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Introduction

This time Infosys is hiring for on-campus drive **2025 and it has two rounds for Selection Process :**

Round 1 - Online test

Round 2 - Technical & HR interview

Infosys Placement Papers Year 2025

Name of the Section	No. of questions
Reasoning Ability	15 Questions
Technical Ability(Qunats)	10 Questions
Verbal Ability	20 Questions
Pseudo Code	5 Questions
Numerical Puzzle	4 Questions
English Grammar	5 Questions
English Writing	1 Question

QUANTITATIVE APTITUDE

- **Number of Questions –** 10
- **Time Limit –** 35 mins
- **Difficulty -** Easy-Medium
- **Importance -** Moderate
- **Cut off –** 70 to 80%ile i.e. 6 to 8 Questions Correct (depends on college to college or drive to drive)

Topic	Approx Problems	Difficulty Level	Probability of Star Mark
Percentages	1	Medium	Low
Data Interpretation	1	Medium	High
Permutation and Combination	1	Medium	Low
Probability	1 – 2	Medium	Medium
Areas, Shapes, Perimeter	2	High	Low
Speed Time and Distance / Boats and Streams	1 – 2	Medium	Low
Time and Work	2	80%	Medium
Profit and Loss | Mixtures & Allegation	0 – 1	Medium	Low
Problem on Ages	1	Medium	Low
Divisibility	0 – 1	Low	Low

Number Decimal & Fractions	2	High	Medium
Series and Progression	2	High	High
LCM and HCF	2 – 3	Medium	High

LOGICAL REASONING

- **Number of Questions –** 15
- **Time Limit –** 25 mins
- **Difficulty -** Easy-Medium
- **Importance -** Moderate
- **Cut off –** 75 to 80%ile i.e. 9 to 11 Questions Correct (depends on college to college or drive to drive)

Reasoning Pattern	Questions	Difficulty	Chances
Arrangements	0 or 5	High	50%
Data Sufficiency	0 or 5	Medium	50%
Syllogisms	3	Medium	100%
Coding Decoding	0 or 3/5	Medium	50%
Number series	0 or 3	High	50%
Cryptarithmetic	0 or 2	Medium	30%
Clocks and Calendar	0 or 1	Medium	40%

ENGLISH

- **Number of Questions –** 20
- **Time Limit –** 20 mins
- **Difficulty -**Medium- Hard
- **Importance -** Moderate
- **Cut off –** 70 to 80%ile i.e. 27 to 31 Questions Correct (depends on college to college or drive to drive)

Test Details

Quantitative Ability – This section clearly indicates that Infosys is looking for candidates' with good Problem Solving and Analytical skills. 10 Questions and 35 Minutes to solve so expect time consuming, higher difficulty questions. The focus was more on Numbers and Advance concepts like Permutation and Combination, Probability. Few questions from topics like Time and Work, Time Speed and Distance were also seen.

Along with this there were one or two Cryptarithmetic Questions. These questions are usually time consuming to solve. Since there were options given for these questions it makes these questions solvable with-in the available time.

Reasoning Ability – Similar to older Infosys pattern we have seen questions from Data Arrangement, Data Interpretation, Data Sufficiency, Syllogism, Visual Reasoning and Puzzles. Earlier there were sets of 5 questions in each set and now it was reduced to 2 or 3 per question set and this makes it time consuming to solve. Apart from this we didn't notice any change in the difficulty level of the questions.

Verbal Ability – Infosys is probably the only company that stresses a lot on Verbal Ability and they continue to do the same by retaining the same old pattern for this section. 40 Questions testing almost all the areas of Verbal i.e. Grammar, Comprehension, Vocabulary and Critical Reasoning, 10 Questions each.

Expected Cut-Off:
Quantitative Ability – 6 to 7 Marks
Reasoning Ability – 10 to 11 Marks
Verbal Ability – 10 marks

Quantitative Ability

Easy Hits: TSD, Time & Work, Mixtures & Alligation
Difficult Hits: Numbers, Permutation & Combination, Probability

Easy Hits: DI, DS, Syllogism, Visual Reasoning,

Difficult Hits: Arrangements, Analytical Reasoning
Verbal Ability

Easy Hits: Sentence Correction, Fill in the Blanks, Error Spotting

Difficult Hits: Reading Comprehension, Critical Reasoning

Section 1: Series

1.1 Number Series

In number series questions, a set of numbers are given following a particular pattern. In the series, each following number is logically related to its immediate preceding number and thus forms a pattern. That pattern itself is called the numbers forming a particular sequence. The students are required to understand the pattern logic and find the missing term of the series using the same logic.

The series can be in three forms:

Throughout in Ascending Order

Throughout in Descending Order

In Ascending / Descending Order in alternate fashion.

If the series is throughout in ascending order, then generally the mathematical operators involved in forming the next numbers in the series are +, ×, (× and +) and (× and –)

Example 1: 2, 5, 8, 11, 14, _____(+ 3, + 3, + 3)

Example 2: 2, 4, 8, 16, 32, _____(× 2, × 2, × 2,)

Example 3: 2, 5, 11, 23, 47, _____(× 2 + 1, × 2 + 1, × 2 + 1,)

Example 4: 2, 3, 5, 9, 17, _____(× 2 – 1, × 2 – 1, × 2 – 1,)

If the series is throughout in descending order, then generally the mathematical operators involved in forming the next numbers in the series are '–' and '÷'

Example 1: 27, 23, 19, 15, 11, _____(–4, –4, –4,)

Example 2: 32, 16, 8, 4, _____ (÷2, ÷2, ÷2,)

If the series is in ascending / descending order, then generally there are two series formed; one amongst the numbers are odd places and the second amongst the numbers at even places.

Example: 5, 6, 7, 8, 10, 11, 14, 15, _____, _____

PRACTICE EXERCISE

Direction: Insert the missing number in the following series.

1. 0, 6, 24, 60, 120, 210, ?

a).336 b).349 c).312 d).337

2. 11, 14, 19, 22, 27, 30, ?

a).39 b).34 c).36 d).35

3. 6, 12, 21, ? , 48

a).33 b).39 c).36 d).31

4. 18, 22, 30, ? ,78, 142

a).44 b).35 c).46 d).48

5. 73205, 6655, 605, 55, ?

a).9 b).5 c).13 d).11

6. 25, 100, ?, 1600, 6400

a).400 b).300 c).360

d).420

7. 125, ?, 343, 512, 729,

1000 a).216 b).215

c).256 d).225

8. 1 , 27 , 125 , 343 , ? , 1331

a).730 b).729 c).512 d). 772

9. 121, 144, 169, ?, 225

a).180 b).172 c).186 d). 196

10. ?, 2116, 2209, 2304, 2401, 2500

a).2124 b).1972 c).1521 d).2025

11. 12 12 18 45 180 1170 ?

a)12285 b)10530 c)11700 d)12870

12.444 467 513 582 674 789 ?

a)950 b)904 c)927 d)881

13.23 25 53 163 657 3291 ?

a)4096 b)2401 c)1764 d)19753

14. 4.5 18 2.25 1.6875 33.75

a)27 b)25.5 c)36 d)40

15.36 157 301 470 ? 891

a)646 b)695 c)639 d)None of these

Direction: In the following number series only one number is wrong. Find out the wrong number.

16. 3 6 16 47.5 154.5 558.5 2257

a)2257 b)47.5 c)154.5 d)558.5

17. 898 906 933 996 1122 1338 1681

a)906 b)933 c)1122 d)None of these

18. 7 56 442 3089 18532 92647 370586

a)442 b)92647 c)18532 d)3089

19. 8000 3200 1280 512 204.8 84.92 32.768

a)512 b)84.92 c)204.8 d)1280

20.4 55 576 4209 21280 64083 64204

a)4209 b)576 c)21280 d)64204

1.2 Letter Series

In this type of questions a series of small letters are given which follow a certain pattern. However, some letters are missing from the series.Students are required to minutely observe the pattern and insert the missing letters. These missing letters are given in a proper sequence as one of the alternatives.

PRACTICE EXERCISE

Direction: In each of the following questions various terms of a letter series are given with one term missing as shown by (?). Choose the missing term out of the given alternatives.

21. A, C, F, J, O, ?

a). Q b). U c). V d). T

22. B, L, E, O, H, R, ?

a). U b). J c).K d). M

23. A, T, C, R, F, O, J, ?

a). K b). J c).L d). M

24. AC, EG, BD, FH, IK, ?

a). IJ b).LM c).PS d). JL

25. CAB, FDE, IGH, ?

a). ILK b).JKW c).LJK d). LKJ

26. X, F, Y, G, ..., H

a) Z b) A c) B d) Y

27. B, B, A, D ....., F

a) B b) A c) Z d) C

28. LMD, MKG, NIJ, ...

a) PKM b) MGO c) LGM d) OGM

29. 2B, ..., 8E, 14H, 22L

a) 4C b) 4D c) 6E d) 9F

30.1 C V, 5 F U, 9 I T, ..., 17 O R

a) 11LS b) 14JS c) 15JS d) 13LS

Directions (31-3d): Study the following questions and answering the questions referring to the word sequence given below:

MEF THY JFG KSY NOE RXB

31. When first and second letter of each word is interchanged, then how many meaning full word will be formed?

a) Three b) Two c) One d) Five

32. If each Consonant is changed to previous letter in the alphabetical series and each vowel is changed to next letter in the alphabetical series, then how many word contains at most two vowel?

a) None b) One c) Two d) Three

33. If words are arranged according to the alphabetical series from left to right, which word is third from the right end?

a) MEF b) KSY c) JFG d) NOE

34. If each letter in the each word is arranged according to the alphabetical series from left to right, and then first and second letter are interchanged in each word then how many meaning full word will be formed?

a) One b) Two c) None d) More than three

Directions (35-38): These questions are based on the following alphabet series.
AAFBBFUUABFFAUCBBBFFFCCCCACAUUAABCCUFFCAUCCC

35. How many C's are there in above arrangement which is immediately followed by vowel?

a) Three b) Two c) One d) Four

36. If all the F's are deleted from the above arrangement then which of the following letter is 12th to right of 3rd from left?

a) B b) U c) C d) A

37. Which of the following letter is 4th to the left of 15th from left end?

a) F b) U c) C d) A

38. How many B's are there in above arrangement which is immediately preceded by vowel but not immediately followed by consonant?

a) Two b) One c) None d) Three

Directions (39-40): In each question below is given a group of letters followed by four combinations of digits/symbols numbered (a), b), c) and d). You have to find out which of the combinations correctly represents the group of letters based on the following coding system and mark the number of that

combination as your answer. If none of the four combinations correctly represents the group of letters, mark
e). 'None of these', as the answer

Letter	H	I	T	K	R	F	A	L	E	M	J	B	Q	U
Digits/Symbols	3	7	%	#	4	$	6	9	@	↑	2	5	©	8

1. If the first letter in the group is a vowel and the last letter is a consonant their codes are to be interchanged.
2. If the first letter in the group is a consonant and the last letter is a vowel are to be coded as the code for vowel.
3. If the first as well as the last letter is a vowel both are to be coded as the code for the first letter.

39. IRHMEJ

(a) 743↑@2
(b) 243↑@7
(c) 243↑@2
(d) 743↑@7
(e) None of these

40. ALFJHE

a) 69$23@ b) @9$23@ c) 69$236 d) @9$236

Section 2: Coding & Decoding

Questions of coding-decoding are designed to test the candidate's ability to understand the rule (Logic) used for the coding of a word and use the same logic to code the given word.

Types of Coding

Type - 1: One word coding:

Some common logics used for word to word coding are illustrated below:

	Word	Coding	Coding Name/Logic
1.	ORACLE	PSBDMF	**Forward Letter Coding:** Here, each letter in the word is moved one step forward to obtain the corresponding code letters.
2.	ORACLE	NQZBKD	**Backward Letter Coding :** Here, each letter in the word is moved one step backward to obtain the corresponding code letters.
3.	ORACLE	PQBBMD	**Forward / Backward Letter Coding:** Here, each letter in the word is moved forward/backward in alternate fashion to obtain the corresponding code letters.
4.	ORACLE	LIZXOV	**Positional Coding :** Here, each letter in the word is replaced by the same positioned letter from the other end in the English alphabet A - Z. e.g. in English alphabet, O is at 15th place from left and L is at 15th place from right.
5.	ORACLE	ELCARO	**Rearrangement of Letters :** Here, a word is coded by simple changing the order of letters of the word.

Type - 2: Multiword to Multiword Coding:

In this type of questions, generally two or three messages are given in the coded language and the code for a particular word is asked. To get the code of such word, any two messages are picked up bearing the same word and the common code word. The common code word will be the code for the required word from the message.

Type 3: Word to word coding related to terms *'is called / is / means'*

PRACTICE EXERCISE:

1. In a certain code 'COUNTERS' is written as 'SRETNUOC'. Then find out how 'CLEARING' is written in that code language?

a) CGLNEIAR b) GNIRCLEA c) GRINGACLE d) CLEANRIG e) GNIRAELC

2. In a certain code ‘STRATEGIC’ is written as ‘TSARTGECI’. Then find out how ‘STIPULATE’ is written in that code language?

a) USTIPALET b) PLATEUSTI c) TSPIUALET d) PULATESIT e) TIPSUATEL

3. If VXUPLVH is written as SURMISE, what is OHPRQ the code for?

a) LEMON b) OPENS c) MELON d) NAMED e) RKSUT

4. In a certain code language, the word ‘NEATLY’ is written as ‘WORDCQ’ and the word PRAISE is written as ‘CVGDPS’. How will the word ‘SUMMIT’ be written in that code language?

a) PSVRLK b) VSPKLR c) RLKPSV d) KLRVSP e) None of these

5. In a certain code, ‘GRANDEST’ is written as ‘NARGFHWY’. Then what is the code for ‘MOTHERLY’?

a) ORXMGUPD b)HTOMGUPD c)HTOMYLRE d)YLREHTOM e)None of these

6. In a certain code ‘CAMPHOR’ is written as ‘6$3#152’ and ‘SAKE’ is written as ‘@$98’. How is ‘MORSE’ written in that code language?

a) @96$2 b)352@8 c)533@8 d)3528@ e)None of these

7. If CARING is coded as MPDRGF, and SHARES is coded as XLPDUX, how could CASKET be possibly coded in the same code?

a) MPXBUN b) MXPGUN c) MPDDUX d) LMPGFR e) FGRDXP

Direction for 8:- In the below question a group of letters or word is given followed by some conditions. You have to find the code for the word based on the following letter coding system.

M	L	E	G	S	K	R	U	B	W	C	H	I	A	P

4	8	$	1	#	5	7	©	2	6	%	*	3	9	@

Find the code for 'BELGIUM'

a)281$34% b)2$813©4 c)21$83©4 d) ©34128$ e)none of these

9. If in a code language, COULD is written as BNTKC and MARGIN is written as LZQFHM, how will MOULDING be written in that code?

a)CHMFINTK b)LNKTCHMF c)LNTKCHMF

d)NITKHCMF e)none of these

10. In a certain code, COMPUTER is written as RFUVQNPC How is MEDICINE written in the same code?

a)EOJDJEFM b)EOJDEJFM c)MFEJDJOE d)MFEDJJOE e)none of these

11. If in a certain code, TWENTY is written as 863985 and ELEVEN is written as 323039, how is TWELVE written in that code?

a)863203 b)863584 c)863903 d)863063 e)none of these

12. If in a certain language if ENTRY is coded as 12345 and STEADY is coded as 931785, then state which the correct code for below word is 'NEATNESS' ?

a)25196577 b)21732199 c)21362199 d)21823698 e)none of these

13. In a certain code, 15789 is written as AXBTC, 2346 is written as MPDU. How is 23549 written in that code?

a)MPXDT b)MPADC c)MPXCD d)MPXDC e)none of these

14. Here are some words translated from an artificial language
' Di onot means oak tree', 'Bly onot means oak leaf' AND 'Bly crin means maple leaf' Which word could mean" maple syrup"?

a)blymth b)hupponot c)patricrin d)crinweel e)none of these

15. In a certain code language '3a,2b,7c' means 'Truth is Eternal' ;'7c,9a,8b,3a' means 'Enmity is not Eternal' and '9a,4d,2b,6b' means 'Truth does not pernish '.Which of the following means 'enmity' in that language?

a)3a b)7c c)8b d)9a e)none of these

16. If sand is coded as Brick, Brick as House, House as Temple, Temple as Palace then where do you worship?

a)Palace b)Temple c)Brick d)House e)none of these

17. In a certain coded language K is written as 11 and KEEP is written as 37.How will the word DRAFT be written in that coded language?

a)45 b)49 c)46 d)48 e)none of these

18. If in code of alphabet AT=20, BAT=40 then CAT=?

a) 34 b)56 c)40 d)60 e)none of these

19. In a certain code 'a friend of mine 'is written as '4 9 1 6 "mine lots of metal' is written as '3 1 0 9 ' and' a piece of metal 'is written as '7 1 6 3 '? What is the code for 'piece '?
a)2 b)3 c)1 d)7 e)none of these

20. In a certain case GIGANTIC is written as GIGTNACI. How is MIRACLES written in that code?
a)MIRLCAES b)RIMCALSE c)MIRACSE d)RIMLCAES e)none of these

Section 3: Blood Relation

Introduction

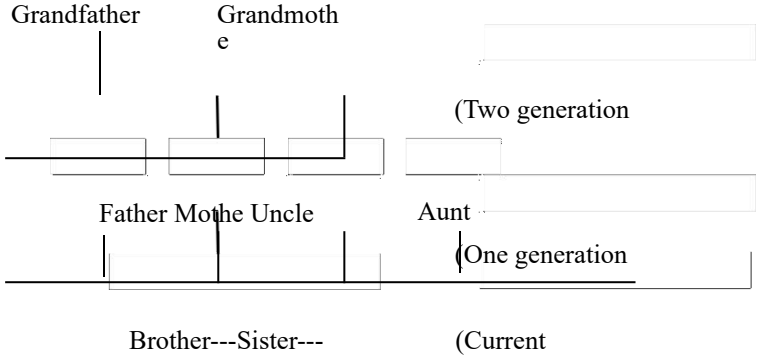
Questions from Blood Relation are frequently asked in almost all competitive examinations. For solving questions on blood relations, it requirescandidate's ability of analysing information showing blood relationship among members of a family. In the questions, a chain of relationship is given in the form of statements and on the basis of information in the form of statement, a candidate is required to establish the relation between any two members given in the statement. For establishing the relationship, it is very necessary that the candidate should be familiar of different relationship in a family.

The following chart will help to understand the relationship in a family:

Blood Relation Chart

Mother's or Father's son :	Brother
Mother's or Fathers' daughter :	Sister
Mother's or Fathers' brother :	Uncle
Mother's or Fathers' sister :	Aunt
Mother's or Fathers' mother :	Grand mother
Mother's or Fathers' father :	Grand father
Son's wife :	Daughter-in-law
Daughter's husband :	Son-in-law
Husband's or Wife's sister and Brother's wife :	Sister-in-law
Husband's or Wife's brother and Sister's husband:	Brother-in law
Brother's or Sister's or Cousin's son :	Nephew
Brother's or Sister's or Cousin's daughter:	Niece
Son or Daughter of two brothers or two sisters or one brother and one sister :	Cousins
Grandfather's or Grandmother's only son	Father
Grandfather's or Grandmother's only daughter-in-law	Mother

In Blood Relation questions, relation between two members is asked in three generations only, i.e. Son–Father–Grandfather. This hierarchical relationship can be understood by the following family tree.



PRACTICE EXERCISE

Direction: In a family, there are eight members. Four men Ram, Shyam, Mohan and Sohan and four women Sita Gita, Sangeeta and Meeta. Sangeeta has two married sons and one married daughter. Ram is Mohan's son-in-law. Gita is Shyam's sister. Sita is not Sohan's wife.

1. Who is Meeta?
(a) Sohan's sister (b) Sohan's sister in law (c) Sohan's wife (d) Mohan's daughter (e)None of these

2. Who are the two daughters-in-law of Mohan?

(a) Sita and Gita (b) Sita and Meeta (c) Geeta and Meeta
(d) Sangeeta and Sita (e) Sangeeta and Meeta

3. Which of the following is NOT a correct pair of husband and wife?

(a) Mohan and Sangeeta (b) Sohan and Meeta (c) Sita and Shyam (d) Gita and Ram (e) None of these

4. Who is Gita?

(a) Sohan's wife (b) Mohan's wife (c) Sohan's daughter (d) Mohan's daughter (e)None of these

5. Which of the following statements in not correct?

(a) Ram is Mohan's son in law (b) Sita is Shyam's wife (c) Gita is Sohan's sister
(d) None of these (e) All of these

Direction(6-8): In a family consisting of three generations, there are 8 members. Peter's granddaughter Alicia is an engineering student. Mike's mother Laura is a lawyer while his maternal aunt Katty is a banker. Carol's son David is a doctor while his son-in-law James runs a gym with his son?

6. What is Mike's profession?

(a) Gym (b) Student (c) Lawyer (d) Banker (e)None of these

7. How is Alicia related to David?

(a) Nephew (b) Niece (c) Cousin (d) Maternal uncle (e) Noneof these

8. How are Alicia and Mike related to each other?

(a) Cousins (b) Husband and wife (c) Siblings (d) Daughter in law (e)Either a or c

Direction(9-10): In a family of eight, four women P, Q, R and S and men T, U, V and W, the old couple has a married daughter and a married son. The son has a daughter and the daughter has a son.
R is Q's grandmother is T's son-in-law U is S's son

9. How is P related to W?
(a) Sister (b) Sister in low (c) Wife (d) Mother (e)None of these

10. Which of the following is not a valid couple?
(a) P and W (b) S and V (c) R and T (d) Q and U (e)None of these

Direction(11-13): Read the following information carefully to answer the questions given

below: 'L + K' means 'L is the father of K'.

'L–K' means 'L' is wife of K'.
'L × K' means 'L' is the brother of K'. 'L ÷ K' means 'L is the daughter of K'

11. If A ÷ B + C + D, which of the following is true?

(a) A is the father of D (b) B is the aunt of A (c) A is the aunt of D
(d) A is the mother of B (e) None of these

12. If A ×B ×C+D, then how is A related to D?

(a) Brother (b) Father (c) Son (d) Uncle (e)None of these

13. A×B+C×D+E. How is A related to E?

(a) Father (b) Grandfather (c) Grandfather's brother (d) Unrelated (e) None of these

Direction: Find the answer of the question with the help of given information.
P + Q means P is the daughter of Q. P × Q means P is the son of Q.
P – Q means P is the wife of Q.

14. If A × B – C, which of the following is true?
(a) A is the daughter of C (b) B is the son of C (c) A is the son of C
(d) B and C are husband wife pair (e) Both c and d

15. If A × B – C + D, how is D related to A?

(a) Mother (b) Sibling (c) Daughter (d) Wife (e)None of these

16. Deepak is brother of Ravi. Reena is sister of Atul. Ravi is son of Reena. How is Deepak related to Reena?

a) Son b) Brother c) Nephew d) Father e)Can't be determine

17. E is the son of A, D is the son of B, E is married to C, C is B's daughter. How is D related to E?
a) Brother b) Uncle c) Father-in-law d) Brother-in-law e)None of

these Directions (18-19): Read the following information and answer the questions given

below it:

A is the father of C But C is not his son.
E is the daughter of C, F is the spouse of A B is the brother of C, D is the son of B
G is the spouse of B, H is the father of G.

18. Who is the grandmother of D?

a) A b) C c) F d) H e)G

19. Who is the son of F?

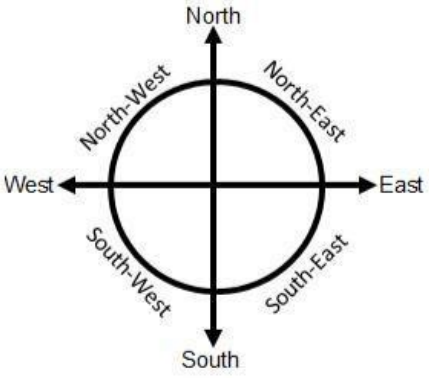
a) B b) C c) D d) E e)A

20. P is the son of Q while Q and R are the sisters to one another. T is the mother of R. If S is the son of T, which of the following statements is correct?

a) T is the brother of Q b) S is the cousin of P c) Q and S are sisters
d) S is the maternal uncle of P e)T is the sister of Q

Section 4: Directions

These questions are designed to test the candidate's ability to sense direction. For this, a candidate should have the knowledge of directions on the surface of a paper. Also it is necessary to sketch out the directions with the help of information provided. On a plane, directions are shown as below-



Right and left turning

There is a lot of confusion in students in right turning and left turning.
Right turning means turning in clockwise direction and left turning means turning in anticlockwise direction. See the figure below

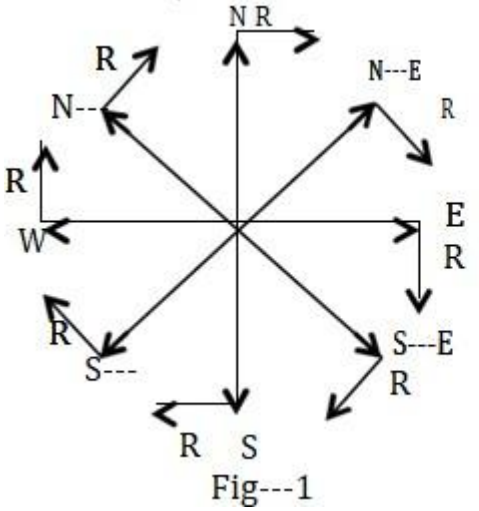


Fig---1

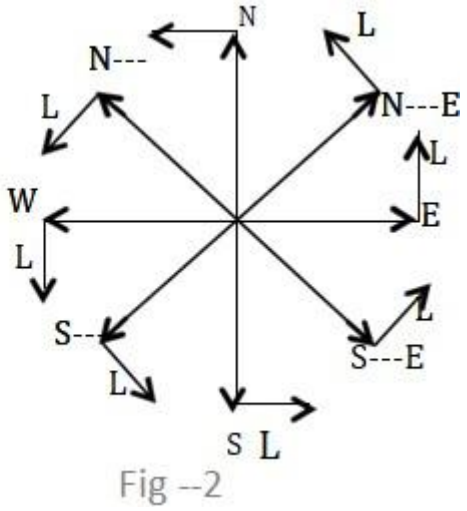


Fig --2

Practice Question:
Directions for Questions 1 to 4: Answer the questions independent of each other.

1. A watch in Huckleberry Finn's house reads 4·30. If the minute hand points towards the West, in which direction does the hour hand point?
   a) Northeast b) Southwest c) Northwest d) North

2. Hanuman, while looking for the Sanjeevani booty travels 3 km to the west, turns left and goes 3 km, turns right and goes 1 km, again turns right and goes 3 km. How far is he from the starting point?
   a) 7 km b) 6 km c) 5 km d) 4 km

3. Raveena walks 10 km south from her house, turns left and walks 25 km, again turn left and walks 40 km, then turns right and walks 5 km to reach her office. In which direction was the office from her house?
   a) Southwest b) Northwest c) East d) North

4.For the above question, what is the distance of her office from her home?
a) 30 b) 30 X $2^{1/2}$ c) 45 X 21/2 d) None of these

5. A road network has parallel and perpendicular roads, running north-south or east-west only. Junctions/Intersections on this road network are marked as A, B, C, D… All roads are at exactly half a kilometer distance from each other. The following is known about junctions A, B, C, H and X.
'A' is east of 'B' and west of 'C', 'H' is southwest of 'C' and southeast of B. 'B' is southwest of 'X'. Which junctions are the farthest south and the farthest east?
a) H, B b) H, C c) C, H d) B, H

6. The Suvarna Rekha river flows from west to east and on the way turns left and goes in a quarter circle around a Shiv temple, and then turns left in right-angles. In which directions is the river finally flowing?
a) North b) South c) East d) West

Directions for Questions 7 to 9: Read the situation given below to answer these questions.
j, k, l, m, n, o, p, q, and r are nine huts. 1 is 2 km east of k. j is 1 km north of k and q is 2 km south of j. p is 1 km west of q while m is 3 km east of p and o is 2 km north of p. r is situated just in middle of k and l while n is just in middle of q and m.
7. Distance between k and l is:
a) 2 km b) l km c) 5 km d) 1.5 km

8. Distance between k and r is:
a) 1.41 km b) 3 km c) 2 km d) 1 km

9. Distance between p and q is:
a) 4 km b) 2 km c) 1 km d) 3 km

Directions for Questions 10 to 14: Study the following information carefully to answer these questions.
All the streets of a city are either perpendicular or parallel to one another. The streets are all straight. Streets N, O, P, Q and R are parallel to one another. Streets S, T, U, V, W, X and Y are parallel to one another.
(i) Street N is 1 km east of Street O.
(ii) Street O is 1/2 km west of Street P.
(iii) Street Q is 1 km west of Street R.
(iv) Street S is 1/2 km south of Street T.
(v) Street U is 1 km north of Street V.
(vi) Street W is 1/2 km north of Street X.
(vii) Street W is 1 km south of Street Y.

10. If W is parallel to U and W is 1/2 km south of V and 1 km north of T, then which two streets would be 1&1/2 km apart?
a) U and W b) V and S c) V and T d) W and V

11. Which of the following possibilities would make two streets coincide?
a) X is 1/2 km north of U b) P is 1 km west of Q c) Q is 1/2 km east of N d) R is 1/2 km east of O

12. If street R is between O and P, then distance between N and Q is:
a) 1/2 km b) l km c) 1.5 km d) 1.5-2 km .

13. If R is between O and P, then which of the following is false?
a) Q is 1.75 km west of N b) P is less than 1 km from Q
c) R is less than 1 km from N d) Q is less than 1 km from O

14. Which of the following is necessarily true (given the basic clues)?
a) R and O intersect b) Q is 2 km west of Oc) Q is at least 2 km west of N d) Y is 1.5 km north of X

15. Usain runs 100 m south from his house, turns left and runs 250 m, again turns left and runs 400 m, then turns right and runs 50 m to reach to the stadium. In which direction is the stadium from his house?
a) Southwest b) Northeast c) East d) North

16. If Southeast becomes east and Northwest becomes west and all the other directions are changed in the same direction. Then what will be the direction for north?
a) Northwest b) Southeast c) Southwest d) Northeast

17. At a crossing there was a direction pole, which was showing all the four directions in correct manner. But due to wind it turns in such a manner that now west pointer is showing South. A man went to the wrong direction thinking that he was traveling East. In what direction he was actually traveling?
a) South b) West c) North d) Can't say

18. A direction pole at a crossing, due to an accident turns in such a manner that now east pointer is showing southwest. A traveler went to wrong direction thinking that he was travelling south. In what direction was he actually traveling?
a) South-west b) West-north c) North-east d) East-south

19. Vandana walks 4 kms towards the north, turns right and walks 5 km. Then he turns towards south and walks 2 km. Again he takes a turn towards west walks 3 km and stops for a while. Then he further walks 2 km. What is her distance from the starting point?
a) 16 km b) 2 k c) 4 km d) 3 km

20. If Ram is in the West of Shyam and Kareem is in the North of Shyam, in what direction is Kareem with respect to Ram?
a) Northeast b) Southwest c) Northwest d) Southeast

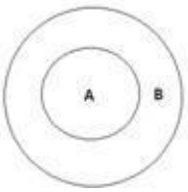
Section 5: Syllogism

The questions on syllogism are a regular feature in almost all the competitive exams. Generally three statements are given followed by four conclusions. Students are required to draw the conclusions from the statements itself. At the time of drawing the conclusion, you are requested to consider the statements to be true even if they appear to be at variance with commonly known facts.

Types of Statements

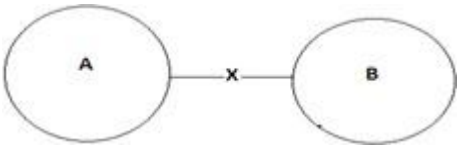
a)Universal Statements (All Type Statements)

1) Universal Affirmative/Positive
i.e. All A's are B's



Note: Converse All B's Are A's is a Possibility

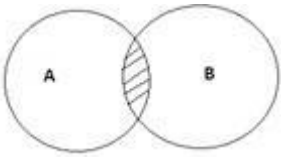
2) Universal Negative : All A's are not B



Converse All B's are not A

2) Particular Statements
3) Particular Affirmative/Positive

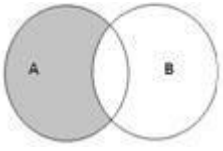
Some A's are B's



Converse : Some B's are A's

4) Particular Negative

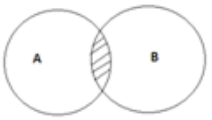
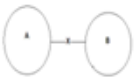
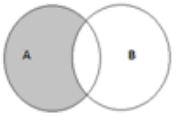
Some A's Are Not B



Converse : Some B's are not A is a

possibility Learn the following tables with

l

Universal Affirmative	Particular Affirmative	Universal Negative	Particular Negative
Direct Statement: **All A's are B's**  (1) Definite Conclusion a) Some A's are B's b) Some B's are A's (i.e. these conclusions are sure conclusions without any doubt (2) Possible Conclusions a) Some B's are not A's is a possibility  b) B's are not A is a possibility. i.e. 	**Direct Statement :** **Some A's are B's**  1) Definite Conclusions a) Some B's are A's 2) Possible Conclusion a) Some A's are not B is a possibility b) Some B's are not a is a possibility c) All A's are B's is a possibility d) All B's is A is a possibility	**Direct Statement :** **All A's are not B**  1) Definite Conclusions a) All B's are not A b) Some A's are not B c) Some B's are not A Note : Since there is no relation between A&B ∴ No possibility are definite conclusions	**Direct Statement:** **Some A's are not B's**  1) Definite Conclusion None as nothing definite can be said from the diagram All are a possibility 2) Possible Conclusions a) Some A's are B's is a possibility b) Some B is A is a possibility c) Some B is not equal to A is a possibility d) All A is not equal to B is a possibility e) All B is not equal to A is a possibility f) All B is equal to A is a possibility  Note : Vice – Versa is not a possibility i.e. All A is equal to B as the direct statements itself states that some A is not equal to B".

Other names of all, some, All not & possibilities

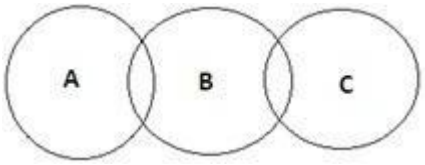
All	SOME	ALL NOT	POSSIBILITIES
1) Each 2) Every 3) Each and every 4) 100% (> 100%, i.e. any % above 100) 5) Almost 6) Almost 7) Always 8) None but 9) Only 10) Any*	1) Few 2) Generally 3) Frequently 4) most 5)1-99%, (any % between 1-99) 6) At least 7) Least	1) 0% (All A not B) 2) None (none A is B) 3) Can never	1) Can 2) Can be 3) May be 4) Might be 5) If 6) Cannot

Important Note:-

1. "Only A are B" means "All B's are A's" i.e. subject and predicate – change
2. "All A's are definitely" means "All A's are B's"
3. "None but A is B" means Only A is B which in turn means "All B's are A's"
4. A is B means all A is b)

In each question there are five options available, learn these by heart but not necessarily in the same order.
1) only answer 1 is true
2) only answer 2 is true
3) either 1 or 2 is true
4) neither 1 nor 2 is true
5) both 1 and 2 are true.
This sequence will be used in the below questions...so do not get confused if numbers 1,2,3,4,5 are used in place of answer.

EITHER OR CONCLUSIONS
(Quest.)
Some A's are
B's Some B's
are C's



Conclusions :

Case (1)
a) No A is C (F)
b) Some A's are C's (F) - (3)

Note : Here both statements are false as from the diagram nothing definite can be known about relation b/w A and C had the word possibility added to the statements then they would have been true.
Case (2)
a) No A is C is a possibility (T)
b) Some As are C's (F) - (1)

Case (3)
a) No A is C (F) (2)
b) Some A's are C's is a possibility (T)- (2)

Case (4)
a) No A is C is a possibility (T)
b) Some A's are C's " " (T) - (5)

Conditions of Either Or :
(1) Subject Predicate should be same in both statements
(2) Complimentary pairs i.e. one should be positive and one should be negative
(3) Maximum possibility i.e. maximum diagrams possibility should be covered
(4) Individually both false
(5) relation between subject and predicate should not be clear.
(6) Either or condition not applicable between All and no type sentences.
i.e. All A's are C's (F)
No A's are C's (F) – then it is (4) and not (3)

But If it is:
All A's are C's
Some A's are not C's (F) –the ans is
(3) OR
But if it is:

No A's are C's
Some A's are not C's- then ans is (4)
This is applicable between all & some statements

Note: No C is A can also be written as no A
is c) Similarly some A is C =some C is a)
So subject is equal to predicate.

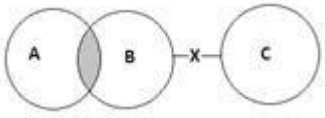
ANOTHER METHOD FOR SOLVING SYLLOGISMS : (Note : if method 1 is clear then you do not need this but never the less go through as it helps in clearing the concepts)

RULE METHOD (learn by heart these)
Rule 1.
All + are = All
Ex. All A's are
B's All B's are
C's

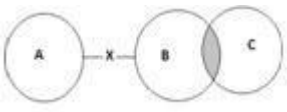
Rule 2.
Some + All =
some Ex. Some
A's Are B's All
B's Are C's
∴ Some A's are C's

Rule 3.
All + Some = no definite
conclusion Ex. All A's are B's
Some B's are C's
∴ Relationship between A and C is a possibility

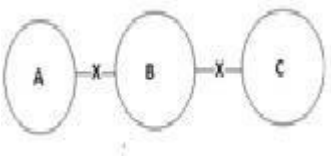
Rule 4.
Some + Some = No definite conclusion
Rule 5. Some + No = Some not (forward i.e. A to
c) Ex. Some A's are B's
No B's are C's
∴ Some A's are not C's



Rule 6.
No + Some = Some not (back words i.e. C to
A) Ex. No A's are B's
Some B's are C's
∴ Some C's are not A

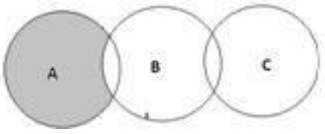


Rule 7.
No + No = no definite
conclusion Ex. No A's are B's
No B's are C's



∴ Relation between is a possibilities

Rule 8.
Some not + Some not = no definite conclusion
(NDC) Ex. Some A's are not B
Some B's are not C



Rule 9. All + Some not = N D C

Rule 10. Some + Some not = N

D C **Rule 11.** Not + Some not =

N D C

Practice Exercise:
Direction: In each of the following questions below are given two /three statements followed by the conclusion. You have to take the given statements to be true even if they seem at the variance from commonly known facts. Read all the conclusions and then decide which if the given conclusion logically follows from the given statements disregarding commonly known facts.

1. **Statements:**
I. Some brown are blue.
II. All blue is black.
III. Some black is yellow.
Conclusions:
I. Some brown are black
II. Some yellow is not black.

a). Only conclusion I follows b). Only conclusion II follows c). Either conclusion I or II follows
d). Neither conclusion I nor II follows e). Both conclusion I and II follow

2. Statements:
I. Some rats are cats.
II. All cats are bats.
III. No bat is a dog
Conclusions:
I. Some rats are definitely not dogs
II. No rat is dog
III. Not cat is a dog

a). Only I follows. b). Only II follows. c). Both I and II follow.
d). Both I and III follow. e). All I, II and III follow

3. Statements:
I. All pandas are rabbits.
II. No panda is tortoise.

III. No giraffe is rabbit.
Conclusions:
I. No panda is giraffe
II. At least some giraffes are pandas
III: At least some rabbits are not tortoises.
a) Only I follows b) Only II follows c) Only III follows
d) Both I and II follow. e) Both I and III follow.

4. Statements:
I. All tea is coffee.
II .All coffee is water.
III. No
water is milk.
No milk is juice.
Conclusions:
I. At least some coffee are juices
II. Some juices
are not tea III: No
water is juice
a) Only I follows b) Only II follows c) Only III follows
d) All I, II and III follow. e) None follow

5. **Statements:**
I. Some brown are blue.
II. All blue is black.
III. Some black is yellow.
Conclusions:
I: Some brown are black
II: Some yellow is not
black III: All yellow is
black
a)Only I follows b)Only II follows c)Only III follows
d)Both I and II follow e)I and Either II or III follows

6. **Statements:**
I. All lamps are pots.
II. All pots are roses.
III. No rose is a flower
Conclusions:
I. All roses are pots
II. All lamps are roses
a) If only conclusion I follows. b) If only conclusion II follows. c) If either conclusion I or II follows.
d) If neither conclusion I nor II follows. e) If both conclusions I and II follow

7. Statements:
I. All flowers are nuts.
II. Some nuts are walls.
III. All chairs are walls
Conclusions:
I. Some nuts are chairs
II. At least some walls are flowers
a) If only conclusion I follows. b) If only conclusion II follows. c) If either conclusion I or II follows.
d) If neither conclusion I nor II follows. e) If both conclusions I and II follow

8. **Statements:**
I. Some marbles are cats.
II. All cats are pillows.
III. No pillow is a dog
Conclusions:

I. Some marbles are definitely not dogs
II. No marble is a dog
a) If only conclusion I follows. b) If only conclusion II follows. c) If either conclusion I or II follows.
d) If neither conclusion I nor II follows. e) If both conclusions I and II follow

9. **Statements:**
I. All lamps are pots.
II. All pots are roses.
III. No rose is a flower
Conclusions:
I. All roses are pots
II. All lamps are roses
a) If only conclusion I follows. b) If only conclusion II follows. c) If either conclusion I or II follows.
d) If neither conclusion I nor II follows. e) If both conclusions I and II follow

10. **Statements:**
I. All flowers are nuts.
II. Some nuts are walls.
III. All chairs are walls
Conclusions:
I. Some nuts are chairs
II. At least some walls are flowers
a) If only conclusion I follows. b) If only conclusion II follows. c) If either conclusion I or II follows.
d) If neither conclusion I nor II follows. e) If both conclusions I and II follow

11. **Statements:**
I. Some marbles are cats.
II. All cats are pillows.
III. No pillow is a dog
Conclusions:
I. Some marbles are definitely not dogs
II. No marble is a dog
a) If only conclusion I follows. b) If only conclusion II follows. c) If either conclusion I or II follows.
d) If neither conclusion I nor II follows. e) If both conclusions I and II follow

12. **Statements:**
I. Some marbles are cats.
II. All cats are pillows.
III. No pillow is a dog
Conclusions:
I. Some marbles are definitely not dogs
II. No marble is a dog
a) If only conclusion I follows. b) If only conclusion II follows. c) If either conclusion I or II follows.
d) If neither conclusion I nor II follows. e) If both conclusions I and II follow

13. **Statements:**
I. Some A are C
II. Some C are E
III. All E are F.
IV. Some F are G.
Conclusions:
I. Some A are F.
II. Some F are E
III. At least some E are G.

a) Only I follows b) Only II follows c) Only I, II and III follow
d) All follow e) None follows

14. **Statements:**
I. All Banks are Parks
II. Some Parks are Pencils
III. No pencil is Monkey
IV. All Monkeys are Brinjals
Conclusions:
I. No Bank is Brinjal
II. No Monkey is Park
III. Some Banks are Brinjals
a) Only I follows b) Either III or I follows c) Only I and II follow d) All follow e) None follows

15. Statements:
I. Some pens are pencils.
II. Some pencils are erasers.
III. Some erasers are sharpeners. Some sharpeners are dusters.
Conclusions:
I. Some sharpeners are not pencils.
II. All dusters are pens.

a) only 1st follows b) only 2nd follows c) either 1st or 2nd
d) neither 1st nor 2nd e) both 1st and 2nd

16. **Statements:**
I. Some Cats are Rats.
II. All bats are tables.
III. All Rats are Bats.
Conclusion:
I. Some Cats are bats
II. All bats are rats
III. All tables are cats
IV. All bats are cats

a). Only I & II follow b). Only II follows c). Only I & IV follow d). None of these

17. **Statements:**
I. Some ships are boats.
II. All boats are submarines.
III. Some submarines are yatches.
Conclusion:
I. Some yatches are boats.
II. Some submarines are boats.
III. Some submarines are ships.
IV. Some yatches are ships

a). All follow b). Only II and III follow c). Only III follows d). Only IV follows

18. **Statements:**
I. All Carrots are birds.
II. Some telephones are Carrots.
III. All bedsheets are telephone.
Conclusion:

I. All bedsheet are birds
II. Some bedsheet are birds
III. Some birds are telephone
IV. All telephone are birds

a). Only I followsb). Only II follows c). Only I and III follow d). Only III follows

19. **Statements:**
I. Most CPUs are keyboards.
II. No keyboard is a Mouse.
III. All Mouses are CPU.
Conclusion:
I. Some keyboards are CPU
II. All CPU's are Mouse
III. No Mouse is a keyboard
IV. Some Mouse are keyboard

a). Only I followsb). Only II and III follow c). Only I and III follow d). Only II follows

20. **Statements:**
I. Samosas are Jalebi.
II. All Jalebis are Tikki.
III. All Tikkis are Barfi
Conclusion:
I. All Jalebis are Barfi
II. All Tikkis are Samosas
III. All Samosas are Barfi
IV. All Barfi are Jalebi

a). Only I and II follow b). Only I and III follow c). Only II and III follow d). All follow

Section 6: Puzzle

Analytical Reasoning problems are the most common problem types in all entrance exams containing *Logical Reasoning* section. The information that is provided is of two types:

Information relating an object with its property
Information that matches two properties of an object.

Using these clues, you are required to match all the objects with their corresponding properties. We will take a simple example to make things clear.

SOLVING TECHNIQUES

There are the two types of solving techniques that can be used to solve complex arrangement problems.

A. Consolidated Table Method

B. Matrix Method

THE CONSOLIDATED TABLE METHOD

In the Consolidated Table Method, we prepare a table where the second column lists down the objects, and the remaining columns have properties associated with the objects. The first column is to note down which property types are eliminated for the object that we are considering in that particular row.

The step by step method of solving a question set using the consolidated table method is as follows:First, prepare a table as per the rules explained above.

Read the conditions that are given and find out the information that relates a particular object with a property type. This is direct information and should be filled in the table in the appropriate row. Also, note this down as the eliminated property type against rows of all other objects.
After listing down all direct information, look for cells in the table that can be filled using the eliminated properties for any object. For example, if two out of three property types have been eliminated for a particular property of an object, then it follows that the object has the third property type.
After this, look for information that relates two or more property types with each other and look for places in the table where they can be accommodated.
Finally, a partially complete or a complete table will be obtained which has the objects aligned with their property types. In case of partially complete tables, use short forms of property types separated by '/' to accommodate multiple cases in the solution.
Use this table to answer the questions that follow. If the question has additional information, modify the table accordingly.

THE MATRIX METHOD

In the Matrix Method, we prepare a table with the first column as our object heading, and the remaining column headings as the various property types. Each row of the matrix corresponds to one object name. Ticks or crosses are put in the boxes other than in the first column depending on whether the object (the entry in the first column) has that property type or not.

The step-by-step method of solving a question set using the matrix method is as follows:

First, prepare a matrix table listing down the objects and the property types as the headings of all the columns. List the object names as the rows of the table.
Read the information to find out data that relates an object name directly to a property type. In such cases, put a tick against the property type column for that particular object name. Put crosses in all other rows for that particular column and also for all other sub columns of that property for that object.
To accommodate information that relates two or more property types with each other, look for rows in the matrix table that carry no ticks or crosses for the properties that are being considered.
A partial or a complete matrix table will be obtained after all the given information has been represented. Use this table to answer the questions that follow. Accommodate any additional information from the questions in the table to complete it if it is not.

PRACTICE QUESTIONS

Directions (1 - 2): There are four books of Hindi, English, accounts and Tax written by four different authors, Mishra, Kaul, Gupta and Mehta; not necessarily in that order. These books have been arranged in four different shelves numbered 1 to 4.
the book written by Gupta is in shelf
3. Mishra has written the English
book. Accounts book is in shelf 4.
Kaul has not written the Hindi book and the book written by him is in an odd numbered self.

1. Who has written the Accounts book?
(a) MIshra (b)Kaul (c) Gupta (d) Mehta (e) None of these

2. Who has written the Tax book?
(a) MIshra (b)Kaul (c) Gupta (d) Mehta (e) Cannot be determined

3. Four different coloured balls viz. red, green, yellow and blue are kept in four different boxes numbered 1, 2, 3 and 4, though not in that order. Yellow ball is kept in box number 3. The box number 2 is adjacent to the box number 4. Red ball is not kept in a box adjacent to yellow balls. The box numbered 3 is in between box number 1 and box number 2. The red ball is in the box numbered ?

(a) 1 (b) 2 (c) 3 (d) 4 (e) cannot be determined.

Directions (4 - 5): Read the following information and answer the questions following them:

Four people were seated around a square table playing carrom board. The carpenter sat on Ramu's left and Mahesh sat opposite cook. Raghu is not the tailor and does not have knowledge of carpenting. The carpenter sat opposite vishnu.

4. Who among the following is cobbler?

(a) Ramu (b) Vishnu (c) Mahesh (d) Raghu (e) None of these

5. Who among the following is cook?

(a) Ramu (b) Vishnu (c) Mahesh (d) Raghu (e) None of these

6. Two of Anthony, Bernard and Charles are fighting each other.
a. The shorter of Anthony and Bernard is the older of the two fighters
b. The younger of Bernard and Charles is the shorter of the two fighters
c. The taller of Anthony and Charles is the younger of the two
fighters. Who is not fighting?

a)Anthony b)Bernard c)Charles d)can't be determine

7. One of the words listed below is my secret word.
AIM DUE MOD OAT TIE
With this list in front of you, if I were to tell you any one letter of my secret word, then you would be able to tell me the number of vowels in my secret word. Which word is my secret word?
a)AIM b)DUE c)OAT d)TIE e)can't be determine

8. Zita, her brother, her daughter and her son are tennis players. As a game of doubles is about to begin:
a. Zita's brother is directly across the net from her daughter.
b. Her son is diagonally across the net from the worst player's sibling.
c. The best player and the worst player are on the same side of the net. Who is the best player?
a)Zita b)Zita's son c)Zita's Brother d)Zita's Daughtere)None of these

Direction (9-13):
Five millionaires – Mr. Lim, Mr. Peters, Mr. Yao, Mr. Kumar and Mr. Cartwright – are the owners of five paintings, one each by the artists Cezanne, Picasso, Gauguin, Vermeer and Rembrandt. Each millionaire owns one of the above paintings. The costs of the paintings (in million USD) are, in some order, 4, 6, 12, 13 and 21. All five millionaires bought their respective painting from one of the following cities:Reykjavik, London, Delhi, Paris and Johannesburg. No two millionaires bought their painting from the same city or of the same price.
The following information is known.
a). Neither Mr. Lim nor Mr. Kumar bought their paintings from Reykjavik. They bought their paintings from Paris and Johannesburg, in any order.
b). Mr. Yao bought the painting by Picasso.
c). Mr. Peters bought the painting worth 12 million USD from Delhi.
d). The sum of the costs of the paintings bought by Mr. Lim and Mr. Yao is less than the cost of the painting bought by Mr. Kumar. Mr. Kumar does not own the most expensive painting.
e). The most expensive painting is by Gauguin, and was bought from London.
f). The second most expensive painting is by Cezanne, and was bought from Johannesburg.

9. From where did Mr. Yao buy his painting?
a) Paris b) London c) Reykjavik d) Delhi e) Johannesburg

10. What are the costs (in million USD) of the paintings owned by Mr. Lim and Mr. Yao? (The order is not important).
a) 4 & 6 b) 4 & 13 c) 6 & 13 d) 4 & 12 e) 6 & 12

11. Who owns the painting by Cezanne?
a) Mr. Lim b) Mr. Peters c) Mr. Yao d) Mr. Kumar e) Mr. Cartwright

12.Which of these millionaires is a possible owner of the painting by Rembrandt?
a) Mr. Peters b) Mr. Yao c) Mr. Kumar d) Mr. Cartwright e) None of these

13. What is the total cost (in million USD) of the paintings owned by Mr. Lim, Mr. Yao and Mr. Cartwright?
a) 22 b) 23 c) 31 d) 40 e) Cannot be determined
14. Abigail, Bridget and Claudia often eat dinner out.
a. Each orders either coffee or tea after dinner
b. If Abigail orders coffee, then Bridget orders the drink that Claudia orders.
c. If Bridget orders coffee, then Abigail orders the drink that Bridget orders.

Who do you know always orders the same drink after dinner?
a)Abigail b)Bridget c)Claudia d)Can't be determine

15. A

B

C
D

E F

G
H
I

Each of the digits 1,2,3,4,5,6,7,8 and 9 is:

a. Represented by a different letter in the figure above
b. Positioned in the figure above so that each of A+B+C, C+D+E, E+F+G and G+H+I is equal to 13.

Which digit does E represent?

a)2 b)7 c)1 d)9 e)4

Directions for Questions 16 to 19: Rajeev planted some plants in his lawn but in certain fixed pattern:
i. In most of the row s there are neither Roses nor Marigolds.
ii. There are two more row s of Orchids than Tulips and two more row s of Roses than Orchids.
iii. There are four more row s of Roses than Tulips.
iv. There aren't as many row s of Lilly as Fireball.
v. There is one less Marigold row than Rose.
vi. There is just one row of Tulips.
Vii. The maximum number of rows he planted is six.

16. How many rows of rose did he planted
a) Two b) Five c) Four d) Cannot be determined

17. Which of the above information is redundant and can he dispensed with?
a) (i) b) ii c) (i) and (iii) both d) All are necessary

18. What is the sum of the rows of Orchids and Marigold he planted?
a) Three b) Nine c) Seven d) Cannot be determined
19. How many rows of fireball did he plant?
a) Two b) Six c) Two or Six d) Data inadequate

20. Lee, Dale and Terry are related to each other.

i. Among the three are Lee's legal spouse, Dale's sibling and Terry's sister in law
ii. Lee's legal spouse and Dale's sibling are of the same sex

Who do you know is a married man?
a)Lee b)Dale c)Terry d)Can't be determine

21. Shadow went to an Island where the natives lie and the visitors speak truth. Shadow saw a salesman and wanted to know whether he was a native or a visitor. He did not pose a question directly but asked him indirectly instead. Shadow saw a woman and asked the salesman,"Is that a NATIVE or VISITOR?" .For which the salesman replied," She is a visitor". Is the salesman a Native or a Visitor?

Ans :Since Shadow himself saw him/her as a woman and asked the salesman. The Salesman replied ,"SHE " by which he speaks truth and is a Visitor. Salesman is a Visitor.

Section 7: Visual Reasoning

Non-verbal section consists a number of types of questions on different heads.

Non-Verbal Series

In this type of questions a series of figures (generally 5 figures) is given which proceeds following a certain rule. This series is known as problem figures which is followed by another series of five figures known as answer figures. Students are required to select one figure from the series of answer figure which follows the logic of problem figures and represents the next figure in the series.

Ex.

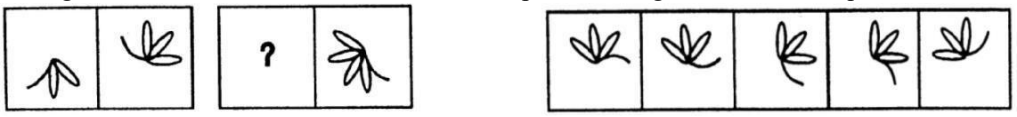
(a) (b) (c) (d) (e)

Solution: (a) In alternate steps 'T' and arrow interchange places while the third one is replaced by a newone.

Non-Verbal Analogy

This section of non-verbal reasoning has been designed to test the ability of a candidate to understand the relationship between two figures, which follow a certain rule, and apply the same rule to select a figure from answer figure which establishes the same relationship with the figure asked in the question.

Ex.



(a) (b) (c) (d) (e)

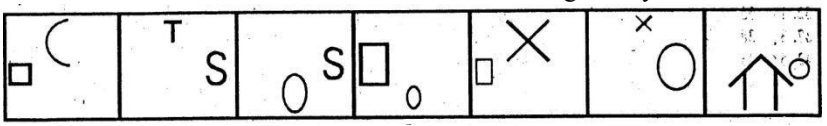
Solution: (b) From fig II to I: The whole figure rotates by 90° CW. One-and – a-half petals are lost from ACW side and half a petal are added to its CW side

Non-Verbal Classification

(i) Series based classification

Direction: In each of the following questions, a series begins with the unnumbered figure on the extreme left. One and only one of the five-numbered figures does not fit into the series. The two unnumbered figures, one each on the extreme left and extreme right fit into the series. You have to take as many aspects into account as possible of the figures in the series and find out the one and only one of the five-numbered figures which does not fit into the series. The number of that figure is your answer.

16.



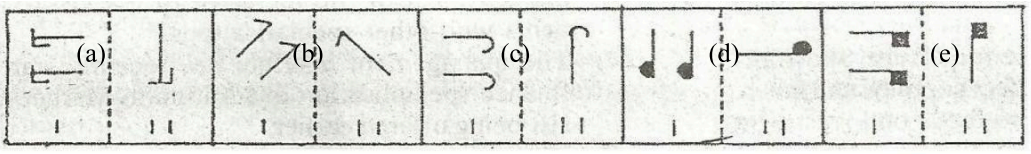
(a) (b) (c) (d) (e)

Solution: *(a) In each step, the bigger element gets reduced in size and retained. The other one shifts two sides and changes its shape*

(ii) Analogy based Classification

Direction: *In each of the following questions, in four out of five pairs of figures, element(I) is related to element (II) in same particular way. Determine pair of figures which the element (I) is not so related to element (II).*

Ex.

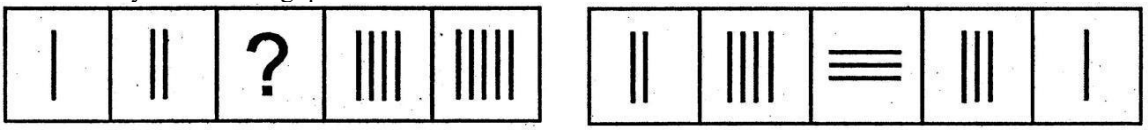


Solution: (d) *The whole figure rotated by 90° ACW while one similar element is lost.*

PRACTICE EXERCISE

Direction (Q.1-9): In each of these questions there are two sets of figures. The figures on the left are Problem Figures (four figures and one question-marked space) and those on the right are Answer Figures indicated by number a, b, c, d and e. A series is established if one of the five Answer Figures is placed at the "question- marked space". Problem Figures form a series if they change from left to fight according to some rule. The number of the Answer Figure which should be placed in the question-marked space, is the answer. All the five figures, ie four problem figures and one Answer Figure placed in the question-marked space should be considered as forming the series.

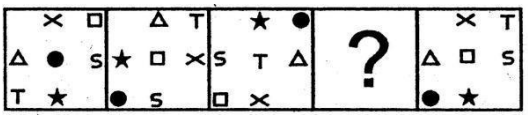
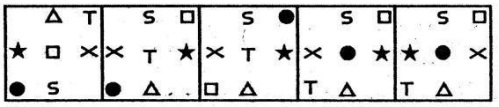
Study the following questions.



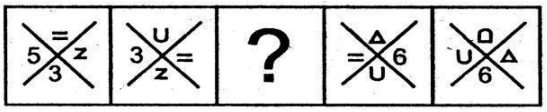
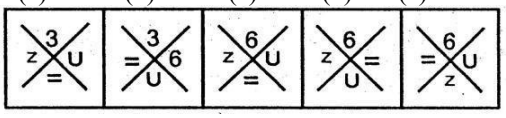
(e) If we place the answer Figure (d) in the question marked space it makes a series which indicates that one vertical line is added in each figure. So the answer is (d), Note that if we go by only one aspect of 'number of lines', Answer Figure (c) may also fit in. So
you have to consider all different aspects. Now solve the following questions.

Problem Figures **Answer Figure**

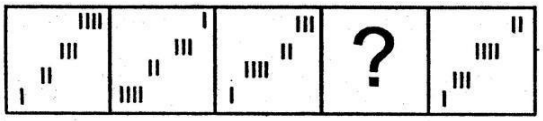
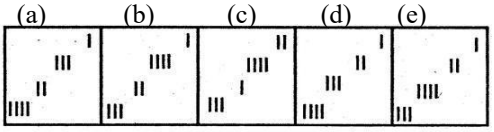
1.

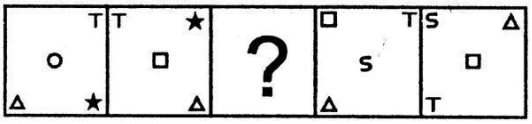
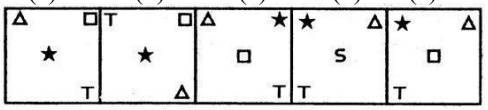
(a) (b) (c) (d) (e)

2. 


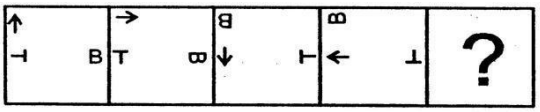
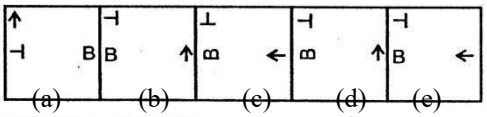
(a) (b) (c) (d) (e)

3. 


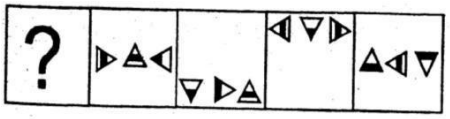
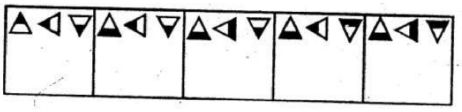
(a) (b) (c) (d) (e)

4. 


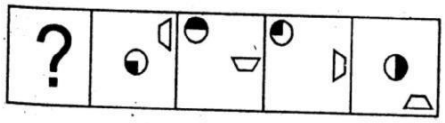
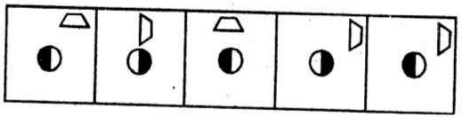
(a) (b) (c) (d) (e)

5. 


(a) (b) (c) (d) (e)

6. 


(a) (b) (c) (d) (e)

7. 


(a) (b) (c) (d) (e)

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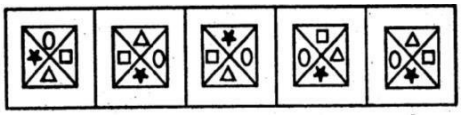
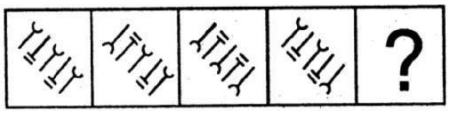
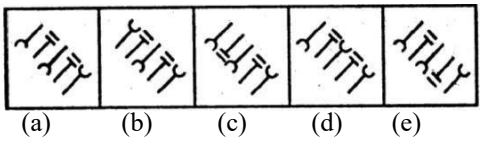
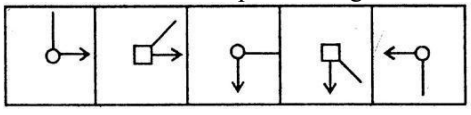
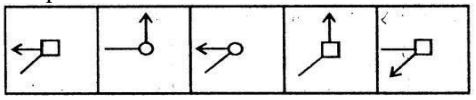


(a) (b) (c) (d) (e)

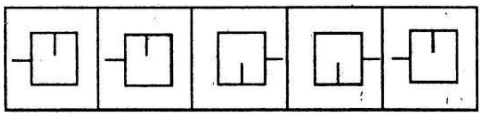
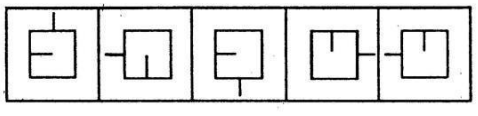
9. 


(a) (b) (c) (d) (e)

Direction (Q.10 29): In each of the questions given belows which one of the five answer figures on the right should come after the problem figures on the left, if the sequence were to be continued?

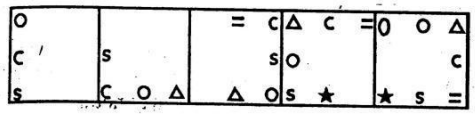
10. 


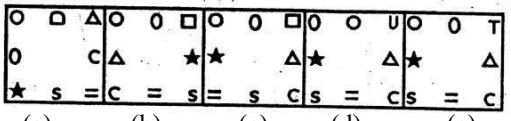
(a) (b) (c) (d) (e)

11. 


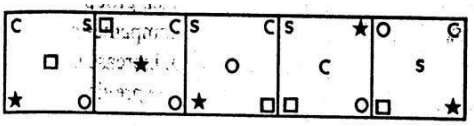
(a) (b) (c) (d) (e)

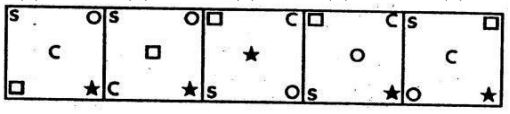
Directions: In each of the questions given below which one of the five answer figures on the right should come after the problem figures on the left, if the sequence were continued?

12. 



(a) (b) (c) (d) (e)

13. 



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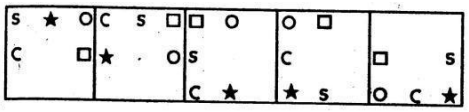
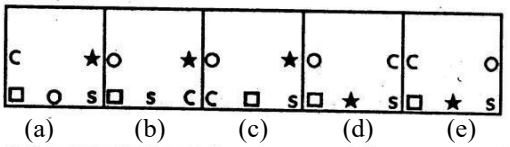
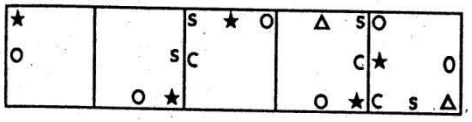
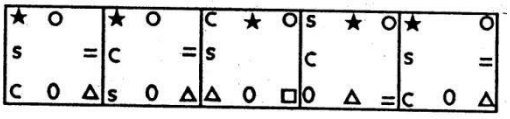
14. 

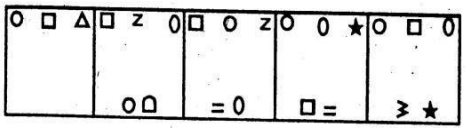


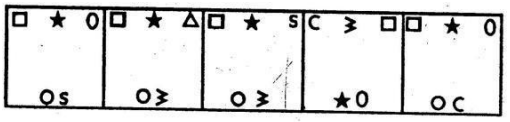
(a) (b) (c) (d) (e)

15. 



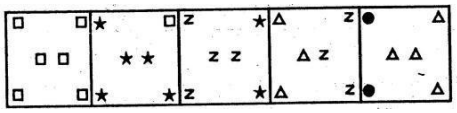
(a) (b) (c) (d) (e)

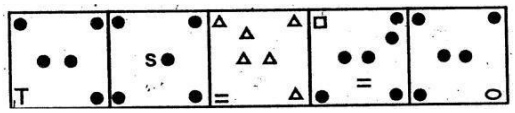
16. 



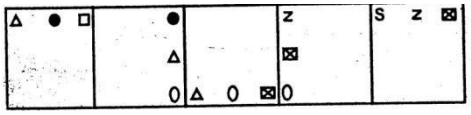
(a) (b) (c) (d) (e)

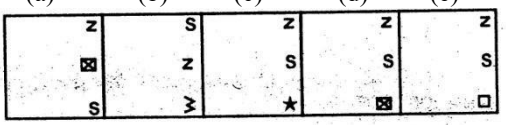
Problem Figure Answer Figure

17. 



(a) (b) (c) (d) (e)

18. 



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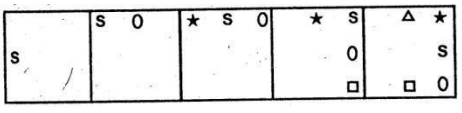
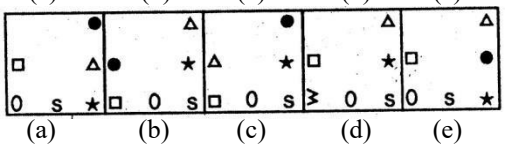
19. 



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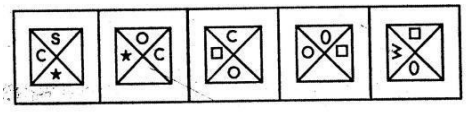
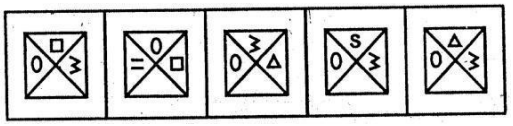
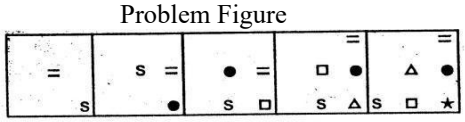
20. 



Problem Figure

Answer Figure

21.



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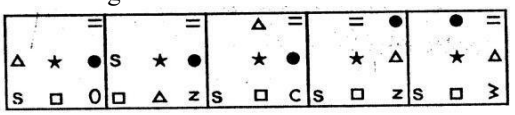

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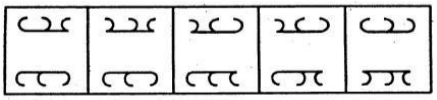

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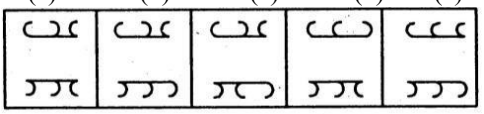

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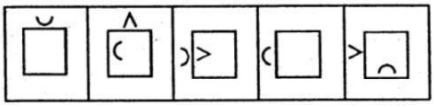

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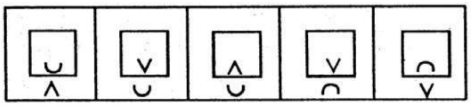

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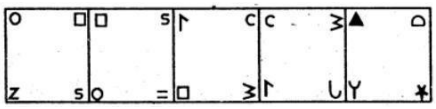

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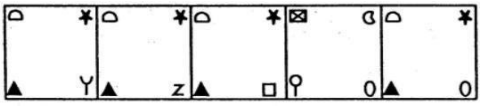

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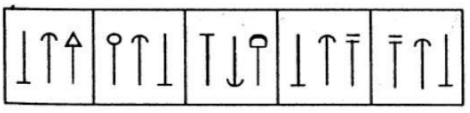

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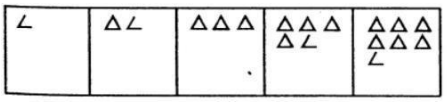

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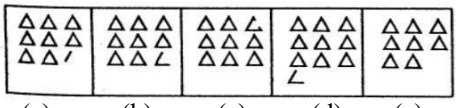

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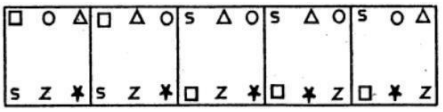

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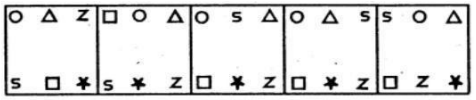

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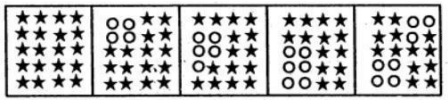

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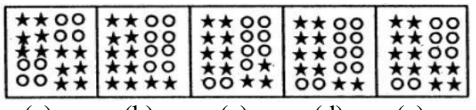

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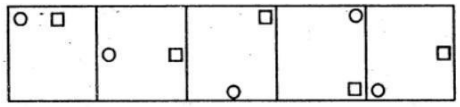

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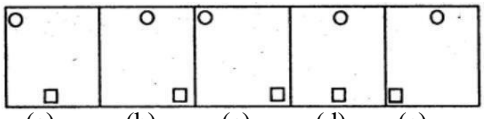


Section 8: Cyptarithmatic

1. Marbles are to be distributed. Ann gets 1,Mary gets 2, Rose gets 3 and Lisa gets 4. John Brown gets as much as his sister. Tim Smith gets 2 times as much as his sister. Neil Johnson gets 3 times as much as his sister. Sam Paul gets 4 times as much as his sister. Find the surnames of Ann, Mary, Rose and Lisa ?
a)32 b)30 c)28 d)None of these

2. Three football teams are there. Given below is the group table.
Fill in the x's P - Played
W -
Won
L -
Lost
D -
Dra
w
F - Goals For
A - Goals
Against P
W L D F A
A 2 2 x x x 1
B 2 x x 1 2 4
C 2 x x x 3 7

3. Rahul took a part in cycling game where 1/5 ahead of him and 5/6 behind him excluding him. Then total number of participants are
a)20 b)29 c)31 d)none of these

4. Joe's age, Joe's sister's age and Joe's fathers age sums up to a century. When son is as old as his father, Joe's sister will be twice as old as now. When Joe is as old as his father then his father is twice as old as when his sister was as old as her father.Age of her father ?
a)40 b)50 c)60 d)None of these

5. A family X went for a vacation. Unfortunately it rained for 13 days when they were there.

But whenever it rained in the mornings, they had clear afternoons and vice versa. In all they enjoyed 11 mornings and 12 afternoons. How many days did they stay there totally?
a)18 b)13 c)23 d)none of these

6. Find out which option is correct according to the given statement.
If dolly works hard then she can get A grade

1. If dolly does not work hard then she can get A grade
2. If dolly gets an A grade then she must have worked hard
3. If dolly does not gets an A grade then she must not have worked hard
4. Dolly wishes to get A grade

a)1 b)2 c)3 d)4

7. Mr. T has a wrong weighing pan. One arm is lengthier than other. 1 kilogram on left balances 8 melons on right, 1 kilogram on right balances 2 melons on left. If all melons are equal in weight, what is the weight of a single melon.
a)100 b)200 c)150 d)None of these

8. HERE = COMES – SHE, (Assume s = 8) Find value of R + H + O
a)14 b)12 c)10 d)can't be determine

9. A person is 80 years old in 490 and only 70 years old in 500 in which year is he born?
a) 400 b) 550 c) 570 d) 440

10. Lucia is a wonderful grandmother and her age is between 50 and 70. Each of her sons have as many sons as they have brothers. Their combined ages give Lucia's present age.what is the age?
a)64 b)60 c)80 d)85

11. Find the total number of rectangles (include squares also as rectangles) in a 8 * 8 standard chessboard?

a)64 b)144 c)1296 d)1728

12. In an Island the natives lie and visitors speak truth. A man wants to know whether a salesman beside him in a bar is a native or visitor. He asked him to ask a woman beside him whether she is a native or visitor. He replied "she says she is a visitor". Then he knew that the salesman is a native or visitor. salesman is in which category , native or visitor?
a)Native b)Visitior c)can't be determine d)data insufficient

13. If ravi binded his book and the binder cut the pages of the book , ravi decided to mark the pages by himself own
, what he found that number of three appears 61 times find of number of pages?
a)200 b)300 c)450 d)None of these
14. Find the unit digit of productofthe prime numberup to 50 .
a)1 b)9 c)7 d)0

15. HOW +MUCH = POWER Then P+ O + W+ E+ R =
a)10 b)12 c)14 d)none of these

16. Find the
digits X,Y,Z X X X
X
Y Y Y Y +
Z Z Z Z

Y X X X Z
---
a)9,1,8 b)8,1,9 c)1,8,9 d)9,8,1

17. Given a collection of 36 points P in the plane and a point equidistant from all points in P, which of the following are necessarily true?
A. The points in P lie on a circle.
B. The distance between any pair of points in P is larger than the distance between X and a point in P
a) A and B b) Neither A nor B c) B only d) A only

18 A, B, C are the husbands and D, E, F are their wives not in that order. They are playing the Golf following these conditions. D, E, F and B scores are as follows 106,102,100 and 94.A and C scores are 98 and 96 not in that order as their names are not displayed. Two couples get the same score. B wife beat the A wife list out the wives names and the scores they got.
a)A,C(102,100 b)B,C(106,100) c)A,B(102,106) d)can't be determine

19. A family I know has several children. Each boy in this family has as many sisters as brothers but each girl has twice as many brothers as sisters. How many brothers and sisters are there?
a)5boy,4girl b)4boy,3girl c)7boy,6girl d)None of these

20. A research lab in Chennai requires 100 mice and 75 sterilized cages for a certain set of laboratory experiments . To identify the mice, the lab has prepared labels with numbers 1 to 100 , by combining tags numbered 0 to 9. The SPCA requires that the tags be made of toxin-free material and that the temperature of the cages be maintained at 27 degree Celsius. Also , not more than 2 mice can be caged together and each cage must be at least 2 sq.ft in area. The 5 experiments to be conducted by lab are to be thoroughly documented and performed only after a round of approval by authorities. The approval procedure takes around 48 hours. How many times is the tag numbered '4' used by the lab in numbering these mice?
a) 9 b)19 c) 20 d) 21

Section 9: Data Sufficiency

Directions: Each of the questions given below consists of a statement and /or a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statement(s) is/ are sufficient to answer the given question. Read both the statements and

Give answer a) if the data in Statement I alone are sufficient to answer the question, while the data in Statement II alone are not sufficient to answer the question.

Give answer b) if the data in Statement II alone are sufficient to answer the question, while the data in Statement I alone are not sufficient to answer the question.

Give answer c) if the data either in Statement I or in Statement II alone are sufficient to answer the question. Give answer d) if the data even in both Statements I and II together are not sufficient to answer the question. Give answer e) if the data in both Statements I and II together are necessary to answer the questions.

1. What is the two digit number?
I. The sum of the two digits is 8. The ratio of the two digits is 1:3
II. The product of the two digits of a number is 12. The quotient of two digits is 3

2. What is the sum which earned interest?
I. The total simple interest was ` 7000 after years.
II. The total of sum and simple interest was double of the sum after 5 years.

3. What is Reena's present age?
I. Reena's present age is 5 times her son's present age
II. Reena's age two years hence will be three times her daughter's age at that time.

4. What is the area of the circle?
   I. The circumference of the circle is 308 m.
   II. II. The radius of the circle is 28 m

5. What is the speed of the train?
   I. 280 m long train crosses a signal pole in 18 seconds
   II. 280 m long train crosses a platform in 45 seconds

6. Is Kareena the wife of Saif?

   I. Kareena is a female person and Saif is a male person
   II. Kareena is the daughter of Saif

7. What is the two digit number?
   I. The difference between the two digits is 9
   II. The sum of the digits is equal to the difference between the two digits

8. What is the difference between the digits of a two – digit number?
I. The sum of the digits of that number is 8
II. One fifth of that number is 15 less than half of 44

9. By selling a product with 20% profit, how much profit was earned?

I. The difference between cost and selling price is ` 40

II. The selling price is 120% of the cost price.

10. What would have been the selling price per kg of rice?

I. 50 kg of rice was purchased for 3350 and 150 was spent on transport.

II. Profit earned was 5%

11. What is the percent profit earned by selling the product? I. The profit earned was50 II. Had it been sold for 310, the profit would be 70

12. What was the cost price of the suitcase purchased by Richard?

I. Richard got 20% concession on the labeled price.

II. Richard sold the suitcase for 2000 with 25% profit on the labeled price.

13. By selling a product for 100, how much profit was earned?

I. 20% profit would have been earned if it were sold for 90.

II. The profit was one-third of the purchase price.

14. How much profit did Anand make by selling a bed?

I. He bought the bed with 40% discount on the labeled price.

II. He sold it with 20% profit on the labeled price.

15. What is the rate of simple interest?

I. The total interest earned was 4000

II. The sum was invested for 4 years

16. What will be the compounded amount?

I. 200 were borrowed for 192 months at 6% compounded annually.

II. 200 were borrowed for 16 years at 6%

17. What was the rate of interest on a sum of money?

I. The sum fetched a total of 2522 as compound interest at the end of 3 years.

II. The difference between the simple interest and the compound interest at the end of 2 years at the same rate was 40.

18. What is Sonia's present age?

I. Sonia's present age is five times Deepak's present age.

II. Five years ago her age was 25 times Deepak's age at that

19. Divya is twice as old as Shruti. What is the difference in their ages?

I. Five years hence, the ratio of their ages would be 9:5

II. Ten years back, the ratio of their ages was 3:1

20. Rahul, Anurag and Vivek started a business together. In what proportion would the annual profit be distributed among them?

I. Rahul got one – fourth of the profit.

II. Rahul and Vivek contributed 75% of the total investment.

Directions (21-22): Each Question Given Below has a problem and two statements numbered I and II giving certain Information. You have to decide if the information given in the statements is sufficient for answering the problem.
Indicate your answer as

(i) if data in statement I alone are sufficient to answer the question;

(ii) if data in statement II alone are sufficient to answer the question;
(iii) if data either in I or II alone are sufficient to answer the question;
(iv) if the data even in both the statements together are not sufficient to answer the question;
(v) if the data in both the statements are needed.

21. Is Anil taller than Sachin?
I. Dinesh is of the same height as Arun and Sachin.
II. Sachin is not shorter than Dinesh.
a)i b) iii c) ii d) v e) iv

22. In a certain code language, '13' means 'stop smoking' and '59' means 'injurious habit'. What is the meaning of '9' and '5' respectively in that code?
I. '157' means 'stop bad habit'
II. '839' means 'smoking is injurious'.
a)ii b) iii c) v d) iv e) i

Directions (23- 25): In the following problem, there is one question and three statements I, II and III below the question. You have to decide whether the data given in the statements is sufficient to answer the question. Read all the statements carefully and find out the probable pair which can be sufficient to answer the question.

23. Five persons --- A, B, C, D and E are sitting in a row. Who is sitting in the middle?
I. B is in between E and C.
II. B is to the right of E.
III. D is in between A and E.
a)I and II together b) II and III together c) I and III together
d) I, II and III together e)Data insufficient.

24. Four Subjects --- Physics, Chemistry, Mathematics and Biology were taught in four Consecutive periods of one hour each starting from 8.00 a.m. At what time was the Chemistry period scheduled?
I. Mathematics period ended at 10.00 am which was preceded by Biology.
II. Physics was scheduled in the last period.
III. Mathematics period was immediately followed by Chemistry.
a)Only I b) Only I or II c) Only II
d) II and III together e) I and II together or I and III together

25. How many sons does Sharma have?
I. Saurav and Aditya are brothers of Sonali.
II. Ayesha is sister of Sharmila and Aditya.
III. Ayesha and Sonali are daughters of Sharma.
a) I and II only. b) II and III together. c) I, II and III together
d) I, II, III together are not sufficient e) I and III together

Direction(26-35): Opera Ltd. Co. wants to recruit computer operators for its branch in various place. Following criteria are laid down for selection:
I. Be a graduate with at least 66% marks.
II. Have passed a PG degree/Diploma in computer applications with at least 70% marks.
III. Have cleared the computer skill test with at least 56% marks.
IV. Be not less than 24 years and not more than 30 years of age as on 1.9.2012

However, If a candidate satisfies all these conditions except:-

(I) and (II) above, but has secured at least 70% marks in computer skill test, the case is to be referred to the PO-Admin of the company.
(II) and (IV) above, but has a working experience of at least two years in information technology, the case is to be referred to the GM-president of the company.

In each of the following questions details of one candidate are given as regards his/her candidature. You have to read the information provided and decide. You are not to assume anything other than the information provided in each question. All these cases are given to you as on 1.9.2012
Given Answer:-
(a) If the candidate is to be selected.
(b) If the case is to be referred to the PO-Admin.
(c) If the case is to be referred to the GM-President.
(d) If the data provided are inadequate to take a decision.
(e) If the candidate is not to be selected.

26. Mohnish has passed B.Sc.(Botany) with 60% marks and has done a PG diploma in computer Applications. His date of birth is 14th August 1990. He has cleared the computer skill test with 58% marks.
27. Anita Sharma passed BCA examination in 2007 at age of 22 years with 89% marks. After working for two years she enrolled for post-graduation in computer Applications. She has secured 56% marks in computer skill test.

28. Raj Bhushan has passed BCA as well as MCA with 73% marks. He has cleared the computer skill test with 70% marks. His date of birth is 5th August 1979.

29. Amit Kumar has passed BA with 70% marks and PG diploma in computer Applications with 75% marks. He has secured 70% marks in computers skill test. His date of birth is 8.2.1987.

30. SukumarSen passed PGDCA examination in 2007 at the age of 28 years with 76% marks. After working for five years in Information Technology he enrolled for PG degree in Computer Applications last year. He has secured 80% marks in graduation as well as in computer skill test.

31. RiyaPrakash has obtained engineering degree in Computer Science with 66% marks and MCA with 65% marks. She has secured 82% marks in computer skill test. She has completed 26 years of age.

32. PawanMethew has done B.Sc. (Physics) and PG diploma in computer Application with 69% marks and 65% marks respectively. He has secured 76% in computer skill test. His date of birth is 10.03.1988.

33. Radha Verma has obtained post-graduation degree in computer applications from a reputed institute. She has cleared the computer skill test with 56% marks. She completed 27 years of age.

34. Mukul Verma is a science graduate with 61% marks. He has done MCA with 70% marks and 5 years of experience in the area of IT. He has secured 65% marks in computer skill test. His date of birth is 01.01.1982.

35. Fatima Shekh has passed B.Sc. (Honours) and MCA with 73% and 78% marks respectively. She has cleared the Computer skill test with 79% marks. Her date of birth is 16.06.1986.

36. A man fixed an appointment to meet the manager, Manager asked him to come two days after the day before the day after tomorrow. Today is Friday. When will the manager expect him? (repeated from previous papers)
a)Monday b)Sunday c)Wednesday d)Tuesday e)can't be determine

37. Consider two tumblers, the first containing one litre of coffee. Suppose you take one spoon of water out of the first tumbler and pour it into the second tumbler. After moving you take one spoon of the mixture from the second tumbler and pour it back into the first tumbler . Which one of the following statement holds now?
a) There is less coffee in the first tumbler than water in the second tumbler.
b) There is more coffee in the firs tumbler than water in the second tumbler
c) There is as much coffee in the first tumbler as there is water in the second tumbler

d) None of the statements holds true.

38. Alok and Bhanu play the following coins in a circle game. 99 coins are arranged in a circle with each coin touching two other coin. Two of the coins are special and the rest are ordinary. Alok starts and the players take turns removing an ordinary coin of their choice from the circle and bringing the other coins closer until they again form a (smaller) circle. The goal is to bring the special coins adjacent to each other and the first player to do so wins the game. Initially the special coins are separated by two ordinary coins O1 and O2. Which of the following is true ?

a) In order to win, Alok should remove O1 on his first turn.
b) In order to win, Alok should remove one of the coins different from O1 and O2 on his first turn.
c) In order to win, Alok should remove O2 on his first turn.
d) Alok has no winning strategy.

Section10: Clock

Important Formulas - Clock

1. **Minute Spaces**

The face or dial of clock is a circle whose circumference is divided into 60 equal parts, named minute spaces.

2. **Hour hand and minute hand**

A clock has two hands. The smaller hand is called the hour hand or short hand and the larger one is called minute hand or long hand.

3. In 60 minutes, minute hand gains 55 minute spaces over the hour hand.

(In 60 minutes, hour hand will move 5 minute spaces while the minute hand will move 60 minute spaces. In effect the space gain of minute hand with respect to hour hand will be 60 - 5 = 55 minutes.)

4. Both the hands of a clock coincide once in every hour.

5. The hands of a clock are in the same straight line when they are coincident or opposite to each other.

6. When the two hands of a clock are at right angles, they are 15 minute spaces apart.

7. When the hands of a clock are in opposite directions, they are 30 minute spaces apart.

8. Angle traced by hour hand in 12 hrs = 360°

9. Angle traced by minute hand in 60 min. = 360°.

10. If a watch or a clock indicates 9.15, when the correct time is 9, it is said to be 15 minutes too fast.

11. If a watch or a clock indicates 8.45, when the correct time is 9, it is said to be 15 minutes too slow.

12. The hands of a clock will be in straight line but opposite in direction, 22 times in a day.

13. The hands of a clock coincide 22 times in a day.

14. The hands of a clock are straight 44 times in a day.

15. The hands of a clock are at right angles 44 times in a day.

16. The two hands of a clock will be together between H and (H+1) o'
clock at (60H/11) minutes past H o' clock.
17. The two hands of a clock will be in the same straight line but not together between H and (H+1) o'
clock at (5H−30)*12/11
minutes past H, when H>6
(5H+30)*12/11 minutes past H, when H<6
18. Angle between hands of a clock
When the minute hand is behind the hour hand, the angle between the two hands at M minutes past H 'o clock
=30(H−M/5)+M/2 degree
When the minute hand is ahead of the hour hand, the angle between the two hands at M minutes past H 'o clock =30(M/5−H)−M/2 degree

19. The two hands of the clock will be at right angles between H and (H+1) o' clock at (5H±15)*12/11 minutes past H 'o clock
20. If the minute hand of a clock overtakes the hour hand at intervals of MM minutes of correct time, the clock gains or loses in a day by (720/11−M)(60×24/M) minutes.
21. Between H and (H+1) o' clock, the two hands of a clock are M minutes apart at (5H±M)*12/11 minutes past H 'o clock

Practice Question:

1. An accurate clock shows 8 o'clock in the morning. Through how many degrees will the hour hand rotate when the clock shows 2 o'clock in the afternoon?
a) 144 b)15 c) 168 d)180

2. A clock is started at noon. By 10 minutes past 5, the hour hand has turned through:
a) 145 degrees b) 150 degree c)155 degrees d)160 degrees

3. The angle between the minute hand and the other hour hand of a clock when the time is 8:30 is
a) 80 degrees b) 75 degree c) 60 degrees d) 105 degrees

4. What is the angle made by minute angle in 16 minutes?
a) 8^0 b)32^0 c)96^0 d) 48^0

5. What is the difference between angles made by minute hand and hour hand in 24 minutes?
a) 185^0 b)120^0 c)180^0 d) 132^0

6. How often the hands of clock at right angle every day?
a) 11 times b)22 times c)44 times d)55 times

7. A clock strikes 5 takes 16 seconds. In order to strike 10 at the same rate, the time taken is
a) 24 seconds b)30 seconds c)36 seconds d)32 seconds

8. What is the angle between the minute hand and hour hand at 20 minutes past 4 O' clock?
a) 5^0 b)10^0 c)180^0 d) 15^0

9. At what time between 4 and 5'O clock are the two hands of the clock coincide?
a) 4.21 9/11 b)4.20 c)4.23 7/11 d)4.22

10. Find the time between 8 and 9'O Clock when the two hands of a clock are in the same straight line.
a) 8.41 9/11 b)8.43 7/11 c)8.47 3/11 d)8.44 3/11

11. At what time between 4 and 5 are the hands 2 minutes spaces apart?
a) 4 19 7/11 and 4.22 b)4.21 7/11 and 4.24
c) 4. 19 7/11 and 4.24 d) 4.18 9/11 and 4.24 2/11

12. When do the two hands of a clock of just after 3 pm make 30 º angles between them?
a) 3:15:00 b)3:10:54 c)3:01:59 d) 3:20:21

13. A clock strikes ones at 1 O'clock, twice at 2 O'clock and so on. What is the total number of striking in a day
a) 12 b) 156 c) 78 d) 24

14. Three cuckoo clocks are such that the cuckoos chime after every 9 minutes, 15 minutes and 35 minutes respectively. If the 3 clocks chime simultaneously at 3 p.m, what time will they chime together again?
a) 8 :15 p.m b)9:15 p.m c)10.30 p.m d) 10.00 p.m

15. The minute hand of a clock overtakes the hour hand at intervals of 65 minutes of correct time. How much in a day does the clock gain or lose?

a) 11 11/143 minutes b)10 10/143 minutes c)12 11/143 minutes d) 9 11/143 minutes

16. A watch was set correct at 12'O clock. It loses 10 minutes per hour. What will be the angle between the two hands of the clock after 1 hour?
a) 75º b) 85º c) 90º d) 105º

17. A clock is set right at 7:10 am on Thursday, which gains 12 minutes in a day. On Sunday if this watch is showing 3: 50 pm. What is the correct time?
a) 2:50 pm b) 3:10 pm c) 3:30 pm d)4:30 pm

18. A clock is set right at Tuesday 10 a.m . The clock gains 10 min in 24 hours What will be the correct time on the following Thursday, when the watch indicates 8 p.m.?
a) 8.36 p.m. b) 8.40 p.m. c)7.36 p.m. d) 7.52 p.m

19. A clock was correct at 2 p.m, but then it began to lose 30 minutes each hour. It now shows 6 pm, but it stopped 3 hours ago. What is the correct time now?
a) 8.30 pm. b)12 midnight c)11 p.m. d)None of these

20. The reflex angle between the hands of a clock at 10.25 is

a) 197 ½ b) 167 ½c) 157 ½d)187 ½

Section11: Calendar

Concept of Calendar

We know that

Any non-leap year contains 365 days = 52 weeks + 1 day And leap-year contains 366 days = 52 weeks + 2 days

This 1-day and 2 days extra added to any year create changes in the calendar and this is the reason why calendar of N^{th} year will not be same as $N+1^{th}$ year.

Before we proceed ahead, we should be very clear about two things:

i. Which years are leap years?

It takes the earth about 365.2422 days to go around the sun, but a normal calendar year is only 365 days. The extra fraction of a day added up four times makes four years (or, four revolution of earth around sun) 1460.9688 days, but four calendar years would only be 1460 days. That 0.9688 is almost a whole day, so every four years we add an extra day to our calendar, February 29. We call that year leap year. To make things easier, leap years are always divisible by four: 2004 and 2008 will both be leap years.

For hundreds of years, people used a calendar called the Julian calendar that followed this rule, adding a leap year every four years. However, because 0.9688 isn't *exactly* a whole day, the Julian calendar slowly began to disagree with the real seasons. In 1582, Pope Gregory fixed this problem by ordering everyone to use a new set of rules.

These rules are named the Gregorian calendar, after him. They work like this:

The Gregorian Calendar

Rule	Examples
Every fourth year is a leap year.	2004, 2008, and 2012 are leap years.
However, every centenary year is *not* a leap year.	1900 and 2100 are not leap years.
In case of centuries, every four hundred years, there's a leap year after all.	2000 and 2400 are leap years.

In layman terms, all the century years divisible by 400 will be leap years and all the non-century years divisible by 4 will be leap years. So, leap year next to 2096 AD is 2104 AD and not 2100 Ad)

Because 2000, 4000, 6000, etc. are leap years and 1000, 3000, 5000, etc. are not, the number of leap days in each millennium alternates between 242 and 243, with the first, third, etc. millennia (i.e., 1-1000, 2001-3000, etc.) having 242 leap days, and the second, fourth, etc. (i.e., 1001-2000, 3001-4000, etc.) having 243 leap days.

ii. How the days of consecutive years change?

Due to any non-leap year, calendar of next year go ahead by 1 day and due to any leap year, calendar of next year goes ahead by 2 days, but this change in calendar will be there only before 29^{th} February.

It can be seen through the example given below:

	1991	1992	1993
1^{st} January	Sunday	Monday	Wednesday
28^{th} February	Tuesday	Wednesday	Friday
1^{st} March	Wednesday	Friday	Saturday

In the above example, we have assumed that 1^{st} January of 1991 is Sunday. 1991 and 1993 are non- leap years and 1992 is a leap year.

If now we try to find out the symmetricity of calendars, we can see this in the following way:

i. For any leap-year

Let us see, for example, the case of 1972.

Year	1972	1973	1974	1975	1976
Excess days	2	1	1	1	2

Since no. of excess days are 7, so the days of the year 1972 and year 1977 will be same from 1st of January and 28th of February.

ii. For any (leap-year+1) year

Year	1973	1974	1975	1976	1977	1978
Excess days	1	1	1	2	1	1

Since no. of excess days are 7, so calendar of year 1973 and 1979 will be same for whole year.

iii. For any (leap-year+2) year

Year	1974	1975	1976	1977	1978	1979
Excess days	1	1	2	1	1	1

Since excess days are 7, so calendar of year 1974 and 1980 will be same till 28th of February.

iv. For any (leap-year+3) year

Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Excess days	1	2	1	1	1	2	1	1	1	2	1

Nature of year	No. of years after which 1st January will be same
Leap year	5
Leap year + 1	6
Leap year + 2	6
Leap year + 3	11

Since no. of excess days are 14, so calendar of year 1975 and 1986 will be same for whole year. This whole mechanism can be summed up in following way:

So, if 1st January of 1972 and 1st January of 1977 will be on same day.

If 1st January of 1973 and 1st January of 1979 will be on same day and so on.

Exception – No century year, which is not a leap year, should be included in this calculation.

e.g.1. Sum of dates of last Monday of previous month and 1st Thursday of next month is 38. If both the dates are of the same year, then which month is the current month?

Solution- Sum of dates of last Monday of previous month and 1st Thursday of next month is 38 is possible only if last Monday is 31st and 1st Thursday is 7th.(Since if we take 30+8 = 38, then 30 can be last Monday of any month but 8th can not be the 1st Thursday of any month)

So, 31st of last month is a Monday. Hence 7th of current month - 14th of current month –21st of current month -28th of current month will be a Monday.

Now, if current month is a month with 30 days, then 5th of next month will be a Monday, so 7th of next month cannot be a Thursday.

If current month is a month with 31 days, then 4th of next month will be a Monday, so 7th of next month will be a Thursday.

Finally we can conclude that previous month and current month, both are having 31 days. Since both the dates are of the same year, so current month is August.

Finding day of a date by using a reference date:

Let us see this with the help of an example: If 9th Dec of 1972 is Sunday, then which day it will be on 14th December 1998?

Process: - There are several processes to do this calculation: 1. Year method, 2. Days method, 3. Actual calculation method

1. Year Method – We use the above given table to find out about any of the years. 9.12.1972 – Sunday

1.1.1973 – Tuesday (It is a Leap year + 1 year)

So, 1.1.1979 – Tuesday, (It is a Leap year + 3 year) So, 1.1.1990- Tuesday, (It is a Leap year + 2 year) So, 1.1.1996 – Tuesday

Now, we can find out all the next years one-by-one. 1.1.1997 – Thursday

1.1.1998 – Friday – 31.12.1998 – 24.12.1998 – 17.12.1998

So, 14.12.1998 – Tuesday

2. Days method – We use the no. of excess days every year to find out the no. of days calendar will move ahead by. 1.1.1973 – Tuesday

Due to 1973, calendar will go ahead by 1 day, similarly due to 1974 – 1 day, due to 1975 – 1 day and due to 1976- 2 days.

So, in four years, calendar will go ahead by 5 days.

Using unitary method, in four years, calendar will move ahead by 5 days.

So, in 24 years calendar will move ahead by 30 days. Hence calendar will move ahead by 2 days. So, 1.1.1997 will be two days ahead of Tuesday i.e. Thursday.

Now, it is calculation as given in Year Method.

3. Actual Calculation method- With the help of this method, we can find the actual day of any date of 20th century. To use this method effectively, we need to remember the Month Codes of all the months.

Let us learn this method by finding the date of 15th August 1947 –

At 1st, add the Date + Month code of August + Last two digits of year +

(Where [x] represents the greatest integer value of x.)

So, corresponding to 15th August 1947 – 15 + 3 + 47 + 11 = 76

Now, divide this value by 7 to find out the remainder.

If the remainder is 0 then it is a Saturday If the remainder is 1 then it is a Sunday If the remainder is 2 then it is a Monday If the remainder is 3 then it is a Tuesday

If the remainder is 4 then it is a Wednesday If the remainder is 5 then it is a Thursday If the remainder is 6 then it is a Friday

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Leap Year	0	3	4	0	2	5	0	3	6	1	4	6
Non-leap year	1	4	4	0	2	5	0	3	6	1	4	6

Here, remainder is 6, so 15th August 1947 was a Friday.(It should have been 'Free'day) List of Month Code:

Practice Question:

1. How many years have 29 days in February from 2001 to 2100.

a)26 b)25 c)23 d)24

2. 2012 January 1st is Sunday, then which day is the Indian Independence day of the same year.

a) Saturday b) Wednesday c) Thursday d) Friday

3. Which year has the same calendar as 1700?

a) 1705 b)1706 c)1707 d)1708

4. If Arun's birthday is on May 25 which is Monday and his sister's birthday is on July 13. Which day of the week is his sister's birthday?

a) Monday b) Wednesday c) Thursday d) Friday

5. March 1st is Wednesday. Which month of the same year starts with the same day?

a) October b) November c) December d) None of these

6. The calendar for the year 2007 will be the same for the year:

a)2014 b)2016 c)2017 d)2018

7. Which of the following is not a leap year?
a)700 b)800 c)1200 d)2000

8. On 8th Dec, 2007 Saturday falls. What day of the week was it on 8th Dec, 2006?
a)Sunday b)Thursday c)Tuesday d)Friday

9. Today is Sunday. After 1344 days it will be
a)Sunday b)Monday c)Saturday d)Tuesday

10. What was the day of the week on 2nd july 1984?

a) Wednesday b) Tuesday c) Monday d) Thursday

11. On What dates of April,2001 did Wednesday fall?
a) 1st, 8th, 15th, 22nd, 29thb) 2nd, 9th, 16th, 23rd, 30th
c) 3rd, 10th, 17th, 24th d) 4th, 11th, 18th, 25th

12. What was day of the week on 21-September-1987?

a) Sunday b) Monday c) Friday d) Saturday

13. If 17 nov 1992 is Monday then 17 nov 2017 is:
a)Friday b)Thursday c)Wednesday d)Sunday

14. How many leap year in first 200years?
a)50 b)49 c)48 d)can be determine
15. If 1st janurary 2016 is Friday then 31dec 2016 is?

a)Thursday b)Friday c)Saturday d)Sunday

16. If 21st march 1986 is Friday then which day comes 53 times In that year?
a)Friday b)Wednesday c)Thursday d)Monday

17. If today is Friday then which day comes 20 day before?
a)Tuesday b)Thursday c)Saturday d)Sunday

18. If today is Sunday then which day comes after 121 days?
a)Tuesday b)Thursday c)Saturday d)Sunday

19. Find the day of the week on 26th january 2012?
a)Tuesday b)Thursday c)Saturday d)Sunday

20. Father of Nation Mahatma Gandhi died on 30th January 1948. What was the day on which he died?
a)Friday b)Wednesday c)Thursday d)Monday

Section 12: Arrangement

Introduction:

The questions on seating arrangement are regular feature of almost every competitive examination. In these questions, you have to arrange a group of persons fulfilling certain conditions. This is also written as sitting arrangement or sitting arrangement reasoning at some places. Here we can classify these problems into 4 types:

1. Linear Arrangement: Here the arrangement of the persons is linear i.e. you have to arrange them in a line. Here generally a single row of arrangement is formed.
2. Double row arrangement: In these questions, there will be two groups of persons. You have to arrange one group in one row and the other group in other row. The persons in these rows normally face each other
3. Circular arrangement: In the circular seating arrangement questions, you have to arrange the persons around a circular table etc. fulfilling certain conditions.
4. Rectangular arrangement: These arrangements are almost similar to the circular arrangements; the only difference is that the persons are sitting around a rectangular table.

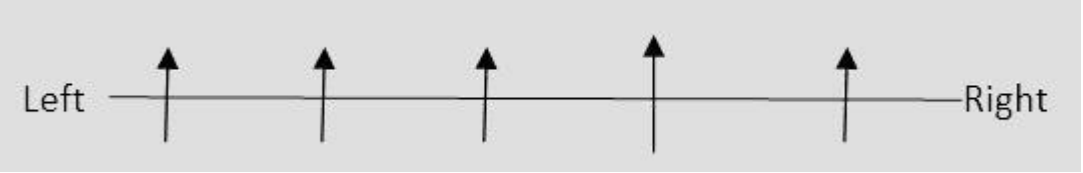
Seating arrangement tricks to solve the problems:

Questions on seating arrangement are generally asked in blocks of 4 – 5 questions. You are given some information and then there will 4 -5 questions based on the information. These questions have two types of information:

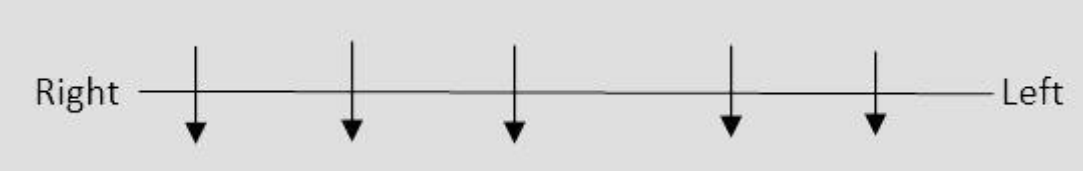
1. Direct information: This is the information which is clearly mentioned in the statement of the question. This is the information which you will use when you start solving the questions.
2. Indirect information: After filling the direct information you will look for the connection between different parts of the information. These connections form the indirect information.

While arranging the persons, the direction to which the persons are facing is very important.

Let us take the case of linear arrangements. Here if it is stated that there are five persons sitting facing North then the arrangement will be like

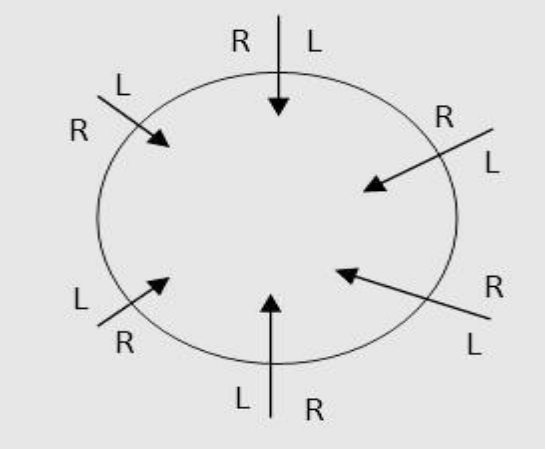


On the other hand if these persons are sitting facing South then the arrangement will be like

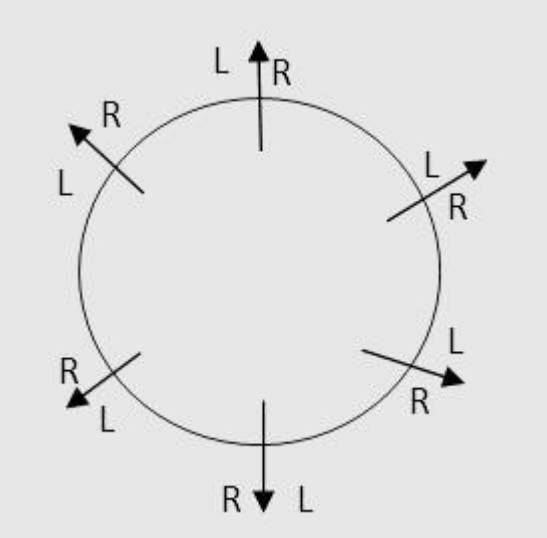


Similarly if the arrangement is a double row arrangement, then one group of people will be facing north and the second will face south and the directions will be taken as similar to the above figures.

In case of circular arrangements questions, or rectangular arrangement, the persons may be facing the centre of the circle or they may be looking away from the center. If they are looking towards the centre, then the right hand side will be in the anticlockwise direction and left hand side will be in the clockwise direction as shown below:



If the persons are looking away from the centre then the right hand side will be in the clockwise direction and left hand side will be in the anti clockwise direction as shown below:



The same concept of directions follows if the persons are sitting around a rectangular table.
Next, while solving the questions related to linear arrangements or double row arrangements, the information regarding the position of the persons is very important. If it is written that A is sitting next to B, then it means that A and B are sitting together. B may be to the right or left of A. Further if it is given that B is sitting to the right/left of A, then it does not mean that B is sitting immediate right/left of A. There may be some other persons sitting between A and B. If B is sitting immediate right/left of A then it will be mentioned in the statement of the question.

Practice Exercise:

4. Among A, B, C, D and E each one has scored different marks in an examination, B scored more than C and E and less than A and D. C's marks are not the lowest marks?
a) D b) C c) B d) Data inadequate e) None of these

7. In a group of six children, Q is taller than P but not as tall as L. M is taller than N and O, but not as tall as P. Who is the shortest among them?
a) N b) O c) M d) Data inadequate e) None of these

8. Among five students M is heavier than K and T. B is lighter than T and P. K is not the lightest. Who among them is the lightest?
a) K b) B c) T d) Data inadequate e) None of these

Directions (14 - 17): Read the following information to answer these questions.
Consider a group comprising of 4 students - Reena, Beena, Meena and Neena, who stand in a row. Reena and Beena stand in sixth and seventh positions respectively from the left. Meena and Neena stand in the fourth and fifth positions respectively from the right. When Beena and Meena exchange their positions, then Beena will be fifteenth from the left.

14. Originally, Neena's position from the left is
a) 5 b) 13 c) 1 d) 16 e) None of these

15. Reena's position from the right is
a) 6 b) 13 c) 14 d) 18 e) None of these

16. If neena and Reena also exchange their positions between themselves, then after the exchange, Neena's position from the left will be
a) 6 b) 10 c) 12 d) None of these e) All the above

17. After exchange of positions between Beena and Meena, Meena's positions from the right is
a) 5 b) 10 c) 12 d) None of these e) All the above

4. Nisha is taller than Suja. Nina is taller than Nisha. Nila is taller than Nina. Misha is the tallest of all. If they stand according to their height, who will be in the middle?
(a) Nihsa (b) Nina (c) Suja (d) Nila (e) None of these

9. In a group of six children, Q is taller than P but not as tall as L. M is taller than N and O, but not as tall as P. Who is the shortest among them?
(a) N (b) O (c) M (d) Data inadequate (e) None of these

10. In a group of six children T, K, V, O, M and W, T is fatter than M but not as fat as W. K is not the fattest nor is W whereas V is the thinnest. Who is the fattest among them all?
(a) O (b) T (c) M (d) Data inadequate (e) None of these

Direction (11-15): Study **the following information carefully and answer the given question:**

Eight colleagues A, B, C, D, E, F, G and H are sitting around a circular table facing the center but not necessarily in the same order. Each one of them holds a different post Manager, Company Secretary, Chairman, President, Vice President, Group Leader, Financial Advisor and Managing Director A sits third to the right of the Managing Director. Only two people sit between the Managing Director and H. The Vice President and company Secretary are immediate neighbours. Neither A nor H is a Vice President or a company Secretary. The Vice President is not an immediate neighbour of the Managing Director. The Manager sits second to the left of E. E is not an immediate neighbour of H. The Manager is an immediate neighbour of both the group leader and the financial advisor. The Financial Advisor sits third to the right of B.B is not the vice President. C sits on the immediate right of the Chairman. A is not the Chairman. F is not an immediate neighbour of A. G is not an immediate neighbour of the Manager.

11. Who amongst the following sits third to the left of E?

a) Manager b) G c) A d) Financial Advisor e) B

12. Four of the following Five are alike in a certain way based on the given arrangement and thus form a group. Which is the one that does not belong to that group?

a) F-Chairman b) G- President c) D-Manager d) A-Financial Advisor e) B-Managing Director

13. Who among the following is the President of the Company?

a) A b) C c) H d) G e) D

14. Which of the post does B hold in the company?

a) Chairman b) Manager c) Company Secretary d) Vice President e) Financial Advisor

15. Who is sitting exactly between the Managing Director and H?

a) H and the Chairman b) B and G c) The Chairman and C

d) F and C e) E and the group leader

Directions(16-20): Study the following information carefully and answer the questions given below: K, L, M, P, Q, R, S and T are sitting around a square table in such a way that four of them sit at four corners of the square while four sit in the middle of each of the four sides. The ones who sit at the four corners face outside while those who sit in the middle of the sides face the centre of the table. P sits third to the right of S. S faces the centre. Q sits third to the left of M. M does not sit in the middle of the sides. Only one person sits between Q and R. R is not an immediate neighbor of M. T face the centre. K is not an immediate neighbor of R.

16. What is position of M with respect to L?

a) Third to the right b) M and L sit diagonally opposite to each other
c) Second to the right d) Second to the left e) Fifth to the right

17. Who sits exactly between Q and R?

a) T b) P c) K d) M e) S and K

18. Which of the following pairs represents the persons seated in the middle of the sides who face each other?

a) S, Q b) K, L c) M, P d) R, T e) T, Q

19. Who amongst the following sit between R and K when counted in anti-clockwise direction from K?

a) No one sits between R and K as R and K are immediate neighbors of each other
b) S, P and L c) P and Q d) L and R e) M, S and T

20. If K is made to face the opposite direction, who would sit to his immediate right?

a) R b) Q c) P d) T e) S

1.a	2.d	3.a	4.c	5.b	6.a	7.a	8.b	9.d	10.d
11.a	12.c	13.d	14.a	15.d	16.d	17.d	18.c	19.b	20.a
21.b	22.c	23.a	24.d	25.c	26.a	27.c	28.d	29.a	30.d
31.b	32.d	33.d	34.a	35.d	36.c	37.a	38.c	39.b	40.c

Answer:

Series:

Coding-Decoding:

1.e	2.c	3.a	4.b	5.b	6.b	7.a	8.b	9.c	10.a
11.a	12.c	13.d	14.c	15.d	16.a	17.b	18.d	19.d	20.d

Blood Relation:

1.c	2.b	3.e	4.d	5.d	6.a	7.e	8.e	9.c	10.d
11.c	12.d	13.c	14.e	15.b	16.a	17.d	18.c	19.a	20.d

Direction:

1.a	2.d	3.b	4.b	5.b	6.a	7.a	8.c	9.c	10.a
11.d	12.d	13.b	14.b	15.b	16.a	17.c	18.c	19.b	20.a

Syllogism:

1.a	2.d	3.e	4.e	5.a	6.b	7.d	8.a	9.b	10.d
11.a	12.a	13.b	14.b	15.d	16.d	17.b	18.d	19.c	20.b

Puzzle:

1.c	2.b	3.d	4.d	5.b	6.c	7.d	8.b	9.c	10.a
11.d	12.a	13.c	14.a	15.e	16.b	17.b	18.c	19.b	20.b

Visual Reasoning:

1.d	2.c	3.e	4.a	5.b	6.b	7.a	8.e	9.e	10.a
11.e	12.e	13.b	14.d	15.b	16.c	17.a	18.c	19.b	20.e
21.d	22.e	23.b	24.e	25.a	26.c	27.b	28.e	29.c	

Cyptarithmetic:

1.a	2.	3.c	4.b	5.a	6.c	7.b	8.a	9.c	10.a
11.c	12.a	13.b	14.d	15.b	16.a	17.d	18.a	19.b	20.b

Data Sufficiency:

1.d	2.e	3.d	4.c	5.e	6.b	7.a	8.b	9.a	10.e
11.e	12.e	13.c	14.d	15.d	16.c	17.e	18.e	19.c	20.e
21.a	22.b	23.d	24.e	25.c					

Clock

1.d	2.a	3.b	4.c	5.d	6.c	7.c	8.b	9.a	10.b
11c	.12.b	13.b	14.b	15.b	16.b	17.b	18.a	19.d	20.a

Calendar:

1.d	2.b	3.b	4.a	5.b	6.d	7.a	8.d	9.a	10.c
11.d	12.b	13.b	14.c	15.c	16.b	17.b	18.a	19.b	20.a

Arrangement:

1.e	2.d	3.b	4.c	5.b	6.a	7.c	8.b	9.d	10.a
11.d	12.e	13.a	14.c	15.e	16.d	17.b	18.e	19.c	20.b

Practice Questions: Quantitative Aptitude

Section 1: Numbers

1.1 Basic Formulae

$(a+b)^2=a^2+b^2+2ab$ $(a-b)^2=a^2+b^2-2ab$

$(a+b)^2-(a-b)^2=4ab$

$(a+b)^2+(a-b)^2=2(a^2+b^2)$

$(a^2-b^2)=(a+b)(a-b)$

$(a+b+c)^2=a^2+b^2+c^2+2(ab+bc+ca)$

$(a^3+b^3)=(a+b)(a^2-ab+b^2)$

$(a^3-b^3)=(a-b)(a^2+ab+b^2)$

$(a^3+b^3+c^3-3abc)=(a+b+c)(a^2+b^2+c^2-ab-bc-ca)$

If $a+b+c=0$, then $a^3+b^3+c^3=3abc$

2. Types of Numbers I. Natural Numbers

Counting numbers 1,2,3,4,5,...1,2,3,4,5,... are called natural numbers

II. Whole Numbers

All counting numbers together with zero form the set of whole numbers. Thus,
(i) 0 is the only whole number which is not a natural number. (ii) Every natural number is a whole number.

III. Integers

All natural numbers, 0 and negatives of counting numbers i.e.,
...,−3,−2,−1,0,1,2,3,.....,−3,−2,−1,0,1,2,3, together form the set of integers.
(i) Positive Integers: 1,2,3,4,.....1,2,3,4, is the set of all positive integers.
(ii) Negative Integers: −1,−2,−3,.....−1,−2,−3, is the set of all negative integers.
(iii) Non-Positive and Non-Negative Integers: 0 is neither positive nor negative. So,
0,1,2,3,....0,1,2,3,.... represents the set of non-negative integers, while 0,−1,−2,−3,.....0,−1,−2,−3,
Represents the set of
non-positive integers.

IV. Even Numbers

A number divisible by 2 is called an even number, e.g.,2,4,6,82,4,6,8, etc.

V. Odd Numbers

A number not divisible by 2 is called an odd number. e.g.,1,3,5,7,9,11,1,3,5,7,9,11, etc.

VI. Prime Numbers

A number greater than 1 is called a prime number, if it has exactly two factors, namely and the number itself.

VII. Composite Numbers

Numbers greater than 1 which are not prime, are known as composite numbers, e.g., 4,6,8,9,10,12.4,6,8,9,10,12.
Note:
(i) 1 is neither prime nor composite.
(ii) 2 is the only even number which is prime.
(iii) There are 25 prime numbers between 1 and 100.

3 Remainder and Quotient

"The remainder is r when p is divided by k" means $p=kq+rp=kq+r$ the integer q is called the quotient.

For instance, "The remainder is 1 when 7 is divided by 3" means $7=3*2+17=3*2+1$. Dividing both sides of $p=kq+rp=kq+r$ by k gives the following alternative form $pk=q+rkpk=q+rk$

1.4. Even, Odd Numbers

A number n is even if the remainder is zero when n is divided by 2: $n = 2z+0$ or $n=2z$. A number n is odd if the remainder is one when n is divided by 2: $n=2z+1$.

1.5. Tests of Divisibility Divisibility By 2

A number is divisible by 2 if its unit's digit is any of 0,2,4,6,80,2,4,6,8.

Divisibility By 3

A number is divisible by 3 if the sum of its digits is divisible by 3.

Divisibility By 4

A number is divisible by 4 if the number formed by the last two digits is divisible by 4.

Divisibility By 5

A number is divisible by 5 if its unit's digit is either 0 or 5. Thus, 20820 and 50345 are divisible by 5, while 30934 and 40946 are not.

Divisibility By 6

A number is divisible by 6 if it is divisible by both 2 and 3.

Divisibility By 8

A number is divisible by 8 if the number formed by the last Three digits of the given number is divisible by 8.

Divisibility By 9

A number is divisible by 9 if the sum of its digits is divisible by 9.

Divisibility By 10

A number is divisible by 10 if it ends with 0.

Divisibility By 11

A number is divisible by 11, if the difference of the sum of its digits at odd places and the sum of its digits at even places, is either 0 or a number divisible by 11.

Note:

If a number is divisible by p as well as q, where p and q are co-primes, then the given number is divisible by pq. If p and q are not co-primes, then the given number need not be divisible by pq, even when it is divisible by both p and q.

PRACTICE QUESTIONS

1. The number obtained by interchanging the two digits of a two-digit number is more than the original number by 27. If the sum of the two digits is 13, what is the original number?
a) 63 b) 74 c) 85 d) 58 e) None of these

2. The number obtained by interchanging the two digits of a two-digit number is less than the original number by 18. The sum of the two digits of the number is 16. What is the original number?
a) 97 b)87 c)79 d) Cannot be determined e) None of these

3. The sum of four consecutive even numbers is 44. What is the sum of the original squares of these numbers?
a) 288 b)502 c)696 d) 920 e) None of these

4. A, B, C, D and E are five consecutive odd numbers. The sum of A and C is 146. What is the value of E?
a) 75 b)81 c)71 d)79 e) None of these

5. What is the smallest number that should be added to 89357 to make it exactly divisible by 9?
a) 1 b) 3 c) 4 d) 7 e) None of these

6. Which smallest number should be added to 86237 to make it exactly divisible by 9?
a) 11 b) 9 c) 10 d) 2 e) None of these

7. The difference between two numbers is 4 and the difference between their squares is 128. What is the larger number?
a) 14 b)16 c)12 d) 18 e) None of these

8. The difference between two numbers is 3 and the difference between their squares is 63. What is the larger number?
a) 12 b)9 c)15 d) Cannot be determined e) None of these

9. What will be the smallest number divisible by 6, 8, 18, 24 and 36?
a) 36 b)72 c)48 d) 144 e) None of these

10. Which is the least number divisible by 10, 18 and 25?
a) 350 b)450 c)320 d) 500 e) None of these

11. The LCM and HCF of two positive numbers are 300 and 30 respectively. If one of the numbers is divided by 4, the quotient is 15, then what is the other number?
a) 360 b) 300 c) 150 d) 75 e) None of these

12. The HCF of two numbers is 11 and their LCM is 7700. If one of these numbers is 275, then what is the other number?
a) 279 b) 283 c) 308 d) 318 e) 320

13. Find the smallest number which gives a remainder 5, when divided by any of the numbers 8, 12 and 15.
a) 120 b) 240 c) 125 d) 65 e) 101

14. What is the smallest number which when divided by 16, 20, and 25 leaves remainder 7, 11, and 16 respectively?
a) 391 b) 404 c) 164 d) 146 e) None of these

15. Which is the smallest number which when divided by 20, 25, 35 and 40 leaves the remainder 14, 19, 29 and 34 respectively?
a) 1394 b) 1404 c) 1664 d) 1406 e) None of these

16. Find the greatest number of 4 digits, which is exactly divisible by 8, 12, 18, 15 and 20.
a) 9840 b) 9360 c) 9280 d) 9630 e) None of these

17. Find the greatest number that will divide 65, 81 and 145 leaving the same remainder in each case.
a) 32 b)50 c) 9 d) 16 e) None of these

18. What will be the greatest number that divides 68, 59 and 43 leaving the remainders 8, 9 and 3 respectively?
a) 8 b) 10 c) 24 d) 35 e) None of these

19. What is the least number of square tiles of uniform size required to pave the floor of a rectangular hall of length 20 m and breadth 16 m?
a) 15 b) 20 c) 35 d) 8 e) None of these

20. The length and breadth of a room are 13 m and 7.5 m respectively; the floor of the room is to be paved with square tiles of uniform size. What will be the length of the largest possible size of the tile?
a) 1.0m b) 0.5m c) 1.5m d) 5.0m e) 6.0m

21. There's an electric wire running 1 km from the side of a building. The number of poles in between them is placed in an interval of distance between each other. If one pole is removed then the distance between each pole becomes 1 2/3 meters. Find out how many poles were kept.
a)600 b)599 c)601 d)499 e)None of these

22. A frog falls into a well of height of 30 m. It tries to climb up in an erratic manner. In 24 hours it climbs 3m in daytime and slips 2m in the night. How many days does it take to climb the well?
a)10days b)9 days c)9.5 day d)10.5 day e)none of these

23. A research lab in Chennai requires 100 mice and 75 sterilized cages for a certain set of laboratory experiments . To identify the mice, the lab has prepared labels with numbers 1 to 100 , by combining tags numbered 0 to 9. The SPCA requires that the tags be made of toxin-free material and that the temperature of the cages be maintained at 27 degree Celsius. Also , not more than 2 mice can be caged together and each cage must be at least 2 sq.ft in area. The 5 experiments to be conducted by lab are to be thoroughly documented and performed only after a round of approval by authorities. The approval procedure takes around 48 hours. How many times is the tag numbered '4' used by the lab in numbering these mice?
a) 9 b)19 c) 20 d) 21

24. Nithin was counting down from 32. Sumit was counting upwards the numbers starting from 1 and he was calling out only the odd numbers. What common number will they call out at the same time if they were calling at the same speed?
A. 19 B. 21 C.22 D. They will not call out the same number E. None of these.

25. In a certain office, 1/3 of the workers are women, ½ of the women are married and 1/3 of the married women have children. If 3/4 th of the men are married and2/3 rd of the married men have children, what part of workers are without children?
A. 5/18 B. 4/9 C. 11/18 D17/18 E.17/36

26. There is a church tower 150 feet tall and another catholic tower at a distance of 350 feet from it which is 200 feet tall. There is one each bird sitting on top of both the towers. They fly at a constant speed and time to reach a grain in b/w the towers at the same time. At what distance from the church is the grain?
a)90 b)150 c)350 d)200 e)none of these

27. if a person is sitting in a exam having 30 questions (objective type) the examiner use the formula to calculate the score is S=30+4c- w ,here c is number of correct answer and w is number of wrong answer , the examiner find the score is more than 80, tell how may questions are correct ? if the score is little less but still more than 80 then u wont be able to answer.

28. if a person having 1000 rs and he want to distribute this to his five children in the manner that ecah son having 20 rs more than the younger one , what will be the share of youngest child

29. raju having some coins want to distribute to his 5 son , 5 daughter and driver in a manner that , he gave fist coin to driver and 1/5 of remaining to first son he again gave one to driver and 1/5 to 2nd son and so on at last
he equally distributed all the coins to 5 daughters. how many coins raju initially have???

30. Suppose 8 monkeys take 8 minutes to eat 8 bananas.
a) How many minutes would it take 3 monkeys to eat 3 bananas?
(b) How many monkeys would it take to eat 48 bananas in 48 minutes

31. There is a five digit number. It has two prime digits (1 is not a prime number). Third digit is the highest. Second digit is the lowest. First digit is one less than the third digit. The fifth digit is half of the fourth. The sum of 4th and 5th is less than the first. Find the number.

32. The ball has thrown from 180 feet height, every time it jumps 1/10 th of its height. How much distance it will travel.

Section 2 : Percentage

In mathematics, a **percentage** is a number or ratio expressed as a fraction of 100. It is often denoted using the percent sign, "%", or the abbreviations "pct.", "pct"; sometimes the abbreviation "pc" is also used. A percentage is a dimensionless number (pure number).

Important Points--

- To calculate p % of y
  (p/100) x y = (p x y)/100
  So, p % of y = y % of p
- To find what percentage of x is y: y/x × 100
- To calculate percentage change in value
  Percentage change = {change/(initial value)} x 100
- Percentage point change = Difference of two percentage figures
- Increase N by S % = N(1+ S/100)
- Decrease N by S % = N (1– S/100)
- If the value of an item goes up/down by x%, the percentage reduction/increment to be made to bring it back to the original point is 100x/ (100 + x) %.
- If A is x% more /less than B, then B is 100x/(100 + x) % less/more than a)
- If the price of an item goes up/down by x %, then the quantity consumed should be reducedby100x/ (100 + x)% so that the total expenditure remains the same.
- Successive Percentage Change
  If there are successive percentage increases of a % and b%, the effective percentage increase is:
  {(a + b + (ab/100)}%
- **Percentage – Ratio Equivalence:**

1/3 X 100 = 33.33%	1/10 X 100 = 10%
1/4 X 100 = 25%	1/11 X 100 = 9.09%
1/5 X 100 = 20%	1/12 X 100 = 8.33%
1/6 X 100 = 16.66%	1/13 X 100 = 7.69%

N is Numerator, D is the Denominator

D/N	1	2	3	4	5	6	7	8	9	10
1	100	200	300	400	500	600	700	800	900	1000
2	50	100	150	200	250	300	350	400	450	500
3	33.33	66.66	100							
4	25	50	75	100						
5	20	40	60	80	100					
6	16.66	33.33	50	66.66	83.33	100				
7	14.28	28.56	42.85	57.14	71.42	85.71	100			
8	12.5	25	37.5	50	62.5	75	87.5	100		
9	11.11	22.22	33.33	44.44	55.55	66.66	77.7	88.8	100	
10	10	20	30	40	50	60	70	80	90	100
11	9.09	18.18	27.27	36.36	45.45	54.54	63.6	72.7	81.8	90.9
12	8.33	16.66	25	33.33	41.66	50	58.3	66.6	75	83.3
13	7.69	15.38	23.07	30.76	38.45	46.14	53.83	61.52	69.21	76.9
14	7.14	14.28	21.42	28.57	35.71	42.85	49.98	57.12	64.26	71.4
15	6.66	13.33	20	26.66	33.33	40	46.6	53.3	60	66.6
16	6.25	12.5	18.75	25	31.25	37.5	43.7	50	56.2	62.5

- **Product Stability Ratio**: A × B = P

If A is increased by a certain percentage, then B is required to be decreased by a certain percentage to keep the product P as shown in table. Expressing the percentage figures in

Change in A (INCREASE)	Change in B (DECREASE)	Change in P
$\frac{1}{1}$	$\frac{1}{2}$	0
$\frac{1}{2}$	$\frac{1}{3}$	0
$\frac{1}{3}$	$\frac{1}{4}$	0
$\frac{1}{4}$	$\frac{1}{5}$	0

If the price of a commodity increases by P%, then the reduction in consumption so as not to increase the expenditure is:

$$\left(\frac{P}{100+P}\times 100\right)\%.$$

If the price of a commodity decreases by P%, then the increase in consumption so as not to decrease the expenditure is:

$$\left(\frac{P}{100-P}\times 100\right)\%.$$

Results on Population:

Let the population of a town be P now and suppose it increases at the rate of R% per annum, then:

1. Population after *n* years = $P\left(1+\frac{R}{100}\right)^n$

2. Population *n* years ago = $\frac{P}{\left(1+\frac{R}{100}\right)^n}$

❖❖ **Results on Depreciation:**

Let the present value of a machine be P. Suppose it depreciates at the rate of R% per annum. Then:

1. Value of the machine after *n* years = $P\left(1-\frac{R}{100}\right)^n$

2. Value of the machine *n* years ago = $\frac{P}{\left(1-\frac{R}{100}\right)^n}$

3. If A is R% more than B, then B is less than A by $\left[\frac{R(100+R)}{\quad}\times 100\right]\%$.

4. If A is R% less than B, then B is more than A by $\left[\frac{R}{100-R}\times 100\right]\%$.

Practice Exercise:

1.44% of a number is 275, what is the 64% of same number?

a)450 b)400 c)375 d)500

2. If A salary is 20% more than that of B then how much percent is B's salary less than that of A?

a)16 2/3% b)20% c)40% d)10%

3. If the price of 1 kg of rice is increased by 25% the increased amount is 12 and the new price of price per kg?

a)48 b)60 c)72 d)36

4. A man spends 50% of his income in board and loading 20% of the remainder in other personal necessities and 25% of the rest in Charity find his income if he is left with 4200 rupees?

a)14000 b)8000 c)12000 d)18000

5. The population of a town is 15625 it increases 8% annually what will it be in the end of 3 years?

a)16983 b)18693 c)19683 d)19638

6. The population of a town increases by 12% during 1st year and decrease by 10% during 2nd year if the present population is 50400 but it was 2 year ago

a)40000 b)50000 c)42000 d)40400

7. Student score 55% Mars in 8 paper of hundred marks each he scored 15% of the total marks in English how much does he scored in English?

a)55 b)66 c)77 d)44

8. 60percent of the people of a certain village was illiterate. 28% of literate population are women if the number of literate Men bee 4320 then the total population of a village would be
a)15000 b)6000 c)18000 d)12000

9. In a group of person 70% of the person is male and 30% of the person is married. if 2/7 of them are married what fraction of the female is single?

a)2/7 b)1/3 c)3/7 d)2/3

10. Ram got 300 marks out of a total 500 marks find the percentage marks obtained by the RAM?

a)26% b)36% c)30% d)40%

11. In an examination 10% of the students fail in maths, 20% fail in English and 5% failed in both what is the percentage of student who failed in at least one subject?

a)75% b)25% c)35% d)40%

12. What quantity of water should be added to reduce 16 litre of 25% acidic liquid to 20% acidic liquid?

a)5 liter b)4 liter c)12 liter d)8 liter

13. What quantity of water should be taken out to concentrate 12 Litres of 30% acetic liquid to 40% acidic liquid

a)4 liter b)6 liter c)3 liter d)8 liter

14. In 50 kg mixture of sand and cement, 45% is cement how much sand should be added so that the proportion of cement becomes 10%?

a)175kg b)225kg c)200kg d)150kg

15. In an examination the percentage of students qualified to the number of students appeared from school A is 80%. in school B the number of students appeared is 25% more than the student appeared from school A and the number of students qualified from school B is 40% more than the students qualified from school A. what is the percentage of students qualified to the number of students appeared from school B?

a)45% b)90% c)89.5% d)89.6%

16. Square of a positive number is 2000 % greater than the number itself then the square of that number is

a)1762 b)1635 c)441 d)139

17. The monthly salary of Shain and Kalpana together is $28,000 the salary of Shain and Klpana is increased by 25% and 12.5% respectively. the new salary of Klpana becomes 120% of the new salary of Shain the new salary of Shain is?

a)$15,000 b)$18,000 c)$14,000 d)$16,000

18. 80% of the smaller number is 4 less than 40% of the larger number the larger number is 85 greater than the smaller than the sum of these two number is
a)325 b)425 c)235 d)500

19. 220% of a number X is 44. What is 44% of x

a)88 b)8.8 c)66 d)can't determine

20. the shopkeeper increased the price of a product by 25% so that consumer find it difficult to purchase the required amount but somehow the customer manage to purchase only 70% of the required amount..What is the net difference and expenditure of that product?
a)10% more b)5% more c)12.5% less d)17.5% less

Section 3: Profit, Loss and Discount

- Cost price (CP) is the price at which an article is purchased.
- Selling price (SP) is th e price at which an article is sold.
- If SP > CP, it is a profit or gain
- If CP > SP, it is a loss.
- Gain or Profit = SP – CP
- Loss = CP --- SP
- Loss or gain is always reckoned on CP.

Formula

$$\text{Profit Percentage (Profit \%)} = \frac{\text{Profit}}{\text{CP}} \times 100 = \frac{(\text{SP - CP})}{\text{CP}} \times 100$$

$$\text{Loss Percentage (Loss \%)} = \frac{\text{Loss}}{\text{CP}} \times 100 = \frac{(\text{CP - SP})}{\text{CP}} \times 100$$

In the case of a gain or profit,

$$\text{SP} = \frac{(100 + \text{Gain\%})}{100} \times \text{CP}$$

In the case of a loss,

$$SP = \frac{(100 - \text{Loss\%})}{100} \times \text{CP}$$

SP

$$CP = \frac{100}{(100 - \text{Loss\%})} \times \text{SP}$$

If an article is sold at a gain of 20%, then SP = 120% of CP

If an article is sold at a loss of 20% then SP = 80% of CP.

If an article is sold at a loss of 20% then SP = 80% of CP.

If a person sells two items at the same price; one at a gain of x % and another at a loss of x %, then the seller always incurs a loss expressed as---

$$\text{Loss \%} = \left(\frac{\text{Common Loss and Gain \%}}{10}\right)^2 = \left(\frac{x}{10}\right)^2$$

If a trader professes to sell his goods at cost price, but uses false weights, then

$$Gain\% = \left[\frac{\text{Error}}{(\text{True Value - Error})} \times 100\right]\%$$

Discount

You always come across different offers attracting the customers such as “Buy 1 get 2 Free” or “Buy 3 get 5 Free” or “SALE 50% + 40%”.Can you calculate the discount offered to you? Most of us are not aware of the offer given to us. The percentage of the discount offered in the first case is not 200% but it is 66.66% only. The discount is always on the number of items sold, not on the number of items purchased. In case of successive discounts, we can treat the problem as the problem of successive percentage change and can use the formula---

Net discount = (a+ b – ab/100) %

Markup Price

It is also known as list price or Tag price which is written on the item. The markup price written is always greater than the actual c)P of the item and the percentage rise in the markup price is on the c)P of the item.

Percentage increase in the Markup price = (M.P− C.P)/C.P *100

Concept for successive percentage: When there are two successive Profit of x % and y % then the resultant profi per cent is given by
[x + y+ (x*y/100)]

If there is a Profit of x% and loss of y % in a transaction, then the resultant profit or loss% is given by
[x – y - (x*y/100)]

Note:- For profit use sign + in previous formula and for loss use – sign.
If resultant come + then there will be overall profit. If it come – then there will be overall loss.

If a cost price of m articles is equal to the selling Price of n articles, then Profit percentage
(m-n)/n×100%

If m part is sold at x% profit , n part is sold at y % profit, and p part is sold at z% profit and Rs. R is earned as overall profit then the value of total consignment
R×100 / (mx+ny+pz)

A man purchases a certain no. of article at m a rupee and the same no. at n a rupee. He mixes them together and sold them at p a rupee then his gain or loss %
[{2mn/(m+n)p} -1]× 100
Note + = profit, - = loss

When a person sells two similar items, one at a gain of say x%, and the other at a loss of x%, then in this transaction the seller always incurs a loss given by: = **{x^2/100}%**

A single discount equivalent to discount series of x% and y% given by the seller is equal to
(x +y - xy/100)%

If a seller marks his goods at x% above his cost price and allows purchasers a discount of y % for cash, then overall gain or loss
(x – y –xy/100)%
Profit or loss according to sign .+ = gain, - = loss

If a trader professes to sell his goods at cost price, but uses false weights, then
Gain% = {(Error)/(True value - Error)x 100] %

Practice Question:

1. The cost price of 10 articles is equal to the selling price of 9 articles. Find the profit percent?
a)101/9 % b)100/9 % c)102/9 % d)103/9 %

2. To earn an extra profit, a shopkeeper mixes 30 kg of dal purchased at Rs.36/kg and 26 kg of dal purchased at Rs.20/kg. What will be the profit that he will make if he sells the mixture at Rs.30/kg?
a)Rs.60 b)Rs.80 c)Rs.50 d)Rs.100

3. The retail price of toothpaste of 140 grams is Rs 40, the shopkeeper gives a toothbrush whose actual price is Rs 10, free with it and still gains 25%. The cost price of the toothpaste is:
a)Rs.36 b)Rs.24 c)Rs. 30 d)None of the mentioned options

4. Manish sold two mobiles for Rs.9900 each. At one mobile, he gained 10% and on other, he lost 10%. Find his gain or loss in a transaction?
a)Loss 1% b)Neither loss Nor gain c)Gain 1% d)None

5. A Shopkeeper allows a discount of 20% on the marked price but charges 5% sales tax on the marked price and 5% service tax on the discounted price. If the customer pays Rs. 2670 as price including tax, then what is marked price of the item?
a)3245 b)3000 c)3200 d)3500

6. Ashish sold an article for Rs 315 at a profit of 5%. What would have been the loss incurred by him it was sold for Rs. 275?
a)7.625% b)4.5 % c)5.625% d)6.25%

7. If the selling price of an article is (2/3)rd of its cost price, then find the profit/loss percent.
a)20% profit b)33% profit c)33% loss d)20% loss

8. An article was sold for Rs. 2770. Had it been sold for Rs. 3000 there would have been an additional gain of 10%. Cost Price of the article is:
a) Rs. 2100 b) Rs. 2200 c) Rs. 2300 d) Rs. 2400

9. Rahul buys a scooter worth Rs. 10,000. He sells it to Mohan at a profit of 10%. If after sometime Mohan sells it back to Rahul at a loss of 10%, then totally:
a) loses Rs. 100 b) loses Rs. 1100c) gains Rs. 100 d) gains Rs. 110

10. Pranjul bought 30 kg of rice at the rate of Rs. 8.50 per kg and 20 kg of rice at the rate of Rs. 9.00 per kg. He mixed the two. At what price (App.) per kg should he sell the mixture in order to get 20% profit?
a) Rs. 9.50 b) Rs. 8.50 c) Rs. 10.50 d) Rs. 12.00

11. The cash price of a television is Rs. 4022. A customer paid Rs. 1500 in cash and promised to pay the remaining money in 3 monthly equal installments at the rate of 5% per annum compound interest. What is the value of each installment?
a)Rs. 926.10 b) Rs. 903.33 c) Rs. 928.30 d) Rs. 940.50

12. The population of a village decreases at the rate of 20% per annum. If its population 2 years ago was 10000, what is its present population?
a)6000 b) 10000/144 c) 6400 d) 7600

13. A man bought a number of clips at 3 for a rupee and an equal number at 2 for a rupee. At what price per dozen should he sell them to make a profit of 20% ?
a) Rs 4 b) Rs 5 c) Rs 6 d) Rs 7

14. The manufacturer of a certain item can sell all he can produce at the selling price of Rs. 60 each. It costs him Rs. 40 in materials and labor to produce each item and he has overhead expenses of Rs. 3000 per week in order to Answer rate the plant. The number:
a) 200 b) 250 c) 300 d) 400

15. 1/3 of a commodity is sold at 15% profit, ¼ is sold at 20% profit and the rest at 24% profit. If the Total profit is Rs. 80 is earned then find the value of commodity?
a) 350 b) 410 c) 400 d)300

16. A man purchases a certain no. of apple at 5 per rupee and same no. at 4 per rupee. He mixes them together and sells them at 4 per rupee. What is his gain or loss%?

a) Gain 20 % b) Gain 11.11% c) Loss 1e)11% d) Loss20%

17. If selling price is doubled, the profit triples. Find the profit percent?

a) 100% b) 116.67% c) 200% d)300%

18. The percentage profit earned by selling an article for Rs. 1920 is equal to the percentage loss incurred by selling the same article for Rs. 1280. At what price should the article be sold to make 25% profit?

a) 2200 b) 2400 c) 2500 d)2000

19. A man purchases 10 Cows at Rs. 3000 each. 1 Cow died. He sold 2 Cows at 5% loss, at what rate he should sale the remaining Cows, so as to gain a Profit of 10 % on the total Cost?

a) Rs.4000 b) Rs.3000 c) Rs.3900 d) Rs. 4500

20. Two merchants sell, each an article for Rs.1000. If Merchant A computes his profit on cost price, while Merchant B computes his profit on selling price, they end up making profits of 25% respectively. By how much is the profit made by Merchant B greater than that of Merchant A?

a)Rs.66.67 b)Rs.50 c)Rs.125d)Rs.200

21. The list price of an electric iron is Rs. 300. If two successive discounts of 15% and 10% are allowed, its selling price will be:
a) Rs. 229.50 b) Rs.231.50 c) Rs.232.50 d) Rs. 234.50

22. A trader allows a Discount of 5% for cash payment. How much approx % above cost price must he mark his goods to make a profit of 10%?

a) 8.9% b) 10% c) 12.75% d)15.8%

23. A shopkeeper sells some articles at the profit of 25% on the original price. What is the exact amount of profit? To find the answer, which of the following information given in Statements I and II is/are Sufficent?
I. Sale price of the article
II. Number of articles sold

a)Only I is sufficient. b)Only II is sufficient.
c)Both I & II are sufficient. d)Either I or II are sufficient.

24. If a merchant offers a discount of 40% on the marked price of his goods and thus ends up selling at cost price, what was the % mark up?

a)28.57% b)40% c)66.66% d)58.33%

25. If a merchant offers a discount of 30% on the list price, then she makes a loss of 16%. What % profit or % loss will she make if she sells at a discount of 10% of the list price?

a)6% loss b)0.8% profit c)6.25% loss d)8% profit

26. A merchant marks his goods up by 60% and then offers a discount on the marked price. If the final selling price after the discount results in the merchant making no profit or loss, what was the percentage discount offered by the merchant?

a)60% b)40% c)37.5% d)Depends on the cost price

27. A trader buys goods at a 19% discount on the label price. If he wants to make a profit of 20% after allowing a discount of 10%, by what % should his marked price be greater than the original label price?

a)+8% b)-3.8% c)+33.33% d)None of these

28. The Maximum Retail Price (MRP) of a product is 55% above its manufacturing cost. The product is sold through a retailer, who earns 23% profit on his purchase price. What is the profit percentage (expressed in nearest integer) for the manufacturer who sells his product to the retailer? The retailer gives 10% discount on MRP.

a)31% b)22% c)15% d)13%

29. After applying successive discounts of 10% and 5% on an article, it was sold at Rs. 513. Find the marked price of the article.

a)Rs. 590 b) Rs. 600 c) Rs. 603.5 d) None

30. While selling to the retailer a company allows 30% discount on the market price of their product. If the retailer sells those Product at market price, his profit will be

a)30% b)42 $\frac{1}{7}$%c)40% d)42.$\frac{6}{7}$%

Section 4: Time, Speed & Distance

2.1 Important Formulae

Speed=Distance/Time
Time=Distance/Speed
Distance = speed × time
1km/hr=5/18m/s
1m/s=18/5km/hr
If the ratio of the speed of A and B is a:b, then the ratio of the time taken by them to cover the same distance is 1/a:1/b1 or b:a
Suppose a man covers a distance at x kmph and an equal distance at y kmph, then the AVERAGE SPEED during the whole journey is 2xy/(x+y) kmph
Out of time, speed and distance we can compute any one of the quantities when we happen to know the other two. For example, suppose we drive for 2 hours at 30 miles per hour, for a total of 60 miles.
If we know the time and the speed, we can find the distance: 2 hour * 30 miles/hour=60 miles
If we know the time and the distance, we can find the speed: 60 miles/2 hours=30 miles/hour

2.2 Relative Speed

Case 1:
Two bodies are moving in opposite directions at speed V_1 & V_2 respectively. The relative speed is defined as $V_r=V_1+V_2$
Case 2:
Two bodies are moving in same directions at speed V_1 & V_2 respectively. The relative speed is defined as $V_r=|V_1-V_2|$

2.3 Train Problems

The basic equation in train problem is the same Speed=Distance/Time
The following things need to be kept in mind while solving the train related problems.
When the train is crossing a moving object, the speed has to be taken as the relative speed of the train with respect to the object.
The distance to be covered when crossing an object, whenever trains crosses an object will be equal to: Length of the train + Length of the object

Boats and Streams:

1. A boat is said to go downstream, if the boat goes in the direction of stream.
2. A boat is said to go upstream, if the boat goes opposite to the direction of stream.

Basic Formulas:

1. If speed of boat in still water is b km/hr and speed of stream is s km/hr,
   - Speed of boat in downstream = (b + s) km/hr , since the boat goes with the stream of water.
   - Speed of boat in upstream = (b - s) km/hr. The boat goes against the stream of water and hence its speed gets reduced.

2. Shortcuts With Explanation
3. Scenario 1: Given a boat travels downstream with speed d km/hr and it travels with speed u km/hr upstream. Find the speed of stream and speed of boat in still water.
   b = (d + u)/2
   s = (d – u)/2

   A man can row a boat, certain distance downstream in **td** hours and returns the same distance upstream in **tu** hours. If the speed of stream is **s** km/h, then the speed of boat in still water is given by

   Case downstream:
   d = (b + s) * td

Case upstream:

d = (b - s) * tu

=> (b + s) / (b - s) = tu / td

b = [(tu + td) / (tu - td)] * s

A man can row in still water at **b** km/h. In a stream flowing at **s** km/h, if it takes him t hours to row to a place and come back, then the distance between two places, **d** is given by

d = [t * (Speed to go downstream) * (Speed to go upstream)]/[2 * Speed of boat or man in still water]

2.5 Clock

For clock problems consider the clock as a circular track of 60km.

Min. hand moves at the speed of 60km/hr (think min. hand as a point on the track) and hour hand moves at 5km/hr and second hand at the speed of 3600 km/hr.

Relative speed between HOUR hand and MINUTE hand = 55 km/hr

Practice Questions

1. A bus covers a distance of 216 km in 4 hours. What is the speed of bus in m/s?
a) 5 m/s b) 20 m/s c) 15 m/s d) 18 m/s e) None of these

2. A bus covers a distance of 172 km in 4 hours. What is the speed of bus?
a) 52 kmph b) 47 kmph c) 43 kmph d) 38 kmph e) None of these

3. Two trains start at the same time from A & B and proceed towards B & A at 36 kmph & 42 kmph respectively. When they meet, it is found that one train has moved 48 km more than the other. What is the distance between A and B ?
a) 624 km b) 636 km c) 544 km d) 460 km e) None of these

4. The distance between two stations A and B is 300 km. A train leaves station A at the speed of 30 kmph. At the same time another train departs from station B at the speed of 45 kmph. What will be the distance of the point where both the trains meet from the point A?
a) 100 km b) 120 km c) 130 km d) 200 km e) None of these

5. A car covers the first 35 km of its journey in 45 minutes and the remaining 69 km in 75 minutes. What is the average speed of the car for the whole journey?
a) 42 kmph b)50 kmph c) 52 kmph d) 60 kmph e) None of these

6. Train covers a distance of 3735 km in 20 hours 45 minutes. What is the average speed of the train in kmph?
a) 160 b) 140 c) 190 d) Cannot decide e) None of these

7. Two trains start from two stations A and B at the same time and proceed towards each other to reach B and A respectively. After crossing each other, they take 36 and 49 hours respectively to reach their destinations. Find the speed of the second train, if the first train runs at 140 kmph?
a) 60 kmph b) 120 kmph c) 70 kmph d) 160 kmph e) None of these

8. A car starts from Hyderabad and moves towards Bangalore and at the same time, another car starts from Bangalore and moves towards Hyderabad. After crossing each other, they take 361 and 400 mins respectively to reach their destinations. What will be the speed of the first car, if the speed of second car is 76 kmph?
a) 90 kmph b) 120 kmph c) 80 kmph d) 60 kmph e) None of these

9. Excluding the stoppages, the speed of a bus is 64 kmph and including the stoppages, the speed of the bus is 48 kmph. For how many minutes does the bus stop per hour?
a) 12.5 min b) 15 min c) 10 min d) 18 min e) None of these

10. Without stoppages a train travels a certain distance at an average speed of 80 kmph and with stoppages it covers the same distance with an average speed of 60 kmph. What is the time in minutes per hour for which train stops?
a) 15 min/hr b) 10 min/hr c) 20 min/hr d) 25 min/hr e) None of these

11. Two cars starting from the same point and moving in the opposite directions will be 227.5 km apart in 3 hours 15 mins. Had they been travelling in the same direction, They would have been 32.5 km apart in the same time. Find the speed of both the cars?
a) 45 kmph, 25 kmph b) 40 kmph, 30 kmph c) 55 kmph, 15 kmph d) 80 kmph, 70 kmph e) None of these

12. Anita and Veena are running in opposite direction. Speed of Anita and Veena are 8 kmph and 10 kmph respectively. What will be the distance between them after 2.5 hours if both of them start from the same point?
a) 36 km b) 5 km c)5 km d) Cannot be determined e) None of these

13. A 270 m long train running at the speed of 120 kmph crosses another train running at the speed of 80 kmph in 9 seconds. What is the length of the other train?
a) 230 m b) 240 m c) 260 m d) 320 m e) None of these

14. A train running at the speed of 48 kmph crosses another train coming from the opposite direction in 18 seconds. What is the length of first train?
a) 200 m b) 100 m c) 150 m d) Cannot be determined e) None of these

15. A goods train runs at the speed of 72 kmph and crosses a 250 m long platform in 26 seconds. What is the length of the train?
a) 230 m b) 240 m c) 260 m d) 270 m e) None of these

16. A train of length 170 m running at 72 kmph cleared a tunnel in 18 sec. What is the length of the tunnel?
a) 200 m b)190 m c) 185 m d) 206 m e) None of these

17. A 180 m long train crosses a man standing on a platform in 20 seconds. What is the speed of train (in kmph)?
a) 24 b)18 c) 32.4 d)28.6 e) None of these

18. A 340 m long train crosses a pole in 20 seconds. What is the speed of train (in m/s)?
a) 15 b) 9 c)17 d)12 e) None of these

19. A man can swim with the stream at the rate of 3 kmph and against the stream at the rate of 2 kmph. How long will it take him to swim 7.5 km in still water?
a) 3 hours b) 2.8 hours c) 2.6 hours d) 3.2 hours e) None of these

20. A man can row 9 km in 3 hours against a stream running at 2 kmph. How long would he take in rowing the same distance down the stream?
a) 9/7 hours b) 7/9 hours c) 1.5 hours d) 3 hours e) None of these

21. A boat goes up a river 20 km and down the river 24 km in 8 hours. It also goes up the river 30 km and down the river 28 km in 11 hours. What is the speed of the boat and the river?
a) 6 kmph, 2 kmph b) 3 kmph, 1kmph c) 12 kmph, 4 kmph d) 2kmph, 6kmph e) None of these

22. The time taken to travel in train from Town A to Town B is 5 hours. There are trains starting from both towns at an interval of 1 hour.How many trains meet in 1 trip?
a) 8 b)9 c)10 d)11 e)None of these

23. A man jogs at 6 mph over a certain journey and walks over the same route at 4 mph. What is his average speed for the journey?
a) 4 mph b) 5 mph c) 2.4 mph d) 4.8 mph

24. A person says that their speed while going to a city was 10mph however while returning as there is no much traffic they came with a speed of 15mph. what is their average speed?
a) 12mph b)10mph c)15mph d)12.5mph

25. The boy goes to school reaches railway station at his 1/3 of his journey& mill at 1/4 of his journey the time taken him to walk between railway station & mill is 5 mins. Also he reaches railway station at 7.35am. when he started from house& when he reaches school?

26. if A wins in a race against B by 10 mts in a 100 Meter race. If B is behind of A by 10 mts. Then they start running race, who will won?

27. The distance between Station Atena and Station Barcena is 90 miles. A train starts from Atena towards Barcena. A bird starts at the same time from Barcena straight towards the moving train. On reaching the train, it instantaneously turns back and returns to Barcena. The bird makes these journeys from Barcena to the train and back to Barcena continuously till the train reaches Barcena. The bird finally returns to Barcena and rests. Calculate the total distance in miles the bird travels in the following cases:
the bird flies at 60 miles per hour and the speed of the train is 90 miles per hour
a) 65 miles b)60miles c)90 miles d)can't be determine

28. Jack, Doug and Ann, 3 children had a running race while returning from school. Mom asked who won the race. Then Jack replied" I won't tell u. I will give u a clue, When Ann takes 28 steps Doug takes 24 steps, meantime I take 21 steps. Jack explained that his 6 steps equals Droug's 7 steps and Ann's 8 steps. Who won the race?

29. A motorboat, whose speed in 15 km/hr in still water goes 30 km downstream and comes back in a total of 4 hours 30 minutes. The speed of the stream (in km/hr) is:
a). 4 b). 5 c). 6 d). 10

30. Speed of a boat in standing water is 14 kmph and the speed of the stream is 1.2 kmph. A man rows to a place at a distance of 4864 km and comes back to the starting point. The total time taken by him is:
a). 700 hours b). 350 hours c). 1400 hours d). 1010 hours

31. A boat running upstream takes 8 hours 48 minutes to cover a certain distance, while it takes 4 hours to cover the same distance running downstream. What is the ratio between the speed of the boat and speed of the water current respectively?
a). 2 : 1 b). 3 : 2 c). 8 : 3 d). Cannot be determined

32. An individual can row a ship d km upstream and the identical distance downstream in 5 hours quarter-hour. Additionally, he can row the boat 2d km upstream in 7 hours. How lengthy will it take to row the identical distance 2d km downstream?
a). 3/2 hours b). 7 hours c). 7 (¼) d). 7/2 hours

33. A man takes twice as long to row a distance against the stream as to row the same distance in favour of the stream. The ratio of the speed of the boat (in still water) and the stream is:
a). 3 : 1 b). 1 : 3 c). 1 : 2 d). 2 : 1

34. A man can row at 5 kmph in still water. If the velocity of current is 1 kmph and it takes him 1 hour to row to a place and come back, how far is the place?
a). 2.4 km b). 2.5 km c). 3 km d). 3.6 km

35. A man can row three-quarters of a kilometre against the stream in 11 1/4 minutes and down the stream in 7 1/2minutes. The speed (in km/hr) of the man in still water is:
a). 4 kmph b). 5 kmph c). 6 kmph d). 8 kmph

Section 5: Time & Work

Important Formulae

If A can do a piece of work in n days, work was done by A in 1 day = 1/n

If A does 1/n work in a day, 'A' can finish the work in n days

If M1 men can do W1 work in D1 days working H1 hours per day and M2 men can do W2 work in D2 days working H2 hours per day (where all men work at the same rate), then

(M1 D1* H1) / W1 = (M2*D2*H2)/ W2*

If A is thrice as good as B in work, then

Ratio of work done by A and B = 3:1

Ratio of time taken to finish a work by A and B = 1:3

Practice Questions

1. 15 men can type 3240 pages in 6 days working 2 hours per day. How many men would be required to type 5400 pages working 4 hours per day for 3 days?

a) 10 b) 16 c) 12 d) 25 e) None of these

2. If 5 workers collect 60 kg wheat in 3 days, how many kilogram of wheat will 8 workers collect in 5 days?

a) 80 kg b) 100 kg c) 120 kg d) 160 kg e) None of these

3. A, B and C can finish a piece of work in 10, 15 and 30 days respectively. How many days will be required if A, B and C work together to finish the given work?

a) 5 b) 6 c) 7 d) 8 e) None of these

4. Govind alone can complete a work in 20 days. Jagdish alone completes it in 30 days. How many days will be required if both of them work together?

a) 12 days b) 24 days c) 25 days d)10 days e) None of these

5. A work is started by 15 people. After 5 days, 5 more people accompanied them to finish the work in next 10 days. How many people should have started the work to finish it in 11 days?

a) 24 b)22 c)20 d)25 e) None of these

6. A garrison of 1500 men is provisioned for 60 days. After 25 days, the garrison is reinforced by 500 men. How long will the remaining provisions last?

a) 24 days b) 21.75 days c) 26.25 days d) 52 days e) None of these

7.6 typists can do a piece of work in 8 hours. If 3 more typists whose working speed is double the earlier typists join together, then the work will be finished in how many hours?

a) 6hours b) 5hours c) 4hours d) Data inadequate e) None of these

8. 8 workers can do a work in 12 days. Two more workers whose efficiency is double than the earlier ones join them, in how many days they will be able to finish that work?

a) 6 b)8 c) 10 d) Cannot be determined e) None of these.

9. X alone can complete a piece of work in 12 days and Y alone can complete the same work in 24 days. If they work on alternate how many days will the work be completed?

a) 15 b) 16 c) 4 d) 8 e) None of these

10. A alone can complete a piece of work in 8 days and B alone can complete the same work in 16 days. If they work on alternate days with A working on first day, then in how many days will the work be completed?

a) 5.5 b) 10 c) 10.5 d)11 e) None of these

11. A can do a piece of work in 15 days and B in 20 days. They finished the work with the assistance of C in 5 days and got ` 45 as their wages. What is the share of each person?

a) `22.5,`12,`10.5 b)`10.5,`12,`22.5 c)`15,`11.25,`18.75

d)` 12.5,`13,`19.5 e) None of these

12. A, B and C can do a piece of work in 6, 12 and 30 days respectively. They agreed to work together and finish the work for an amount of ` 3400. What will be the share of the person B from the given amount?
a) ` 1500 b) ` 1000 c) ` 2000 d) ` 400 e) None of these

13. Pipes A and B can fill a cistern in 10 and 12 hours respectively and pipe C can empty it in 6 hours. If all the three are opened simultaneously, then how much time is required for the tank to be full?
a) 20 hours b) 60 hours c) 80 hours d) 40 hours e) None of these

14. A cistern can be filled by two taps in 20 min and 30 min respectively and can be emptied by a third tap in 48 min. If they are all turned on at once, when will the cistern be half full?
a) 16 min b) 8 min c) 10 min d) 12 min e) None of these

15. A water tub can be filled by two taps in 8 min. One tap is closed after 3 min; the other tap fills the remaining tub in 15 min. How much time will the faster tap take to fill the tub?
a) 10 min b) 11 min c) 12 min d) 15 min e) None of these

16. Grass in lawn grows equally thick and in a uniform rate. It takes 40 days for 40 cows and 60 days for 30 cows to eat the whole of the grass. How many days does it take for 20 cows to do the same?
a) 20 b)60 c)120 d)180 e)None of these Ans: 120

17. Suppose 8 monkeys take 8 minutes to eat 8 bananas.
a) How many minutes would it take 3 monkeys to eat 3 bananas?
(b) How many monkeys would it take to eat 48 bananas in 48 minutes
Ans: a)8
B)6

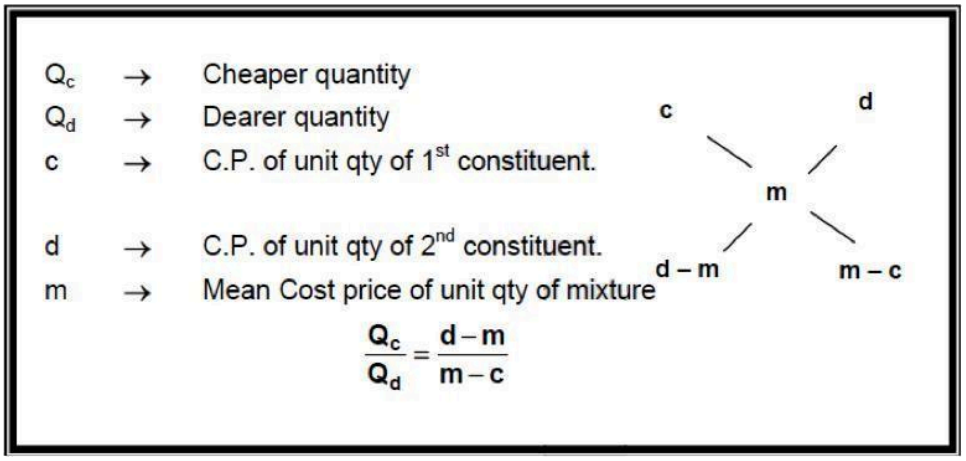
18. There is a leak in the bottom of a cistern.When the cistern is thoroughly repaired. If would be filled in 12 minutes. It now take 18 minutes longer. If the cistern is full, how long would the leak take to empty the cistern?
a) 36 minutes b) 24 minutes c) 26 minutes d) 30 minutes

19. Tap A can fill a water tank in 25 minutes, tap B can fill the same tank in 40 minutes and tap C can empty the tank in 30 minutes. If all the three taps are opend together, in how many minutes will the tank be completely filled up or emptied ?
a) 4 days b)3 days c)3 11/19 days d)4 11/19 days

Section 6: Mixtures & Alligation

When two or more quantities are mixed together in different ratios to form a mixture, then ratio of the quantities of the two constituents is given by the following formulae: $Q_c/Q_d = (d-m)/(m-c)$

Toolkit



Gives us the ratio of quantities in which the two ingredients should be mixed to get the mixture.

Important Concept

Always identify the ingredients as cheaper & dearer to apply the Alligation rule. In the Alligation rule, the variables c, d & m may be expressed in terms of **percentages** (e.g. A 20% mixture of salt in water), **fractions** (e.g. two-fifth of the solution contains salt) or **proportions** (e.g. A solution of milk and water is such that **Milk: Water = 2 : c)** . The important point is to remember is that c & d may represent pure ingredients or mixtures.

Replacement of Part of Solution Formula

Suppose a container contains a solution from which some quantity of solution is taken out and replaced with one of the ingredients. This process is repeated n times then,

Final Amount of ingredient that is not replaced=
Initial Amount×(Vol. after removal/Vol. after replacing) ^{n}

Above formula is not only true for absolute amounts but for ratios as well. So following formula is also valid:

Final ratio of ingredient not replaced to total =
Initial ratio *(Vol. after removal / Vol. after replacing) ^{n}

Practice Questions

1. A dairy man pays Rs.6.4 per litre of milk. He adds water and sells the mixture at Rs. 8 per litre, thereby making 37.5% profit. Find the proportion of the water to that of the milk received by the customers.

(a) 1 : 15 (b) 1 : 10 (c) 1 : 20 (d) 1 : 12 (e) None of these

2. Mr X mixed 10 kg of variety A rice with 15 kg of variety B rice and sold the mixture at a price 40% more than that of A. He did not get any profit. What is the ratio of the cost price of variety A to that of B per kg?

(a) 2 : 5 (b) 3 : 5 (c) 4 : 5 (d) 5 : 8 (e) None of these

3. A trader has 50 kg of rice, a part of which he sells at 10 percent profit and the rest at 5 percent loss. He gains 7 percent on the whole. What is the quantity sold at 10 percent gain and 5 percent loss?
(a) 30 kg, 10 kg (b) 40 kg, 15 kg (c) 35 kg, 40 kg
(d) 40 kg, 10 kg (e) None of these

4. The wheat sold by grocer contained 10% low quality wheat. What quantity of good quantity wheat should be added to 150 kg of wheat so that the percentage of low quality wheat becomes 5%?

(a) 85 kg (b) 50 kg (c) 135 kg (d) 150 kg (e) None of these

5. One type of liquid contains 25% of milk; the other contains 30% of milk. A container is filled with 6 parts of the first liquid and 4 parts of the second liquid. The percentage of milk in the mixture is:

(a) 27% (b) 31% (c) 29% (d) 33% (e) None of these

6. Two gallons of a mixture of spirit and water contain 12% of water. They are added to 3 gallons of another mixture, containing 7% of water and half a gallon of water is then added to the whole. Find the percentage of water in the resulting mixture.

(a)17 3/11% (b)16 12/11% (c)14 1/11%
(d)18 2/11% (e)None of these

7. There are 2 bottles containing a mixture of wine, water and alcohol. The first bottle contains wine, water and alcohol in the ratio 3 : 5 : 2. The second bottle contains water and wine in the ratio 5 : 4. 1 litre of the first and 2 litres of the second are mixed together. What fraction of the mixture is alcohol?
(a) 1/15 litres (b) 6/13 litres (c) 2/15 litres (d) 6/19 litres (e) None of these

8. A bottle contains three-fourths of milk and the rest water. How much of the mixture must be taken away and replaced by an equal quantity of water so that the mixture has half milk and half water?

(a)25% (b)33 1/3% (c)45% (d)50% (e)none of these

9. A bottle is full of dettol. One-third of it is taken out and then an equal amount of water is poured into the bottle to fill it. This operation is done four times. Find the final ratio of dettol and water in the bottle.

(a) 13 : 55 (b) 20 : 74 (c) 16 : 65 (d) 10 : 48 (e) None of these

10. An alloy of gold and silver weighs 50 g. It contains 80% gold. How much gold should be added to the alloy so that percentage of gold is increased to 90?

(a) 50 g (b) 60 g (c) 30 g (d) 40 g (e) None of these

11. A jar contains a mixture of two liquids A and B in the ratio 4 : 1. When 10 litres of the mixture is taken out and 10 litres of liquid B is poured into the jar, the ratio becomes 2 : 3. How many litres of liquid A was contained in the jar?

(a) 14 litres (b) 18 litres (c) 20 litres (d) 16 litres (e) None of these

12. A can contains a mixture of two liquids A and B in the ratio 7:5 when 9 litres of mixture are drawn off and the can is filled with B, the ratio of A and B becomes 7:9. How many litres of liquid A was contained by the can initially?

a)28 litres b)21 litres c)45 litres d)36 litres

13. The ratio of chemical a and b is 3 : 1 in a container when 5 litre of mixture is taken out and replaced by chemical B, then the ratio becomes 1 : 1. What is the quantity of mixture?

a)10 L b)5L c)15 L d)20 L

14. From a cask, 10 litres of wine is taken out and replaced by water. Again 10 litre of mixture is taken out and replaced by water. Thus the ratio of wine and water after Second replacement is 25 : 11. Find the original quantity of find in the car

a)50 L b)40 L c)60 L d)30 L

15. A bartender stole mixture from a bottle containing 75% of alcohol and then replace the amount by mixing mixture containing 65% alcohol to the original mixture. Thus, there was only 72% alchol in the resultant mixture. how much of the original alcohol did the Bartender stole?

a)70% b)30% c)82% d)75%

16. A container was full of milk. Munna Bhai withdrew 10% of the milk from the containers and replaced it with water. Next day he again withdraw10% of the mixture and replaced it with water. As a result at the end of the third day only 729 of milk was left in the container. Find the original quantity of milk.

a)1200 L b)1500 L c)1300 L d)none of these

17. There are two containers the first container contains 500 ml of alcohol while second containers contain 500 ml of water. 3 cups of alcohol from the first container is taken out and is mixed well in the second container. Then 3 cups of the mixture is taken out and is mixed in the first container. Let A donate the preparation of water in the first container and B donate proportion of alcohol in the second container then

a)A>B b)A<B c)A=B d)Cannot be determine

18. From a cask, containing 250 litres of alcohol, A sells 15 litres of alcohol and add 15 litres of water to the Cask. again 15 litre of mixture is sold and again 15 litre of water is added to the mixture. Find the total amount of alcohol left in the Cask, after the mixture is replaced 4 times in all.

a)195.1 L b)205.5 L c)182.6 L d)175 L

19. From a container containing milk, 20 litre is withdrawn and is replaced by same amount of water, again 20 litre of the mixture is withdrawn and is replaced by another 20 litre of water. After 3 such attempts the ratio of milk and water in the mixture is 1: 7. find the initial amount of milk that the container had.

a)200 L b)40 L c)100 L d)150 L

20. From a container, 6 litres of milk was drawn out and replaced by water. After 6 litre of mixture was drawn out and was replaced by the water does the quantity of milk and water in the container after these two operations is 9 : 16 the quantity of mixture is:

a)15 b)16 c)25 d)31

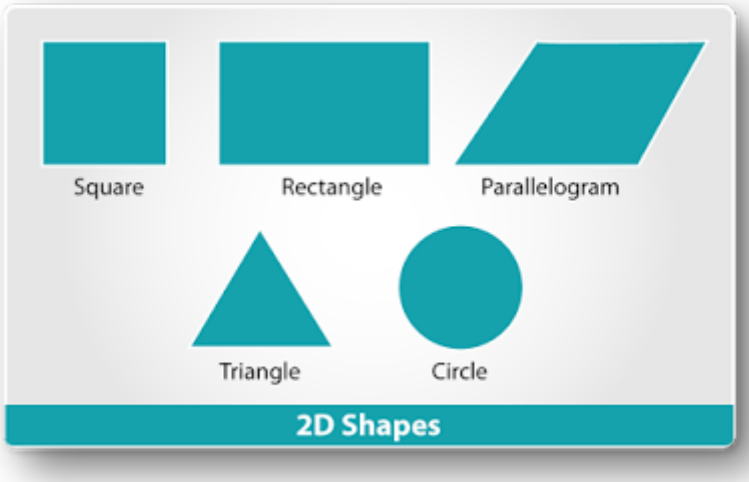
Section 7: Mensuration

What is Mensuration?

Mensuration is a topic in Geometry which is a branch of mathematics. Mensuration deals with length, area and volume of different kinds of shape- both 2D and 3D. So moving ahead in the introduction to Mensuration, let us discuss what are 2D and 3D shapes and the difference between them.

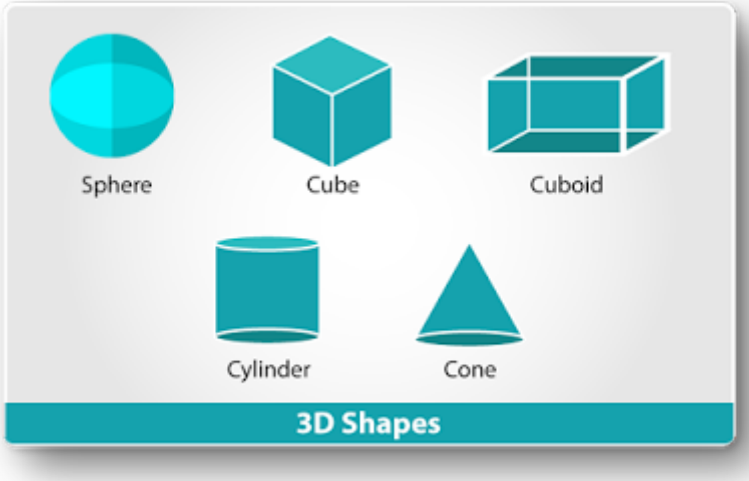
What is a 2D Shape?

Moving ahead with our introduction to Mensuration let's discuss what is a 2D shape. A ***2D shape*** is a shape that is bounded by three or more straight lines or a closed circular line in a plane. These shapes have no depth or height; they have two dimensions- length and breadth and are therefore called 2D figures or shapes. For 2D shapes, we measure area (A) and perimeter (P).



What is a 3D Shape?

The next step in introduction to Mensuration is finding out what is a 3D shape. A ***3D shape*** is a shape that is bounded by a number of surfaces or planes. These are also referred to as solid shapes. These shapes have height or depth unlike 2D shapes; they have three dimensions- length, breadth and height/depth and are therefore called 3D figures. 3D shapes are actually made up of a number of 2D shapes. Also, know as solid shapes, for 3D shapes we measure Volume (V), Curved Surface Area (CSA), Lateral Surface Area (LSA) and Total Surface Area (TSA).



Introduction to Mensuration: Important Terms

Before we move ahead to the list of important mensuration formulas, we need to discuss some important terms that constitutes these mensuration formulas.

Area (A) – The surface occupied by a given closed shape is called its ***area***. It is represented by the alphabet A and is measured in unit square- m2/ cm2.

Perimeter (P) – The length of the boundary of a figure is called its ***perimeter***. In other words, it is the continuous line along the periphery of the closed figure. It is represented by the alphabet P and is measures in cm/ m.

Volume (V) – The space that is contained in a three-dimensional shape is called its ***volume***. In other words, it is actually the space that is enclosed in a 3D figure. It is represented by the alphabet V and is measured in cm3/ m3.

Curved Surface Area (CSA) – In solid shapes where there is a curved surface, like a sphere or cylinder, the total area of these curved surfaces is the ***Curved Surface Area***. . The acronym for this is CSA and it is measured in m2 or cm2.

Lateral Surface Area (LSA) – The total area of all the lateral surfaces of a given figure is called its ***Lateral Surface Area***. Lateral Surfaces are those surfaces that surround the object. The acronym for this is LSA and it is measured in m2 or cm2.

Total Surface Area (TSA) – The sum of the total area of all the surfaces in a closed shape is called its ***Total Surface Area***. For example, in a cuboid when we add the area of all the six surfaces we get its Total Surface Area. The acronym for this is TSA and it is measured in m2 or cm2.

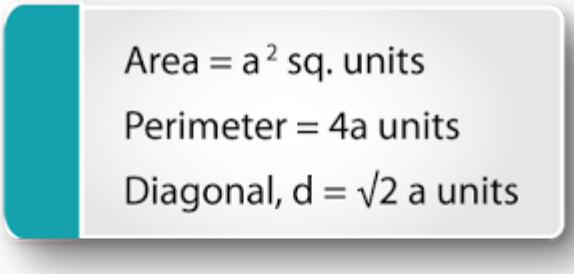
Square Unit (m2/ cm2) – One ***square unit*** is actually the area occupied by a square of side one unit. When we measure the area of any surface we refer to this square of side one unit and how many such units can fit in the given figure. It is expressed as m2 or cm2, depending on the unit in which the area is being measure.

Cube Unit (m3/ cm3) – One ***cubic unit*** is the volume occupied by a cube of side one unit. When we measure the volume of any figure we actually refer to this cube of side one unit and how many such unit cubes can fit in the given closed shape. It is written in ***m3 or cm3***, depending on the unit that is being used to measure.

List of Mensuration Formulas

Now that our introduction to mensuration and the important terms is over let's move to the mensuration formulas since this is a formula based topic. Every 2D and 3D figure has a list of mensuration formulas that establish a relationship amongst the different parameters. Let's discuss the mensuration formulas of some shapes.

Square:



Rectangle:

Area = l x b sq. units

Perimeter = 2(l+b) units

Diagonal, d = $\sqrt{(l^2 + b^2)}$ units

Scalene Triangle:

Area = s $\sqrt{\{(s-a)(s-b)(s-c)\}}$sq. units; [s = (a+b+c)/2]

Perimeter = (a+b+c) units

Equilateral Triangle:

Area = $\sqrt{3}a^2/4$ sq. units

Perimeter = 3a units [a = side of the triangle]

Isosceles Triangle:

Area = (b /4) $\sqrt{(4a^2 - b^2)}$ sq units

Perimeter = 2a + b units [b = base length; a = equal side length]

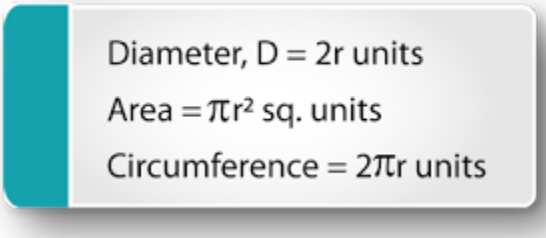
Right Angled Triangle:

Area = (½)b x h sq. units

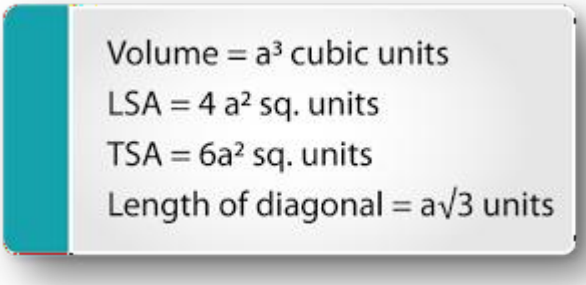
Perimeter = b + h + hypotenuse

Hypotenuse = $\sqrt{(b^2 + h^2)}$ units

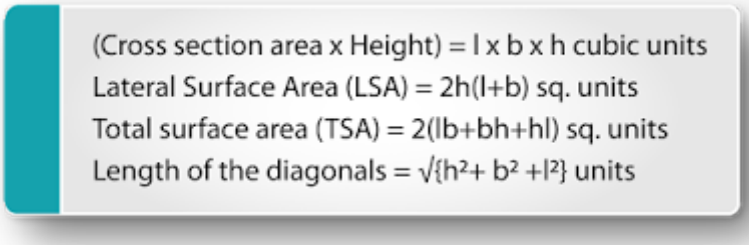
Circle:



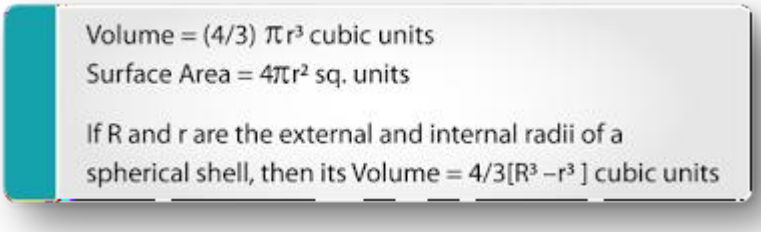
Cube:



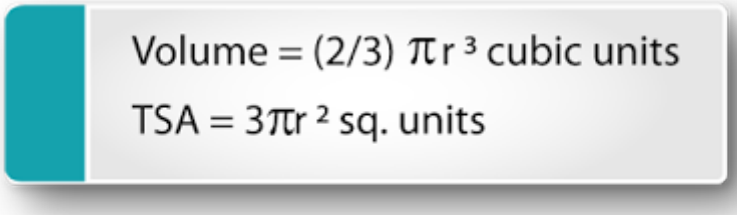
Cuboid:



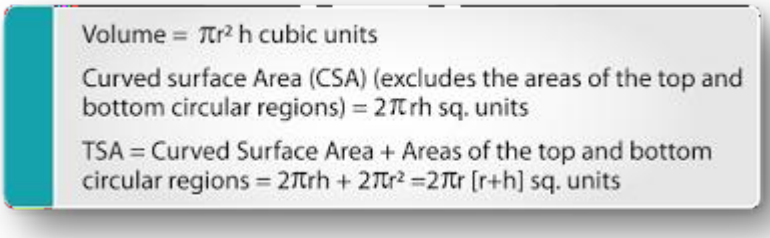
Sphere:



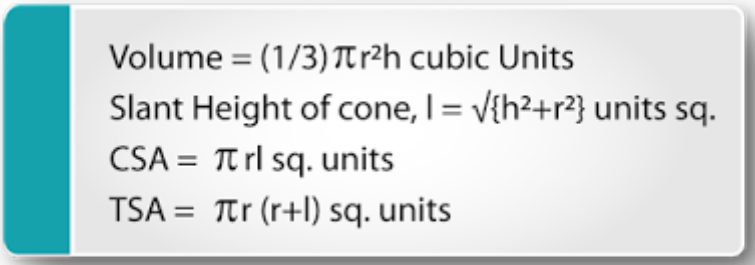
Hemisphere:



Cylinder:



Cone:



Practice Exercise:

1. The sides of a triangle are 51, 52, 53 cm, find the perpendicular from the opposite angle on the side of 52 cm. Also find the areas of the two triangles into which the original triangle is divided.
(a) 45 cm, 560 sq cm, 640 sq cm (b) 45 cm, 540 sq cm, 630 sq cm
(c) 48 cm, 540 sq cm, 630 sq cm (d) 48 cm, 530, sq cm, 640 sq cm

2. A plot of land is in the shape of a right angled isosceles triangle. The length of hypotenuse is $50\sqrt{2}$ m. The cost of fencing is Rs. 3 per metre. The cost of fencing the plot will be:
(a) less than Rs. 300 (b) less than Rs. 400 (c) more than Rs. 500 (d) more than Rs. 600

3. Perimeter of a square and an equilateral triangle is equal. If the diagonal of the square is $15\sqrt{2}$ cm, then find the area of the square.
(a) 144 sq cm (b) 225 sq cm (c) 288 sq cm (d) Data inadequate

4. The width of a rectangular hall is ¾ of its length. If the area of the hall is 300 sq m, then the difference between its length and width is:
(a) 3 m (b) 4 m (c) 5 m (d) 15 m

5. A ladder is placed so as to reach a window 63 m high. The ladder is then turned over to the opposite side of the street and is found to reach a point 56 m high. If the ladder is 65 m long, find the width of the street.
(a) 49 m (b) 45 m (c) 40 m (d) 59 m

6. The length of a rectangular field is twice its breadth. If the rent of the field at Rs. 3500 a hectare is Rs. 28000, find the cost of surrounding it with a fencing at Rs. 5 per metre.
(a) Rs. 6000 (b) Rs. 7000 (c) Rs. 6500 (d) Rs. 8000

7. A man walked 20 m to cross a rectangular field diagonally. If the length of the field is 16 m, the breadth of the field is:
(a)4 m (b) 16 m (c) 12 m (d) Can't be determined

8. A rectangular carpet has an area of 120 m^2 and a perimeter of 46 m. The length of its diagonal is:
(a) 15 m (b) 16 m (c) 17 m (d) 20 m

9. When the length of a rectangular plot is increased by four times its perimeter becomes 480 metres and area 12800 sq m. What was its original length (in metre)?
(a) 160 (b) 40 (c) 20 (d) Can't be determined

10. If the width of a rectangle is 2 m less than its length, and its perimeter is 32 m, the area of the rectangle is:

(a) 224 m^2 (b) 108 m^2 (c)99 m^2 (d)63 m^2

11. A hemispherical bowl has inner diameter 42 cm. The quantity of liquid that the bowl can hold (in cm^3)is: (a)$\frac{2}{3} X \frac{22}{7} X 21^3$ (b) $\frac{2}{3} X \frac{22}{7} X 21^3$ (c) $\frac{2}{3} X \frac{22}{7} X 21^3$ (d)$\frac{2}{3} X \frac{22}{7} X 42^3$

12. If a right circular cone of vertical height 24 cm has a volume of 1232 cm^3, then the area of its curved surface in is:
(a) 1254 (b) 704 (c) 550 (d) 154

13. A right cylindrical vessel is full with water. How many right cones having same diameter and height as those of right cylinder will be needed to store that water?
(a) 2 (b) 3 (c) 4 (d) 5

14. A reservoir is in the shape of a frustum of a right circular cone. It is 8 m across at the top and 4 m across the bottom. It is 6 m deep. Its capacity is:
(a)176 m^3 (b)196 m^3 (c)200 m^3 (d)110 m^3

15. How many bricks 20 cm × 10 cm × 7.5 cm can be carried by a truck whose load is 5 metric tons? The bricks in questions weigh 2500 kg per cubic meter.
(a) 1333 (b) 1233 (c) 1332 (d) 1433

16. The dimensions of an open box are 52 cm, 40 cm and 29 cm .Its thickness is 2 cm. If 2 $cm^3$of metal used in the box weight 0.5 gm., the weight of the box is:
(a) 8.56 kg (b) 7.76 kg (c) 7.756 kg (d) 6.832 kg

17. The water in a rectangular reservoir having a base 80 meters by 60 meters is 6.5 meters deep. In what time can the water be emptied by a pipe of which the cross section is a square of side 20 cm, if the water runs through the pipe at the rate of 15 km per hour?
(a) 26 hrs (b) 52 hrs (c) 65 hrs (d) 42 hrs

18. A cubic meter of copper weighing 9000 kilograms is rolled into a square bar 9 meters long. An exact cube is cut off from the bar. How much does it weigh?
(a) 444.3 kg. (b) 333.3 kg. (c) 222.2 kg. (d) 455.3 kg.

19. If 1 cm^3 cast iron weighs 21 gm, then weight of a cast iron pipe of length 1 m with a bore of 3 cm and in which thickness of metal is 1 cm, is:
(a) 21 kg (b) 24.2 kg (c) 26.4 kg (d) 18.6 kg

20. A cylinder of radius 2 cm and height 15 cm is melted and the same mass is used to create a sphere. What will be the radius of the sphere?
(a) $\sqrt[3]{45}$ (b) $\sqrt[3]{35}$ (c) $\sqrt[3]{55}$ (d) $\sqrt[3]{65}$

Section 8: Permutation & Combination

The study of permutations and combinations is concerned with determining the number of different ways of arranging and selecting objects out of a given number of objects, without actually listing them. There are some basic counting techniques that will be useful in determining the number of different ways of arranging or selecting objects. The two basic counting principles are given below-

Fundamental principle of counting

Suppose an event E can occur in m different ways and associated with each way of occurring of E, another event F can occur in n different ways, then the total number of the occurrence of the two events in the given order is $m \times n$.

Addition principle:

If an event E can occur in m ways and another event F can occur in n ways, and suppose that both cannot occur together, then E or F can occur in m + n ways.

Permutations:

A permutation is arrangement of objects in a definite order.

Permutation of n different objects:

The number of permutations of n objects taken all at a time, denoted by the symbol nPn, is given by

$^{n}P_{n} = n!$

where $n = n(n – 1) (n – 2) ... 3.2.1$, read as factorial n, or n factorial.

The number of permutations of n objects taken r at a time, where $0 < r \leq n$, is given by

$^{n}P_{r}$

Factorial:

Let n be a positive integer. Then n factorial (n!) can be defined as $n! = n(n-1) (n-2) ...1$

Combinations:

Each of the different groups or selections formed by taking some or all of a number of objects is called a combination.

Difference between Permutation and Combination

Sometimes, it will be clearly stated in the problem itself whether permutation or combination is to be used. However, if it is not mentioned in the problem, we have to find out whether the question is related to permutation or combination.

Consider a situation where we need to find out the total number of possible samples of two objects which can be taken from three objects P, Q, R. To understand if the question is related to permutation or combination, we need to find out if the order is important or not.

If order is important, PQ will be different from QP, PR will be different from RP and QR will be different from RQ. If order is not important, PQ will be same as QP, PR will be same as RP and QR will be same as RQ. Hence,

If the order is important, the problem will be related to permutations.

If the order is not important, the problem will be related to combinations.

For permutations, the problems can be like "What is the number of permutations the can be made", "What is the number of arrangements that can be made", "What are the different number of ways in which something can be arranged", etc.

For combinations, the problems can be like "What is the number of combinations the can be made", "What is the number of selections the can be made", "What are the different number of ways in which something can be selected", etc.

Mostly problems related to word formation, number formation etc. will be related to permutations. Similarly, most problems related to the selection of persons, the formation of geometrical figures, distribution of items (there are exceptions for this) etc. will be related to combinations.

Note: The term repetition is very important in permutations and combinations. Consider the same situation described above where we need to find out the total number of possible samples of two objects which can be taken from three objects P, Q, R.
If repetition is allowed, the same object can be taken more than once to make a sample.
i.e., if repetition is allowed, PP, QQ, RR can also be considered as possible samples.
If repetition is not allowed, then PP, QQ, RR cannot be considered as possible samples
Normally repetition is not allowed unless mentioned specifically.

Number of Combinations of n distinct things taking r at a time:
Number of combinations of n distinct things taking r at a time (${}^nC_r$) can be given by

${}^nC_r = n!(r!)(n-r)!=n(n-1)(n-2)\cdots(n-r+1)r!$where $0\le r\le n$

If $r > n$, ${}^nC_r = 0$
Special Case: ${}^nC_0 = 1$
${}^nC_r$ is also denoted by C (n, r). ${}^nC_r$ occurs in many other mathematical contexts as well where it is known as binomial coefficient and denoted by (nr)
Examples
i. ${}^8C_2 = 28$

ii. ${}^5C_4= 5$

Useful Relations -

$n! = n.(n-1)!$

${}^nC_r={}^nP_r*r!$

${}^nP_n = n!$

${}^nP_0 = 1$

${}^nP_1 = n$

${}^nP_n = {}_nP_{n-1}$

${}^nP_r = nx({}^{n-1}P_{r-1})$

${}^nC_r = {}^nC_{(n-r)}$

${}^nC_n = 1$

${}^nC_0 = 1$

${}^nC_0 + {}^nC_1 + {}^nC_2 + ... + {}^nC_n = 2^n$

${}^nC_{r-1} + {}^nC_r =$ ${}^{(n+1)}C_r$ (It is nothing but the famous Pascal's Law)

${}^nC_r / {}^nC_{r-1}=n-r+1/r$

If ${}^nC_x = {}^nC_y$ then either x = y or (n-x) = y

If you are dealing with identical objects-

The number of selections of r objects out of 'n' identical objects is 1.
A total number of selections of zero or more objects from 'n' identical objects is n+1.

Permutations of Objects when All Objects Are Not Distinct

The number of ways in which n things can be arranged taking them all at a time when p_1 of the things are exactly alike of 1st type, p_2 of them are exactly alike of a 2nd type, and p_r of them are exactly alike of rth type and the rest of all are distinct is-

$$\frac{n!}{p1! * p2! \dots \dots . pr!}$$

Permutations with Repetition: Number of permutations of n distinct things taking r at a time (Repetition allowed)-

The number of permutations of n distinct things taking r at a time when each thing may be repeated any number of times is $\mathbf{n^r}$.

Circular Permutations: Case 1: when clockwise and anticlockwise arrangements are different-
Number of circular permutations (arrangements) of n different things is (n-1)!

Circular Permutations: Case 2: when clockwise and anticlockwise arrangements are not different-

Number of circular permutations (arrangements) of n different things, when clockwise and anticlockwise arrangements are not different (i.e., when observations can be made from both sides), is-

½*(n-1)!

Practice Questions

1. In how many different ways can 5 persons stand in a row for a photograph?
a) 100 b) 120 c) 50 d) 5 e) None of these

2. How many different words can be formed using the letters of the word 'BANKER'?
a) 120 b) 6 c) 720 d) 12 e) None of these

3. A set of 12 books has 3 identical Quant books, 3 identical Reasoning books, 4 identical English books and 2 different books on General Awareness. In how many different ways can these 12 books be arranged in a book- shelf?
a) 12! b) 12!/(3!x3!x4!) c) 12!/(3!x3!x4!x2!) d) 126 e) None of these

4. In how many ways can a set of chess pieces consisting of a king, a queen, two identical rooks, two identical knights and two identical bishops be placed on the first row of a chessboard?
a) 8! b) 8^8 c) 5040 d) 4280 e) None of these

5. In how many ways can the letters of the word PLUMBER be arranged such that all the vowels are always together?
a) 6! x 2! b) 7! c) 5! x 2! d) 6! e) None of these

6. How many 4 digit numbers can be formed with the digits 0, 1, 3 and 6?
a) 6 b) 4! c) 9 d) 18 e) None of these

7. In how many ways can 6 persons be seated around a circular table for dinner?
a) 6! b) 5! c) 5!/2 d) 6!/2 e) None of these

8.How many different garlands can be made using 12 flowers of different colors?
a) 12! b) 11! c) 11!/2 d) 12!/2 e) None of these

9. How many bracelets can be made by stringing 9 different colored beads together?
a) 20160 b) 40320 c) 80640 d) 10080 e) None of these

10. Eight boys participated in each of 5 different competitions. In how many different ways can the winner prize be given for all the competitions?
a) 5 b) 5! c) 8^5 d) ${}^8P_5$ e) None of these

11. In how many ways can the top three ranks be awarded for a particular exam/competition involving 12 participants?
a) 12! b) 3! c) 12!/3! d) ${}^{12}P_3$ e) None of these

12. In how many different ways can a committee of 8 persons be formed out of 5 men and 3 women?
a) 8! b) 8 c) 1 d) ${}^8C_3$ e) None of these

13. In how many different ways can a cricket team of 11 players be chosen out of total 14 players?

a) 356 b) 364 c) 256 d) 712 e) None of these

14. A committee of 5 members is to be formed out of 5 professors, 6 Teachers and 3 Readers. In how many different ways can this be done such that.

(i). The committee consists of 2 Professors, 2 Teachers and 1 Reader

a) 450 b) 225 c) 55 d) 90 e) None of these

(ii).The committee includes all the 3 Readers

a)90 b) 180 c) 21 d) 55 e) None of these

15. A committee of 5 members is to be formed out of 3 trainees, 4 professors and 6 research associates. In how many different ways can this be done if

(i). The committee should have all 4 professors and 1 research associate or all 3 trainees and 2 professors

a)12 b) 13 c) 24 d) 52 e) None of these

(ii). The committee should have 2 trainees and 3 research associates.

a)15 b) 45 c) 60 d) 9 e) None of these

16. In how many ways can 3 women be selected out of 15 women if one particular woman is always included and two particular women are always excluded?

a) 66 b) 77 c) 88 d) 99 e) None of these

17. In how many ways can a person choose one or more out of 5 different subject books?

a) 15 b) 32 c) 31 d) 16 e) None of these

18. In how many ways can a person choose 1 or more out of 4 electrical appliances?

a) 10 b) 12 c) 14 d) 15 e) None of these

19. In a party, there are 15 persons and every person shakes hand with every other person. What will be the total number of handshakes?

a) 105 b) 120 c) 140 d) 210 e) None of these

20. How many parallelograms are formed by a set of 5 parallel lines intersecting another set of 8 parallel lines?

a) 56 b) 140 c) 280 d) 120 e) None of these

21. A sentence can be formed by choosing one word of each type from 7 nouns, 5 verbs and 2 adjectives written on a blackboard and we do not care about how much sense the sentence makes. How many different sentences can be formed?

a) $7^2\times 5^2\times 2^2$ b) $7^1\times 5^1\times 2^1\times 3^1$ c) $7!\times 5!\times 2!$ d) $2^7\times 2^5\times 2^2$ e) None of these

22. 1. There is a merry-go-round race going on.One person says,"1/3 of those in front of me and 3/4 of those behind me, give the total number of children in the race". Then the number of children took part in the race?

a) 10 b)12 c)13 d)15 e)can’t be determine

23. 46. A set of football matches is to be organized in a "round-robin" fashion, i.e., every participating team plays a match against every other team once and only once. If 21 matches are totally played, how many teams participated?

a) 7 b)9 c)11 d)13 e)None of these

Section 9: Probability

Probability is that branch of mathematics which deals with the measure of uncertainty in a various phenomenon that gives several results/out comes instead of a particular one. A numerical measure of 'Uncertainty' and denoted by P(E).

Experiment: An activity that produces some well-defined outcomes.

Random Experiment: An experiment in which all possible outcomes are known but the results cannot be predicted in advance.
Trial: Performing an experiment.

Outcome: Result of the trial.

Equally likely outcomes: Outcomes that have equal chances of occurrence.

Sample space: Collection of all possible outcomes.

Some special sample spaces:

Coin tossed once S = {H, T}, n(s) = 2 = 2^1
Coin tossed twice or two coins tossed simultaneously, S = {HH, HT,TH,TT}, n(s) = 4 = 2^2.
Coin tossed S thrice or three coins tossed simultaneously = {HHH, HTH, HHT, THH, TTT, TTH, THT, HTT}, n(s) = 8 = 2^3.
Die is thrown once , S = {1, 2, 3, 4, 5, 6}, n(s) = 6 = 6^1
Die is thrown twice or two dice are thrown simultaneously, S = {(1,1), (1,2), (1,3), (1,4), (1,5), (1,6), (6,6)}
n(s)= 36 = 6^2.

Event: Collection of some including no outcome or all outcomes from the sample space.

Probability of an event: P(E)=N(E)/N(S)

Sure Event: If no. of outcomes favorable to the event is equal to no. of total outcomes of the sample space or an event whose probability is 1.

Impossible Event: Having no outcome or an event whose probability is 0.

Range of Probability: Probability of an event always lies between 0 and 1 (0 and 1 inclusive)
i.e. $0 \leq P(E) \leq 1$.

Complementary Event: Event which occurs only when E does not occur and denoted by E. Probability of a complementary Event P (E') = 1 – P(E).

Sum of Probabilities: Sum of all the probabilities is 1 i.e. P(E1) + P1(E2) + P(E3) +$P(E_n)$ = 1 and P(E) + P(E')=1.

Practice Questions

1. When two coins are tossed simultaneously, what is the probability that both the coins show heads as output?
a) 1/6 b) 1/3 c) 1/2 d) 1/4 e) None of these

2. When three coins are tossed simultaneously, what is the probability that two coins show tails as output?
a) 1/8 b) 3/8 c) 1/2 d) 5/8 e) None of these

3. When two dice are rolled together, what is the probability that the sum of the outputs is 8?
a) 1/36 b) 7/36 c) 5/36 d) 8/36 e) None of these

Directions: Study the given information carefully and answer the questions that follow:

4. A box contains 6 red, 4 blue, 2 green and 3 yellow marbles.If four marbles are picked at random, what is the probability that two are blue, one is green and one is yellow?
a) 12/455 b) 13/35 c) 11/15 d) 7/91 e) None of these

5. If three marbles are picked at random, what is the probability that all are red?
a) 1/6 b) 1/21 c) 2/15 d) 5/21 e) None of these

6. If two marbles are picked at random, what is the probability that either both are yellow or both are green?
a) 5/91 b) 1/35 c) 1/3 d) 4/10 e)None of these

7. If two marbles are picked at random, what is the probability that none is yellow?
a) 3/91 b) 1/5 c) 22/35 d) 7/15 e) None of these

8. If three marbles are picked at random, what is the probability that at least one is blue?
a) 4/15 b) 58/91 c) 11/15 d) 22/91 e) None of these

Directions: Study the following information carefully to answer the questions that follow:

A box contains 2 blue caps, 4 red caps, 5 green caps and 1 yellow cap.

9. If two caps are picked at random, what is the probability that both are blue?
a) 1/6 b) 1/10 c) 1/12 d) 1/45 e) None of these

10. If one cap is picked at random, what is the probability that it is either blue or yellow?
a) 2/9 b) 1/4 c) 3/8 d) 6/11 e) None of these

11. Find the probability that a leap year is selected at random will contain 53 Sundays.

a) 5/7 b)3/4 c)4/7 d)2/7

12. The odds in favour of an event are 2:7.Find the probability of this event?

a) 2/9 b)5/12 c)7/12 d)2/5

13. A basket contain 6 blue, 2 red, 4 green and 3 yellow balls .If 2 balls are picked at random, what is the probability that eithet both are green or both are yellow?

a). 2/5 b). 3/35 c). 1/3 d). 3/91 e). None of these

14. A basket contain 6 blue, 2 red, 4 green and 3 yellow balls .If 5 balls are picked at random, what is the probability that at least one is blue?
a). 137/143 b). 9/91 c). 18/455 d). 2/5 e). None of these

15. A basket contain 6 blue, 2 red, 4 green and 3 yellow balls .If 2 balls are picked at random ,what is the probability that both are blue?
a). 1/5 b). 8/91 c). 2/15 d). 7/27 e). None of these

16. A basket contain 6 blue, 2 red, 4 green and 3 yellow balls If 4 balls are picked at random, What is the probability that 2 are green and 2 are red?
a). 4/15 b). 5/27 c). 1/3 d). 2/455 e). None of these

17. One ball is picked up randomly from a bag containing 8 yellow, 7 blue and 6 black balls. What is the probability that it is neither yellow nor black?
a) 1/3 b) ¼ c) 1/2 d) 3/4

18. A bag contains 4 blue, 5 white and 6 green balls. Two balls are drawn at random. What is the probability that both the balls are blue?
a) 2/35 b) 1/17 c) 1/15 d) 2/21

19. A bag contains 4 blue, 5 white and 6 green balls. Two balls are drawn at random. What is the probability that one ball is white?
a) 10/21 b) 1/2 c) 3/4 d) 2/35

20. Five sweets are distributed among five children. Find the probability that at least one of them does not get any sweet.
a) 601/652 b)600/623 c)601/625 d)None of these

Section 10: Data Interpretation

DI- 1: Table gives the number of candidates appeared in the examination and percentage of students passed from various institutes over the year.

School	A		B		C		D		E		F	
Year	App	Pass	App	Pass	App	Pass	App	Pass	App	Pass	App	Pass
2001	450	60	540	40	300	65	640	50	600	45	680	60
2002	520	50	430	70	350	60	620	40	580	70	560	70
2003	430	60	490	70	380	50	580	50	680	70	700	66
2004	400	65	600	75	450	70	600	75	720	60	780	70
2005	480	50	570	50	400	75	700	65	700	48	560	50
2006	550	40	450	60	500	68	750	60	450	50	650	60
2007	500	58	470	60	470	60	720	70	560	60	720	50

1. What is the total number of students passed from all institutes together in the year 2006?
a)1895 b)985 c)1295 d)1465 e) None of these

2. Approximately what is the overall percentage of students passed from institute C for all the year?

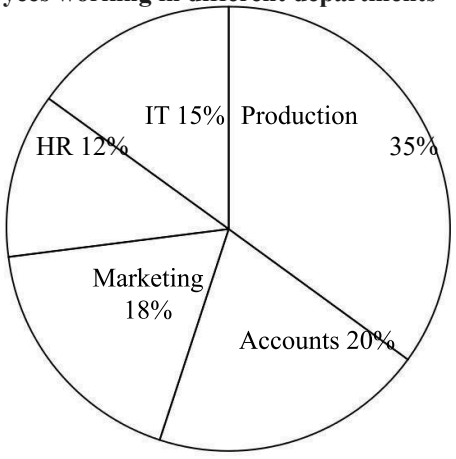
1)160 b)70 c)75 d)55 e)65

3. What is the ratio of the number of students passed from institute F in 2003 to the number of students passed from institute B in 2005?
a) 95:154 b)154:95 c)94:155 d)155:94 e) None of these

4. What is the ratio of the average number of students appeared from institute A for all the years to that from institute D?
a) 463:33 b)353:463 c)461:333 d)333:461 e) None of these

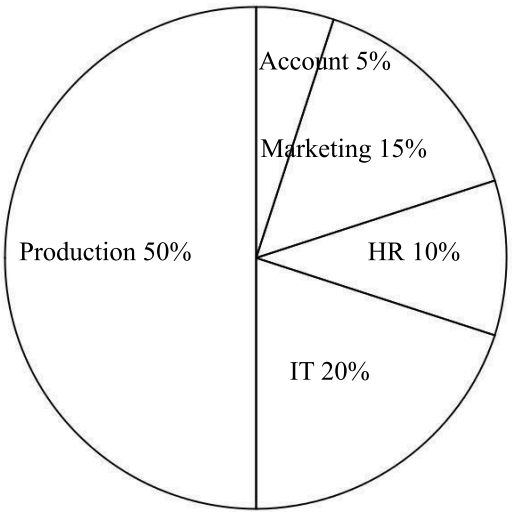
5. What is the overall percentage of students passed all the institutes together in 2004?
a)68 b)70 c)69 4)71 e) None of these

DI 2: Study the following charts and answer the following questions
Break up of Employees working in different departments



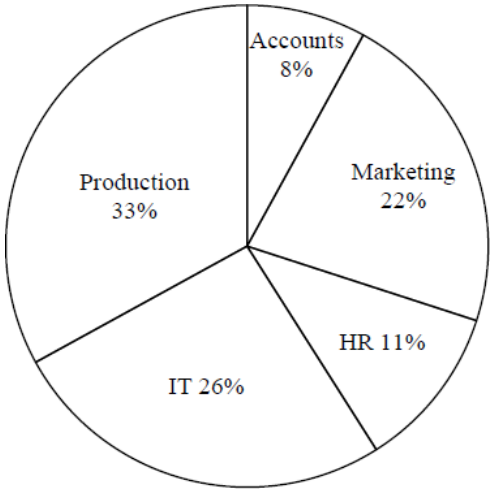
Total number of employees = 3600

Break up of the number of males working in each department



Total number of males in the organization=2,040

Break up of number of employees who recently got promoted in each department



Total Number of employees who got promoted=1,200

6. If half of the number of employees who got promoted from the IT department were males, what was the approximate percentage of males who got promoted from the IT department?
a) 61 b) 29 c) 54 d) 42 e) 38

7. What is the total number of females working in the Production and Marketing departments together?
a) 468 b) 812 c) 582 d) 972 e) None of these

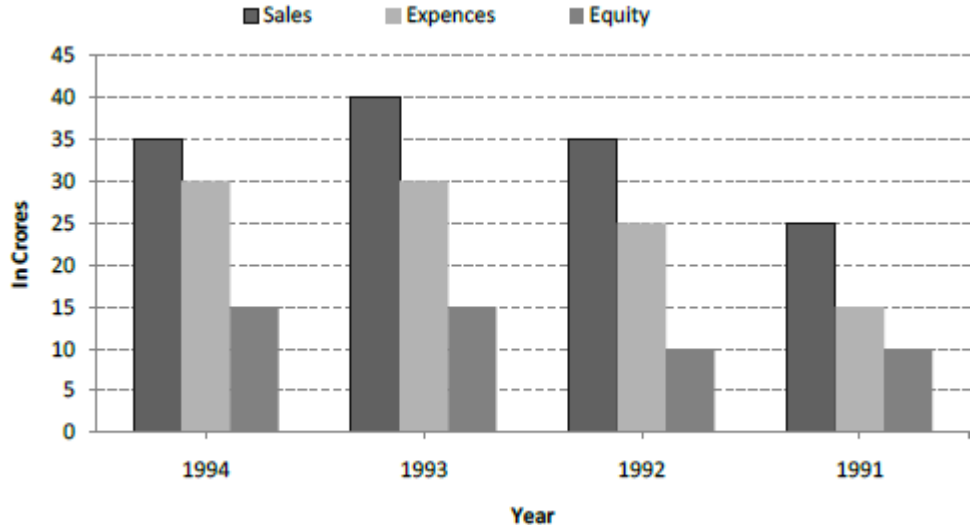
8. What will be the angle made at the centre by the sector showing the number of male in marketing department?
a) 54 b) 45 c) 64 d) 62 e) None of these

9. The total number of employee who got promoted from all the department together was what per cent of the total number of employees working in all the departments together? (Rounded off to the nearest integer).
a) 56 b) 21 c) 45 d) 33 e) 51

10. What is the ratio of the number of employees who got promoted from the HR department to the number of male employees in IT department?

a) 36.19 b) 11:34 c) 47:22 d) 28:17 e) None of these

DI 3: Sales (S), Expenses (E) and the Equity Base (EB) of a company ABC Ltd over different years in ` Crores
Profit = Sales - expenses
Shareholder's return = Profit/Equity Base
Profitability = Profit/Sales



11. Maximum profitability is attained during which year?
a) 1992 b) 1991 c) 1993 d)1994

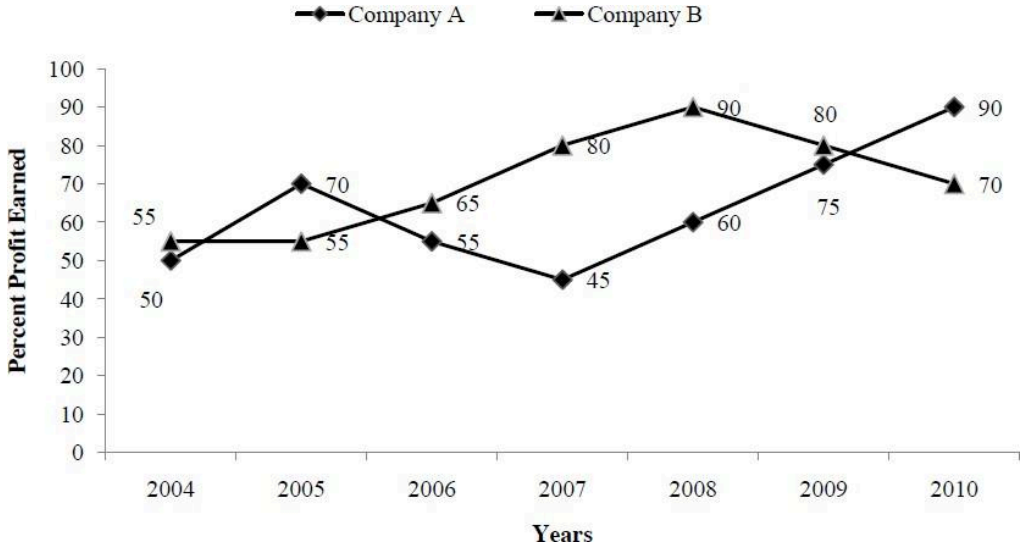
12. Minimum shareholder's return is observed during?
a) 1994 b) 1991 c) 1993 d) 1992

13. Minimum profitability is observed during which year?
a) 1991 b) 1992 c) 1993 d)1994

14. Total profit over the period shown is (crore)?
a) 30 b) 45 c) 35 d) 25 e) None of these

15. Expenses over the entire period as a percentage of Sales for the same period is
a)68 % b) 74% c) 60% d) 80% e) None of these

DI 4: Percent profit made by two companies over the years



16. If the profit earned in 2006 by Company B was 8, 12,500.what was the total income of the company in that year?
a)12,50,000 b)20,62,500 c) 16,50,000 d)18,25,000 e) None of these

17. If the amount invested by the two companies in 2005 was equal, what was the ratio of the total income of the Company A to that of B in 2005?
a) 31 : 33 b) 33: 31 c) 34 : 31 d) 14 : 11 e) None of these

18. If the total amount invested by the two companies in 2009 was ` 27 lakh, while the amount invested by Company B was 50% of the amount invested by Company A, what was the total profit earned by the two companies together?
a)21.15 lakh b)20.70 lakh c)18.70 lakh d)20.15 lakh e) None of these

19. If the income of Company A in 2007 and that in 2008 were equal and the amount invested in 2007 was 12 lakh, what was the amount invested in 2008?
a) 10,87,500 b)10,85,700 c) 12,45,000 d) 12,85,000 e) None of these

20. If the amount of profit earned by Company A in 2006 was 10.15 lakh, what was the total investment?
a) 13.8 lakh b) 14.9 lakh c) 15.4 lakh d) 14.2 lakh e) None of these

DI 5 - Study the information carefully to answer the questions that follow:

A school consisting of a total of 1560 students has boys and girls in the ratio of 7:5. All the students are enrolled in different types of hobby classes, viz Singing, Dancing and Painting classes. Twenty per cent of the girls are enrolled in only painting classes. Ten per cent of the boys are enrolled in only Singing classes. Twenty four per cent of the girls are enrolled in both Singing and Dancing classes together. The number of girls enrolled in only Singing classes is two hundred per cent of the boys enrolled in the same. One-thirteenth of the boys are enrolled in all the three classes together.

The ratio of boys enrolled in Dancing and Painting classes together to the girls enrolled in the same is 2:1. Ten per cent of the girls are enrolled in only Dancing classes whereas eight per cent of the girls are enrolled in both Dancing and Painting classes together. The remaining girls are enrolled in all the three classes together. The number of boys enrolled in Singing and Dancing classes together is fifty per cent of the number of girls enrolled in the same. The remaining boys are enrolled in only Painting classes. Number of boys enrolled in only dancing is same as those of girls enrolled in singing.

21. What is the total number of boys who are enrolled in Dancing?
a) 318 b) 364 c)292 d) 434 e) none of these

22. Total number of girls enrolled in Singing is approximately what per cent of the total number of students in the school?
a) 37 b) 19 c) 32 d) 14 e) 26

23. What is the total number of students enrolled in all the three classes together?
1)135 b) 164 c) 187 d) 142 e) None of these

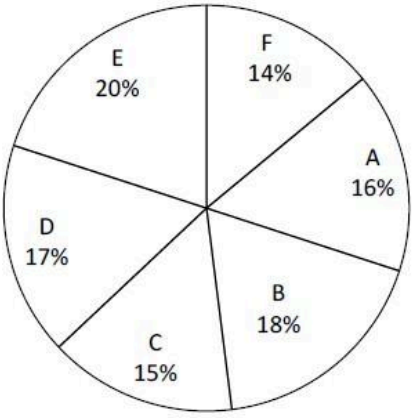
24. Number of girls enrolled in only Dancing classes is what percent of the boys enrolled in the same? (rounded off to two digits after decimal)
a) 38.67 b) 35.71 c) 41.83 d) 28.62 e) None of these

25. What is the ratio of the number of girls enrolled in only Painting classes to the number of boys enrolled in the same?
a) 77:26 b) 21:73 c) 26:77 d) 73:21 e) None of these

DI6: Study the following graph and answer the following questions

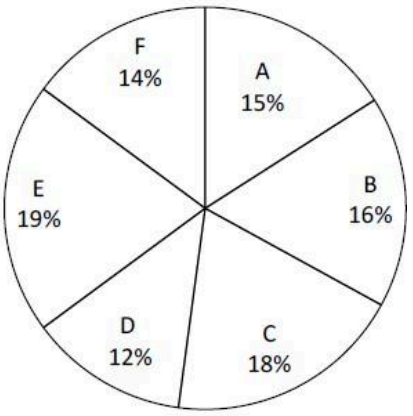
Percentage of adult population (Graduates and upto XII std pass) in various states of the country

Graduates



Total = 24 lakhs

Upto XII STD pass



Total = 32 lakhs

Male : Female Ratio of the adult population in various states of the country

State	**Graduates**	**Upton XII Std Pass**
	M : F	**M : F**
A	7 : 5	7 : 9
B	5 : 3	3 : 5
C	5 : 4	4 : 5
D	9 : 8	5 : 7
E	9: 7	9 : 10
F	4 : 3	3 : 2

26. What is the difference between the Graduate male population and XII Std male population from State A?
a) 24,000 b) 14,000 c) 28,000 d) 36,000 e) None of these

27. What is the ratio of the Graduate female population of State E to Std XII female population of State D?
a) 7:5 b) 5:7 c) 16:15 d) 15:16 e) None of these

28. The Graduate female population of State C is what per cent of the Std XII female population of that State?
a) 40 b) 62.5 c) 50 d) 52.5 e) None of these

29. Std XII male population of State C is what per cent of the total Std Xll population of all the states together?
a) 8% b)12% c)11% d)9% e)None of these

30. What is the ratio of the Graduate male population of State E to the Std XII female population of that State?
a) 28:35 b) 35:28 c) 32:45 d) 45:32 e) None of these

31. Total Graduate population of State F is what per cent of the total Std XII population of State A?

a) 56 b) 72 c) 68 d) 76 e) None of these

32. Std XII male population of State E is what per cent of the Std XII male population of State F?

a) 70 b) 75 c) 68 d) 72 e) None of these

33. What is the ratio of the total Graduate and Std XII male population of State A to the total Graduate and Std XII female population of that State?
a) 215 : 216 b) 214:215 c) 217: 215 d) 215: 217 e) None of these

34. What is the ratio of the total Graduate population of State D to the total Std XII population of that State?
a) 17: 19 b) 19: 17 c) 64:51 d) 51: 64 e) None of these

35. The Graduate female population of State B is what percent of the Graduate female population of State E? (rounded off to the nearest integer)
a) 129 b) 82 c) 77 d) 107 e) None of these

DI 7: Refer to the following Information to answer the question that follow ABC Ltd. is operating in 4 businesses Viz. beverages, automobiles, refrigeration and electronics. The net capital allotted for these four each year is in proportion to the profit they generated in the previous year. Furthermore, the capital allotted to them in the previous year was ` 32 Crores, ` 38 crores, `41 crores and `45 crores respectively for beverages, automobiles, refrigeration and electronics. The net profit generated in the previous year was shared in the ratio as follows – 20%, 30%, 15% and 35%, in the same order. The profit this year has increased by 3%, 2%, 6% and 7% in the same order. Further more, the company is planning to get out of the refrigeration business and divide its capital equally among the remaining three. The total capital to be allotted this year is `40 crores. The net profit last year was `10 crores.

36. The profit (in crores) for beverages this year is
a) 4.3 b)2.06 c) 1 d) 6.01 e) None of these

37. Total profits (in crores) generated this year is
a) 14.33 b) 22.22 c) 6.82 d) 10.46 e) None of these

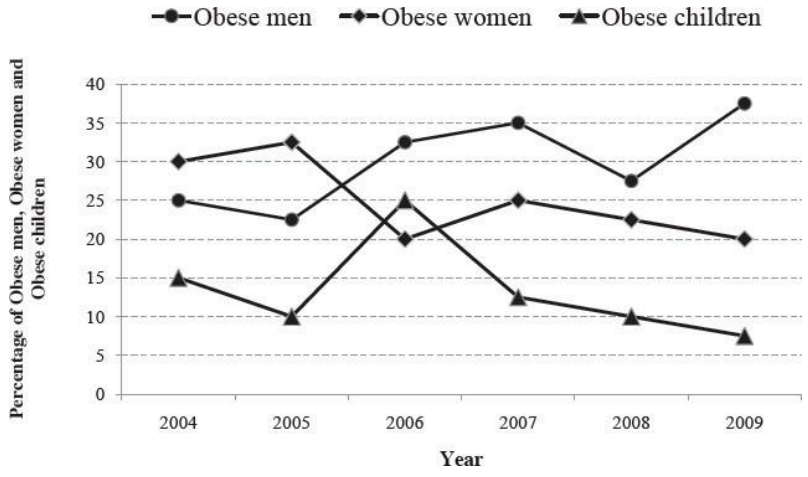
38. The capital (in crores) allotted for automobiles this year is
a) 8 b) 10 c) 12 d) 16 e) None of these

39. After the closure of the refrigeration business, the capital (in crores) allocated this year for electronics is
a) 16 b) 24 c) 10 d) 20 e) None of these

40. The capital (in crores) allotted for electronics this year is
a) 10 b) 12 c) 14 d) 16 e) None of these

DI 8: Study the following graph and answer the following questions

Percentage of Obese men. Obese women and obese children in the state for the give years



Total Number of Men, Women and Children in the state over the years

Years	Men	Women	Children
2004	54000	38000	15000
2005	75000	64000	21000
2006	63000	60000	12000
2007	66000	54000	16600
2008	70000	68000	20000
2009	78000	75000	45000

41. What was the approximate average of obese men, obese women and obese children in 2007?
a) 12,683 b) 12,795 c) 12,867 d) 12,843 e) 12,787

42. The number of obese men in the year 2009 was what percent of the men not suffering from obesity in the same year?
a) 55 b) 60 c) 50.5 d) 65.5 e) None of these

43. What was the ratio of the obese women in the year 2006 to the obese men in the year 2008?
a) 6 : 7 b) 21:65 c) 15:73 d) 48:77 e) None of these

44. What is the difference between the number of obese women and obese children together in the year 2006 and the number of obese men in the same year?
a) 5,475 b) 5,745 c) 4,530 d) 31,650 e) None of these

45. What was the total number of children not suffering from obesity in the year 2004 and 2005 together?
a) 4,350 b) 31,5 0 c) 4,530 d) 31,650 e) None of these

DI 9: The following table shows the number of new employees added to different categories of employees in a company and also the no of employees from these categories who left the company ever since the foundation of the company in 1995.

Year	Managers		Technicians		Operators		Accountants		Peons	
	New	Left	New	Left	New	Left	New	Left	New	Left
1995	760	---	1200	---	880	---	1160	---	820	---
1996	280	120	272	120	256	104	200	100	184	96
1997	179	92	240	128	240	120	224	104	152	88
1998	148	88	236	96	208	100	248	96	196	80
1999	160	72	256	100	192	112	272	88	224	120
2000	193	96	288	112	248	144	260	92	200	104

46. During the period of 1995 and 2000, the total no of operators who left the company is what percent of the total number of Operators who joined the company?
A. 19% B. 21% C. 27% D. 29% E. 32%

47. For which of the following categories the percentage increase in the number of employees working in the company from 1996 to 2000 was maximum?A. Managers B. Technicians C. Operators D. Accountant E. Peons.

48. What is the difference between total number of Technicians added to the company and total number of Accountants added to the company during the year 1996 to 2000 at the maximum?
A. 128 B. 112 C. 96 D. 88 E. 72

49. What was the total no. of peons working in the company in the year 1999?
A. 1312 B. 1192C.1088 D.968 E.908

50. What is the pooled average of all employees in the year 1997?
A. 1325 B. 1285 C. 1265 D.1235 E. 1195

Answer:
Numbers:

1.d	2.a	3.e	4.d	5.c	6.e	7.d	8.a	9.b	10.b
11.b	12.c	13.c	14.a	15.a	16.b	17.d	18.b	19.b	20.b
21.c	22.c	23.b	24.d	25.c	26.a	27.16	28.160	29.881	30.a.8
30.b.6	31.71842	32.220ft							

Percentage:

1.b	2.a	3.b	4.c	5.b	6.b	7.a	8.d	9.b	10.b
11.b	12.b	13.c	14.a	15.d	16.c	17.a	18.c	19.b	20.c

Profit and Loss:

1.B	2.B	3.B	4.A	5.B	6.C	7.C	8.C	9.D	10.C
11.A	12.C	13.C	14.A	15.C	16.B	17.A	18.D	19.C	20.B
21.A	22.D	23.C	24.C	25.D	26.C	27.A	28.D	29.B	30.D

Time, Speed and Distance:

1.c	2.c	3.a	4.b	5.c	6.e	7.b	8.c	9.a	10.b
11.c	12.a	13.d	14.d	15.b	16.c	17.c	18.a	19.a	20.a
21.a	22.c	23.d	24.a	25.7:15&8:15	26.A	27.b	28.Doug	29.b	30.a
31.c	32.d	33.a	34.a	35.b					

Time and Work:

1.d	2.d	3.a	4.a	5.d	6.c	7.c	8.b	9.b	10.c
11.c	12.b	13.b	14.b	15.c	16.c	17.a.8	17.b.6	18.a	19.c

Mixture and Alligation:

1.B	2.B	3.D	4.D	5.A	6.A	7.A	8.B	9.C	10.A
11.d	12.b	13.c	14.c	15.b	16.d	17.c	18.a	19.b	20.a

Mensuration:

1.b	2.c	3.b	4.c	5.a	6.a	7.c	8.c	9.b	10.d
11.a	12.c	13.b	14.a	15.a	16.d	17.b	18.b	19.c	20.a

Permutation and Combination:

1.b	2.c	3.b	4.c	5.a	6.d	7.b	8.c	9.a	10.c
11.d	12.c	13.b	14.(i).a	14.(ii).d	15.(i).a	15.(ii).c	16.a	17.c	18.d
19.a	20.c	21.c	22.c	23.a					

Probability:

1.d	2.b	3.c	4.a	5.b	6.d	7.c	8.b	9.e	10.b
11.d	12.a	13.b	14.a	15.d	16.d	17.a	18.a	19.a	20.c

Data Interpretation:

1.a	2.e	3.b	4.d	5.c	6.e	7.c	8.a	9.d	10.b
11.b	12.a	13.d	14.c	15.b	16.b	17.c	18.b	19.a	20.e

21.d	22.e	23.a	24.b	25.c	26.b	27.d	28.c	29.a	30.e
31.e	32.b	33.c	34.a	35.c	36.b	37.d	38.c	39.a	40.c
41.c	42.b	43.d	44.a	45.d	46.d	47.a	48.d	49.b	50.e

Practice Questions: English Language

Section 1: Spot the Errors

Tips for Error Spotting Questions

1. Certain nouns possess a singular form but still represent plurality and thus, take a plural verb when used in a sentence.
E.g. Cattle, peasantry, people, clergy, police. Thus,

- The Police has come (Incorrect)
- The Police have come (Correct)

2. Certain nouns always take the plural verb because their form is always plural.
E.g. Scissors, trousers, spectacles, thanks, premises. Thus,

- The scissors is kept on the table. (Incorrect)
- The scissors are kept on the table. (Correct)

3. When a number is followed by a noun denoting measure, length, money, number or weight, the form of the nouns does not change so long as they are followed by another noun or pronoun.
E.g. Million, pair, metre, year, dozen, foot, head. Thus,

- This is a nine-metres cloth. (Incorrect)
- This is a nine-metre cloth. (Correct)

4. When a number is followed by a noun denoting measure, length, money, number or weight, but these are not followed by another noun or pronoun, then they take the plural form.
E.g. Million, pair, metre, year, dozen, foot, head. Thus,

- This sari is nine yard long. (Incorrect)
- This sari is nine yards long. (Correct)

5. Certain nouns, especially of the collective category, are used as singular when they specify a unit.
E.g. Public, team, committee, government, audience, orchestra, company, jury. Thus,

- The public were unanimous in their opinion. (Incorrect)
- The public was unanimous in its opinion. (Correct)

6. Certain nouns, especially of the collective category, are used in plural when they specify a difference of opinion or class.
E.g. Public, team, committee, government, audience, orchestra, company, jury. Thus,

- The jury was divided in its opinion. (Incorrect)
- The jury were divided in their opinion. (Correct)

7. If the pronoun 'one' is used, it must be maintained throughout the sentence.
Thus,

- One must respect his elders. (Incorrect)
  One must respect one's elders. (Correct)

8. The word 'whose'is used for living people and 'which' is used for non-living things or ideas.
Thus,

- Which box is kept on the table? (Incorrect)
- Whose box is kept on the table? (Correct)

9. 'Less' is used to denote quantity while 'fewer' is used to denote number. Thus,

- No less than twenty people were (Incorrect)
- No fewer than twenty people were (Correct)

10. 'One of' is always followed by noun in the plural form.
Thus,

- She is one of the least important person in the office. (Incorrect)
- She is one of the least important people in the office. (Correct)

11. Only 'than' should be used after 'no other' Thus,

- I like no other movie but Titanic. (Incorrect)
- I like no other movie than Titanic. (Correct)

12. After the word 'Know', 'how, 'what' or 'when' should be used before using the infinitive.
Thus,

- I know to speak English. (Incorrect)
- I know how to speak English. (Correct)

13. If the verb indicates a purpose, an infinitive must be used and if the verb indicates a cause, a gerund must be used.
Thus,

- He went to the mall for watching a movie. (Incorrect)
- He went to the mall to watch a movie. (Correct)
- He was suspended to show indiscipline. (Incorrect)
- He was suspended for showing indiscipline.(Correct)

14. 'As' is not used with verbs like 'appointed', 'elected' , 'considered', 'called' but it is used with the word 'regard'.
Thus,

- He was elected as Secretary of the organisation. (Incorrect)
- He was elected Secretary of the organisation. (Correct)
- I regard Sahil my best friend. (Incorrect)
- I regard Sahil as my best friend. (Correct)

15. Adverbs should not be confused for adjectives. An adjective describes the characteristic of the subject while an adverb describes the action of the verb. Thus,

- The horse looked beautifully. (Incorrect)
- The horse looked beautiful. (Correct)

16. Question tags are always the opposite of the sentence which means that if the sentence is positive, the question tag is negative and vice versa.
Thus,

- You were dancing, were you? (Incorrect)
- You were dancing, weren't you? (Correct)

17. An infinitive verb should never be split.
Thus,

- I request you to kindly tell me. (Incorrect)
- I request you kindly to tell me. (Correct)

18. A pronoun after 'like', 'unlike' and 'let' takes an objective case. Thus,

- You will never find a woman like she. (Incorrect)
- You will never find a woman like her. (Correct)
- Let I do it. (Incorrect)
- Let me do it. (Correct)

19. The relative pronoun 'that'is used instead of 'who' or 'which' after adjectives in the superlative degree.
Thus,

- This is the best which she could do. (Incorrect)
- This is the best that she could do. (Correct)

20. To show equality 'as'is used both before and after the adjective. Thus,

- I can run as fast, if not faster than you. (Incorrect)
- I can run as fast as, if not faster than you. (Correct)

21. Even though 'More than one' indicates a plural sense, it agrees with a singular noun and takes a singular verb.
Thus,

- More than one students completed their project. (Incorrect)
- More than one student completed his project. (Correct)

22.'Scarcely' and 'hardly' are followed by 'when' and not by 'than'. Thus,

- Hardly had the teacher left the room than the pupils started enjoying.(Incorrect)
- Hardly had the teacher left the room when the pupils started enjoying. (Correct)

23. 'Though' is followed by 'yet' and not by 'but'.

Thus,

- Though he is poor but he is honest. (Incorrect)
- Though he is poor, yet he is honest. (Correct)

24. 'Lest' must be followed by 'should' or by nothing at all and 'Such' must be followed by 'as'.

Thus,

- Work hard lest you will fail. (Incorrect)
- Work hard lest you should fail. (Correct)
- Work hard lest you fail. (Correct)
- He is such a writer that everybody should read his books. (Incorrect)
- He is such a writer as everybody should read his books. (Correct)

25. 'Unless' expresses a condition and is always used in the negative sense. Thus 'not' is never used with 'unless'.

Thus,

- Unless you do not work hard, you will not excel in the examination. (Incorrect)
- Unless you work hard, you will not excel in the examination. (Correct)

26. 'When' denotes a general sense and 'while' implies a time duration of doing something.

Thus,

- When learning how to sing, technique is of utmost importance. (Incorrect)
- While learning how to sing, technique is of utmost importance. (Correct)

27. Some nouns always use a singular verb.

Eg: Advice, scenery, stationery, mathematics, news

- Mathematics are a difficult subject. (Incorrect)
- Mathematics is a difficult subject. (Correct)

28. 'Who' denotes the subject and 'whom' denotes the object.

- Whom do you think won the competition? (Incorrect)
- Who do you think won the competition? (Correct)
- Who did you talk to? (Incorrect)
- Whom did you talk to? (Correct)

29. The verb and pronoun in case of two nouns joined by 'either…or' or 'neither… nor' or by 'or' take the form of the latter noun.

- Either my father or my sister will use their credit card. (Incorrect)
- Either my father or my sister will use her credit card. (Correct)

30. The verb and pronoun are plural when there is one singular noun and one plural noun and is joined by the conjunction 'and'.

- The teacher and her students donated her money. (Incorrect)
- The teacher and her students donated their money. (Correct)

31. When there are two nouns joined by a preposition like 'with' or 'along with', the verb and pronoun take the form of the main (first) noun.

- Mansi, along with her students, were on their way to the movies. (Incorrect)
- Mansi, along with her students, was on her way to the movies. (Correct)

32. If the plural subject indicates a definite amount or quantity taken as a whole, it takes the verb in the singular form.

- Eighty kilometres are a good distance.(Incorrect)
- Eighty kilometres is a good distance. (Correct)

33. When two or more adjectives show the qualities of the same person or thing, all the adjectives must be in the same degree.

- Bhanu is more intelligent and wise than Manu. (Incorrect)
- Bhanu is more intelligent and wiser than Manu. (Correct)

34. When two singular nouns are joined by 'and' are preceded by 'each' or 'every' the pronoun used is singular.

- Each man and each boy must be rewarded for their good deeds. (Incorrect)
- Each man and each boy must be rewarded for his good deeds. (Correct)

35. 'No sooner' is always followed by 'than'.

- No sooner had the bell rung when the students started leaving the classroom. (Incorrect)
- No sooner had the bell rung than the students started leaving the room.(Correct)

36. 'No sooner' is always followed by 'does/do' or 'has/have' in the present tense and by 'did' or 'had' in the past tense.

- No sooner are the boys marching than the whistle blows. (Incorrect)
- No sooner do the boys march than the whistle blows.(Correct)

37.'A great many' is always followed by a plural noun and a plural verb.

- A great many invention has been declared successful. (Incorrect)
- A great many inventions have been declared successful. (Correct)

38. 'Some' is used in affirmative sentences to express quantity or degree. 'Any' is to be used in negative or interrogative sentences.

- I shall buy some books. (Correct)
- I shall not buy any books. (Correct)
- Have you bought any books? (Correct)

But 'some' might be used in interrogative sentences which are requests.

- Will you please give me some water? (Correct)

39. 'Since' indicates a point of time and 'for' stands for the length of time.

- He has been reading the book since three hours. (Incorrect)
- He has been reading the book for three hours. (Correct)
- It has been raining heavily for Monday. (Incorrect)
- It has been raining heavily since Monday. (Correct)

40. When we use 'everybody' 'everyone', 'anybody', and 'each' the pronoun of the masculine or the feminine gender is used with respect to the content.

- I shall be willing to help each of the girls in her practice. (Correct)

But when the gender is not mentioned, we use the pronoun of the masculine gender.

- Anyone can do this job if he tries. (Correct)
- Each of the boys in the class has finished their tasks. (Incorrect)
- Each of the boys in the class has finished his task. (Correct)

41. A singular pronoun is used for a collective nouns, and should be in the neuter gender if the collective noun is viewed as a whole.

- The pride gave away their location by roaring loudly. (Incorrect)

- The pride gave away its location by roaring loudly. (Correct)

42. When pronouns of different persons are to be used together in a sentence, the sequence of persons should be as follows: second person + third + first person in a normal sentence.

- Raju, I and you have finished the work. (Incorrect)
- You, Raju and I have finished our studies. (Correct)

43. 'Older' refers to persons as well as things and is usually followed by 'than'.

- Raju is elder than all other boys of this class. (Incorrect)
- Raju is older than all other boys of this class. (Correct)

'Elder' is used for members of the family.

- Suyash is my older brother. (Incorrect)
- Suyash is my elder brother. (Correct)

44. 'Than' is used in the comparative degree usually , but with words like superior, inferior, senior, junior, prior, anterior, posterior and prefer 'to' is used.

- Gandhi is preferred than Nehru. (Incorrect)
- Gandhi is preferred to Nehru. (Correct)

45. 'Many a' is always followed by the singular verb.

- Many a man were influenced by the speech. (Incorrect)
- Many a man was influenced by the speech. (Correct)

46. The singular verb is used when the subject is "the number of".

- The number of buildings are very low. (Incorrect)
- The number of buildings is very low. (Correct)

47. 'Since', 'because', 'as', 'for 'are often used alternatively, however there is a difference in their degree. Stronger cases use 'since' and 'because' and 'as' and 'for' are used in weak cases.

- I respect him as he is the best teacher. (Incorrect)
- I respect him because he is the best teacher. (Correct)

48. A pronoun is sometimes incorrectly used where it is not required at all. Eliminate the redundant ones.

- He, being an M.A., he is over qualified for the position. (Incorrect)
- He, being an M.A., is over qualified for the position. (Correct)

49. The relative pronoun 'that' is used instead of 'who' or 'which' after adjectives in the superlative degree.

- This is the best which the doctors could do. (Incorrect)
- This is the best that the doctors could do. (Correct)

50. When 'as if' is used in the sense of pretension, 'were' is used in all cases, even with third person singular.

- She behaves as if she was a queen. (Incorrect)
- She behaves as if she were a queen. (Correct)

51. A pronoun takes an objective case after 'let'.

- Let I show it. (Incorrect)
- Let me show it. (Correct)

52. Pronouns joined by 'and' are in the same case.

- He and me are friends. (Incorrect)
- He and I are friends. (Correct)

Practice Question:
Read the each sentence to find out whether there is any grammatical error in it. The error, if any will be in one part of the sentence. The letter of that part is the answer. If there is no error, the answer is 'D'. (Ignore the errors of punctuation, if any).

1. (A) We discussed about the problem so thoroughly /(B)on the eve of the examination/(C)that I found it very easy to work it out./ (D)No error.
2. (A) He fell from a running train /(B) and would have died /(C) if the villagers did not get him admitted in the nearby hospital immediately. / (D)No error.
3. (A) He is /(B) too intelligent /(C) to make a mistake. / (D)No error.
4. (A) He was sure /(B) that he should /(C) win the Prize. / (D)No error.
5. (A) I have read /(B) too many books /(C) by R . K . Narayan. / (D)No error.
6. (A) A small baby breathes about /(B) 45 times per minute while /(C) a child of about six years breathes about 25 times per minute. / (D)No error.
7. (A) It is the newspaper /(B) that exposes us to the widest range/(C) of human experiences and behaviour. / (D)No error.
8. (A) Myself and Gopal /(B) will take care of /(C) the function on sunday. / (D)No error.
9. (A) The customer handed over /(B)a hundred-rupees note /(C) to the shopkeeper. / (D)No error.
10. (A) It is difficult /(B) for anyone /(C) to past time thus. / (D)No error.
11. (A) If you listen with /(B) the question carefully /(C) you will be able to answer them easily / (D)No error.
12. (A) I could not convince them /(B) because they persisted to suggest /(C) that I was lying / (D)No error.
13. (A) Were he /(B) to see you, /(C) he would have been surprised. / (D)No error.
14. (A) She walked in /(B) the room where the murder /(C) had taken place. / (D)No error.
15. (A) He is wiring /(B) for the /(C) last four hours / (D)No error.
16. (A) It is easy to see that /(B) a lawyer's demeanour in court /(C) may be prejudicial against the interests of his client. / (D)No error.
17. (A) The party chief made it a point to state that /(B) the Prime Minister and the Union Home Minister should also come. /(C) and they see what his party men had seen. / (D)No error.
18. (A) Having read a number of stories /(B) about space travel /(C) his dream now is about to visit the moon / (D)No error.
19. (A) Whenever you go to a temple /(B) you must put off /(C) your shoes at the entrance / (D)No error.
20. (A) I am sure that all my monthly expenses /(B) would exceed the income /(C) If I do not economic / (D)No error.
21. (A) He enquired me /(B) why I had not seen him the previous day /(C) as I had promised to do./(D)No error.
22. (A) I was there /(B) many a time/(C) in the past./(D)No error.
23. All the four sons /(B) of the old man/(C) quarrelled between themselves./(D)No error.
24. (A) He wanted to work all night/(B) but we saw that he was completely worn out/(C) and so we persuaded him to stop./(D)No error.
25. (A) Mr.Smith was accused for murder/(B) but the court found him not guilty /(C) and acquitted him./(D)No error.
26. (A) She sang/(B) very well /(C) isn't it?/(D)No error.
27. (A) There is still/(B) little tea/(C) left in the cup./(D)No error.
28. (A) He says that /(B) his car does/(C) eight kilometers in a litre/(D)No error.
29. (A) After opening the door/(B) we entered into the room/(C) next to the kitchen/(D)No error.
30. (A) Can I lend /(B) your pencil/(C) for a minute, please?/(D)No error.
31. (A) Last month we celebrated/(B) the wedding of our sister for whom/(C) we have been looking for a suitable alliance for three years./(D)No error.
32. (A) In an English paper /(B) examiners should give as much weightage to language/(C) as they give to contents./(D)No error.

33. (A) I am hearing /(B) a lot about /(C) the problem of AIDS these days./(D)No error.
34. (A) Unless you stop to make noise at once/(B) I will have no option but to /(C) bring the matter to the attention of the police./(D)No error.

35. (A) He is generally /(B) more hungry/(C) than she is ./(D)No error.
36. (A) Since India has gained Independence/(B) 49 years ago./(C) much progress has been made in almost every field./(D)No error.
37. (A) He ensured his bank manager /(B) that he would soon /(C) repay the loan./(D)No error.
38. (A) A free press is not a privilege/(B) but the organic necessity/(C) in a free society./(D)No error.
39. (A) He explained the matter/(B) at great length/(C) but I was not the wiser /(D)No error.
40. (A) He will end up his work /(B) in the city /(C) by the end of the year./(D)No error.
41. (A) Even though the shirt is rather expensive/(B) but I wish to/(C) purchase it with my own money./(D)No error.
42. (A) After the humiliating exposure/(B) he hanged his head/(C) in shame./(D)No error.
43. (A)The eminent speaker's speech/(B) was broadcasted over/(C) all the major radio-stations./(D)No error.
44. (A) The meeting adjourned abruptly/(B) by the Chairman after/(C) about three hours of deliberation./(D)No error.
45. (A) The company has put up an advertisement/(B) in newspapers/(C) all over the country./(D)No error.
46. (A) Will you lend me/(B) little money/(C) to tide over this crisis./(D)No error.
47. (A) He gave them no money/(B) nor did help them/(C) in any way./(D)No error.
48. (A) The Sharmas /(B) are living in this colony/(C) for the last eight years./(D)No error.
49. (A) My wife has got/(B) a new job/(C) a month ago./(D)No error.
50. (A) The ability to plan,/(B) organise and coordinate work is all fundamental/(C) to working within deadline./(D) No error.
51. (A) At the station,/(B) I'll hire a coolie /(C) to carry my baggages./(D) No error.
52. (A) The number of marks carried by each question/(B) are indicated/(C) at the end of the question/(D) No error.
53. (A) There is no question/(B) of my failing/(C) in the examination./(D) No error.

54. (A) She is/(B) no longer popular as she has/(C) a friends./(D) No error.
55. (A) It is necessary/(B) that everybody/(C) must have a house./(D) No error.
56. (A) Students should not take part /(B)in party politics and political demonstrations/(C) as they interfere in serious study./(D) No error.
57. (A) To facilitate exports and improve sales in the domestic market/(B) some of the improvised fabrics and garments fabricated out from them/(C) are displayed in the main pavilion./(D) No error.
58. (A) Both of you two/(B) can come with me/(C) to the play tonight./(D) No error.
59. (A) No sooner did the sun rise/(B) when we took a hasty breakfast/(C) and resumed the journey./(D) No error.
60. (A) The charges in this hospital/(B) are less than/(C) the hospital near my house./(D) No error.
61. (A) The brakes and steering failed/(B) and the bus ran down the hill/(C) without anyone being able control it./(D) No error.
62. (A) The tall three girls /(B) had left/(C) the day before./(D) No error.
63. (A) When he was asked what is wrong with him./(B) he said that he was not well./(C) and asked for leave of absence for one day./(D) No error.
64. (A) Wherever they go /(B) Indians easily adapt to /(C) local circumstances./(D) No error.

65. (A) Remember that you are part of/(B) the team and your success depends on the support/(C) you are able to give and get from your other team members./(D) No error.
66. (A) It is an established fact that the transcendental American poets and philosophers./(B) who lived in the latter half of the nineteenth century./(C) were more influenced by Indian philosophy, in particular by Upanishadic Philosophy./(D) No error.
67. (A) That house/(B) is costing me/(C) ten thousand rupees./(D) No error.
68. (A) Firstly you should/(B) think over the meaning of the words/(C)/(D) No error.
69. (A) It is true /(B) that God helps those /(C) who helps themselves./(D) No error.
70. (A) Happily, zoos were/(B) unwilling to cooperate/(C) in a scheme that was potentially harmful to animal welfare./(D) No error.
71. (A) Neither he/(B) nor his father is interested/(C) in joining the party./(D) No error.
72. (A) With little patience/(B) you will be able to/(C) cross this hurdle./(D) No error.
73. (A) She was told/(B) to give the award to whosoever/(C) she thought has done the most for the downtrodden./(D) No error.
74. (A) At the end of the year/(B) every student who had done adequate work/(C) was automatically promoted./(D) No error.
75. (A) The reason why/(B) he was rejected/(C) was because he was too young./(D) No error.
76. (A) Since we are friends/(B) there should be no secret/(C) between you and I./(D) No error.
77. (A) Since the attachment of air-conditioned sleeping cars to all important trains,/(B) travelling became very pleasant,/(C) especially during the summer season./(D) No error.
78. (A) If I will have the time /(B) I shall try and make it/(C) to the zoo this afternoon./(D) No error.
79. (A) We are four brothers and sisters living in this house/(B) but neither of us is/(C) satisfied with it./(D) No error.
80. (A) A leading textile manufacturer, one of the fastest growing in the industry./(B) is looking for a marketing manager/(C) to look up the marketing network of the company./(D) No error.
81. (A) Not one of the hundreds/(B) of striking workers./(C) were allowed to go near the factory./(D) No error.

82. (A) The single biggest gainer in this process /(B) was ITC's Gold Flake Kings sales are estimated /(C) to have moved up from 50 million to 200 million sticks per month during 1987 and last year./(D) No error.
83. (A) They left/(B) their luggages /(C) at the railway station./(D) No error.
84. (A) Salim and Antony are such good friends/(B) that one won't go to the pictures/(C) without his coming too./(D) No error.
85. (A) She is /(B) five years/(C) senior than me./(D) No error.
86. (A) The President had hardly spoken/(B) a few words/(C) when the microphone stopped functioning./(D) No error.
87. (A) Locke's treatises on government toleration and education/(B) show a mind fully awake in/(C) the possibilities of social reconstruction./(D) No error.
88. (A) You will get/(B) all the information/(C) if you read this booklet carefully./(D) No error.
89. (A) None of the students attending your class/(B) answered your questions/(C) did they?/(D) No error.
90. (A) An animal/(B) can be just as unhappy in a vast area/(C) or in a small one./(D) No error.
91. (A) He is working in/(B) a bank in New Delhi/(C) for the past several months./(D) No error.

92. (A) The scientist must follow/(B) his hunches and his data/(C) wherever it may lead./(D) No error.

93. (A) Each one of the boys /(B) have paid/(C) the tuition-fee./(D) No error.
94. (A) A large scale exchange of nuclear weapons/(B) will produce unprecedented amounts of radiation /(C) that can penetrate into the biological tissue./(D) No error.
95. (A) Had I /(B) known it earlier /(C) I would contact you./(D) No error.
96. (A) He asked me /(B) why did I call/(C) him a rogue./(D) No error.
97. (A) Were you/(B) given a choice/(C) or you had to do it?/(D) No error.
98. (A) The person which was/(B) recommended for the position/(C) did not fulfil the prescribed qualifications./(D) No error.
99. (A) What does Professor Dhavan/(B) spend so many hours/(C) in the laboratory?/(D) No error.
100. (A) The presumption that the average investor does not understand/(B) or take interest in the affairs of the company/(C) is not correct./(D) No error.

Section 2: Sentence Correction

2.1 Basic Concepts

One of the most important and high scoring sections in verbal ability portion of any test, Sentence Correction is generally taken by students to be English grammar. This is a misconception as the questions asked in this section are based not only on the fundamentals of grammar but also on correct usage of various words. The students find it difficult to crack these because they are not familiar with the subtle nuances of the language.

Though the intricacies of this language are far more than what can be covered here (however we do cover the basics), we can also take a short cut route to answering these questions. Looking at the questions from various sources we have made a list of
common sentence correction errors that are repeated frequently. We will be discussing the list in detail and will equip our self to handle almost all the questions in this section.

2.1.1 Gramma r Basics Noun

1. A proper noun becomes a common noun when it is used in the plural form, or when an article is placed before it.
    i. Example: Vijay Kumar is the Milton of our college.
2. A collective noun takes a singular verb when the whole group is considered as one unit.
    i. Example: The committee consists of five members.
3. An abstract noun can also be used as a common noun by placing an article before it.
    i. Example: Rajani is a beauty.
4. An abstract noun can also be used in the sense of a collective noun. When an abstract noun is used as a collective noun it takes a plural verb.
    i. Example: Youth are the pillars of the nation.
5. When a material noun denotes a mass of matter, it is not used in the plural form.
    i. Example: The house is built of brick and stone.
6. When a plural noun denotes a specific amount, length, weight, quantity etc., considered as a whole, the verb must be in the singular form.
    i. Example: Ten thousand rupees is a big sum.

Pronoun

1. While confessing a fault (or expressing a negative idea) the sequence of the personal pronouns should be 1^{st} – 2^{nd} – 3^{rd} person (I – You – He).
2. While expressing a positive idea or praise, the sequence of the personal pronouns should be 2^{nd} – 3^{rd} – 1^{st} person (You – He – I).
3. When two singular nouns joined by AND denote the same person or thing, the pronoun used for them must be singular in number.
4. When two singular nouns are joined by AND, and are preceded by each or every, the pronoun must be singular in number.
    i. Example: Every student and every teacher took his or her seat.
5. When a singular noun and a plural noun are combine by or, either/or, neither nor; the singular noun usually comes first in the sentence, and the pronoun must be in the plural number, corresponding to the plural noun which is close to it.

   i. Example: Either the manager or his subordinates failed in their duty in sending the official message.
6. When a personal pronoun is used as a complement to the verb to be, it must be in the nominative case.
   i. Example: It was he, who could solve the problem easily.
7. A relative pronoun must always be placed as near its antecedent as possible. Also it must always agree with its antecedent in number, gender and person. Example: This is the manager who rebuked the clerk.
8. Each other is used for two persons or things.
9. One another is used for more than two persons or things.

Adjective

1. When two qualities in the same person or thing are compared, the comparative degree is formed by using more, instead of r/er with the positive.
   i. Example: Reddy is more wise than intelligent.
2. When an object is compared with the rest of the group, the latter term of comparison must exclude the former by using any other.
   i. Example: Gold is more precious than any other metal.
3. Two adjectives which refer to the same noun or pronoun joined by a conjunction must be in the same degree of comparison.
   i. Example: Gandhiji is the wisest and noblest of all national leaders.
4. Many, a great many, a good many, all these take a plural noun and plural verb after them.
   i. Example: My brother has a good many friends.
5. Fewer is used before countable nouns and less before uncountable nouns.

Subject Verb Agreement

1. When two subjects are joined by AND, the verb is plural. Example: My friend and his father are in INDIA.
2. When two singular nouns joined by AND refer to the same person or thing, the verb is singular.
   i. Example: The Chairman and CEO has been arrested.
3. If two singular nouns express one idea, the verb should be in the singular form.
   i. Example: Bread & Butter is good for breakfast.
4. When two singular subjects are practically synonymous, the verb should be in singular form.
   i. Example: Maintaining law and order is the top most priority.
5. When the subjects joined by either / or, neither / nor are of different persons, the verb will agree in person and number nearest to it. Also, the plural subject must be placed nearest to the verb.
   i. Example: Either the chief minister or the cabinet ministers are responsible for this problem.
   ii. Example: Either you or I am responsible for this mistake.
6. If connector like with, together with, as well as, accompanied by, in addition to, along with etc. are used to combine two subjects, the verb agrees with the subject mentioned first.
   i. Example: The Prime Minister along with his cabinet ministers was invited to the party.
7. When not only…….but also is used to combine two subjects, the verb agrees with the subject closer to it.
   i. Example: Not only Harish but also his brothers were also arrested.
8. No / None can take either a singular or a plural verb depending on the noun which follows it.
   i. Example: No example is relevant to this case.
   ii. Example: No examples are relevant to this case.
9. Majority can be singular or plural. If it is alone it is usually singular, if it is followed by a plural noun, it is usually plural.

i. Example: The majority believes that the country can progress.

ii. Example: The majority of the lecturers believe that the student hasn't copied in the exam.

10. Collective nouns are singular in nature, but takes a plural form when it is divided.
    i. Example: The herd of elephants is blocking the way.
    ii. Example: The group are divided in the opinion.

2.1.2 Common Sentence Correction Errors

2.1.2.1 Subject-Verb Agreement

The verb in a sentence must agree with its subject.

I. They both should be either singular or plural. Example:
    i. A boy is reading a novel (sing.).
    ii. The boys are reading a novel (plural)

II. In case, the subject is a collective noun, then the verb will take a singular form. Example:

i. The class is making a noise.
Note: There are four collective nouns viz.- cattle, poultry, police and gentry; with these nouns, we use a plural verb. There are exceptions to the rule.

III. In case, the subjects are connected by AND; they require a pluralverb. Example:
    i. Gold and Silver are precious metals.
    ii. If the subjects are connected by OR, the verb used will be singular

Example:
    iii. The dog or the pup is sick.
    iv. In case there are two different subjects; the verb is put matching the closure subject. Example:

v. Sachin or I am going for a party.
vi. Sachin or Rahul is going for the party.

IV. All the sentences that begin with EACH, EVERYONE and ANYONE will have a singular verb. Example:

i. Every one of the boys loves to ride. Anyone has a pen, please.

V. I, ME: While deciding between the nominative form (i.e. I) and the objective form (i.e., me); earlier the nominative form was preferred.
Example:
    i. Atul and I are going for a walk.
    But lately its use is considered formal and over correct .We usually use the objective form, i.e. there is no difference between you and me.
    Example:

ii. Please, let Jack and me go to the theatre.

But whenever a comparison is made with THAN or AS; the objective form is used. Example:

iii. He is taller than I am.
iv. He writes as fast I am.
v. I swim better than him.
vi. I am as tall as her.

VI. In the constructions of NEITHER-NOR and EITHER-OR; if both the subjects are singular , the verb will also be singular example Either the mother or the daughter has cooked the meal. But when one of the subjects are joined by OR or NOR is plural, the verb must be plural and the subject should be placed near the verb.

Example:

i. Neither the teacher nor the students were present.

2.1.2.2 Parallelism

While forming a sentence, the structure of the sentence should be kept parallel. If an infinitive is used, then all the phrases should have an infinitive. If a verb is used after it, then we use the objective cases.

Example:

She likes to cook, dance and play.

Similar rule is used for a gerund.

Example:

She likes cooking, dancing and playing.

2.1.2.3 Tautological Error

Sometimes also referred a ‘redundancy’, this is the error of writing the same thing twice.

Example:

He returned back from Delhi.
I hardly have any money to give
you. The correct constructions
should be; He came back from
Delhi.
I have no money to give you.

2.1.2.4 Misplaced Modifier

A common blunder is to leave a participle dangling without a

subject. Example:

Sitting on the gate, a scorpion stung him.

Here, ‘sitting’ cannot be used for scorpion as it is grammatically incorrect.. The correct should be:

Sitting on the gate, he was stung by a scorpion or While he was

sitting on the gate, a scorpion stung him.

Example:

He visited the place where Napoleon died during his holidays.

It seems as the participle ‘during his holidays’ is used for Napoleon while it is meant for the person visiting .So the correct sentence should be:-

During his holidays, he visited the place where Napoleon died. This way, it is correctly understood.

2.1.2.5 Use of Few and Less

Few is used before countable nouns while ‘less’ is used before uncountable nouns.

Example:

There a few children in the class today.

There is less juice left in the jar.

Few and A few have different meanings

Few is equivalent to something negligible, hardly any while. A few is equivalent to

some. Example:

Few persons can keep a secret.

A few persons are convinced about the new manager.

Similarly ‘little’ and ‘a little’ are used for quantity in the same manner. There is little hope of his recovery (almost nil). A little tact would have saved the situation (some tact).

2.1.2.6 Comparisons

The comparisons made should be between two similar things. If we say:- The
population of London is greater than any other city in India. We are comparing:-

(a) The population of London

(b) Any other city in India.

While comparison had to be made between the populations of both. So, the correct expression should be:- The population of London is greater than that of any other city in India.

(a) When comparative degree is used with than, make sure that we exclude the thing compared from the rest of class of things by using the

Example:

He is stronger than any man living.(incorrect).

He is stronger than any other man living.(correct).

Similarly, Solomon was wiser than all other men.

In superlative degree, we must include the thing compared.

Solomon was the wisest of all men.

He is the strongest of all men.

2.1.2.7 Lay and Lie

We need to distinguish between these two words as they are used very differently.

(a) Lay, laid, laid

'Lay the table' ordered the mistress He
laid the guitar by his side.
The hen had laid an egg.

(b) Lie, Lay, Lain

Let me lie down here.
He lay under the Banyan tree.
He had lain in the sun for three hours yesterday.

2.1.2.8 Trust Your Ears

If you become stuck, 'say' the choices in your head and then select the passage that sounds best to your ears. Most test takers, particularly native English speakers, have internalized many more grammar rules than they can explicitly identify.

2.1.2.9 Know the Time

Use time cues (ex. *before*, *during*, *as*, *in 1960*) to eliminate options that contain **verb tense errors**. Remember, events that occur during the same time period must be in the same tense!

2.1.2.10 Run the Numbers

If a sentence is about some sort of numerical quantity (ex. t*he percentage of homeowners in Minneapolis* or *the number of women studying French*) check
for **idiomatic errors.** Remember: "fewer" describes a countable quantity, like people; "less" describes an uncountable quantity, like sugar. Also check for **redundancy** (ex. "went up by a 20% increase").

PRACTICE QUESTIONS

In questions given below, a part of the sentence is *italicised and underlined*. Below are given alternatives to the italicised part which may improve the sentence. Choose the correct alternative. In case no improvement is needed, option 'D' is the answer.

1) The poor villagers *have waited* in the bitter cold for more than 4 hours now.
   a) have been waiting
   b) had waited
   c) has been waiting
   d) No improvement
2) The old man felled some trees in the garden with *hardly no effort* at all.

a) hard effort
b) hardly any effort
c) a hardly any effort
d) No improvement

3) The company goes to great length to ensure that employees *can be comfortable* in their work environment.
a) are comfortable
b) will be comfortable
c) should be comfortable
d) No improvement

4) I want *you to clearly understand* that excuses won't do

a) you clearly to understand
b) you to understand clearly
c) to clearly understand you
d) No improvement

5) He *was fined* for careless driving.
a) got fined
b) fined
c) was to be fined
d) No improvement

6) As he is past his teens now, he can look *for* himself.
a) after
b) to
c) around
d) No improvement

7) *There is no more room* for you in this compartment.
a) there is no more seat
b) there is no more space
c) there is no more accommodation
d) No improvement

8) Will you *lend me few rupees* in this hour of need?
a) lend me any rupees
b) borrow me a few rupees
c) lend me a few rupees
d) No improvement

9) During his long discourse, he did not *touch* that point.
a) touch upon
b) touch on
c) touch of
d) No improvement

10) He found a *wooden broken chair* in the room.
a) wooden and broken chair
b) broken wooden chair
c) broken and wooden chair
d) No improvement

11) He could not *look* anything in the dark room.
a) look at
b) see
c) see through
d) No improvement

12) The greatest thing in style is to have a *use* of metaphor.
a) knowledge
b) command
c) need

d) No improvement

13) While crossing the highway a five year old child was knocked *out* by a passing car.
a) away
b) up
c) down
d) No improvement
14) Hoping not to be disturbed, I sat down in my easy chair to read the book. *I won as a prize*.
a) I had won as a prize
b) I have won as prize
c) I had to win as a prize
d) No improvement
15) More than one person *was killed* in accident.
a) were killed
b) are killed
c) have been killed
d) No improvement
16) No one could explain how a calm and balanced person like him could *penetrate* such a mindless act on his friends.
a) perpetuate
b) perpetrate
c) precipitate
d) No improvement
17) Five years ago today, I *am sitting* in a small Japanese car, driving across Poland towards Berlin.
a) was sitting
b) sat
c) have been sitting
d) No improvement
18) I took the cycle *which he bought yesterday*.
a) that he bought yesterday
b) that which he had bought yesterday
c) that he had bought yesterday
d) No improvement
19) Please make it a point to send you letter *at my address*.
a) on my address
b) to my address
c) in my address
d) No improvement
20) If you are living near a market place you should be ready *to bear* the disturbances caused by traffic.
a) to bear upon
b) to bear with
c) to bear away
d) No improvement
21) I hope you won't object *to me watching* while you work.
a) against me watching
b) me to watch
c) to my watching
d) No improvement
22) You cannot forbid *him leaving*.
a) he leaving
b) his leaving
c) him to leave
d) No improvement
23) You have come here with a view *to insult me*.

a) to insulting me
b) of insulting me
c) for insulting me
d) No improvement

24) 20 kms *are not a great distance* in these days of fast moving vehicles.
a) is not a great distance
b) is no distance
c) aren't a great distance
d) No improvement

25) *The more they earn, more they spend*.
a) More they earn, more they spend
b) More they earn, the more they spend
c) The more they earn, the more they spend
d) No improvement

26) It became clear that the strangers were heading *into* a serious disaster.
a) along
b) towards
c) for
d) No improvement

27) The dissidents *hold* a great problem in every political party.
a) cause
b) give
c) pose
d) No improvement

28) I would have waited for you at the station if I *knew* that you would come.
a) had known
b) was knowing
c) have known
d) No improvement

29) They are social insects, *living in communities*, regulated by definite laws, each member of society bearing well- defined and separate part in the work of a colony.
a) who are living in communities
b) living among a community
c) who lives with a community
d) No improvement

30) Practically *every part* of the banana tree is used by man.
a) each part
b) any part
c) most part
d) No improvement

31) My *opinion for* the film is that it will bag the national ward.
a) opinion to
b) opinion about
c) opinion on
d) No improvement

32) The end of the examinations is (an) *oppurtunity* for celebrating.
a) chance
b) moment
c) occasion
d) No improvement

33) We were *not* the wiser for all this effort to explain the case to us.
a) none
b) neither
c) nevertheless

d) No improvement

34) Whenever my students come across new words, I ask them *to look for them* in the dictionary.
a) to look it up
b) to look them up
c) to look at them
d) No improvement

35) We look forward to *hear* from you.
a) hearing
b) have heard
c) listen
d) No improvement

36) It was indeed a shock for her, but she has *later* recovered from it.
a) since
b) then
c) afterwards
d) No improvement

37) Realising is the significance of technical education for developing country, the government *laid aside* a large sum on it during the last plan-period.
a) laid up
b) set aside
c) laid out
d) No improvement

38) If you are not clear about the meaning of a word, it is wise to *look to* a dictionary.
a) look for
b) look at
c) look up
d) No improvement

39) You are warned *against committing* the same mistake again.
a) to commit
b) for committing
c) against to commit
d) No improvement

40) No sooner *he had returned home then* his mother felt happy.
a) had he returned home when
b) he had returned home than
c) did he return home than
d) No improvement

41) He should move on to the next point, and not *harp one sting only*.
a) harp on string only
b) harp only one string
c) harp upon one string only
d) No improvement

42) Either *he or I am going*.
a) he or I are going
b) he is going or I am
c) I or he is going
d) No improvement

43) I hope you vividly remember the premier of the film when *I, my wife and you* were present in the hall.
a) my wife, I and you
b) you, I and my wife
c) my wife, you and I
d) No improvement

44) To get one's name in the Rowland Ward's book of hunting records was the *hot* ambition of every serious hunter.
   a) extreme
   b) burning
   c) high
   d) No improvement
45) Taxpayers *are to* be conscious of their privileges.
   a) have to
   b) need
   c) ought to
   d) No improvement
46) As she was suffering from high fever, she could not *face* the examination.
   a) bear
   b) suffer
   c) take
   d) No improvement
47) The demonstration *passed off* peacefully.
   a) passed out
   b) passed away
   c) passed on
   d) No improvement
48) Every time *I go in a lift* to my sixth floor apartment, I remember the calm and serenity of my ancestral home in the village.
   a) move in a lift
   b) ascend in a lift
   c) C.take a lift
   d) No improvement

49) In fact, if it hadn't been for his *invaluable advice* on so many occasions I wouldn't have achieved anything in life.
   a) remarkable advice
   b) valuable advices
   c) priceless suggestion
   d) No improvement
50) Mr. Smith arrived *at* India in June last year.
   a) to
   b) by
   c) in
   d) No improvement
51) But in all these cases conversion from scale *have well-formulated*.
   a) can be well-formulated
   b) are well-formulated
   c) well-formulated
   d) No improvement
52) With a thundering roar the huge rocket *soared up* from the launching pad.
   a) flew up
   b) went upwards
   c) took off
   d) No improvement
53) There is dearth of *woman doctor* in our state. We shall have to recruit some from the other states.
   a) women doctor
   b) woman doctors
   c) women doctors
   d) No improvement

54) If you *cross the line* you will be disqualified.
   a) cross upon the line
   b) cross on the line
   c) cross out the line
   d) No improvement
55) Why the dinosaurs died out *is not known*.
   a) it is not known
   b) the reason is not known
   c) that is not known
   d) No improvement
56) His father won't be able to leave for Varnasi *until they have arrived*.
   a) until they arrive
   b) until they will have arrived
   c) until they will arrive
   d) No improvement
57) I will not go to school, if *it shall rain tomorrow*.
   a) it would rain tomorrow
   b) it will rain tomorrow
   c) it rains tomorrow
   d) No improvement
58) If I stood alone in defence of truth, and the whole world *is banded* against me and against truth. I would fight them all.
   a) will be banded
   b) were banded
   c) banded
   d) No improvement

59) He *has not and can never be* in the good books of his employer because he lacks honesty.
   a) A. has not and cannot be
   b) has not and can never been
   c) has not been and can never be
   d) No improvement
60) When the examinations were over *Anil and me* went to our native town.
   a) me and Anil
   b) Anil and I
   c) I and Anil
   d) No improvement
61) Our office clock is not so *correct* as it should be it is usually five minutes fast.
   a) right
   b) regular
   c) accurate
   d) No improvement
62) The cloud of misfortunes appears to have blown *out*.
   a) over
   b) up
   c) away
   d) No improvement
63) While we would like *that all Indian Children to* go to school, we need to ponder why they do not.
   a) that all the Indian children
   b) if all the children of India
   c) all Indian children
   d) No improvement
64) In India today many of our intellectuals still talk in terms of the French Revolution and the Rights of Man, not appreciating that *much has happened* since then.

a) much has been happening
b) much had happened
c) much might happen
d) No improvement

65) I shall be grateful to you if you *are of help to* me now.
a) help
b) would help
c) helped
d) No improvement

66) The logic of Berlin wall *already had been undermined* but when the news came through that the wall itself had been opened I jumped into a car.
a) had been undetermined already
b) had already been undetermined
c) had been already undetermined
d) No improvement

67) Other countries *have eradicated* this disease ten years ago.
a) eradicated
b) had eradicated
c) did eradicated
d) No improvement

68) Young men and women should get *habituated* to reading and writing about current affairs.
a) used
b) prepared
c) trained
d) No improvement

69) The workers are *hell bent at getting* what is due to them.
a) hell bent on getting
b) hell bent for getting
c) hell bent upon getting
d) No improvement

70) When it was feared that the serfs might go too far and gain their freedom from serfdom, the protestant leaders joined the princes *at crushing* them.
a) into crushing
b) in crushing
c) without crushing
d) No improvement

71) *If the room had been brighter*, I would have been able to read for a while before bed time.
a) If the room was brighter
b) If the room are brighter
c) Had the room been brighter
d) No improvement

72) The record for the biggest tiger hunt has not been *met* since 1911 when Lord Hardinge. then Viceroy of India, shot a tiger than measured 11 feet and 6 inches.
a) improved
b) broken
c) bettered
d) No improvement

73) *his powerful desire* brought about his downfall.
a) His intense desire
b) His desire for power
c) His fatal desire
d) No improvement

74) Will you kindly *open* the knot?

a) untie
b) break
c) loose
d) No improvement

75) He *sent a word* to me that he would be coming late.
a) sent word
b) had sent a word
c) sent words
d) No improvement

76) John *had told* me that he hasn't done it yet.
a) told
b) tells
c) was telling
d) No improvement

77) If he *had* time he will call you.
a) would have
b) would have had
c) has
d) No improvement

78) Will you *lend me few rupees* in this hour of need?
a) lend me any rupees
b) borrow me a few rupees
c) lend me a few rupees
d) No improvement

79) She says she's already paid me back, but I can't remember, so I 'll have *to take her word*.
a) to take her word true
b) to take her at her word
c) to take her word for it
d) No improvement

80) If you had attended the meeting, you *would have benefited* a great deal.
a) could benefit
b) would benefit
c) benefited.
d) No improvement

81) This matter *admits of* no excuse.
a) admits to
b) admits from
c) admits
d) No improvement

82) If he *would have tried* he would have succeeded.
a) is tried
b) was tried
c) had tried
d) No improvement

83) It will be no good *trying to find* an excuse next time.
a) to try to find
b) to try finding
c) trying finding
d) No improvement

84) Please remind me *of posting* these letters to my relatives.

a) by posting
b) to post
c) for posting
d) No improvement

85) Not a word *they spoke* to the unfortunate wife about it
a) did they speak
b) they will speak
c) they had spoken
d) No improvement

86) Not long back, in Japan, a mysterious nerve gas *affected* a large number of people.
a) effected
b) infected
c) infested
d) No improvement

87) We *had nothing* to eat since 8'o clock, this morning.
a) have had nothing
b) has had nothing
c) did have nothing
d) No improvement

88) We *did not see* this movie yet.
a) have seen
b) have not seen
c) have seen
d) No improvement

89) My friend was in hospital for a week *after* an accident.
a) through
b) following
c) for
d) No improvement

90) *All, but her,* had made an attempt.
a) All, but she,
b) All, but herself,
c) All, but her,
d) No improvement

91) Whatever to our other problems. we have no *shortcoming* to cheap labour in India.
a) default
b) deficit
c) scarcity
d) No improvement

92) I *have lived* in Delhi since I was four.
a) am living
b) lived
c) had lived
d) No improvement

93) This telephone number *is not existing*.
a) has not existed
b) does not exist
c) has not been existing
d) No improvement

94) I shall not go *untill I am invited*.
   a) till I am invited
   b) Unless I am invited
   c) if not I am invited
   d) No improvement
95) He died *in the year 1960 at 11pm on 14 July*.
   a) on 14 July in the year 1960 at 11pm
   b) in the year 1960 on 14 July at 11pm
   c) at 11pm on 14 July in the year 1960
   d) No improvement
96) *Due to these reason* we are all in favour of universal compulsory education.
   a) Out of these reasons
   b) For these reasons
   c) By these reasons
   d) No improvement
97) *The long or short of it* is that I do not want to deal with that new firm.
   a) The long and short of it
   b) The long and short for it
   c) The long or short for it
   d) The shot and long for it
98) Can you tell me *why did you not speak* the truth?
   a) why did not you speak
   b) that why did you not speak
   c) why you did not speak
   d) why did you not spoke

Section 3: Reading Comprehension

3.1 Basic Concepts

Reading comprehension uses multiple-choice questions to measure your ability to read and comprehend written material, to reason and evaluate arguments, and to correct written material to conform to standard written English. Because the Verbal section includes content from a variety of topics, you may be generally familiar with some of the material; however, neither the passages nor the questions assume knowledge of the topics discussed. Reading comprehension questions are intermingled with critical reasoning and sentence correction questions throughout the Verbal section of the test.

Reading comprehension questions begin with written passages up to 350 words long. The passages discuss topics from the social sciences, humanities, the physical or biological sciences, and such business-related fields as marketing, economics, and human resource management. The passages are accompanied by questions that will ask you to interpret the passage, apply the information you gather from the reading, and make inferences (or informed assumptions) based on the reading.

As you move through the reading comprehension worksheets, try to determine a process that works best for you. You might begin by reading a passage carefully and thoroughly, though some test takers prefer to skim the passages the first time through, or even to read the first question before reading the passage. You may want to reread any sentences that present complicated ideas or introduce terms that are new to you. Read each question and series of answers carefully. Make sure you understand exactly what the question is asking and what the answer choices are.

If you need to, you may go back to the passage and read any parts that are relevant to answering the question. Specific portions of the passages may be highlighted in the related questions.

What Is Measured

Reading comprehension questions measure your ability to understand, analyze, and apply information and concepts presented in written form. All questions are to be answered on the basis of what is stated or implied in the reading material, and no specific prior knowledge of the material is required.

The reading comprehension questions evaluate your ability to do the following:

1. **Understand words and statements.** Although the questions do not test your vocabulary (they will not ask you to define terms), they do test your ability to interpret special meanings of terms as they are used in the reading passages. The questions will also test your understanding of the English language. These questions may ask about the overall meaning of a passage.

2. **Understand logical relationships between points and concepts.** This type of question may ask you to determine the strong and weak points of an argument or evaluate the relative importance of arguments and ideas in a passage.

3. **Draw inferences from facts and statements.** The inference questions will ask you to consider factual statements or information presented in a reading passage and, on the basis of that information, reach conclusions.

4. **Understand and follow the development of quantitative concepts as they are presented in written material.** This may involve the interpretation of numerical data or the use of simple arithmetic to reach conclusions about material in a passage.

There are six kinds of reading comprehension questions, each of which tests a different skill. The reading comprehension questions ask about the following areas:

Main idea
Each passage is a unified whole—that is, the individual sentences and paragraphs support and develop one main idea or central point. Sometimes you will be told the central point in the passage itself, and sometimes it will be necessary for you to determine the central point from the overall organization or development of the passage. You may be asked in this kind of question to

Recognize a correct restatement, or paraphrasing, of the main idea of a passage Identify the author's primary purpose or objective in writing the passage

Assign a title that summarizes, briefly and pointedly, the main idea developed in the passage

Supporting ideas
These questions measure your ability to comprehend the supporting ideas in a passage and differentiate them from the main idea. The questions also measure your ability to differentiate ideas that are *explicitly stated* in a passage from ideas that are *implied* by the author but that are not explicitly stated. You may be asked about

Facts cited in a passage
The specific content of arguments presented by the author in support of his or her views Descriptive details used to support or elaborate on the main idea

Whereas questions about the main idea ask you to determine the meaning of a passage *as a whole*, questions about supporting ideas ask you to determine the meanings of individual sentences and paragraphs that *contribute* to the meaning of the passage as a whole. In other words, these questions ask for the main point of *one small part* of the passage.

Inferences
These questions ask about ideas that are not explicitly stated in a passage but are *implied* by the author. Unlike questions about supporting details, which ask about information that is directly stated in a passage, inference questions ask about ideas or meanings that must be inferred from information that is directly stated. Authors can make their points in indirect ways, suggesting ideas without actually stating them. Inference questions measure your ability to understand an author's intended meaning in parts of a passage where the meaning is only suggested. These questions do not ask about meanings or implications that are remote from the passage; rather, they ask about meanings that are developed indirectly or implications that are specifically suggested by the author.

To answer these questions, you may have to

Logically take statements made by the author one step beyond their literal meanings
Recognize an alternative interpretation of a statement made by the author
Identify the intended meaning of a word used figuratively in a passage

If a passage explicitly states an effect, for example, you may be asked to infer its cause. If the author compares two phenomena, you may be asked to infer the basis for the comparison. You may be asked to infer the characteristics of an old policy from an explicit description of a new one. When you read a passage, therefore, you should concentrate not only on the explicit meaning of the author's words, but also on the more subtle meaning implied by those words.

Applying information to a context outside the passage itself

These questions measure your ability to discern the relationships between situations or ideas presented by the author and other situations or ideas that might parallel those in the passage. In this kind of question, you may be asked to

Identify a hypothetical situation that is comparable to a situation presented in the passage Select an example that is similar to an example provided in the passage
Apply ideas given in the passage to a situation not mentioned by the author
Recognize ideas that the author would probably agree or disagree with on the basis of statements made in the passage

Unlike inference questions, application questions use ideas or situations *not* taken from the passage. Ideas and situations given in a question are *like* those given in the passage, and they parallel ideas and situations in the passage; therefore, to answer the question, you must do more than recall what you read. You must recognize the essential attributes of ideas and situations presented in the passage when they appear in different words and in an entirely new context.

Logical Structure

These questions require you to analyze and evaluate the organization and logic of a passage. They may ask you

How a passage is constructed—for instance, does it define, compare or contrast, present a new idea, or refute an idea?
How the author persuades readers to accept his or her assertions
The reason behind the author's use of any particular supporting detail To identify assumptions that the author is making
To assess the strengths and weaknesses of the author's arguments To recognize appropriate counterarguments

These questions measure your ability not only to comprehend a passage but also to evaluate it critically. However, it is important for you to realize that logical structure questions do not rely on any kind of formal logic, nor do they require you to be familiar with specific terms of logic or argumentation. You can answer these questions using only the information in the passage and careful reasoning.

About the Style and Tone

Style and Tone questions ask about the expression of a passage and about the ideas in a passage that may be expressed through its diction—the author's choice of words. You may be asked to deduce the author's attitude to an idea, a fact, or a situation from the words that he or she uses to describe it. You may also be asked to select a word that accurately describes the tone of a passage—for instance, "critical," "questioning," "objective," or "enthusiastic."

To answer this type of question, you will have to consider the language of the passage as a whole. It takes more than one pointed, critical word to make the tone of an entire passage "critical." Sometimes, style and tone questions ask what audience the passage was probably intended for or what type of publication it probably appeared in. Style and tone questions may apply to one small part of the passage or to the passage as a whole. To answer them, you must ask yourself what meanings are contained in the words of a passage beyond the literal meanings. Did the author use certain words because of their emotional content, or because a particular audience would expect to hear them? Remember, these questions measure your ability to discern meaning expressed by the author through his or her choice of words.

Test-Taking Strategies

1) **Do not expect to be completely familiar with any of the material presented in reading comprehension passages**

You may find some passages easier to understand than others, but all passages are designed to present a challenge. If you have some familiarity with the material presented in a passage, do not let this

knowledge influence your choice of answers to the questions. Answer all questions on the basis of what is *stated or implied* in the passage itself.

2) Analyze each passage carefully, because the questions require you to have a specific and detailed understanding of the material.

You may find it easier to do the analysis first, before moving to the questions. Or, you may find that you prefer to skim the passage the first time and read more carefully once you understand what a question asks. You may even want to read the question before reading the passage. You should choose the method most suitable for you.

3. Focus on key words and phrases, and make every effort to avoid losing the sense of what is discussed in the passage.

Keep the following in mind:

- Note how each fact relates to an idea or an argument.
- Note where the passage moves from one idea to the next.
- Separate main ideas from supporting ideas.
- Determine what conclusions are reached and why.

4. Read the questions carefully, making certain that you understand what is asked.

An answer choice that accurately restates information in the passage may be incorrect if it does not answer the question. If you need to, refer back to the passage for clarification.

5. Read all the choices carefully.

Never assume that you have selected the best answer without first reading all the choices.

6. Select the choice that answers the question best in terms of the information given in the passage.

Do not rely on outside knowledge of the material to help you answer the questions.

7. Remember that comprehension—not speed—is the critical success factor when it comes to reading comprehension questions.

8. Classify the Passages

a. Explanatory (Mostly Science passages, explain one theory/phenomenon in detail)

b.Comparative (two or more point of views on a theory/topic. Doesn't go in much detail)

c. Argumentative (Subjective, opinionated. Mostly social science/business topics, Pros and cons of a topic with author's views on them)

9. Don't over read.

Skip examples, dates, lengthy names, and any details that can be referred in case something is asked explicitly.

10. Don't go for choices that hold true only for one part of the author's argument.

11. Don't go for choices that exaggerate the author's conclusion.

3.2 Practice Questions

Passage 1:

(This passage was written in 1978.)

Recent years have brought minority- owned businesses in the United States unprecedented opportunities—as well as new and significant risks. Civil rights activists have long argued that one of the principal reasons why Blacks, Hispanics, and other minority groups have difficulty establishing themselves in business is that they lack access to the sizable orders and subcontracts that are generated by large companies. Now Congress, in apparent agreement, has required by law that businesses awarded federal contracts of more than $ 500,000 do their best to find minority subcontractors and record their efforts to do so on forms filed with the government. Indeed, some federal and local agencies have gone so far as to set specific percentage goals for apportioning parts of public works contracts to minority enterprises.

Corporate response appears to have been substantial. According to figures collected in 1977, the total of corporate contracts with minority businesses rose from
$77 million in 1972 to $1.1 billion in 1977. The projected total of corporate contracts with minority businesses for the early 1980's is estimated to be over 53 billion per year with no letup anticipated in the next decade.
Promising as it is for minority businesses, this increased patronage poses dangers for them, too. First, minority firms risk expanding too fast and overextending themselves financially, since most are small concerns and, unlike large businesses, they often need to make substantial investments in new plants, staff, equipment, and the like in order to perform work subcontracted to them. If, thereafter, their subcontracts are for some reason reduced, such firms can face potentially crippling fixed expenses. The world of corporate purchasing can be frustrating for small entrepreneurs who get requests for elaborate formal estimates and bids. Both consume valuable time and resources, and a small company's efforts must soon result in orders, or both the morale and the financial health of the business will suffer.

A second risk is that White-owned companies may seek to cash in on the increasing apportionments through formation of joint ventures with minority- owned concerns. Of course, in many instances there are legitimate reasons for joint ventures; clearly, White and minority enterprises can team upto acquire business that neither could acquire alone. But civil rights groups and minority business owners have complained to Congress about minorities being set up as "fronts" with White backing, rather than being accepted as full partners in legitimate joint ventures.

Third, a minority enterprise that secures the business of one large corporate customer often runs the danger of becoming—and remaining—dependent. Even in the best of circumstances, fierce competition from larger, more established companies makes it difficult for small concerns to broaden their customer bases: when such firms have nearly guaranteed orders from a single corporate benefactor, they may truly have to struggle against complacency arising from their current success.

1. The primary purpose of the passage is to
b) present a commonplace idea and its inaccuracies
c) describe a situation and its potential drawbacks
d) propose a temporary solution to a problem
e) analyze a frequent source of disagreement
f) explore the implications of a finding

2) The passage supplies information that would answer which of the following questions?
a) What federal agencies have set percentage goals for the use of minority-owned businesses in public works contracts?
b) To which government agencies must businesses awarded federal contracts report their efforts to find minority subcontractors?
c) How widespread is the use of minority-owned concerns as "fronts" by White backers seeking to obtain subcontracts?
d) How many more minority-owned businesses were there in 1977 than in 1972?
e) What is one set of conditions under which a small business might find itself financially overextended?

3) According to the passage, civil rights activists maintain that one disadvantage under which minority-owned businesses have traditionally had to labor is that they have
   a) been especially vulnerable to governmental mismanagement of the economy
   b) been denied bank loans at rates comparable to those afforded larger competitors
   c) not had sufficient opportunity to secure business created by large corporations
   d) not been able to advertise in those media that reach large numbers of potential customers
   e) not had adequate representation in the centers of government power

4) The passage suggests that the failure of a large business to have its bids for subcontracts result quickly in orders might cause it to
   a) experience frustration but not serious financial harm
   b) face potentially crippling fixed expenses
   c) have to record its efforts on forms filed with the government
   d) increase its spending with minority subcontractors
   e) revise its procedure for making bids for federal contracts and subcontracts

5) The author implies that a minority-owned concern that does the greater part of its business with one large corporate customer should
   a) avoid competition with larger, more established concerns by not expanding
   b) concentrate on securing even more business from that corporation
   c) try to expand its customer base to avoid becoming dependent on the corporation
   d) pass on some of the work to be done for the corporation to other minority-owned concerns
   e) use its influence with the corporation to promote subcontracting with other minority concerns

6) It can be inferred from the passage that, compared with the requirements of law, the percentage goals set by “some federal and local agencies” (lines 14-15) are
   a) more popular with large corporations
   b) more specific
   c) less controversial
   d) less expensive to enforce
   e) easier to comply with

7) Which of the following, if true, would most weaken the author’s assertion that, in the 1970’s, corporate response to federal requirements (lines 18-19) was substantial
   a) Corporate contracts with minority-owned businesses totaled $2 billion in 1979.
   b) Between 1970 and 1972, corporate contracts with minority-owned businesses declined by 25 percent.
   c) The figures collected in 1977 underrepresented the extent of corporate contracts with minority- owned businesses.
   d) The estimate of corporate spending with minority-owned businesses in 1980 is approximately $10 million too high.
   e) The $1.1 billion represented the same percentage of total corporate spending in 1977 as did $77 million in 1972.

8) The author would most likely agree with which of the following statements about corporate response to working with minority subcontractors?
   a) Annoyed by the proliferation of “front” organizations, corporations are likely to reduce their efforts to work with minority-owned subcontractors in the near future.
   b) Although corporations showed considerable interest in working with minority businesses in the 1970’s, their aversion to government paperwork made them reluctant to pursue many government contracts.

c) The significant response of corporations in the 1970's is likely to be sustained and conceivably be increased throughout the 1980's.
d) Although corporations are eager to cooperate with minority-owned businesses, a shortage of capital in the 1970's made substantial response impossible.
e) The enormous corporate response has all but eliminated the dangers of over-expansion that used to plague small minority-owned businesses.

Passage 2

Woodrow Wilson was referring to the liberal idea of the economic market when he said that the free enterprise system is the most efficient economic system. Maximum freedom means maximum productiveness; our "openness" is to be the measure of our stability. Fascination with this ideal has made Americans defy the "Old World" categories of settled possessiveness *versus* unsettling deprivation, the cupidity of retention *versus* the cupidity of seizure, a "status quo" defended *or* attacked. The United States, it was believed, had no *status quo ante*. Our only "station" was the turning of a stationary wheel, spinning faster and faster. We did not base our system on property but opportunity—which meant we based it not on stability but on mobility. The more things changed, that is, the more rapidly the wheel turned, the steadier we would be. The conventional picture of class politics is composed of the Haves, who want a stability to keep what they have, and the Have-Nots, who want a touch of instability and change in which to scramble for the things they have not. But Americans imagined a condition in which speculators, self-makers, runners are always using the new opportunities given by our land. These economic leaders (front -runners) would thus be mainly agents of change. The nonstarters were considered the ones who wanted stability, a strong referee to give them some position in the race, a regulative hand to calm manic speculation; an authority that can call things to a halt, begin things again from compensatorily staggered "starting lines."

"Reform" in America has been sterile because it can imagine no change except through the extension of this metaphor of a race, wider inclusion of competitors, "a piece of the action," as it were, for the disenfranchised. There is no attempt to call off the race. Since our only stability is change, America seems not to honor the quiet work that achieves social interdependence and stability. There is, in our legends, no heroism of the office clerk, no stable industrial work force of the people who actually make the system work. There is no pride in being an employee (Wilson asked for a return to the time when everyone was an employer). There has been no boasting about our social workers—they are merely signs of the system's failure, of opportunity denied or not taken, of things to be eliminated. We have no pride in our growing interdependence, in the fact that our system can serve others, that we are able to help those in need; empty boasts from the past make us ashamed of our present achievements, make us try to forget or deny them, move away from them. There is no honor but in the Wonderland race we must all run, all trying to win, none winning in the end (for there is no end).

9) The primary purpose of the passage is to
a) criticize the inflexibility of American economic mythology
b) contrast "Old World" and "New World" economic ideologies
c) challenge the integrity of traditional political leaders
d) champion those Americans whom the author deems to be neglected
e) suggest a substitute for the traditional metaphor of a race

10) According to the passage, "Old World" values were based on
a) ability
b) property
c) family connections
d) guild hierarchies
e) education

11) In the context of the author's discussion of regulating change, which of the following could be most probably regarded as a "strong referee" (line 30) in the United States?
   a) A school principal
   b) A political theorist
   c) A federal court judge
   d) A social worker
   e) A government inspector

12) The author sets off the word "Reform" (line 35) with quotation marks in order to
   a) emphasize its departure from the concept of settled possessiveness
   b) show his support for a systematic program of change
   c) underscore the flexibility and even amorphousness of United States society
   d) indicate that the term was one of Wilson's favorites
   e) assert that reform in the United States has not been fundamental

13) It can be inferred from the passage that the author most probably thinks that giving the disenfranchised "a piece of the action" (line 38) is
   a) a compassionate, if misdirected, legislative measure
   b) an example of Americans' resistance to profound social change
   c) an innovative program for genuine social reform
   d) a monument to the efforts of industrial reformers
   e) a surprisingly "Old World" remedy for social ills

14) Which of the following metaphors could the author most appropriately use to summarize his own assessment of the American economic system (lines 35-60)?
   a) A windmill
   b) A waterfall
   c) A treadmill
   d) A gyroscope
   e) A bellows

15) It can be inferred from the passage that Woodrow Wilson's ideas about the economic market
   a) encouraged those who "make the system work" (lines 45-46)
   b) perpetuated traditional legends about America
   c) revealed the prejudices of a man born wealthy
   d) foreshadowed the stock market crash of 1929
   e) began a tradition of presidential proclamations on economics

16) The passage contains information that would answer which of the following questions? I.What techniques have industrialists used to manipulate a free market?
   II.In what ways are "New World" and "Old World" economic policies similar? III.Has economic policy in the United States tended to reward independent action?
   a) I only
   b) II only
   c) III only
   d) I and II only
   e) II and III only

17) Which of the following best expresses the author's main point?
   a) Americans' pride in their jobs continues to give them stamina today.

b) The absence of a *status quo ante* has undermined United States economic structure.
c) The free enterprise system has been only a useless concept in the United States.
d) The myth of the American free enterprise system is seriously flawed. e)Fascination with the ideal of "openness" has made Americans a progressive

Passage 3

No very satisfactory account of the mechanism that caused the formation of the ocean basins has yet been given. The traditional view supposes that the upper mantle of the earth behaves as a liquid when it is subjected to small forces for long periods and that differences in temperature under oceans and continents are sufficient to produce convection in the mantle of the earth with rising convection currents under the mid-ocean ridges and sinking currents under the continents. Theoretically, this convection would carry the continental plates along as though they were on a conveyor belt and would provide the forces needed to produce the split that occurs along the ridge. This view may be correct: it has the advantage that the currents are driven by temperature differences that themselves depend on the position of the continents. Such a back-coupling, in which the position of the moving plate has an impact on the forces that move it, could produce complicated and varying motions.

On the other hand, the theory is implausible because convection does not normally occur along lines, and it certainly does not occur along lines broken by frequent offsets or changes in direction, as the ridge is. Also it is difficult to see how the theory applies to the plate between the Mid-Atlantic Ridge and the ridge in the Indian Ocean. This plate is growing on both sides, and since there is no intermediate trench, the two ridges must be moving apart. It would be odd if the rising convection currents kept exact pace with them. An alternative theory is that the sinking part of the plate, which is denser than the hotter surrounding mantle, pulls the rest of the plate after it. Again it is difficult to see how this applies to the ridge in the South Atlantic, where neither the African nor the American plate has a sinking part.

Another possibility is that the sinking plate cools the neighboring mantle and produces convection currents that move the plates. This last theory is attractive because it gives some hope of explaining the enclosed seas, such as the Sea of Japan. These seas have a typical oceanic floor, except that the floor is overlaid by several kilometers of sediment. Their floors have probably been sinking for long periods. It seems possible that a sinking current of cooled mantle material on the upper side of the plate might be the cause of such deep basins. The enclosed seas are an important feature of the earth's surface, and seriously require explanation because, in addition to the enclosed seas that are developing at present behind island arcs, there are a number of older ones of possibly similar origin, such as the Gulf of Mexico, the Black Sea, and perhaps the North Sea.

18) According to the traditional view of the origin of the ocean basins, which of the following is sufficient to move the continental plates?
a) Increases in sedimentation on ocean floors
b) Spreading of ocean trenches
c) Movement of mid-ocean ridges
d) Sinking of ocean basins
e) Differences in temperature under oceans and continents

19) It can be inferred from the passage that, of the following, the deepest sediments would be found in the
a) Indian Ocean
b) Black Sea
c) Mid-Atlantic
d) South Atlantic
e) Pacific

20) The author refers to a "conveyor belt" in line 13 in order to
a) illustrate the effects of convection in the mantle
b) show how temperature differences depend on the positions of the continents

d) demonstrate the linear nature of the Mid-Atlantic Ridge
e) describe the complicated motions made possible by back-coupling
f) account for the rising currents under certain mid-ocean ridges

21) The author regards the traditional view of the origin of the oceans with
a) slight apprehension
b) absolute indifference
c) indignant anger
d) complete disbelief
e) guarded skepticism

22) According to the passage, which of the following are separated by a plate that is growing on both sides?
a) The Pacific Ocean and the Sea of Japan
b) The South Atlantic Ridge and the North Sea Ridge
c) The Gulf of Mexico and the South Atlantic Ridge
d) The Mid-Atlantic Ridge and the Indian Ocean Ridge
e) The Black Sea and the Sea of Japan

23) Which of the following, if it could be demonstrated, would most support the traditional view of ocean formation?
a) Convection usually occurs along lines.
b) The upper mantle behaves as a dense solid.
c) Sedimentation occurs at a constant rate.
d) Sinking plates cool the mantle.
e) Island arcs surround enclosed seas.

24) According to the passage, the floor of the Black Sea can best be compared to a
a) rapidly moving conveyor belt
b) slowly settling foundation
c) rapidly expanding balloon
d) violently erupting volcano
e) slowly eroding mountain

25) Which of the following titles would best describe the content of the passage?
a) A Description of the Oceans of the World
b) Several Theories of Ocean Basin Formation
c) The Traditional View of the Oceans
d) Convection and Ocean Currents
e) Temperature Differences among the Oceans of the World

Section 4: Critical Reasoning

Critical reasoning section uses multiple-choice questions to measure your ability to read and comprehend written material, to reason and to evaluate arguments, and to correct written material to conform to standard written English. Because the Verbal section includes content from a variety of topics, you may be generally familiar with some of the material; however, neither the passages nor the questions assume knowledge of the topics discussed. Critical reasoning questions are intermingled with reading comprehension and sentence correction questions throughout the Verbal section of the test.
Although critical reasoning questions are based on written passages, these passages are shorter than reading comprehension passages. They tend to be less than 100 words in length and generally are followed by one or two questions. For these questions, you will see a split computer screen. The written passage will remain visible as each question associated with that passage appears in turn on the screen. You will see only one question at a time.

Critical reasoning questions are designed to test the reasoning skills involved in (1) making arguments, (2) evaluating arguments, and (3) formulating or evaluating a plan of action. The materials on which questions are based are drawn from a variety of sources.

In these questions, you are to analyze the situation on which each question is based, and then select the answer choice that most appropriately answers the question. Begin by reading the passages carefully, then reading the five answer choices. If the correct answer is not immediately obvious to you, see whether you can eliminate some of the wrong answers. Reading the passage a second time may be helpful in illuminating subtleties that were not immediately evident.

Answering critical reasoning questions requires no specialized knowledge of any particular field; you don't have to have knowledge of the terminology and conventions of formal logic. The sample critical reasoning questions in this chapter illustrate the variety of topics the test may cover, the kinds of questions it may ask, and the level of analysis it requires.

The following pages describe what critical reasoning questions are designed to measure and present the directions that will precede questions of this type. Sample questions and explanations of the correct answers follow.

What Is Measured

Critical reasoning questions are designed to provide one measure of your ability to reason effectively in the following areas:

1. **Argument construction** Questions in this category may ask you to recognize such things as the basic structure of an argument, properly drawn conclusions, underlying assumptions, well-supported explanatory hypotheses, and parallels between structurally similar arguments.

2) **Argument evaluation** These questions may ask you to analyze a given argument and to recognize such things as factors that would strengthen or weaken the given argument; reasoning errors committed in making that argument; and aspects of the method by which the argument proceeds.

3) **Formulating and evaluating a plan of action** This type of question may ask you to recognize such things as the relative appropriateness, effectiveness, or efficiency of different plans of action; factors that would

strengthen or weaken the prospects of success of a proposed plan of action; and assumptions underlying a proposed plan of action.

Test-Taking Strategies

1) Read very carefully the set of statements on which a question is based. Pay close attention to

a) What is put forward as factual information
b) What is not said but necessarily follows from what is said
c) What is claimed to follow from facts that have been put forward
d) How well substantiated are any claims that a particular conclusion follows from the facts that have been put forward

In reading the arguments, it is important to pay attention to the logical reasoning used; the actual truth of statements portrayed, as fact is not important.

2) Identify the conclusion.

The conclusion does not necessarily come at the end of the text; it may come somewhere in the middle or even at the beginning. Be alert to clues in the text that an argument follows logically from another statement or statements in the text.

3) Determine exactly what each question asks.

You might find it helpful to read the question first, before reading the material on which it is based; don't assume that you know what you will be asked about an argument. An argument may have obvious flaws, and one question may ask you to detect them. But another question may direct you to select the one answer choice that does NOT describe a flaw in the argument.

4) Read all the answer choices carefully.

Do not assume that a given answer is the best without first reading all the choices.

Practice Questions

1) Mr. Janeck: I don't believe Stevenson will win the election for governor. Few voters are willing to elect a businessman with no political experience to such a responsible public office.
Ms. Siuzdak: You're wrong. The experience of running a major corporation is a valuable preparation for the task of running a state government.
M. Siuzdak's response shows that she has interpreted Mr. Janeck's remark to imply which of the following?

a) Mr. Janeck considers Stevenson unqualified for the office of governor.
b) No candidate without political experience has ever been elected governor of a state.
c) Mr. Janeck believes that political leadership and business leadership are closely analogous.
d) A career spent in the pursuit of profit can be an impediment to one's ability to

run a state government fairly.

e) Voters generally overestimate the value of political experience when selecting a candidate.

2) Which of the following best completes the passage below?

> One tax -reform proposal that has gained increasing support in recent years is the flat tax, which would impose a uniform tax rate on incomes at every level. Opponents of the flat tax say that a progressive tax system, which levies a higher rate of taxes on higher-income taxpayers, is fairer, placing the greater burden on those better able to bear it. However, the present crazy quilt of tax deductions, exemptions, credits, and loopholes benefits primarily the high-income taxpayer, who is consequently able to reduce his or her effective tax rate, often to a level below that paid by the lower-income taxpayer. Therefore, _____

a) higher-income taxpayers are likely to lend their support to the flat-tax proposal now being considered by Congress
b) a flat-tax system that allowed no deductions or exemptions would substantially increase actual government revenues
c) the lower-income taxpayer might well be penalized by the institution of a flat-tax system in this country
d) the progressive nature of our present tax system is more illusory than real
e) the flat tax would actually be fairer to the lower-income taxpayer than any progressive tax system could be

3) As part of our program to halt the influx of illegal immigrants, the administration is proposing the creation of a national identity card. The card would be available only to U.S. citizens and to registered aliens, and all persons would be required to produce the card before they could be given a job. Of course, such a system holds the potential, however slight, for the abuse of civil liberties. Therefore, all personal information gathered through this system would be held strictly confidential, to be released only by authorized personnel under appropriate circumstances. Those who are in compliance with U.S. laws would have nothing to fear from the identity card system.

In evaluating the above proposal, a person concerned about the misuse of confidential information would be most interested in having the author clarify the meaning of which of the following phrases?

a) “all persons” (line 5)
b) “however slight” (line 7)
c) “civil liberties” (line 8)
d) “appropriate circumstances” (line 11)
e) “U.S. laws” (line 2)

4) At one time, European and Japanese companies tried to imitate their American rivals. Today, American appliance manufacturers import European scientists to lead their research staffs; American automakers design cars that mimic the styling of German, Italian, and French imports; and American electronics firms boast in their advertising of “Japanese-style” devotion to quality and reliability. In the world of high technology, America has lost the battle for international prestige.

Each of the following statements, if true, would help to support the claim above EXCEPT:

a) An American camera company claims in its promotional literature to produce cameras “as fine as the best Swiss imports.”
b) An American maker of stereo components designs its products to resemble those of a popular Japanese firm.
c) An American manufacturer of video games uses a brand name chosen because it sounds like a Japanese word.
d) An American maker of televisions studies German-made televisions in order to adopt German manufacturing techniques.

e) An American maker of frozen foods advertises its dinners as "Real European-style entrees prepared by fine French and Italian chefs."

5) Johnson is on firm ground when he asserts that the early editors of Dickinson's poetry often distorted her intentions. Yet Johnson's own, more faithful, text is still guilty of its own forms of distortion. To standardize Dickinson's often indecipherable handwritten punctuation by the use of the dash is to render permanent a casual mode of poetic phrasing that Dickinson surely never expected to see in print. It implies that Dickinson chose the dash as her typical mark of punctuation when, in fact, she apparently never made any definitive choice at all.

Which of the following best summarizes the author's main point?

a) Although Johnson is right in criticizing Dickinson's early editors for their distortion of her work, his own text is guilty of equally serious distortions.
b) Johnson's use of the dash in his text of Dickinson's poetry misleads readers about the poet's intentions.
c) Because Dickinson never expected her poetry to be published, virtually any attempt at editing it must run counter to her intentions.
d) Although Johnson's attempt to produce a more faithful text of Dickinson's poetry is well-meaning, his study of the material lacks sufficient thoroughness.
e) Dickinson's editors, including Johnson, have failed to deal adequately with the problem of deciphering Dickinson's handwritten manuscripts.

6) A law requiring companies to offer employees unpaid time off to care for their children will harm the economic competitiveness of our nation's businesses. Companies must be free to set their own employment policies without mandated parental-leave regulations.

Which of the following, if true, would most seriously weaken the conclusion of the argument above?

a) A parental-leave law will serve to strengthen the family as a social institution in this country.
b) Many businesses in this country already offer employees some form of parental leave.
c) Some of the countries with the most economically competitive businesses have strong parental-leave regulations.
d) Only companies with one hundred or more employees would be subject to the proposed parental-leave law.
e) In most polls, a majority of citizens say they favor passage of a parental-leave law.

7) If A,
then B.
If B,
then C.
If C,
then D.

If all of the statements above are true, which of the following must also be true?

a) If D, then A.
b) If not B, then not C.
c) If not D, then not A.
d) If D, then E.
e) If not A, then not D.

8) Dear Applicant:

Thank you for your application. Unfortunately, we are unable to offer you a position in our local government office for the summer. As you know, funding for summer jobs is limited, and it is impossible for us to offer jobs to all those who want them. Consequently, we are forced to reject many highly qualified applicants.

Which of the following can be inferred from the letter?

a) The number of applicants for summer jobs in the government office exceeded the number of summer jobs available.
b) The applicant who received the letter was considered highly qualified.
c) Very little funding was available for summer jobs in the government office.
d) The application of the person who received the letter was considered carefully before being rejected.
e) Most of those who applied for summer jobs were considered qualified for the available positions.

9) Studies of fatal automobile accidents reveal that, in the majority of cases in which one occupant of an automobile is killed while another survives, it is the passenger, not the driver, who is killed. It is ironic that the innocent passenger should suffer for the driver's carelessness, while the driver often suffers only minor injuries or none at all.
Which of the following is an assumption underlying the reasoning in the passage above?
a) In most fatal automobile accidents, the driver of a car in which an occupant is killed is at fault.
b) Drivers of automobiles are rarely killed in auto accidents.
c) Most deaths in fatal automobile accidents are suffered by occupants of cars rather than by pedestrians.
d) Auto safety experts should increase their efforts to provide protection for those in the passenger seats of automobiles.
e) Automobile passengers sometimes play a contributing role in causing auto accidents.

Questions 10-11 are based on the following

> As one who has always believed that truth is our nation's surest weapon in the propaganda war against our foes, I am distressed by reports of "disinformation" campaigns by American intelligence agents in Western Europe. In a disinformation campaign, untruths are disseminated through gullible local journalists in order to damage the interests of our enemies and protect our own. Those who defend this practice say that lying is necessary to counter Soviet disinformation campaigns aimed at damaging America's political interests. These apologists contend that one must fight fire with fire. I would point out to the apologists that the fire department finds water more effective.

10) The author of the passage above bases his conclusion on which of the following?
a) A circular definition of "disinformation"
b) An example of the ineffectiveness of lying as a weapon in the propaganda war
c) An analogy between truth and water
d) An appeal to the authority of the fire department
e) An attack on the character of American intelligence agents in Western Europe

11) The author's main point is that
a) although disinformation campaigns may be effective, they are unacceptable on ethical grounds
b) America's moral standing in the world depends on its adherence to the truth
c) the temporary political gains produced by disinformation campaigns generally give way to long-term losses
d) Soviet disinformation campaigns have done little to damage America's standing in Europe
e) disinformation campaigns do not effectively serve the political interests of the United States

12) Are you still reading the other newspaper in town? Did you know that the *Daily Bugle* is owned by an out-of- town business syndicate that couldn't care less about the people of Gotham City? Read the *Daily Clarion*, the only *real* voice of the people of Gotham City!
Which of the following most directly refutes the argument raised in the advertisement above?
a) Over half of the advertising revenues of the *Daily Clarion* come from firms whose headquarters are located outside of Gotham City.
b) The *Daily Clarion* usually devotes more of its pages to out-of-town news than does the *Daily Bugle*.
c) Nearly 40 percent of the readers of the *Daily Clarion* reside outside the limits of Gotham City.

d) The editor-in-chief and all the other members of the editorial staff of the *Daily Bugle* have lived and worked in Gotham City for ten years or more.
e) The *Daily Bugle* has been published in Gotham City for a longer time than has the *Daily Clarion*.

Questions 13-14 are based on the following.

The earth's resources are being depleted much too fast. To correct this, the United States must keep its resource consumption at present levels for many years to come.

13) The argument above depends on which of the following assumptions?
a) Per capita resource consumption in the United States is at an all-time high.
b) The United States wastes resources.
c) The United States uses more resources than any other country.
d) The United States imports most of the resources it uses.
e) Curbing U.S. resource consumption will significantly retard world resource depletion.

14) Which of the following, if true, would most strengthen the argument above?
a) New resource deposits are constantly being discovered.
b) The United States consumes one-third of all resources used in the world.
c) Other countries need economic development more than the United States does.
d) Other countries have agreed to hold their resource consumption at present levels.
e) The United States has been conserving resources for several years.

15) Alba: I don't intend to vote for Senator Frank in the next election. She is not a strong supporter of the war against crime.

Tam: But Senator Frank sponsored the latest anticrime law passed by the Senate.

Alba: If Senator Frank sponsored it, it can't be a very strong anticrime law. Which of the following identifies the most serious logical flaw in Alba's reasoning?

a) The facts she presents do not support her conclusion that Senator Frank is soft on crime.
b) She assumes without proof that crime is the most important issue in the upcoming election.
c) She argues in a circle, using an unsupported assertion to dismiss conflicting evidence.
d) She attacks Senator Frank on personal grounds rather than on he merit as a political leader.
e) In deciding not to vote for Senator Frank, she fails to consider issues other than crime.

16) Which of the following best completes the passage below?

the most serious flaw in television's coverage of election campaigns is its tendency to focus on the horse-race side of politics—that is, to concentrate on the question "Who's winning?" at the expense of substantive coverage of the issues and the candidates' positions on them. The endless interviews with campaign managers, discussions of campaign strategies, and, especially, the obsession with opinion polls have surrounded elections with the atmosphere of a football game or a prizefight. To reform this situation, a first step might well be_____

a) a shortening of the length of election campaigns to a period of six weeks
b) a stringent limit on campaign spending
c) a reduction in the television coverage of opinion polls during election campaigns
d) the publication and distribution of voter-education literature to inform the public about each candidate's position on the major issues
e) a limit on the length and number of political advertisements broadcast on television

17) With Proposition 13, if you bought your house 11 years ago for $75,000, your property tax would be approximately $914 a year (1 percent of $75,000 increased by 2 percent each year for 11 years); and if your neighbor bought an identical house next door to you for $200,000 this year, his tax would be $2,000 (1 percent of $200,000). Without Proposition 13, both you and your neighbor would pay $6,000 a year in property taxes (3 percent of $200,000).

Which of the following is the conclusion for which the author most likely is arguing in the passage above?

a) Proposition 13 is unconstitutional because it imposes an unequal tax on properties of equal value.
b) If Proposition 13 is repealed, every homeowner is likely to experience a substantial increase in property taxes.
c) By preventing inflation from driving up property values, Proposition 13 has saved homeowners thousands of dollars in property taxes.
d) If Proposition 13 is not repealed, identical properties will continue to be taxed at different rates.
e) Proposition 13 has benefited some homeowners more than others.

Questions 18-19 are based on the following.

At an enormous research cost, a leading chemical company has developed a manufacturing process for converting wood fibers into a plastic. According to the company, this new plastic can be used for, among other things, the hulls of small sailboats. But what does the company think sailboat hulls used to be made of? Surely the mania for high technology can scarcely go further than this.

18) The author's opinion of the manufacturing process described in the passage is based primarily on the fact that
    a) plastic is unlikely to be durable enough for high-quality sailboat hulls
    b) the research costs of developing the process outweigh any savings possible from the use of the plastic
    c) a small sailboat is not normally regarded as a high-tech product
    d) hulls for small sailboats can be made from wood without converting it into plastic
    e) many other spheres of human activity are in far greater need of technological research

19) Which of the following, if true, would most seriously weaken the author's conclusion?
    a) he plastic produced by the process is considerably lighter, stronger, and more watertight than wood.
    b) The wood used in producing the plastic is itself in increasingly short supply.
    c) The cost of the manufacturing process of the plastic increases the cost of producing a sailboat hull by 10 to 15 percent.
    d) Much of the cost of the research that developed the new process will be written off for tax purposes by the chemical company.
    e) The development of the new plastic is expected to help make the chemical company an important supplier of boat-building materials.

20) A young man eager to become a master swordsman journeyed to the home of the greatest teacher of swordsmanship in the kingdom. He asked the teacher, "How quickly can you teach me to be a master swordsman?" The old teacher replied, "It will take ten years." Unsatisfied, the young man asked, "What if I am willing to work night and day, every day of the year?" the teacher replied, "In that case, it will take twenty years."

    The teacher's main point is that an important quality of a master swordsman is
    a) humility
    b) willingness to work hard
    c) respect for one's elders
    d) patience

Section 5: Fill in the Blanks

5.1 Basic Concepts

How to Solve 'Fill in the Blank' Questions

STEP 1: Read the statement carefully and first, try to fill the missing word without looking at the options

STEP 2: Choose the word from the options that best replaces the word that you had thought of initially

STEP 3: Read the sentence again by replacing the blank with the option that you have chosen
NOTE: You must ensure that the word you have inserted in the blank, enables you to read the sentence smoothly and correctly

STEP 4: Read the sentence one last time to ensure that there are no grammatical errors in the sentence. Also check whether the sentence actually makes sense or not, once you have placed the option you think is correct in place of the blank.

Points to Remember

1. Questions on 'fill in the blank' are frequently asked in all placement exams. To be able to solve such questions correctly, you must have a very good **vocabulary.**

2. It is very important that you **read the sentence in the question very carefully**. In most of the cases, clues about the type of information needed to fill the gap — a person's name, a date or a fact — can be derived by a good understanding of the meaning of the sentence itself.

3. You should keep a close watch at **grammar clues**, for instance, if the article, "an" comes before the blank, then it implies that the answer must begin with a vowel. Such grammatical clues can be of great help in deciding the answers.
4. You must recognise the logical structure of a sentence and pay attention to what the question requires.
5. It is necessary that you **understand the context** of the sentence. While closely reading the sentence and the options given in the question, you must try to determine the tone of the missing word — whether the required word is positive or negative in the meaning it implies
6. In certain fill in the blank questions, you are required to fill more than one blank. In such cases you should use the **method of elimination** by simultaneously checking which of the options best satisfies both the entries.

7. In certain questions your knowledge and understanding of common idioms and phrases in English Language may be tested. Hence, be sure to have a good skill set of such phrases.

8. Ensure that the **meaning of the sentence is intact**. Once you have placed the likely option, do check that the sentence gives out a plausible meaning.

9. In case you are confused between two or more options, you can also apply the **hit & trial method** – one by one place each of the likely options in place of the missing word in the sentence. The option which credits maximum meaning to the sentence should be the correct answer.

10. **Do not spend a lot of time** on one question. If you are unable to spot the correct answer, despite repeated efforts, leave the question and move forward.

5.2 Practice Questions

Q.1-5. Choose a word to be fitted in both the sentences

1. **Almost 90% of the spices produced are utilized within the country, and only the ——- is exported.**
   Rohit was advised to take ——— since he broke his leg in the accident. A. Medicine B. Coffee C. As D. Rest E. Leftover

2. **The ————-of the bus was arrested two days after the incident.**
   Women's safety was the key ——— behind the big push for sanitation in the villages.

   A. Passenger B. Trainer C. Issue D. Owner E. Driver

3. **She————- in slum area and struggles hard to reach her workplace everyday.**
   Despite the existence of safety norms, many private buses plying in Malabar continue to violate all norms risking the ——— of passengers.

   A. Lives B. Calm C. Plays D. Aptitude E. Dwell

4. **It is always the ordinary people who ———victims of violence because the politicians move around in bullet-proof vehicles.**
   Those who conspire against others———— into their own trap.

   A. Indicate B. Shun C. Fall D. Transform E. Suppressed

5. **The fleeting ————- of rainfall have increased the fears of steep rise in vegetable prices among traders and consumers.**
   The child had the problem of learning how to ———- a word, for which he was taken to the psychiatrist.

   A. Order B. Spell C. Form D. Change E. Occur

Q.6-30. Choose a word to be fitted in the blank

6. **Steel prices, which have been on the rise for last several years, have ——— —-the backbone of auto parts industry.**

   A. Joined B. Burst C. Broken D. Altered E. Distanced

7. **Adopting healthy habits is vital in curbing the spread of H1N1, and it is high time people ———it.**
   A. Rage B. Chooses C. Hover D. Gather E. Realize

8. **It is ————-for children, elderly and people suffering from lung diseases to avoid going out early in the morning.**
   A. Tired B. Rampant C. Affected D. Advisable E. Enviable

9. Since ————on mango trees is a very sensitive period, any weather change can badly hit its productivity and quality.
A. Towering B. Pruning C. Washing D. Flowering E. Sprayed

10. The ————should understand that they would get a licence only if they have basic skills of driving.
A. Residential B. Political C. Authoritative D. Applicants E. Driven

11. My Mother upset the kettle of boiling water and____her right hand badly.
(A) Scorched (B) Burn (C) Wounded (D) Scalded (E) None of these

12. Please do not____an offer made by the Chairman.
(A) Refuse (B) Deny (C) Refrain (D) Refuge (E) None of these

13. The government is confident that the standard of living will begin to_____again soon.
(A) Rise (B) Lift (C) Flourish (D) Revive (E) None of those

14. On second reading his poems strike us as singularly___of subline emotions.
(A) Attribute (B) Significative (C) Symptomatic (D) Evocative (E) None of these

15. Health is too important to be____
(A) Neglected (B) Discarded (C) Despised (D) Detested (E) None of these

16. Even a ___glance will reveal the mystery.
(A) Crude (B) Cursory (C) Critical (D) Curious (E) None of these

17. Like any other country India has its___share of superstitions.
(A) Abundant (B) Fair (C) Proper (D) Peculiar (E) None of these

18. Hindus believe that _____from the cycle of birth and rebirth can be attained only by good deeds.
(A) Bondage (B) Deliverance (C) Delivery (D) Retirement (E)

None of these

19. An employment advertisement should ___the number of vacancies.
(A) Provide (B) Declare (C) Contain (D) Specify (E) None of these

20. The family gave father a gold watch on the _____of his fifteenth birthday.
(A) Time (B) Event (C) Occasion (D) Celebration (E) None of these

21. The passengers were afraid but the captain _____them that there was no danger.
A)Promised (B) Advised (C) Assured (D)Consele (E)None of these

22. **It's very kind of you to _____to speak at the meeting.** 8.

(A) Comply (B) Agree (C) Accept (D) Concur (E) None of these

23. I haven't seen you ___a week
(A) Within (B) Since (C) For (D) From (E) None of these

24. Do you Know_____?

(A) Where she comes from (B) Where does she come from (C) Where from she comes
(D) From where does she come (E) None of these

25. The battalion operating from the mountain was able to _____three enemy divisions.
(A) Tie up (B)Tie Down (C)Tie on (D)Tie with (E)None of these

26. She_____a brief appearance at the end of the party.

(A) Put on (B)Put in (C)Put across (D)Put up (E)None of these

27. Once he has signed the aggrement, he won't be able to_____.

(A) Bank up (B)Back in (C)Back at (D)Back out (E) None of these

28. _____of old paintings is a job for the experts.
(A) Resurrection (B) Retrieval (C) Restoration (D) Resumption

(E) None of these

29. The terrorists made a vain attempt to _____the bridge.
(A) Blow down (B) Blow up (C) Blow over (D) Blow out (E) None of these

30. The Finance Minister may _____new proposal in his budget speech.
(A) Bring out (B) Bring forward (C) Bring round (D) Bring forth (E) None of these

Direction to solve from 31-40: Each question below has two blanks. There are five pairs of words below each sentence. Each pair is numbered. Choose the pair of words which can be filled up in the blanks in the sentence in the same order so as to complete the sentence meaningfully.

31. The _____playing of loud music has led the angry residents of this vicinity to file a police complaint and move court against the organizer's lack of _____for the people's need for a peaceful neighbour-hood.
(A) peaceful, thought (B) abrupt, hope (C) incessant, consideration
(D) fashionable, friendliness (E) intermittent, interpretation

32. The _____of the chronic balance of payments deficit which has _____the Finance Ministry under three Prime Ministers is very real.
(A) temptation, reviled (B) understanding. Menaced (C)

impact, Underestimated (D) obligation, blessed

(E) dilemma, plagued

33. Britain for the present, is deeply _____in economic troubles, and the economic future, heavily _____looks uncertain.
(A) engrossed, responsive (B) ingrained, sceptical (C) saturate, Enveloped (D) mired, mortgaged (E) restrained, participative

34. Our Constitution was based on the belief that the free_____of ideas, people and cultures is essential to the____of a democratic society.
(A) selection, concurrence (B) interchange, preservation (C) reversal. Upholding (D) dissemination congruence (E) distinction, design

35. As this country has become more _____industrial and internationalized, it has like all Western democracies, experienced a neces-sary increase in the _____of the executive.
(A) urbanized, role (B) objective, wealth (C) synthesized, efficiency (D) civilized, convenience (E) concretized, vision

36. More is …… of conditions of the tribals in Maharashtra than …… conditions of those in the other parts of the country.
(A) certain ……the (B) known …… of (C) aware …… of (D) favourable……those (E) uncertain…… all

37. Although …… is not a very desirable feeling, we need a certain amount of it to ……
(A)Anxiet----exist (B)grief----enjoy (C)impatience----preach (D)anger define (E)jealousy bad

38. Although he is a _____person,he occasionally loses his_____.
(A)quiet-------power (B)Cheerful-----grief (C)balanced—temper (D)thoughtful anxiety (E)generous wealth

39. In a_____tone,the leader made a powerful_____to the people.
(A)realistic---zeal(B)lower---conviction (C)loud argument (D)soft---appeal (E)pitch statement

40. The tunnel was so_____and congested, that we became_____
(A)long-----enthusiastic (B)deep----cautions (C)dark---frightened(D)crowed islated (E)sharp worried

Select the most appropriate word for the blank to make the sentence meaningful.

41. The boy was _____of cheating in the examination.
(A) Condemned (B) accused (C) Charged (D) punished

42. We have two telephone operators, _____of them do you want?
(A) who (B) whom (C) which (D) what

43. I have no _____motive in offering this advice.
(A)Posterior (B) interior
(C) ulterior (D) exterior

44. _____ politicians are always respected.
(A) Conscious (B) Conscientious
(C) Cautious (D) Carefree

45. We will have to atone _____our misdeeds.
(A) at (B) on
(C) for (D) with

46. I got used _____on the right when I was in the U.S. for two years.
(A) Driving (B) to drive
(C) to driving (D) by driving

47. Had you told me earlier I _____the meeting.
(A) had attended (B) have attended
(C) attended (D) would have attended

48. The climate is not conducive _____good health.
(A) with (B) from
(C) in (D) to

49. A dog lives in a _____
(A) burrow (B) coop
(C) stable (D) kennel

50. Many things have happened _____I met you last.
(A) before (B) when
(C) from (D) since

Directions (51-80): In the following passage there are blanks, each of which has been numbered. These numbers are printed below the passage and against each, five words suggested, one of which fits the blank appropriately. Find out the appropriate word in each case.

Indeed, much progress in this ***...(51)...*** *has already been made as a* ***...(52)...*** *of the combined* ***...(53)...*** *of the government and the people of the state and the* ***...(54)...***
initiative provided by Central Government under Prime Minister's ***...(55)...*** *leadership. The results of* ***... (56)...*** *efforts are there for all to see. Prices of* ***... (57)...*** *commodities and other goods have* ***...(58)...*** *considerably. The rate of inflation* ***... (59)...*** *fallen to gratifying figure of* ***... (60)...*** *minus 3 % , the* ***...(61)...*** *in the world. There is complete harmony in* ***...(62)...*** *public and private sector establishments and* ***...(63)...*** *is bound to lead to* ***...(64)...*** *industrial and agricultural production. Is it is hope or a* ***...(65)...***

51. (A) Behalf (B) Regards (C) Way (D) Regard (E) Respect
52. (A) Resultant (B) Resulting (C) Result (D) Resulted (E) Resultify
53. (A) Effort (B) Work (C) Efforts (D) Progress (E) Movement
54. (A) Proper (B) Welcomes (C) Required (D) Welcome (E) Initialization
55. (A) Chair (B) Inspires (C) Inspiring (D) Stable (E) Stabilize
56. (A) The (B) These (C) This (D) Those (E) Then
57. (A) Certain (B) Essential (C) Good (D) Several (E) Manifold
58. (A) Fell (B) Falls (C) Fallen (D) Risen (E) Plummeted
59. (A) Have (B) Become (C) Has (D) Greatly (E) Rarely

60. (A) Above (B) Near (C) Nearly (D) Inflation (E) Internal
61. (A) Highest (B) Lowest (C) Higher (D) Lower (E) Lowering
62. (A) State (B) All (C) Both (D) Either (E) Center
63. (A) Will (B) These (C) This (D) Those (E) That
64. (A) Great (B) High (C) Greater (D) Lower (E) Lowest
65. (A) Certainty (B) Definitive (C) Hope (D) Ultimate (E) Expectation

Does Indian industry need democracy? The Indian economy's sustained growth today is.... (66) by incomplete democracy. While millions of Indians endure poverty, only a tiny majority ……(67)…… prosperity. On the other hand, many Latin American countries have registered ……(68)…… growth rates under military dictators and today one of the fastest growing economies in the world – china- has an ……(69) rather than a democracy government. So why does Indian need democracy for sustained growth? To many, democracy ……(70) slower decision making with corrupt politicians and red-tapism etc. Industry should, therefore, be ……..(71)…… with less, not more, democracy. However, while China …….(72)Consumption in order to save and invest more than half its output to produce 10% growth, India …….(73)…… almost two-thirds of its output and manages to achieve 9% growth from one-third of its output. ……(74) ……. India's democracy is not inefficient when it comes to making ……(75) use of resources.

66. (a) deprived (b) hampered (c) eliminated (d) faced (e) threaten
67. (a) pursuit (b) acquisition (c) benefit (d) enjoy (e) value
68. (a) acceptable (b) insignificant (c) variable (d) inflated (e) affordable
69. (a) autonomous (b) economical (c) authoritarian (d) egalitarian (e)orthodox
70. (a) imply (b) mentions (c) attracts (d) features (e) means
71. (a) gracious (b) adapted (c) fascinated (d) pleased (e) urged
72. (a) bans (b) curtails (c) regulate (d) ceases (e) discourage
73. (a) consumes (b) selects (c) indulges (d) disperse (e) hoard
74. (a) Accordingly (b) Totally (c) Thus (d) Even (e) Likely
75. (a) ultimately (b) capably (c) modest (d) secure (e) effective

Fill the blanks and make sentence complete

76. He is too to be deceived easily
    a. strong b. modern c. kind d. intelligent
77. Ravi's behaviour is worthy of by all the youngsters.
    a. trail b. emulation c. following d. exploration
78. The speaker did not properly use the time as he went on on one point alone.
    a. dilating b. devoting c. deliberation d. diluting
79. The principal and staff have made… efforts to enable the students to attend college on the days of the bus strike.
    a. integrated b. deliberate c. concerted d. systematic
80. It was that a mind so pure and searching could miss the truth.
    a. likely b. unlikely c. possible d. scarcely
81. The is working on wood.
    a. artifact b. artistic c. artist d. artisan
82. If an indelible ink is used, this will not be…….
    a. observed b. obligated c. obliterated d. obviated
83. He that he could speak five languages.
    a. challenged b. boasted c. submitted d. suggested
84. It is indeed……that 40 years after independence, we have failed to a suitable education or examination system.
    a. bad, produce b. improper, create

c. sad, evolve d. objectionable, present

85. The boy you met yesterday is in class……..
a. ninth b. the ninth c. nine d. the nine

86. The children were disappointed because they had hoped ……with us.
a. to have gone b. to go c. would have gone d. none of these

87. He is the friend ……I trust most.
a. him b. whom c. which d. who

88. The meeting was presided by the Prime Minister.
a. on b. upon c. up d. over

89. He… his camera on the railway.
a. laid b. lay c. lain d. none of these

90. The doctor tried both pencillin and sulphamilamide; the pencillin proved to be the ……effective drug.
a. very b. more c. most d. none of these

91. The soldiers were instructed to restraint and handle the situation peacefully.
a. exercise b. control c. prevent d. enforce

92. My friend took his first pay to the bank to it in his account.
a. deposit b. deficit c. debit d. demote

93. Family planning is essential for curbing the rapid in population.
a. spread b. increase c. spurt d. augment

94. The ties that bind a family together are… ,that they can hardly withstand any strain.
a. tenacious b. twisted c. tenuous d. tentative

95. The stenographer is very efficient. He is …….to his firm.
a. a credit b. a blessing c. an asset d. a boon

96. The young man lost his way in the forest and found that he had become a/an……to the dacoits.
a. enemy b. adversary c. decoy d. quarry

97. He sold property because he was under a lot of……
a. account b. debt c. loan d. credit

98. He was an who was fond of weird pets.
a. ambitious b. amiable c. eccentric d. emotional

99. He bought new shoes last month but they are already out.
a. given b. gone c. knocked d. worn

100. He knew everything better than anybody else, and it was an affront to his vanity that you should disagree with him.
a. overwrought b. overwhelming c. overweening d. overstrung

Answer Keys
Spot the Errors

1	A	26	C	51	C	76	C
2	C	27	B	52	B	77	B
3	D	28	C	53	B	78	A
4	B	29	B	54	C	79	B
5	B	30	A	55	C	80	C
6	D	31	C	56	C	81	C
7	D	32	D	57	B	82	B
8	A	33	A	58	A	83	B
9	B	34	A	59	B	84	C
10	C	35	D	60	C	85	C
11	A	36	A	61	C	86	D
12	B	37	A	62	A	87	B
13	A	38	B	63	A	88	A
14	A	39	B	64	B	89	C
15	A	40	A	65	A	90	C
16	D	41	B	66	C	91	A
17	C	42	B	67	B	92	C
18	C	43	B	68	A	93	B
19	B	44	A	69	C	94	C
20	C	45	A	70	C	95	C
21	B	46	B	71	D	96	B
22	A	47	B	72	A	97	A
23	C	48	B	73	C	98	A
24	B	49	A	74	D	99	A
25	A	50	C	75	C	100	D

Sentence Correction

1	**A**	26	**A**	51	**D**	76	**A**
2	**B**	27	**C**	52	**C**	77	**A**
3	**A**	28	**B**	53	**B**	78	**B**
4	**D**	29	**A**	54	**C**	79	**C**
5	**D**	30	**A**	55	**C**	80	**C**
6	**B**	31	**D**	56	**D**	81	**B**
7	**B**	32	**D**	57	**D**	82	**D**
8	**A**	33	**B**	58	**A**	83	**D**
9	**B**	34	**B**	59	**C**	84	**C**
10	**C**	35	**A**	60	**B**	85	**A**
11	**B**	36	**B**	61	**C**	86	**B**
12	**B**	37	**A**	62	**B**	87	**A**
13	**B**	38	**A**	63	**C**	88	**B**
14	**A**	39	**B**	64	**A**	89	**A**
15	**C**	40	**C**	65	**C**	90	**B**
16	**A**	41	**D**	66	**D**	91	**B**
17	**A**	42	**C**	67	**B**	92	**A**
18	**B**	43	**C**	68	**B**	93	**C**

19	**A**	44	**D**	69	**A**	94	**D**
20	**C**	45	**C**	70	**D**	95	**B**
21	**B**	46	**C**	71	**C**	96	**B**
22	**B**	47	**A**	72	**B**	97	**C**
23	**C**	48	**C**	73	**C**	98	**B**
24	**C**	49	**D**	74	**B**	99	**A**
25	**A**	50	**C**	75	**B**	100	**C**

Reading Comprehension

1	(B)	2	(E) 3	(C) 4		(A)	5 (C)
6	(B)	7	(E) 8	(C)	9	(A)	10 (B)
11	(C) 12		(E) 13	(B) 14		(C)	15 (B)
16	(C) 17		(D) 18	(E) 19		(B)	20 (A)
	21 (E) 22		(D) 23	(A) 24		(B)	25 (B)

Critical Reasoning

1	(A)	**2**	(D) **3**	(D) **4**		(E)	**5** (B)
6	(C)	**7**	(C) **8**	(A) **9**		(A)	**10** (C)
11	(E) **12**		(D) **13**	(E) **14**		(B)	**15** (C)
16	(C) **17**		(B) **18**	(D) **19**		(A)	**20** (D)