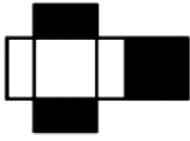




12. Choose the answer figure that is similar to the figure formed by the question figure?

Question figure:



Answer figures:



1) 2) 3) 4)

1) 1 and 3 only

2) 2 and 4 only

3) 3 and 4 only

4) 1 and 4 only

13. In a family, each girl has the same number of brothers as she has sisters and each boy has twice as many sisters as he has brothers. How many boys are there in the family?

1) 2

2) 3

3) 4

4) 5

14. Introducing a woman, Shashank said, "She is the mother of the only daughter of my son". How is that woman related to Shashank?

1) Daughter

2) Sister-in-law

3) Wife

4) Daughter-in-law

15. Find the missing number (?) from the given options.

360, ?, 180, 60, 15, 3

1) 180

2) 360

3) 720

4) 480

16. **Statements:** All cars are cats.

All fans are cats.

**Conclusions:** I) All cars are fans.

II) Some fans are cars.

1) Only Conclusion I follows

2) Only Conclusion II follows

3) Either Conclusion I or II follows

4) Neither Conclusion I nor II follows

17. A boy rode his bicycle Northward, then he turned left and rode 1 km and again turned left and rode 2 km. He found himself 1 km west of his starting point. How far did he ride northward initially?

1) 1 km

2) 2 km

3) 3 km

4) 5 km

18. Choose the correct alternatives from the given ones that will complete the series.

ab\_dec\_e\_bd\_abce\_b\_d

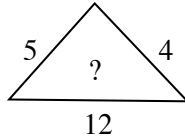
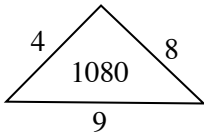
1) bcdeab

2) cdeabc

3) cdaaec

4) dbcaeb

19. From the given options choose the missing number / letter.

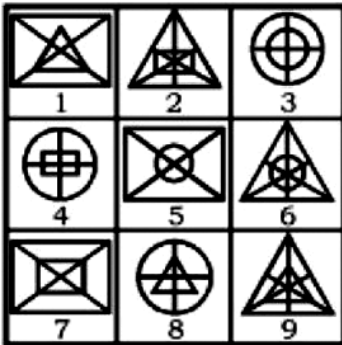


- 1) 800                      2) 1140                      3) 1080                      4) None of these

20. If A \$ B means B is the father of A; A # B means B is the mother of A; A ★ B means B is the sister of A and A @ B means B is the husband of A, then which of the following indicates that N is the grandmother of P?

- 1) P ★ Q # M \$ N              2) P @ Q \$ M # N              3) P # Q \$ N ★ M              4) None of these

21. Group the given figures into three classes using each figure only once.



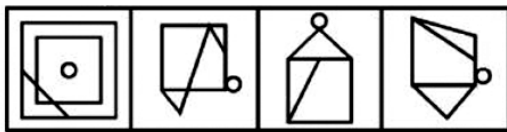
- 1) 2, 4, 7; 1, 8, 9; 3, 5, 6                      2) 2, 6, 9; 1, 5, 7; 3, 4, 8  
3) 2, 6, 7; 1, 5, 8; 3, 4, 9                      4) 2, 8, 7; 1, 5, 9; 3, 4, 6

22. Find out which of the answer figures (1), (2), (3) and (4) can be formed by using the pieces given in question figure?

Questions figure:



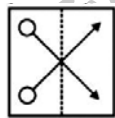
Answer figures:



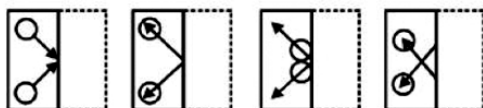
- 1)                      2)                      3)                      4)

23. Find out amongst the four alternative as to how the pattern would appear when the transparent sheet is folded at the dotted line?

Question figure:



Answer figures:



- 1)                      2)                      3)                      4)

24. If  $2 \star 3 = 289$ ,  $3 \star 44 = 1849$  then  $2 \star 4 = ?$

- 1) 624                                      2) 576                                      3) 762                                      4) 1326

25. A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of letters as in two matrices given below. The columns and rows of Matrix - I are numbered from 0 to 4 and that of Matrix - II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column. e.g.: 'A' can be represented by 02, 14, 33 etc., and 'K' can be represented by 57, 69, 88 etc. Similarly, you have to identify the set for the word 'FEAR'.

**Matrix-I**

	0	1	2	3	4
0	R	S	A	C	I
1	C	I	R	S	A
2	S	A	C	I	R
3	I	R	S	A	C
4	A	C	I	R	S

**Matrix-II**

	5	6	7	8	9
5	M	B	K	E	F
6	E	F	M	B	K
7	B	K	E	F	M
8	F	M	B	K	E
9	K	E	F	M	B

- 1) 66, 23, 86, 95                      2) 78, 30, 67, 69                      3) 59, 77, 21, 31                      4) 87, 40, 95, 57

**GENERAL AWARENESS**

26. Who among the following got benefited most by the British revenue system in India?

- 1) Sharecroppers                      2) Peasants                                      3) Zamindars                                      4) Agriculture-labour

27. Which of the following diseases is caused by a virus?

- 1) Influenza                                      2) Pneumonia                                      3) Cholera                                      4) Whooping Cough

28. The earlier name of WTO was .....

- 1) UNCTAD                                      2) GATT                                      3) UNESCO                                      4) FICC

29. The original name of Mahabharata was .....

- 1) Katha Saritsagar                      2) Jai Samhita                                      3) Rajatarangini                                      4) Vraht Katha

30. Which of the following does not come as a product of vehicular pollution?

- 1) Sulphur dioxide                                      2) Nitrogen oxide  
3) Carbon monoxide                                      4) Hydrogen peroxide

31. Pulses are a good source of .....

- 1) Carbohydrates                      2) Vitamins                                      3) Proteins                                      4) Fats

32. The members of Estimates Committee are.....

- 1) elected from Lok Sabha only  
2) elected from Rajya Sabha only  
3) elected from both Lok Sabha and Rajya Sabha  
4) nominated by the Speaker of the Lok Sabha

33. .... was a book written by Late Dr. Mulkraj Anand, the eminent English author.

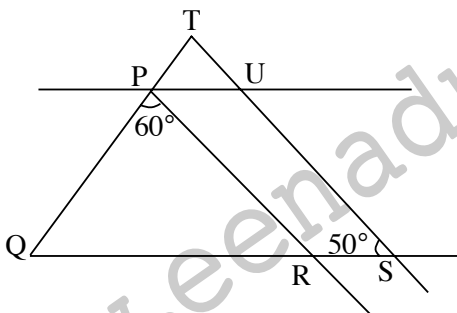
- 1) Coolie                                      2) The Barbers Trade Union  
3) Two Leaves and a Bud                                      4) All of these

34. The Russian nuclear submarine, which sunk killing all on board, was called .....
- 1) Solvik                      2) Lenin                      3) Brodigaya                      4) Kursk
35. The busiest rail section in respect to goods transportation is .....
- 1) Delhi-Kolkata section                      2) Kolkata-Chennai section  
3) Delhi-Mumbai section                      4) Mumbai-Chennai section
36. When was Purna Swaraj day first decided to be celebrated?
- 1) 15<sup>th</sup> August, 1947                      2) 15<sup>th</sup> August, 1930  
3) 26<sup>th</sup> January, 1950                      4) 26<sup>th</sup> January, 1930
37. The original aim of the East India Company was .....
- 1) Colonisation                      2) Trade                      3) Exploitation                      4) Expansion
38. Sarabandi (no-tax) campaign of 1922 was led by .....
- 1) Bhagat Singh                      2) Chittaranjan Das                      3) Rajguru                      4) Vallabhbhai Patel
39. Harihara and Bukka founded which Kingdom/ dynasty?
- 1) Vijay Nagar                      2) Hampi                      3) Vaishali                      4) Takshsila
40. Where is the Meitei language predominantly spoken?
- 1) Nagaland                      2) Bihar                      3) Assam                      4) Manipur
41. Which of the following states is called the 'Tiger State' of India?
- 1) Assa                      2) Gujarat                      3) West Bengal                      4) Madhya Pradesh
42. The metal with more electrical conductivity is .....
- 1) copper                      2) aluminium                      3) silver                      4) lead
43. Match the following.
- |                     |                        |
|---------------------|------------------------|
| I. Limestone        | 1. Fertiliser industry |
| II. Sandstone       | 2. Electrical industry |
| III. Rock phosphate | 3. Cement industry     |
| IV. Mica            | 4. Building material   |
- Codes :**
- |      |    |     |    |      |    |     |    |
|------|----|-----|----|------|----|-----|----|
| I    | II | III | IV | I    | II | III | IV |
| 1) 1 | 3  | 4   | 2  | 2) 3 | 4  | 2   | 1  |
| 3) 3 | 4  | 1   | 2  | 4) 4 | 3  | 1   | 2  |
44. EL Nino is .....
- 1) a sea storm                      2) a warm ocean current  
3) a tropical disturbance                      4) another name of typhoon
45. Energy in reflected light –
- 1) does not depends on the angle of incidence  
2) increases with the increase in angle  
3) decreases with the increase in angle of incidence  
4) becomes maximum for angle of incidences equal to 45°

46. In which city did the first stock exchange begin its operation in India?  
 1) Bombay                      2) Calcutta                      3) Madras                      4) Delhi
47. Ethylene Glycol is added to aviation gasoline because it ....  
 1) reduces evaporation of petrol                      2) increases efficiency of petrol  
 3) prevents freezing of petrol                      4) reduces consumption of petrol
48. How many members of the Rajya Sabha retire in every two years?  
 1) Half                      2) One-third                      3) One-fourth                      4) One-fifth
49. Which one of the following statements is not correct? Vulcanisation of rubber makes it  
 1) soft and flexible                      2) strong and hard  
 3) chemical resistant                      4) withstand highest temperatures
50. An instrument for determining the amount of water vapours present in the atmosphere is known as .....  
 1) Hygrometer                      2) Hydrometer                      3) Chronometer                      4) None of these

**QUANTITATIVE APTITUDE**

51. A can do a piece of work in 24 days, while B can do it in 30 days. With the help of C they can finish the whole work in 12 days. How much time is required for C to complete the work, alone?  
 1) 100 days                      2) 120 days                      3) 125 days                      4) 72 days
52. A person wants to reduce the trade tax so he calculates his profit on the sale price instead of on the cost price. In this way by selling a article for Rs.280 he calculates his profit as  $14 \frac{2}{7} \%$ . What is his actual profit percentage?  
 1) 20 %                      2) 16.66%                      3) 25%                      4) Data insufficient
53. If  $5x - \frac{5}{x} = 10$ , then find the value of  $x^2 + \frac{1}{x^2}$   
 1) 6                      2) 4                      3) -4                      4) 3
54. In the given figure, PR || TS and PU || RS. Find  $\angle TPU$ .



- 1)  $60^\circ$                       2)  $70^\circ$                       3)  $80^\circ$                       4)  $100^\circ$
55. Simplify :  $8 \frac{1}{2} - \left[ 3 \frac{1}{4} \div \left\{ 1 \frac{1}{4} - \frac{1}{2} \left( 1 \frac{1}{2} - \frac{1}{3} - \frac{1}{6} \right) \right\} \right]$   
 1)  $4 \frac{1}{2}$                       2)  $4 \frac{1}{6}$                       3)  $9 \frac{1}{2}$                       4)  $\frac{2}{9}$

56. A cricketer had a certain average of runs for his 64 innings. In his 65<sup>th</sup> innings, he is bowled out for no score on his part. This brings down his average by 2 runs. His new average runs is .....
- 1) 130                                      2) 128                                      3) 70                                      4) 68
57. A motorboat went downstream for 28 km and immediately returned. It took the boat twice as long to make the return trip. If the speed of the river flow were twice high, the trip downstream and back would take 672 minutes. Find the speed of the boat in still water and the speed of the river flow.
- 1) 9 km/h, 3 km/h                                      2) 9 km/h, 6 km/h  
3) 8 km/h, 2 km/h                                      4) 12 km/h, 3 km/h
58. The diagonals of rectangle ABCD meet at O. If  $\angle BOC = 44^\circ$ , then  $\angle OAD$  is equal to
- 1)  $90^\circ$                                       2)  $60^\circ$                                       3)  $100^\circ$                                       4)  $68^\circ$
59. In an examination, a student was asked to find  $\frac{3}{14}$  of a certain number. By mistake, he found  $\frac{3}{4}$  of it. His answer was 150 more than the correct answer. The given number is
- 1) 500                                      2) 280                                      3) 240                                      4) 180
60. Rakesh starts from X to Y a 42 km distance with a speed of 60 km/hr. But after every 10 min. he decreases his speed by 6 km/hr. How much time did he take to reach at Y?
- 1) 52 min.                                      2) 54 min.                                      3) 55 min.                                      4) 53 min.
61. If the four equal circles of radius 3 cm touch each other externally, then the area of the region bounded by the four circles is
- 1)  $4(9 - \pi)$  sq. cm                                      2)  $9(4 - \pi)$  sq. cm  
3)  $5(6 - \pi)$  sq. cm                                      4)  $6(5 - \pi)$  sq. cm
62. Two numbers 11284 and 7655, when divided by a certain number of three digits leaves the same remainder. The sum of digits of such a three-digit number is
- 1) 8                                      2) 9                                      3) 10                                      4) 11
63. A trader marks his goods such that he can make 32% profit after giving 12% discount. However a customer availed 20% discount instead of 12%. What is the new profit percentage of trader ?
- 1) 20%                                      2) 44%                                      3) 30%                                      4) 28.8%
64. If  $x + y + z = 0$ , then find the value of  $\frac{x^2}{yz} + \frac{y^2}{zx} + \frac{z^2}{xy} =$
- 1) 0                                      2) 1                                      3) 2                                      4) 3
65. If  $x + \frac{1}{x} = 5$ , then the value of  $\frac{x^4 + 3x^3 + 5x^2 + 3x + 1}{x^4 + 1}$  is
- 1)  $\frac{43}{23}$                                       2)  $\frac{47}{21}$                                       3)  $\frac{41}{23}$                                       4)  $\frac{45}{21}$
66. If  $\cos 44^\circ 30' = 0.7133$ ,  $\cos 44^\circ 40' = 0.7112$ , then  $\cos 44^\circ 38'$  is
- 1) 0.71162                                      2) 0.71412                                      3) 0.71102                                      4) 0.71302
67. The labour of a labourer is increased by 20%. But every week his work time is reduced by 20%. If earlier he earns Rs.4000 per week, then how much money he will earn per month (in 4 weeks) according to the new labour price?
- 1) Rs.16320                                      2) Rs.15960                                      3) Rs.15360                                      4) Rs.14420



68. A sector is formed by opening out a cone of base radius 8 cm and height 6 cm. Then the radius of the sector is  
 1) 4 cm                                      2) 8 cm                                      3) 10 cm                                      4) 6 cm
69. 49% of the soldiers of a cantonment speaks Hindi and 36% of them speak English and 15% speak both Hindi and English. If 900 soldiers do not speak any of the languages, then find how many soldiers speak only English.  
 1) 610                                      2) 630                                      3) 570                                      4) 670
70. Simplify  $-1^5 + 1^2$   
 1) 0                                      2) 1                                      3) 2                                      4) None

Directions (Q. 71 – 75): Following table shows the marks scored by six students in different subjects:

Student	Subject					
	Maths (150)	Hindi (120)	English (100)	Science (100)	Sanskrit (50)	GK (80)
A	84	66	73	61	24	52
B	75	90	82	54	38	60
C	96	48	65	62	40	44
D	128	75	62	76	34	68
E	108	78	78	70	39	48
F	142	84	48	81	42	38

71. What overall percentage did student B get in all subjects together?  
 1) 62.5%                                      2) 64%                                      3) 66.5%                                      4) 67.5%
72. What is the ratio of the total marks obtained by A to that by F?  
 1) 4 : 5                                      2) 5 : 6                                      3) 5 : 7                                      4) 24 : 29
73. What is the average marks obtained by all the students in Hindi?  
 1) 73.5                                      2) 74.5                                      3) 75                                      4) 76.5
74. What is the average percentage of marks obtained by all the students in Maths?  
 (Answer in approximate value)  
 1) 62%                                      2) 65%                                      3) 68%                                      4) 70%
75. The total marks obtained by E is what percentage more than total marks obtained by A?  
 (Answer in approximate value)  
 1) 9%                                      2) 11%                                      3) 13%                                      4) 17%

**ENGLISH LANGUAGE**

Directions (Q. 76 and 77): In these questions some part of the sentences have errors and some are correct. Find out which part of a sentence has an error and choose the correct alternative out of (1), (2), (3). If a sentence is free from error, your answer is (4).

76. My brother has ordered for a new book.  
 1) No error                                      2) My brother  
 3) for a new book                                      4) has ordered



77. The top-ranking candidates will be appointed in senior jobs in good companies.

- 1) No error  
2) will be appointed in  
3) senior jobs in good companies  
4) The top-ranking candidates

**Directions (Q. 78 – 80):** In these questions, sentences given with blanks to be filled in with an appropriate word(s). Four alternatives are suggested for each question. Choose the correct alternative out of the four.

78. The accused ..... to the judge for mercy.

- 1) asked  
2) appealed  
3) demanded  
4) requested

79. Sachin was to reach that afternoon but was ..... up at Delhi for some personal work.

- 1) kept  
2) held  
3) delayed  
4) stayed

80. He ..... his shoes till they shone.

- 1) brushed  
2) scrubbed  
3) shined  
4) polished

**Directions (Q. 81 – 84):** In these questions, a sentence /a part of the sentence is underlined. Below are given alternatives to the underlined part at (1), (2), (3) which may improve the sentence. Choose the correct alternative. In case no improvement is needed your answer is (4).

81. The problems of translation are still remain.

- 1) are remain  
2) will remained  
3) will still remain  
4) No Improvement

82. Anand has the guts to rise from the occasion and come out successful.

- 1) to rise against  
2) in rising from  
3) to rise to  
4) No Improvement

83. Hundreds of people were killed by the earthquake.

- 1) from  
2) in  
3) of  
4) No Improvement

84. The members of his family are coming in this train.

- 1) with  
2) by  
3) on  
4) No Improvement

**Directions (Q. 85 – 87):** In these questions, four alternatives are given for the Idiom/ Phrase underlined in the sentence. Choose the alternative which best expresses the meaning of the Idiom/ Phrase.

85. To mind one's P's and Q's

- 1) To be cautious  
2) To be accurate and precise  
3) To be careful of one's accounts  
4) To be careful of one's personality

86. To oil the knocker

- 1) To instigate a person to do a job  
2) To do a work with increased pace  
3) To tip the office-boy  
4) To revive old enmity

87. A fool's errand

- 1) A blunder  
2) An impossible task  
3) A useless undertaking  
4) None of these

**Directions (Q. 88 – 91):** In these questions, out of the four alternatives, choose the one which can be substituted for the given sentence.

88. A person who kills somebody especially for political reasons .....

- 1) Criminal  
2) Murderer  
3) Assassin  
4) Hangman

89. A small piece of potato .....

- 1) Chunk                      2) Chip                      3) Scrap                      4) Bit

90. A common place remark .....

- 1) Dialogue                      2) Platitude                      3) Epigram                      4) Statement

91. One who despises persons of lower social position .....

- 1) Prim                      2) Snob                      3) Prig                      4) Fig

92. Out of the four alternatives, choose the one which best expresses the meaning of the given word as your answer.

**CONSENSUS**

- 1) Settlement                      2) Unity                      3) Harmony                      4) Agreement

93. Choose the word opposite in meaning to the given word opposite in meaning to the given word.

**PRAGMATIC**

- 1) Indefinite                      2) Vague                      3) Idealistic                      4) Optimistic

**Directions (Q. 94 – 95):** In these questions, four words are given in each question, out of which only one word is spelt wrongly. Find the wrong spelt word.

94. 1) Pagent                      2) Paroxysm                      3) Pillory                      4) Pipette

95. 1) Cieling                      2) Celluloid                      3) Cease                      4) Cemetery

**Directions (Q. 96 – 100):** Read the passage carefully and choose the best answer to each question out of the four alternatives.

When we are suddenly confronted with any terrible danger, the change of nature we undergo is equally great. In some cases fear paralyses us. Like animals, we stand still, powerless to move a step in fright or to lift a hand in defence of our lives, and sometimes we are seized with panic, and again, act more like the inferior animals than rational beings. On the other hand, frequently in cases of sudden extreme peril, which cannot be escaped by flight, and must be instantly faced, even the most timid men at once as if by miracle, become possessed of the necessary courage, sharp quick apprehension and swift decision. This is a miracle very common in nature. Man and the inferior animals alike, when confronted with almost certain death 'gather resolution from despair' but there can really be no trace of so debilitating a feeling in the person fighting, or prepared to fight for dear life. At such times the mind is clearer than it has ever been. The nerves are steel, there is nothing felt but a wonderful strength and daring. Looking back at certain perilous moments in my own life. I remember them with a kind of joy, not that there was any joyful excitement then, but because they brought me a new experience a new nature, as it were- and lifted me for a time above myself.

96. An appropriate title for the above passage would be .....

- 1) The Will to Fight  
2) The Miracle of Confronting Danger  
3) The Change of Nature  
4) Courage and Panic

97. The author names three different ways in which a man may react to sudden danger. What are they?

- 1) He may flee in panic, or fight back or stand still  
2) He may be paralysed with fear, seized with panic or act like an inferior animal  
3) He may be paralysed with fear, or seized with panic, or as if by miracle, become possessed of the necessary courage, and face the danger  
4) He may be paralysed with fear, run away or fight

98. The distinction between 'inferior animals' and 'rational beings' is that .....
- 1) the former are incapable of fighting
  - 2) the latter are clever
  - 3) the latter are stronger
  - 4) the latter are capable of reasoning things out whereas the former cannot do so
99. Explain the phrase 'gather resolution from danger'.
- 1) Find hope and courage
  - 2) A state of utter hopelessness steels one of fight out the danger
  - 3) Not to lose hope, but fight
  - 4) Find courage to face the danger
100. The author feels happy in the recollection of dangers faced and overcome because .....
- 1) they brought him a new experience.
  - 2) they brought him a new experience, and lifted him above himself for a time
  - 3) he survived his ordeal
  - 4) he was lucky to be alive

### KEY

1-2; 2-4; 3-3; 4-1; 5-4; 6-2; 7-4; 8-3; 9-3; 10-3; 11-2; 12-1; 13-2; 14-4; 15-2; 16-4; 17-2; 18-3; 19-3; 20-4; 21-2; 22-3; 23-2; 24-2; 25-3; 26-3; 27-1; 28-2; 29-2; 30-4; 31-3; 32-1; 33-4; 34-4; 35-1; 36-4; 37-2; 38-4; 39-1; 40-4; 41-4; 42-3; 43-3; 44-2; 45-2; 46-1; 47-3; 48-2; 49-1; 50-1; 51-2; 52-2; 53-1; 54-2; 55-2; 56-2; 57-1; 58-4; 59-2; 60-2; 61-2; 62-4; 63-1; 64-4; 65-1; 66-1; 67-3; 68-3; 69-2; 70-1; 71-3; 72-4; 73-1; 74-4; 75-4; 76-3; 77-2; 78-2; 79-2; 80-4; 81-3; 82-3; 83-2; 84-2; 85-2; 86-3; 87-3; 88-3; 89-2; 90-2; 91-2; 92-4; 93-3; 94-1; 95-1; 96-2; 97-3; 98-4; 99-2; 100-2.

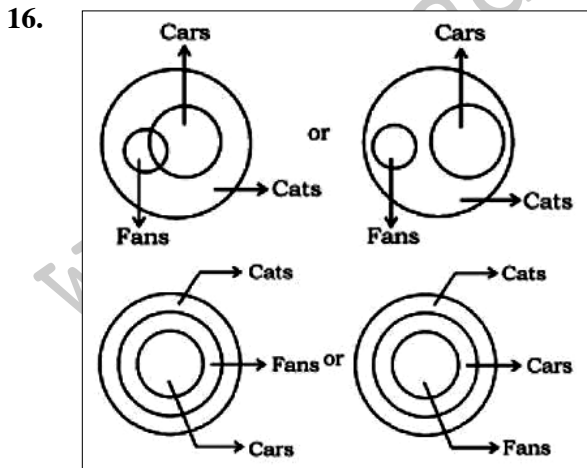
### EXPLANATIONS

1. Previous prime number to 97 is 89. Similarly for 43, the previous prime number is 41.
2. As Tiger is found in Forest, similarly Otter is found in the water.
3.

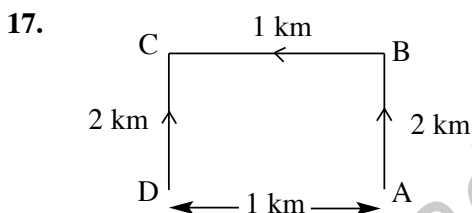
Letter	B E	A C
Position	2 5	1 3
	↓	↓
	$(2 \times 5) \times (2 + 5) = 70$	$(1 \times 3) \times (1 + 3) = 12$
4.

$5 : 5^3 + 5^2 :: 11 : 11^3 + 11^2$
↓                      ↓
150                      1452
5. A Huckster is one who deals in Advertising and a Gangster is one who deals in Crime.
6. The country of Argentina neighbours the country of Brazil. Similarly, Iraq shares the borders with Iran.
7. All except locust are reptiles, while locust is an insect.
8. In all except Trifle, 'tri' indicates 'three'.
9. Except (3), in rest of the options, second can be obtained by Multiplying 2.5 to first.

10. Orange is the only citrus fruit in the group.
11. ROCK
12. When the sheet shown in question figure is folded to form a box (cuboid), then the two rectangular-shaded faces lie opposite to each other, two rectangular white faces lie opposite to each other and the two square shaped faces (one shaded and one white) lie opposite to each other. Clearly, the cuboids shown in figures (2) and (4) cannot be formed as in each of the two cuboids the two shaded rectangular faces appear adjacent to each other. So, only the cuboids in figures (1) and (3) can be formed.
13. Let B and G represent the number of daughters and sons respectively.  
Then, we have:  $B - 1 = G$  and  $2(G - 1) = B$ .  
Solving these two equations, we get:  $B = 4, G = 3$ .
14. The woman is the mother of Shashank's granddaughter. Hence, the woman is the daughter-in-law of Shashank.
15. The pattern is  $\div 1, \div 2, \div 3, \div 4, \div 5$ .  
So, missing term =  $360 \div 1 = 360$ .



Hence, neither conclusion I nor II follows.



So, initially the boy rode 2 km Northward.

18. abcde / cdeab / deabc / eabcd
19.  $(4 + 8) \times 9 = 108$   
 $\Rightarrow 108 \times 10 = 1080$   
 $(5 + 4) \times 12 = 108$   
 $\Rightarrow 108 \times 10 = 1080$
21. 2, 6, 9 contain a triangle with its three medians as the outer element and another element (similar or different) placed inside it.

★ 1, 5, 7 contain a rectangle with its two diagonals as the outer element and another element (similar or different) placed inside it.

★ 3, 4, 8 contain a circle with its two mutually perpendicular diameters as the outer element and another element (similar or different) placed inside it.

24.  $2 \star 3 \Rightarrow 23 + 32 = 8 + 9 = 17$

$\Rightarrow 172 = 289$

$3 \star 4 \Rightarrow 33 + 42 = 27 + 16 = 43$

$\Rightarrow 432 = 1849$

$2 \star 4 \Rightarrow 23 + 42 = 8 + 16 = 24$

$\Rightarrow 242 = 576$

26. By the Permanent Settlement Act of 1793, the Zamindars class became more powerful than they were in the Mughal period. Earlier Zamindars in Bengal, Bihar and Orissa has been functionaries who held the right to collect revenue on behalf of the Mughal emperor and his representative or diwan in Bengal. The security of tenure of landlords and revenues intermediaries were granted prosperity, so as to minimize the tendency by British administrators to amass a small fortune in sluiced-away revenue.

27. Influenza, commonly known as the 'flu', is an infectious disease of birds and mammals caused by RNA viruses. The most common symptoms are fever, sore throat, muscle pains, headache (often severe), cough, weakness / fatigue and general discomfort. Typically, Influenza is transmitted through the air by coughs or sneezes, creating aerosols containing the virus.

31. Pulses are (20 to 25%) protein by weight, which is double the protein content of wheat and three times that of rice. While pulses are generally high in protein, and the digestibility of that protein is also high, they are often relatively poor in the essential amino acid methionine.

32. Among the Standing Committees, the three Financial Committees i.e., Committees on Estimates, Public Accounts and Public Undertakings, constitute a distinct group as they keep an unremitting vigil over Government expenditure and performance. While Committees of the Rajya Sabha are associated with Committees on Public Accounts and Public Undertakings, the members of the Committee on Estimates are drawn entirely from the Lok Sabha.

35. The busiest rail section in respect to goods transportation is Delhi-Kolkata section.

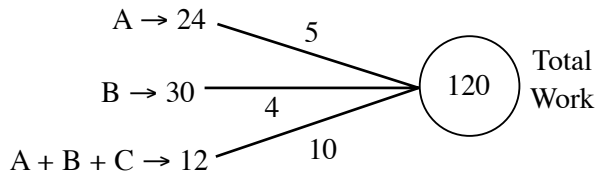
42. **Copper:** 9% less conductive than silver, aluminium is 10% less conductive than copper, while steel is the least conductive among the given options. So, the most electrically conductive metal is silver.

45. Reflected waves are simply those waves that are neither transmitted nor absorbed, but are reflected from the surface of the medium they encounter. The amount of incident-wave energy that is reflected from a surface depends on the nature of the surface and the angle at which the wave strikes the surface. The amount of wave energy reflected increases as the angle of incidence. The reflection of energy is the reflecting surface.

47. Ethylene glycol (IUPAC name: ethane - 1, 2- diol) is an organic compound widely used an automotive antifreeze and a precursor to polymers. In its pure form, it is an odourless, colourless, syrupy, sweet-tasting liquid. Ethylene glycol is a toxic and ingestion which can result in death. Due to its low freezing point ethylene glycol resists freezing. A mixture of 60% ethylene glycol and 40% water freezes at - 45 degree C (- 49 degree F). Diethylene glycol behaves similarly. It is used as a de-icing fluid for windshields and aircraft. The antifreeze capabilities of ethylene glycol have made it an important component of vitrification (anticrystallization) mixture for low- temperature preservation of biological tissues and organs.

49. In order to give more strength and more elasticity, natural rubber is heated with sulphur or sulphur compounds at 150°C temperature. Vulcanized rubber has good tensile strength. The working temperature of vulcanized rubber is enhanced up to 100°C. It has good resistance to organic solvents.

51.



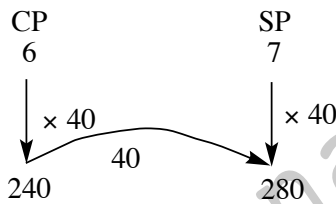
Efficiency of C =  $10 - (5 + 4) = 1$  unit / day

Required time for C =  $\frac{120}{1} = 120$  days

52.  $14 \frac{2}{7} \% = \frac{1}{7}$

SP = 7 units, CP =  $(7 - 1) = 6$  units

According to the question,



% Actual profit =  $\frac{40}{240} \times 100 = 16.66\%$

53.  $5x - \frac{5}{x} = 10 \Rightarrow x - \frac{1}{x} = 2$

$\Rightarrow \left(x - \frac{1}{x}\right)^2 = 2^2 \Rightarrow x^2 + \frac{1}{x^2} - 2 = 4$

$\Rightarrow x^2 + \frac{1}{x^2} = 6$

54.  $\therefore PR \parallel TS$

$\therefore \angle PRQ = \angle USR = 50^\circ$

In  $\Delta PQR$ :

$\angle PQR = 180^\circ - (50^\circ + 60^\circ) = 70^\circ$

$\therefore \angle TPU = \angle PQR = 70^\circ$

[ $\therefore PU \parallel RS \parallel QS$ ]

55.  $8 \frac{1}{2} - \left[ 3 \frac{1}{4} \div \left\{ 1 \frac{1}{4} - \frac{1}{2} \left( 1 \frac{1}{2} - \frac{1}{3} - \frac{1}{6} \right) \right\} \right]$   
 $= \frac{17}{2} - \left[ \frac{13}{4} \div \left\{ \frac{5}{4} - \frac{1}{2} \left( \frac{3}{2} - \frac{1}{3} - \frac{1}{6} \right) \right\} \right]$   
 $= \frac{17}{2} - \left[ \frac{13}{4} \div \left\{ \frac{5}{4} - \frac{1}{2} \left( \frac{9-2-1}{6} \right) \right\} \right]$   
 $= \frac{17}{2} - \left[ \frac{13}{4} \div \left\{ \frac{5}{4} - \frac{1}{2} \times \frac{6}{6} \right\} \right]$   
 $= \frac{17}{2} - \left[ \frac{13}{4} \div \left\{ \frac{5}{4} - \frac{1}{2} \right\} \right]$

$$\begin{aligned}
 &= \frac{17}{2} - \left[ \frac{13}{4} \div \left\{ \frac{5-2}{4} \right\} \right] = \frac{17}{2} - \left[ \frac{13}{4} \div \frac{3}{4} \right] \\
 &= \frac{17}{2} - \left[ \frac{13}{4} \times \frac{4}{3} \right] = \frac{17}{2} - \frac{13}{3} = \frac{51-26}{6} \\
 &= \frac{25}{6} = 4 \frac{1}{6}
 \end{aligned}$$

56. Let the cricketer's average runs for his 64 innings be 'x' runs.

$$\therefore \text{Total runs in 64 innings} = 64x$$

According to the question,

$$\frac{64x + 0}{65} = x - 2$$

$$\Rightarrow 64x = 65x - 130 \Rightarrow x = 130$$

$$\therefore \text{New average of runs} = x - 2 = 130 - 2 = 128$$

57. A  $\overline{\hspace{10em}}$  B  
 $\overleftarrow{\hspace{10em}} \overrightarrow{\hspace{10em}}$  28 km  $\overleftarrow{\hspace{10em}} \overrightarrow{\hspace{10em}}$

Motor boat  $\rightarrow$  x km/h

Stream  $\rightarrow$  y km/h

Let the speed of motorboat and of stream be 'x' km/h and 'y' km/h respectively.

**Condition (i)**

$$2 \left( \frac{28}{x+y} \right) = \frac{28}{x-y} \Rightarrow 2x - 2y = x + y$$

**Condition (ii)**

When the speed of the stream is doubled

$$\frac{28}{x+2y} = \frac{28}{x-2y} = \frac{672}{60} \quad [\text{put } x = 3y]$$

$$\frac{28}{5y} + \frac{28}{y} = \frac{672}{60} \Rightarrow \frac{1}{5y} + \frac{1}{y} = \frac{672}{60}$$

$$\Rightarrow \frac{1}{5y} + \frac{1}{y} = \frac{24}{60} \Rightarrow \frac{1+5}{5y} = \frac{2}{5} \Rightarrow y = 3 \text{ km/h}$$

$$\Rightarrow x = 9 \text{ km/h}$$

58. Since, the diagonals of a rectangle bisect each other and are equal.

$$\therefore OA = OD \Rightarrow \angle ODA = \angle OAD$$

But,  $\angle AOD = 44^\circ$

(Vertically opposite angle to  $\angle BOC$ )

$$\therefore \angle OAD = \frac{1}{2} (180^\circ - 44^\circ) = \frac{1}{2} (136^\circ) = 68^\circ$$

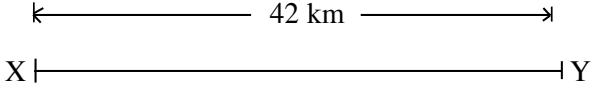


59. Let the number be 'x'.

Then,

$$\frac{3}{4}x - \frac{3}{14}x = 150 \Rightarrow \frac{21x - 6x}{28} = 150$$

$$\Rightarrow 15x = 28 \times 150 \Rightarrow x = \frac{28 \times 150}{15} = 280$$

60. 

Rakesh  $\rightarrow$  60 km/h

$$\text{Distance travelled by Rakesh in first 10 minutes} = 60 \times \frac{10}{60} = 10 \text{ km}$$

Now he will reduce his speed by 6 km/h = (60 - 6) = 54 km/h

$$\text{Distance in next 10 minutes} = 54 \times \frac{10}{60} = 9 \text{ km}$$

Similarly:

Time (10 min)  $\rightarrow$  I II III IV V

Distance (km)  $\rightarrow$  10 9 8 7 6

Total time = 50 min

Total distance covered = 40 km

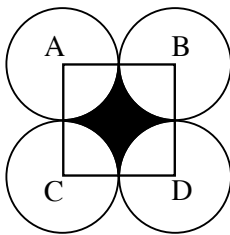
Remaining distance = 42 - 40 = 2 km

Now speed of Rakesh = 30 km/h

$$\text{Required time} = \frac{2}{30} \times 60 = 4 \text{ min}$$

Total time = (50 + 4) = 54 minutes

61.



Area of the shaded region = Area of square of side 6 cm - 4  $\times$  area of right angled sector

$$36 - 4 \times \frac{\pi \times 3^2}{4} = 36 - 9\pi = 9(4 - \pi) \text{ sq. cm}$$

62. If the remainder be 'x', then (11284 - x) and (7655 - x) are divisible by three digit number. i.e.,

(11284 - x) - (7655 - x) = 3629 is divisible by that number.

$$3629 = 19 \times 191$$

Hence, required number = 191

$$\text{Sum of digits} = 1 + 9 + 1 = 11$$

63. CP : SP  
 (100 - 12) : (100 + 32)  
 88 : 132

Now according to the question,

$$SP = 132 \times \frac{(100 - 20)}{100} = 105.6$$

$$\text{Profit \%} = \frac{105.6 - 88}{88} \times 100 = \frac{17.6}{88} \times 100 = 20\%$$

64.  $\therefore x + y + z = 0$

$$\therefore x^3 + y^3 + z^3 = 3xyz$$

$$\Rightarrow \frac{x^3}{xyz} + \frac{y^3}{xyz} + \frac{z^3}{xyz} = 3$$

$$\Rightarrow \frac{x^2}{yz} + \frac{y^2}{xz} + \frac{z^2}{xy} = 3$$

65.  $x + \frac{1}{x} = 5 = a$  (say)

$$\therefore x^2 + \frac{1}{x^2} = a^2 - 2 = 25 - 2 = 23$$

Now,  $\frac{x^4 + 3x^3 + 5x^2 + 3x + 1}{x^4 + 3}$

$$= \frac{x^2 \left( x^2 + 3x + 5 + \frac{3}{x} + \frac{1}{x^2} \right)}{x^2 \left( x^2 + \frac{1}{x^2} \right)}$$

$$= \frac{\left( x^2 + \frac{1}{x^2} \right) + 3 \left( x + \frac{1}{x} \right) + 5}{x^2 + \frac{1}{x^2}}$$

$$= \frac{23 + 3 \times 5 + 5}{23} = \frac{23 + 20}{23} = \frac{43}{23}$$

66. For a diff. of 10', diff. in value = 0.7133 - 0.7112

$$\therefore \text{For a diff. of 8', diff. in value} = \frac{0.0021}{10} \times 8 = 0.00168$$

$$\therefore \cos 44^\circ 38' = (0.7133 - 0.00168) = 0.71162$$

67.  $20\% = \frac{1}{5}$

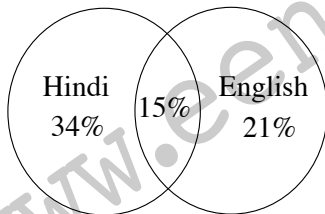
Old	:	New	
Wages →	5	):	6
Time →	5	) ×	4
Total wages →	25	:	24
	↓ × 160		↓ × 160
	4000		3840

for 1 week, wages = Rs.3840

for 4 week, wages = 3840 × 4 = Rs.15,360

68. Radius of sector = Slant height of cone  
 $= \sqrt{h^2 + r^2} = \sqrt{6^2 + 8^2} = \sqrt{36 + 64}$   
 $= \sqrt{100} = 10 \text{ cm}$

69. Venn diagram of the soldiers



Total % of soldiers who do not speak any language =  $100 - (34 + 15 + 21) = 30\%$

According to the question,  $30\% = 900$

$$1\% = \frac{900}{30}$$

$$21\% = \frac{900}{30} \times 21 = 630$$

70.  $-1^{25} + 1^{32} = -1 + 1 = 0$

71. Overall by B in all subjects

$$\% = \frac{399}{600} \times 100 = 66.5\%$$

72. Ratio =  $\frac{360}{435} = \frac{24}{29} = 24 : 29$

73. Average =  $\frac{441}{6} = 73.5$

74. Average % marks =  $\frac{633}{500} \times 100$   
 $= 70.3\% \approx 70\%$

75. Total<sub>A</sub> = 84 + 66 + 73 + 61 + 24 + 52 = 360  
Total<sub>E</sub> = 108 + 78 + 78 + 70 + 39 + 48 = 421

∴ Required%

$$= \frac{421 - 360}{360} \times 100 = \frac{6100}{360} \approx 17\%$$

77. Replace 'in' by 'to'. 'Appoint' will take 'to' after it, as 'appoint someone to some - thing' means 'choose somebody for a job or position of responsibility'.

81. Since 'remain' is not used usually in progressive tenses.

82. Phrase 'To rise to the occasion' means 'perform better than usual in response to a special situation or event'.

(ఈ నమూనా ప్రశ్నపత్రాన్ని RACE Institute కు చెందిన నిపుణులు రూపొందించారు)