

# General Knowledge Sample Paper - 14

## SECTION-III : GENERAL TEST

1. Unemployment which occurs when workers move from one job to another job is known as:  
(a) Cyclical unemployment  
(b) Technological unemployment  
(c) Seasonal unemployment  
(d) Frictional unemployment
2. If the President wishes to resign, he should submit his / her resignation in writing addressed to:  
(a) The Speaker of Lok Sabha  
(b) Chief Justice of India  
(c) The Prime Minister of India  
(d) None of these
3. Wood is a common name of:  
(a) Secondary Xylem  
(b) Secondary Phloem  
(c) Cambium  
(d) Primary Phloem
4. Buddhist Scriptures are contained in Tri-Pitakas. What is the meaning of Pitakas?  
(a) Baskets (b) Bank  
(c) Box (d) Book
5. Who wrote 'A Haunted House'?  
(a) Thomas Hardy  
(b) Virginia Woolf  
(c) Bret Harte  
(d) James Joyce
6. Who acts as the Chairman of the National Development Council ?  
(a) Minister of State for Planning  
(b) Prime Minister  
(c) Minister of Planning  
(d) Secretary of the Planning Commission
7. Gold is made hard by alloying with:  
(a) Aluminium (b) Copper  
(c) Iron (d) Silver
8. Formic acid can easily be identified by its:  
(a) pungent smell  
(b) repelling smell  
(c) sweet smell  
(d) bad smell
9. 'Revolver' was discovered by:  
(a) Marconi (b) Shaltz  
(c) Faraday (d) Colt
10. Which of the following states does not share its border with Pakistan:  
(a) Gujarat  
(b) Madhya Pradesh  
(c) Jammu and Kashmir  
(d) Rajasthan
11. Who composed the famous song "Sare Jahan Se Achha"?  
(a) Bankim Chandra Chatterjee  
(b) Rabindranath Tagore  
(c) Jaidev  
(d) Mohammad Iqbal
12. Digboi Oil Refinery is located in the state of:  
(a) Punjab (b) Assam  
(c) Gujarat (d) Bihar
13. The Suez canal connects:  
(a) Red Sea and Arabian Sea  
(b) Red Sea and Black Sea  
(c) Mediterranean Sea and Red Sea  
(d) Mediterranean Sea and Black Sea
14. Which part of potato is edible?  
(a) Fruit (b) Flower  
(c) Leaf (d) Stem
15. Agmark is:  
(a) An agricultural marketing society  
(b) A quality guarantee stamp for commodities like eggs, ghee, honey etc.  
(c) A co-operative for egg production  
(d) A regulated agricultural market
16. When the National Emergency is declared, the following remain suspended  
(a) Directive Principles of States Policy  
(b) Judiciary  
(c) Fundamental Duties  
(d) Fundamental Rights
17. Transport of oxygen in human body takes place in:  
(a) Body Cavity  
(b) Alimentary canal  
(c) Body Fluids  
(d) Blood
18. Expand the term CD-ROM:  
(a) Compactable Disk Read only Memory  
(b) Compact Disk Read only Memory  
(c) Compactable Data Read only Memory  
(d) Compact Data Read only Memory
19. Which one of the following is directly elected in India?  
(a) Members of Legislative Assembly  
(b) Members of Rajya Sabha  
(c) President of India  
(d) Vice President of India
20. In soil, nitrites are converted into nitrates by:  
(a) Nitrobacter  
(b) Azotobacter  
(c) Nitrosomonas  
(d) Pseudomonas
21. Which discovery is associated with the name of Marie Curie?  
(a) Radio activity  
(b) Photo electric effect  
(c) Protino  
(d) Artificial transmutation
22. Fuse wire should have:  
(a) high resistance, high melting point  
(b) high resistance, low melting point  
(c) low resistance, high melting point  
(d) low resistance, low melting point
23. Kaiga thermal power plant is in:  
(a) Andhra Pradesh  
(b) Kerala  
(c) Tamil Nadu  
(d) Karnataka
24. Noble Prize is not given in the field of:  
(a) Medicine  
(b) Civil Administration  
(c) Physics  
(d) Chemistry

25. The lift of an aeroplane is based on:
- Law of gravitation
  - Coulomb's law
  - Toricelli's theorem
  - Bernoulli's principle

Directions (Q. 26-29): Select the related word/letters/number from the given alternatives.

26. Entomology : Insects :: Seismology : ?  
 (a) Man (b) Fossils  
 (c) Earthquakes (d) Diseases
27. WU : TQO :: LIG : ?  
 (a) EFG (b) FCA  
 (c) DEF (d) EFG
28. EV : LO :: JQ : ?  
 (a) JQ (b) FU  
 (c) QJ (d) HS
29. 12 : 132 :: 14 : ?  
 (a) 172 (b) 182  
 (c) 176 (d) 180

Directions (Q. 30-33): Select the odd word/letters/number pair from the given alternatives.

30. (a) Hyderabad (b) Kerala  
 (c) Tamil Nadu (d) Karnataka
31. (a) BCD (b) GHW  
 (c) EOA (d) GTS
32. (a) 51 (b) 66  
 (c) 83 (d) 93
33. (a) 153 (b) 177  
 (c) 187 (d) 221

Directions (Q. 34-36): A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

34. AB, BC CD, DE, EF?  
 (a) GH (b) FE  
 (c) FG (d) IJ
35. BDG, KMP, TVY?  
 (a) CDH (b) CEH  
 (c) HEC (d) CEI
36. 11, 13, 17, 19?  
 (a) 22 (b) 23  
 (c) 29 (d) 31

37. A is taller than B but smaller than E. C is the smallest of all. D is taller than A but smaller than E. Who is the tallest of the five?  
 (a) B (b) C  
 (c) D (d) E

38. Arrange the given words in the sequence in which they occur in the dictionary.
- Terrace
  - Tenant
  - Tea
  - Tomorrow
- (a) iii, ii, i, iv (b) i, ii, iii, iv  
 (c) iv, i, ii, iii (d) i, iii, ii, iv

39. In a certain coded language, "NATURE" is written as "TANURE". How is "LISTEN" written in that coded language?

- (a) NETSIL (b) TENSIL  
 (c) SILTEN (d) LITSEN
40. If "+" means "minus" "×" means "divided by", "÷" means "plus" and "-" means "multiplied by", then  
 $96 \times 12 - 4 + 13 \div 21 = ?$   
 (a) 42 (b) 40  
 (c) 37 (d) 333

41. If "S" denotes "multiplied by", "V" denotes "subtracted from", "M" denotes "added to" and "L" denotes "divided by", then

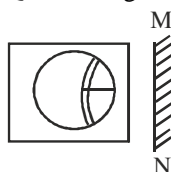
$44 \text{ L } 11 \text{ S } 7 \text{ V } 7 \text{ M } 9 = ?$   
 (a) 32 (b) 25  
 (c) 37 (d) 30

42. In the following question, which one set of letters when sequentially placed at the gaps in the given letter series, shall complete it?  
 \_d\_be\_c\_ed\_b

- (a) edbcb (b) cdebc  
 (c) ecdbc (d) eedcb
43. Ramesh moves towards the east and covers 30 m and then takes a right turn and covers 40 m. Find the direction and the distance from the initial point to the final point.  
 (a) 50 m north  
 (b) 50 m north-east  
 (c) 40 m south-east  
 (d) 50 m south-east

44. Sumit's grandfather's brother is the father of Hemant's father. How is Sumit related to Hamant?  
 (a) Brother (b) Cousin  
 (c) Father (d) Uncle

45. If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?  
 Question figure:



Answer figures:

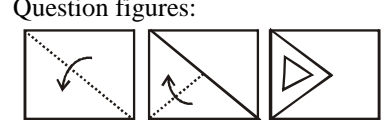
- (a) (b) (c) (d)

46. Identify the diagram that best represents the relationship among the given classes.

Engine, Car, Battery

- (a) (b) (c) (d)

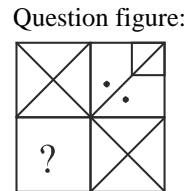
47. A piece of paper is folded and punched as shown below in the question figure. From the given answer figures, indicate how it will appear when unfolded.



Answer figures:

- (a) (b) (c) (d)

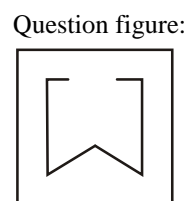
48. Which answer figure will complete the pattern in the question figure?



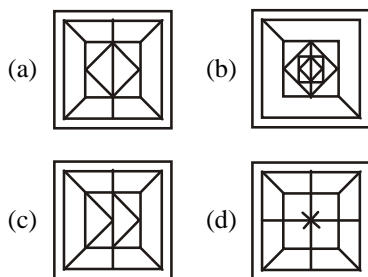
Answer figures:

- (a) (b) (c) (d)

49. From the given answer figures, select the one in which the question figure is hidden embedded.



Answer figures:



50. 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 alphabets 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 each can be represented first by its row and next by its column, e.g. 'B' can be represented by 21, 32, etc. 'W' can be represented by 97, 89, etc. Similarly, you have to identify the set for the word 'SAINT'.

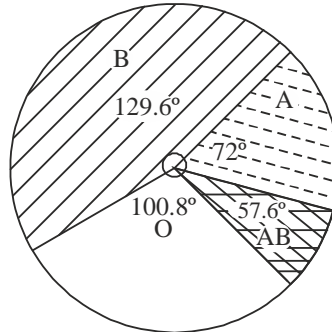
Matrix-I						Matrix-II					
	0	1	2	3	4		5	6	7	8	9
0	S	L	K	J	J	5	O	A	N	Q	Q
1	B	S	F	F	G	6	T	O	A	N	R
2	I	B	S	H	H	7	U	T	O	A	N
3	D	I	B	S	C	8	V	P	T	O	W
4	E	E	I	B	C	9	P	V	W	T	O

- (a) 00, 56, 20, 68, 76  
 (b) 11, 67, 31, 57, 12  
 (c) 22, 78, 20, 02, 44  
 (d) 33, 67, 42, 00, 99
51. Which of the following is correct?  
 (a)  $(4x - 5y)^2 = 16x^2 - 20xy + 25y^2$   
 (b)  $(4x - 5y)^2 = 16x^2 + 40xy - 25y^2$   
 (c)  $(4x - 5y)^2 = 16x^2 - 40xy + 25y^2$   
 (d)  $(4x - 5y)^2 = 16x^2 - 20xy - 25y^2$
52. If the radius of a circle is increased by 15%, its area increases by  
 (a) 30% (b) 32.25%  
 (c) 15% (d) 16.125%
53. Ticket for an adult is ₹ 1600 and a child is ₹ 600. One child goes free with two adults. If a group has 17 adults and 7 children, what is the discount given to the group?  
 (a) 13.37% (b) 26.02%  
 (c) 24.41% (d) 32.2%
54. When 0.090909..... is converted into a fraction, then the result is  
 (a) 1/33 (b) 1/11  
 (c) 2/33 (d) 6/11
55. The bus fare between two cities is increased in the ratio 5 : 11. Find the increase in the fare if the original fare is ₹ 275.  
 (a) ₹ 605 (b) ₹ 121  
 (c) ₹ 330 (d) ₹ 242
56. The difference between simple and compound interests compounded annually on a certain sum of money for 2 years at 9% per annum is ₹ 405. The sum is  
 (a) ₹ 50,000 (b) ₹ 1,00,000  
 (c) ₹ 2,00,000 (d) ₹ 1,50,000
57. A can do a piece of work in 20 days and B in 50 days. If they work on it together for 5 days, then what fraction of work is left?  
 (a) 13/20 (b) 1/3  
 (c) 1/6 (d) 2/9
58. In  $\triangle DEF$ , G and H are points on sides DE and DF, respectively. GH is parallel to EF. If G divides DE in the ratio 1:3 and HF is 7.2 cm, find the length of DF.  
 (a) 2.4 cm (b) 4.8 cm  
 (c) 3.6 cm (d) 9.6 cm
59. The mean of marks secured by 65 students in division A of class X is 54, that of 30 students of division B is 50 and that of 55 students of division C is 48. Find the mean marks of the students of three divisions of Class X.  
 (a) 50.3 (b) 49.6  
 (c) 51 (d) 52.4
60. Two cars travel from city A to city B at a speed of 30 km/hr and 44 km/hr, respectively. If one car takes 3.5 hours lesser time than the other car for the journey, then the distance between city A and city B is  
 (a) 330 km (b) 396 km  
 (c) 495 km (d) 264 km
61. Curved surface area of a cylinder is 528 sq. cm. If circumference of its base is 44 cm, find the height of the cylinder.  
 (a) 12 cm (b) 24 cm  
 (c) 36 cm (d) 6 cm

62.  $2\sec^2 A$  is equal to  
 (a)  $(1 - \tan A)^2 - (1 + \tan A)^2$   
 (b)  $\sqrt{[(1 - \tan A)^2 + (1 + \tan A)^2]}$   
 (c)  $\sqrt{[(1 - \tan A)^2 - (1 + \tan A)^2]}$   
 (d)  $(1 - \tan A)^2 + (1 + \tan A)^2$
63. Mr. X and Mr. Y started a business by investing ₹ 45,000 and ₹ 72,000, respectively. If after one year, there is a profit of ₹ 13,000, then the share of profit of Mr. X is:  
 (a) ₹ 5,000 (b) ₹ 8,000  
 (c) ₹ 4,000 (d) ₹ 7,000
64. To stitch a shirt, 2m 15 cm cloth is needed. Out of 40m cloth, how many shirts can be stitched and how much cloth will remain?  
 (a) 18 shirts and 1m30 cm  
 (b) 19 shirts and 1 m 30 cm  
 (c) 18 shirts and 2 m 30 cm  
 (d) 20 shirts and 1 m 30 cm
65. If a sum of money amounts to ₹ 5,450 in 3 years at 3% per annum, what is the principal?  
 (a) ₹ 5,000 (b) ₹ 4,500  
 (c) ₹ 5,500 (d) ₹ 4,550
66. If the cost of 6 mobile phones is ₹ 51,000, how many mobiles can be purchased for ₹ 93,500?  
 (a) 10 (b) 11  
 (c) 12 (d) 13
67. Find the square root of 389376.  
 (a) 544 (b) 534  
 (c) 624 (d) 524
68. In a class of 80 students, only 20 went for a summer camp organised as part of the school programme. What percent of the total class opted out?  
 (a) 45 (b) 40  
 (c) 50 (d) 75
69. A class has 40 students. 90% of these students took the final examination, two-thirds of which passed. How many students passed the final examination?  
 (a) 18 (b) 20  
 (c) 24 (d) 22

70. A trader mixes 26 kg of rice at ₹ 20 per kg with 30 kg of rice of other variety at ₹ 36 per kg and sells the mixture at ₹ 30 per kg. His profit percent is:
- No profit, no loss
  - 5%
  - 8%
  - 10%
71. Three candidates contested an election and received 1136, 7636 and 11628, votes, respectively. What percentage of the total votes did the winning candidate get?
- 57%
  - 60%
  - 65%
  - 90%
72. The population of a town increased from 175000 to 262000 in a decade. The average percent increase of population per year is
- 4.37%
  - 5%
  - 6%
  - 8.75%

Directions (73-75): This is a pie chart for the data on A, B, O, AB blood groups of 150 donors. Observe the pie chart and answer the questions.



73. The number of donors having blood group 'O' is
- 50
  - 42
  - 30
  - 34
74. The number of persons having either blood group 'A' or blood group 'B' is
- 84
  - 96
  - 78
  - 54
75. What is the percentage of donors having blood group 'AB'?
- 61%
  - 26%
  - 16%
  - 36%

SECTION-III : GENERAL TEST

1. (d) Frictional unemployment is unemployment that occurs because it takes workers some time to move from one job to another. Unemployment due to frictional unemployment is usually thought to last only short period of time.

2. (d) According to Article 56 of the Indian Constitution, the President may, by writing under his hand addressed to the vice-president, resign his office. Any resignation addressed to the vice-President under the (abovementioned) clause should be communicated by him to the speaker of the Lok Sabha.

3. (a) Wood is a hard, fibrous structural tissue found in the stems and roots of trees and other woody plants. It is sometimes defined as only the secondary xylem in the stems of trees. The secondary phloem is called inner bark.

4. (a) Tripitaka is a Pali word meaning Three Baskets. It is the traditional term used by Buddhist traditions to describe their various canons of scriptures. The 3 pitakas are: Sutta Pitaka, Vinay Pitaka and Abhidhamma Pitaka.

5. (b) A Haunted House is a 1944 collection of 18 short stories by Virginia Woolf. It was produced by her husband Leonard Woolf.

6. (b) The national development council is presided over by the Prime Minister. It also comprises the Union Cabinet Ministers, Chief Ministers of all States or their substitutes, representatives of the Union Territories and the members of the Planning Commission.

7. (d) Gold is actually an alloy of copper or silver with varying amounts of gold. It is hardened by the addition of alloying elements, copper, silver, nickel, palladium and zinc. Alloying gold with silver gives a moderate improvement in strength and hardness.

8. (a) Formic acid is a colourless liquid having a highly pungent, penetrating odor smell at room temperature. It is the simplest carboxylic acid. It occurs naturally, most notably in ant venom.

9. (d) Samuel Colt was an American inventor and industrialist who made the first mass produced revolver in 1835. He founded Colt's Patent Fire Arms Manufacturing Company and made the mass production of the revolver commercially viable.

10. (b) Madhya Pradesh borders the states of Uttar Pradesh to the northeast, Chattisgarh to the southeast, Maharashtra to the South, Gujarat to the west and Rajasthan to the north west.

11. (d) 'Sare Jahan se Accha' is one of the enduring patriotic poems of the Urdu language. Written for children in the ghazal style of Urdu poetry by poet Muhammad Iqbal, the poem was published in the weekly journal Ittehad on 16 August, 1904.

12. (b) Digboi Oil Refinery is situated in the Tinsukia district of Assam. Commissioned by Assam oil Company Ltd in 1901, it is India's oldest refinery.

13. (c) The Suez Canal is an artificial sea-level waterway in Egypt, connecting the Mediterranean sea and the Red Sea. Opened in November 1869 after 10 years

of construction, it allows ships to travel between Europe and eastern Asia without navigating around Africa.

14. (d) The edible part of potato is a tuber (i.e., the swollen end of an underground stem). Potato is one of some 150 tuber-bearing species of the genus *Solanum* (family Solanaceae).

15. (b) The present AGMARK standards cover quality guidelines for 205 different commodities spanning a variety of Pulses, Cereals, Essential Oils, Vegetable Oils, Fruits & Vegetables and semi-processed products like Vermicelli.

16. (d) During a national emergency, many Fundamental Rights of Indian citizens can be suspended. The six freedoms under Right to Freedom are automatically suspended. By contrast, the Right to life and Personal Liberty cannot be suspended according to the original Constitution.

17. (d) The majority of oxygen in the body is transported by the haemoglobin, which is found inside red blood cells. The oxygen molecules are carried to individual cells in the body tissue where they are released.

18. (b) A CD-ROM is a pre-pressed optical compact disc which contains data. The name stands for "Compact Disc Read-Only Memory". Computers can read CD-ROMs, but cannot write on the CD-ROMs which are not writable or erasable.

19. (a) The Members of Legislative Assembly (MLA) are directly elected, normally once in every five years. MLAs are representatives elected by the voters of an electoral district to the Legislature of a State.

20. (a) Nitrobacter are responsible for the oxidation of the nitrites into nitrates. It is important for the ammonia to be converted to nitrates because accumulated nitrites are toxic to plant life.

21. (a) Marie Curie was physicist and chemist who conducted pioneering research on radio activity. Her achievements included a theory of radioactivity, technique for isolating radioactive isotopes and the discovery of two elements, polonium and radium.

22. (b) The fuse wire is a short piece of wire made up of a material of high resistance and low melting point so that it may easily melt on overheating when excessive current passes through it. It is connected in series with the electrical installations and protects them from strong current.

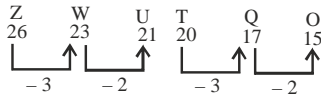
23. (d) Kaiga generating station is a nuclear power generating station situated at Kaiga, near the river Kali, in Uttara Kannada district of Karnataka. The plant has been in operation since March 2000 and is operated by the Nuclear Power Corporation of India.

24. (b) The Nobel Prizes in Physics, Chemistry, Physiology or Medicine, Literature, and Peace were first awarded in 1901. The related Nobel Memorial Prize in Economic Sciences was created in 1968.

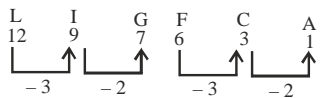
25. (d) The aerodynamic lift on the wing of an airplane (airfoil) is generally explained by the argument that the faster speed of the air along the top of the wing leads to reduced air pressure there and hence produces a lift. This is in accordance with Bernoulli's Law.

26. (c) As entomology is related to insects. Similarly, seismology is related to earthquakes.

27. (b)

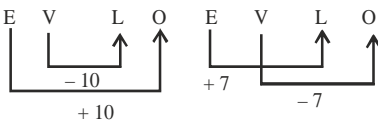


Similarly

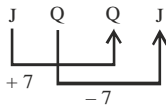


Finally, the missing term is FCA.

28. (c)



Similarly



Finally, the missing term is QJ.

29. (b) As

$$12 \rightarrow 132$$

$$12 \times 12 - 12 = 132$$

Similarly,

$$14 \rightarrow 182$$

$$14 \times 14 - 14 = 182$$

Finally the missing number is 182.

30. (a) Hyderabad is the odd word because Kerala, Tamil Nadu and Karnataka are below to Hyderabad.

31. (c)

A	B	D	G	H	W	E	O	A	G	T	S
2	3	4	7	8	23	5	15	1	7	20	19

Finally, EOA is the odd letters pair

32. (d)  $51 \Rightarrow (2)^2 + 1, 1$

$$66 \Rightarrow (3)^2 - 3, (3)^2 - 3$$

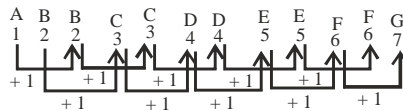
$$83 \Rightarrow (2)^3, 3$$

$$93 \Rightarrow (3)^2, 3$$

Finally, 93 is the odd number because 10<sup>th</sup> digit is square of 1 digit.

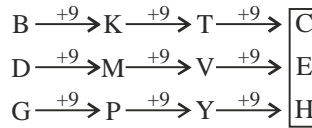
33. (b) 153, 187 and 221 are divisible by 17 and 177 is not divisible by 17. So, 177 is the odd number.

34. (c)



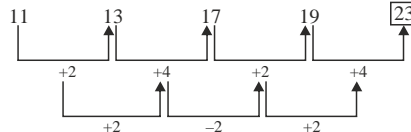
Finally, the missing term is FG

35. (b)



Finally, the missing term is CEH.

36. (b) The series is:



Finally, the missing term is 23.

37. (d) According to the sitting arrangement:

$$E > A > B > D > C$$

Finally, E is the tallest of the five.

38. (a) According to the dictionary arrangement of the words is given below:

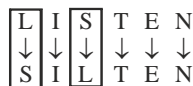
(iii) Tea, (ii) Tenant, (i) Terrace, (iv)

Tomorrow

39. (c) As



Similarly,



Finally, 'LISTEN' is written as SILTEN in the code language.

40. (b) Given expression:

$$\therefore 96 + 12 - 4 + 13 - 21$$

Put the sign according to the question:

$$96 \div 12 \times 4 - 13 + 21$$

$$8 \times 4 - 13 + 21$$

$$31 - 13 + 21 = (53 - 13) = 40$$

41. (d) Given expression:

$$44 \div 11 \times 7 - 7 + 9$$

$$= 44 \div 11 \times 7 - 7 + 9$$

$$= 4 \times 7 - 7 + 9 = 28 - 7 + 9$$

$$= (37 - 7)$$

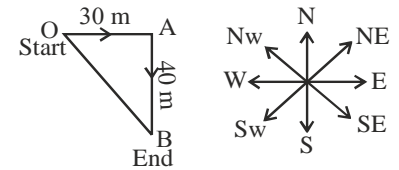
$$= 30$$

42. (c) The series:

$$[e] d [c] b/e d c [b]/ed [c] b$$

Finally, the set of letters 'ecdbc' will complete the series.

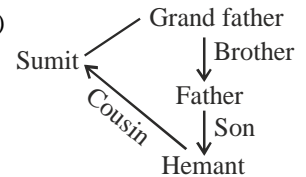
43. (d)



Ramesh is in the south-east direction from the starting point and the distance (OB)

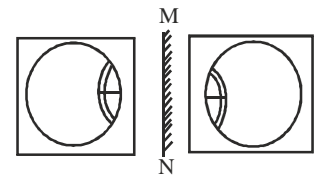
$$\begin{aligned} OB &= \sqrt{(OA)^2 + (AB)^2} \\ &= \sqrt{(30)^2 + (40)^2} \\ &= \sqrt{900 + 1600} \\ &= \sqrt{2500} = 50 \text{ m} \end{aligned}$$

44. (b)

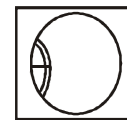


Finally, Sumit is the cousin of Hemant.

45. (d)



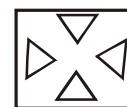
Finally, the right mirror image of the given image is



46. (c) Engine and Battery are the parts of a Car. So, the best representation is:



47. (a) A piece of paper, folded and punched when unfolded will appear as given below:



48. (c) Answer figure (c) will complete the pattern of the question figure.



49. (c)

50. (a)  $S = \{00\}$ , 11, 22, 33

$A = \{56\}$ , 67, 78,

$I = \{20\}$ , 21, 42

$N = 57, \{68\}$ , 79

$T = 65, \{76\}$ , 87, 98

For 'SAINT', the set of letters is 00, 56, 20, 68, 76.

51. (c)  $(4x - 5y)^2 = (4x)^2 + (5y)^2 - 2 \times 4x \times 5y = 16x^2 + 25y^2 - 40xy$

52. (b) If radius is increased 15% of a circle, (where  $r = 15\%$ )

Increase % in area

$$= \left( 2r + \frac{r^2}{100} \right) \%$$

$$= \left( 15 \times 2 + \frac{(15)^2}{100} \right) \%$$

$$= \left( 30 + \frac{225}{100} \right) \%$$

$$= 30 + 2.25 = 32.5\%$$

53. (a) Total cost of tickets

$$= 17 \times 1600 + 7 \times 600$$

$$= 27200 + 4200$$

$$= ₹ 31400$$

Cost of 17 adults + 7 children

$$= 7 \times 2 + 7 \times 3 \text{ adults}$$

$$= 14 \times 1600 + 3 \times 1600$$

$$= 22400 + 4800$$

$$= ₹ 27200$$

$$\text{Discount} = (31400 - 27200)$$

$$= 4200$$

Discount %

$$= \frac{4200 \times 100}{31400} = 13.37\%$$

54. (b)  $x = 0.090909 \dots = 0.09$

...(i)

$$100x = 9.09$$

...(ii)

Subtracting (i) from (ii), we get:

$$\Rightarrow 99x = 9$$

$$\Rightarrow x = \frac{9}{99} = \frac{1}{11}$$

55. (c) According to the question,

let the new fare be  $x$

Then,

$$5 : 11 = 275 : x$$

$$\Rightarrow \frac{5}{11} = \frac{275}{x}$$

$$\Rightarrow x = \frac{275 \times 11}{5}$$

$$= 55 \times 11 = 605$$

Increased bus fare

$$= 605 - 275 = ₹ 330$$

56. (a) According to the question:

$$P \left[ \left( 1 + \frac{R}{100} \right)^n - 1 \right] - \frac{PRT}{100}$$

$$= 405$$

$$\Rightarrow P \left[ \left( 1 + \frac{9}{100} \right)^2 - 1 - \frac{9 \times 2}{100} \right]$$

$$= 405$$

$$\Rightarrow P \left[ \left( \frac{109}{100} \right)^2 - 1 - \frac{18}{100} \right] = 405$$

$$\Rightarrow P \left[ \frac{11881}{10000} - \frac{118}{100} \right] = 405$$

$$\Rightarrow P \left[ \frac{11881 - 11800}{10000} \right] = 405$$

$$\therefore P \times 81 = 405 \times 10000$$

$$P = \frac{405 \times 10000}{81} = ₹ 50000$$

So, the sum is ₹ 50,000.

57. (a) A's one day's work =  $\frac{1}{20}$

$$\text{B's one day's work} = \frac{1}{50}$$

(A + B)'s one day's work

$$= \frac{1}{20} + \frac{1}{50} = \frac{5+2}{100} = \frac{7}{100}$$

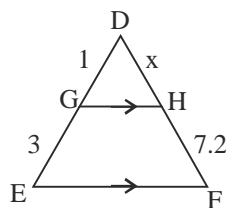
(A + B)'s 5 day's work

$$= \frac{7}{100} \times 5 = \frac{7}{20}$$

$$\text{Left work} = \left( 1 - \frac{7}{20} \right) = \frac{20-7}{20}$$

$$= \frac{13}{20}$$

58. (d) Let DH be  $x$ .



In  $\triangle DEF$ :

$$\frac{DG}{GE} = \frac{DH}{HF}$$

$$\frac{1}{3} = \frac{x}{7.2}$$

$$x = \frac{7.2}{3} = 2.4 \text{ cm}$$

$$DF = DH + HF = (2.4 + 7.2) = 9.6 \text{ cm}$$

59. (c) Mean marks of 3 divisions

$$= \frac{m_1 x_1 + m_2 x_2 + m_3 x_3}{m_1 + m_2 + m_3}$$

$$= \frac{65 \times 54 + 30 \times 50 + 55 \times 48}{65 + 30 + 55}$$

$$= \frac{3510 + 1500 + 2640}{150}$$

$$= \frac{7650}{150} = 51$$

Hence, the mean marks are 51.

60. (a) Let the time for slow car be  $t$  hours and time for fast car be  $(t - 3.5)$  hours

Distance between two places will be equal.

$$\text{So, } 30t = 44(t - 3.5)$$

$$\Rightarrow 44(t - 3.5) = 30t$$

$$\Rightarrow 44t - 30t = 44 \times 3.5$$

$$\Rightarrow t(44 - 30) = 44 \times 3.5$$

$$t = \frac{44 \times 3.5}{14} = 22 \times 0.5$$

$$= 11 \text{ hours}$$

Distance between A and B

$$= 30t = 30 \times 11 = 330 \text{ km}$$

61. (a) Curved surface area = 528  $\text{cm}^2$

$$\text{Perimeter} \times \text{height} = 528 \text{ cm}^2$$

$$\Rightarrow 2\pi r h = 528$$

$$\Rightarrow 44 \times h = 528$$

$$\Rightarrow h = \frac{528}{44}$$

$$= \frac{48}{4} = 12 \text{ cm}$$

62. (d)  $2\sec^2 A$

$$= \sec^2 A + \sec^2 A$$

$$= (1 + \tan^2 A) + (1 + \tan^2 A)$$

$$= (1 + \tan^2 A - 2\tan A)$$

$$+ (1 + \tan^2 A + 2\tan A)$$

$$= (1 - \tan A)^2 + (1 + \tan A)^2$$

63. (a) Ratio of Mr. X and Mr. Y's investment = 45,000 : 72,000 = 5 : 8

Now, share of profit of Mr. X

$$= \frac{5}{5+8} \times 13,000$$

$$= \frac{5}{13} \times 13,000 = ₹ 5,000$$

64. (a) Required number of shirts

$$= \frac{40 \text{ m}}{2 \text{ m } 15 \text{ cm}}$$

$$= \frac{40 \times 100 \text{ cm}}{215 \text{ cm}} = 18.605$$

( $\therefore$  0.605 is not a complete number)  
 $\cong 18$  shirts and cloth will remain =  $[40 - 2.15 \times 18] \text{ m}$

$$= [40 - 38.70] \text{ m}$$

$$= 1.30 \text{ m} = 1 \text{ m } 30 \text{ cm}$$

65. (a) Let the required principal be P

$$\text{Then, amount} = P \left[ \frac{RT}{100} + 1 \right]$$

$$5450 = P \left[ \frac{3 \times 3}{100} + 1 \right]$$

$$5450 = P \left[ \frac{109}{100} \right]$$

$$P = \frac{5450 \times 100}{109}$$

$$P = ₹ 5000$$

66. (b) Number of mobile phones bought for ₹ 51,000 = 6

Hence, number of mobile phones bought for ₹ 93,500

$$= \frac{6 \times 93500}{51000} = 11$$

67. (c) Square root of 389376

$$= \sqrt{389376} = 624$$

6	389376
+6	36
122	293
+2	244
1244	4976
	4976
	×

68. (d) Percentage of total class opted out

$$= \frac{80 - 20}{80} \times 100\%$$

$$= \frac{60}{80} \times 100\% = 75\%$$

69. (c) Number of students who appeared in the final examination

$$= 90\% \text{ of } 40$$

$$= \frac{90}{100} \times 40$$

$$= 36$$

Now, number of students passed =

$$\frac{2}{3} \text{ of } 36$$

$$= \frac{2}{3} \times 36 = 24$$

70. (b) Total cost of price of rice for trader

$$= (26 \times 20 + 30 + 36)$$

$$= ₹ 1600$$

and Selling price of rice for trader

$$= (26 + 30) \times 30$$

$$= ₹ 1680$$

Now, the profit percentage of trader

$$= \frac{\text{S.P.} - \text{C.P.}}{\text{C.P.}} \times 100$$

$$= \frac{1680 - 1600}{1600} \times 100 = 5\%$$

71. (a) Required percentage of winning candidate

$$= \frac{11628 \times 100}{(1136 + 7636 + 11628)} \%$$

$$= \frac{11628 \times 100}{20400} \% = 57\%$$

72. (b) Average percentage increase of population per year in a town

$$= \left[ \frac{262000 - 175000}{175000} \times 100 \right] \times \frac{1}{10}$$

$$= \frac{870}{175} = 4.97 \cong 5\%$$

73. (b) Number of donors having blood group O

$$= \frac{150 \times 100.8}{360} = 42$$

74. (a) Number of persons having either blood group 'A' or blood group 'B'

$$= \frac{150 \times (129.6 + 72)}{360} = 84$$

75. (c) Percentage of donors having blood group AB

$$= \frac{57.6}{360} \times 100$$

$$= 16\%$$