



NATIONAL LEVEL SCIENCE TALENT SEARCH EXAMINATION

CLASS - 6
Question Paper Code : 10109

KEY

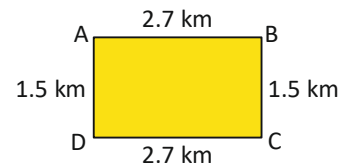
1. A	2. A	3. D	4. B	5. B	6. A	7. A	8. A	9. B	10. C
11. A	12. D	13. B	14. B	15. A	16. D	17. B	18. C	19. D	20. A
21. C	22. B	23. A	24. D	25. B	26. A	27. C	28. B	29. D	30. B
31. C	32. A	33. A	34. C	35. B	36. C	37. C	38. A	39. C	40. B
41. B	42. B	43. B	44. D	45. D	46. D	47. A	48. D	49. C	50. C
51. C	52. C	53. A	54. D	55. D	56. D	57. D	58. B	59. A	60. C

SOLUTIONS

MATHEMATICS

01. (A) $(100 - 32) \times \text{Rs. } 30 + 134 \times \text{Rs. } 20 = \text{Rs. } 2040 + \text{Rs. } 2680 = \text{Rs. } 4720$
02. (A) $\frac{8}{88} \times 8888088 = 808008$
03. (D) From 1 to 15 there are 8 odd numbers
So, $1 + 3 + 5 + 7 + \dots + 15$
 $= 8 \times 8 = 64$
04. (B) If numerators are same, then the smallest denominator fraction becomes the greatest
 $\therefore \frac{5}{6}$ is the greatest option

05. (B) Length of rectangular field = 2.7 km



- Breadth of rectangular field = 1.5 km
Perimeter of rectangular field = $2(\text{Length} + \text{Breadth})$
 $= 2(2.7 + 1.5) = 8.4 \text{ km}$
Since, each side has been fenced with 4 rows of wires.
Total length of wire = $4 \times \text{Perimeter of rectangular field} = 4 \times 8.4 = 33.6 \text{ km}$
Hence, the length of the wire needed is 33.6 km.

$$06. (A) \quad \begin{array}{r} \text{Rs. } 22.29 \\ + \text{Rs. } 17.60 \\ \hline \text{Rs. } 39.89 \end{array}$$

07. (A) Total ice-creams = 140
 Number of ice-creams brought by P & S = $(3 + 5)10 = 80$
 Number of ice-creams brought by Q & R = $140 - 80 = 60$
 Number of ice-creams brought R = $\frac{60}{2} = 30$

08. (A) $-30, -15, -4, -2, 0, 7$ is the increasing order.
 $\begin{array}{ccccccc} & & \uparrow & & \uparrow & & \\ & & 2^{\text{nd}} & & 5^{\text{th}} & & \\ & & & & & & \end{array}$
 \therefore required result = $-15 + 0 = -15$.

09. (B) Number of cars sold in week 1 = $3 \times 2 = 6$
 (Each symbol represents 2 cars)
 4 more cars were sold in week 3 than in week 1
 \Rightarrow Number of cars were sold in week 3 = $6 + 4 = 10$
 which is represented by $\frac{10}{2} = 5$ symbols

10. (C) $XY = (12 - 5.4) \text{ cm} = 6.6 \text{ cm}$
 $RS = (10.6 - 3.6) \text{ cm} = 7 \text{ cm}$
 \therefore Difference length = $7 \text{ cm} - 6.6 \text{ cm} = 0.4 \text{ cm}$

11. (A) Length of the pole = $9 \text{ m } 57 \text{ cm} = 957 \text{ cm}$
 Length of pole remained outside the pond = $5 \text{ m } 66 \text{ cm}$
 = 566 cm
 Depth of the pond = $(957 - 566) \text{ cm} = 391 \text{ cm}$
 = $3 \text{ m } 91 \text{ cm} = 3.91 \text{ m}$

12. (D) $10 \times 5 = 50 \text{ sq m}$
 $6 \times 8 = 48 \text{ sq m}$
 \therefore The required area = $50 + 48 = 98 \text{ sq m}$

13. (B) Number of boys = $\frac{13}{(13+11)} \times 600 = \frac{13}{24} \times 600 = 325$

\therefore Number of girls = $600 - 325 = 275$

So, new ratio = $\frac{325}{(275+25)} = \frac{325}{300} = \frac{13}{12} = 13 : 12$

14. (B) $-12 - (-28) = (-12) + (+28) = +16$

15. (A) Let the second term of the proportion be x .

Then, $18 : x :: 27 : 54$

Since, product of extremes = product of means

$$\text{So, } 18 \times 54 = x \times 27 \text{ or } x = \frac{18 \times 54}{27} = 36$$

16. (D) $4 \times s = 72 \text{ cm} \Rightarrow s = \frac{72}{4} = 18 \text{ cm}$

$$\text{Area} = s \times s = 18 \times 18 \text{ cm}^2 = 324 \text{ cm}^2$$

17. (B) Given, $\frac{P}{Q} = \frac{2}{3}; \frac{Q}{R} = \frac{4}{5}; \frac{R}{S} = \frac{3}{4}$

$$\text{Now, } \frac{P}{Q} \times \frac{Q}{R} \times \frac{R}{S} = \frac{2}{3} \times \frac{4}{5} \times \frac{3}{4} \Rightarrow \frac{P}{S} = \frac{2}{5}$$

So, $P : S = 2 : 5$

$$18. (C) \quad 3\frac{1}{12} + \left[1\frac{3}{4} + \left\{ 2\frac{1}{2} - \left(1\frac{1}{2} - \frac{1}{3} \right) \right\} \right]$$

$$= \frac{37}{12} + \left[\frac{7}{4} + \left\{ \frac{5}{2} - \left(\frac{3}{2} - \frac{1}{3} \right) \right\} \right]$$

$$= \frac{37}{12} + \left[\frac{7}{4} + \left\{ \frac{5}{2} - \left(\frac{9-2}{6} \right) \right\} \right]$$

$$= \frac{37}{12} + \left[\frac{7}{4} + \left\{ \frac{5}{2} - \frac{7}{6} \right\} \right]$$

$$= \frac{37}{12} + \left[\frac{7}{4} + \left\{ \frac{15-7}{6} \right\} \right]$$

$$= \frac{37}{12} + \frac{7}{4} + \frac{8}{6} = \frac{37}{12} + \frac{7}{4} + \frac{4}{3}$$

$$= \frac{37+21+16}{12} = \frac{74}{12} = \frac{37}{6} = 6\frac{1}{6}$$

19. (D) Cost of 2 dozen pens = Rs. 112

$$\Rightarrow \text{Cost of 1 dozen pen} = \text{Rs. } \left(\frac{112}{2} \right) = \text{Rs. } 56$$

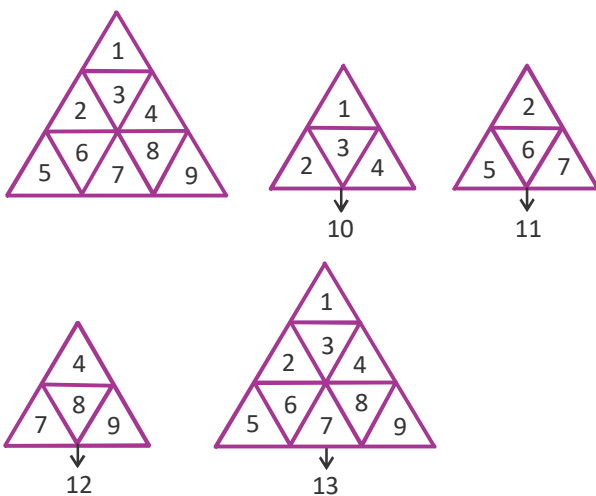
$$\Rightarrow \text{Cost of 12 dozen pens} = 56 \times 12 = \text{Rs. } 672$$

Since, cost of 5 dozen bottles = Cost of 12 dozen pens

$$\Rightarrow \text{Cost of 60 bottles} = \text{Rs. } 672$$

$$\therefore \text{Cost of 10 bottles} = \frac{672}{60} \times 10 = \text{Rs. } 112$$

20. (A)



9 small triangles + 3 (four small triangles combination) triangles + one whole triangle

$$\text{Total triangles} = 9 + 3 + 1 = 13$$

21. (C) The largest decimal that can be formed using 1, 3, 4 and 6 is 643.1

22. (B) Given, $x = 64$

$$x^2 + 12x + 36$$

$$= (64)^2 + 12(64) + 36 = 4900$$

23. (A) $1 + 2 - 3 - 4 = 3 - 3 = -4$

$$5 + 6 - 7 - 8 = 11 - 15 = -4$$

$$9 + 10 - 11 - 12 = 19 - 23 = -4$$

$$13 + 14 - 15 - 16 = 27 - 31 = -4$$

$$\therefore \text{These result} = -4 - 4 - 4 + 17 + 18$$

$$= -16 + 17 + 18$$

$$= 19$$

24. (D) Use distributive property to simplify

$$555 \times 193 - 555 \times 93$$

$$= 555 \times (193 - 93)$$

$$= 555 \times 100 = 55,500$$

25. (B) Given, largest part, 4 parts = Rs. 140

$$\text{Total parts} = 2 + 3 + 4 = 9$$

$$\text{We have, } 4 : 140 :: 9 : x$$

$$\Rightarrow 4 \times x = 140 \times 9$$

$$\Rightarrow x = \frac{140 \times 9}{4} = 315$$

$$\therefore \text{Total sum of money} = \text{Rs. } 315$$

PHYSICS

26. (A) As bulbs I and II lighted up in the given electric circuit, objects P and Q are conductors and R is an insulator due to which bulb III did not light up.

27. (C) The student moved the pencil from position X to position Y under the light source. Its shadow is formed on the left side.

As the pencil at position Y is not moved, its shadow is formed on the right side.

28. (B) Total distance travelled by Rakesh in a car in 7 hr

$$= (292 + 400) \text{ km} = 692 \text{ km}$$

29. (D) Stick, stone and eraser are insulators. When these are connected in the electric circuits, small gaps occur in some circuits. Due to this two reasons, the bulb does not light up. Graphite is a good conductor of electricity. So, the bulb in this circuit lights up.

30. (B) The following conclusion can be made based on the figures drawn by the boy.

Material X is transparent as the cat is clearly visible as the material allowed all the light to pass through it.

Material Y is opaque as the cat is not visible. Material Y did not allow the light to pass through it.

Material Z is translucent as a faint figure of the cat is visible. Material Z being translucent allows the light to pass partially through it.

31. (C) The actual length of the rod
= 34.1 cm – 5.2 cm = 28.9 cm
32. (A) Only switch L must be closed for only Bulb I to light up.
33. (A) As per the given figure, the shadow of a soccer ball placed in an open field on a sunny day is towards west. The most likely position of the sun is at position 1.
34. (C) Thickness of a dozen coins (12 coins) = 40 cm
 \therefore Thickness of one coin = $\frac{40}{12}$ cm = $\frac{10}{3}$ cm = 3.33 cm
35. (B) Rubber, glass and wood are good electrical insulators.

CHEMISTRY

36. (C) Aquatic animals and plants use the oxygen dissolved in water to breathe.
37. (C) A mixture of milk and groundnut oil are immiscible liquids. Groundnut oil being lighter than milk floats above milk. This mixture can be separated by using a separating funnel.
38. (A) Saw dust is used to make particle boards.
39. (C) Less percentage (16) of oxygen and more percentage (4) of carbon dioxide is released during respiration in living organisms. Oxygen diffuses to purify the blood in the lungs and carbon dioxide is released as heat along with water vapour.
40. (B) You need to fold the filter paper twice into quarters. Separate the paper so that one sheet of filter paper is on one side and three sheets on the other side.
Options (A), (C) and (D): Give the wrong number of times the filter paper should be folded to make a filter cone.
41. (B) 'X' is sand and it is used for the given purpose. It does not absorb water. Rest of the substances absorb water.
42. (B) Mountaineers carry oxygen cylinders with them because air becomes thinner as we go higher with an increase in the altitude

43. (B) When a solution does not dissolve any more solute (sugar) it is said to be saturated.
Option (A): A solid that will not dissolve in a particular solvent is insoluble.
Option (C): A solid that will dissolve in a solvent is soluble.
Option (D): A solution in which more solute will dissolve in a solvent is unsaturated.
44. (D) Powdered substance 'Y' is chalk powder. It is used to polish metals and also to prevent rusting.
45. (D) Combustion of diesel in diesel engine, burning of coal as fuel and use of coal in thermal power plants to generate electricity release carbon dioxide back into the atmosphere.

BIOLOGY

46. (D) A child growing up to an adult
47. (A) We eat stems of garlic, potato, turmeric, onion, sugarcane, ginger and Colocasia. We eat roots of turnip, carrot and radish. We eat flower of broccoli
48. (D) The stems of sugarcane have supporting roots coming out from the lower nodes of the stem.
49. (C) Fats as well as carbohydrates are energy giving foods. So, X is Fats and Y is Carbohydrates.
50. (C) Roughage consists of fibres of plant origin. These fibres comprising mostly of cellulose, cannot be digested by humans. Roughage helps in proper bowel movement. Fruits and vegetables are rich sources of roughage.
51. (C) The farmer's friend is earthworm.
52. (C) Carrot is a modified storage root.
53. (A) Benedict's solution is used to test the presence of simple sugars; Millon's reagent is used to test the presence of proteins and iodine is to test the presence of starch.
54. (D) The lack of iodine in the diet causes goitre, a disease in which thyroid glands swell up.
55. (D) All are heterotrophs.

Critical Thinking

56. (D) In order for the light bulb to light up an electrical current must flow through the circuit, i.e. a closed circuit.

In option A, both wires are connected to the same side of the light bulb, rendering the circuit unclosed; thus, no current flows through the light bulb.

In option B, both wires are connected to the same side of the battery which means no electrical potential difference (electric tension) can occur and therefore no electrical current flows in the circuit.

In option C, the filament is torn which means the circuit is not closed; thus, no current flows through the light bulb.

In option D, all of the necessary requirements for a current to flow through the light bulb exist and therefore it will light up.

57. (D) Option (A) is not true because option A has 6 blocks not 5.

Option (B) and (C) are not true because it has 3 rows of blocks.

Option (D) has 4 rows of blocks is the correct 2D view for the given 3D view.

58. (B) Saving teaches patience and responsibility, and it ensures you can purchase the game without relying on others.

59. (A)

A	B	C	D
Car	Train	Aeroplane	Bus
Kerela	Delhi	Goa	Gujarat

60. (A) (?) $1 \times 77 = 77$

$$5 \times 77 = 385$$

$$14 \times 77 = 1078$$

$$43 \times 77 = 3311$$