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NATIONAL LEVEL SCIENCE TALENT SEARCH EXAMINATION

Paper Code: **UN439 (UPDATED)**

Solutions for Class : 5

MATHEMATICS

1. (C) 123, 080, 603 is one hundred twenty three million eighty thousand six hundred and three.
2. (D) The missing digit according to the given expansion is 7.
3. (D) H.C.F. of 60, 650, 250 is 10.
H.C.F. of 230, 450 is 10.
H.C.F. of 120, 180, 240 is 60.
H.C.F. of 135, 315, 495 is 45.
Hence, P and Q have numbers with the same H.C.F.
4. (D) Let the numbers be 24 and 240.
Then their H.C.F. = 24 and L. C. M. = 240
Hence the required numbers are 24 and 240.
5. (B) Length of ribbon used for each present

$$= \frac{2}{3} = \frac{2}{3} \times \frac{1}{5} = \frac{2}{15}$$
6. (C) $\frac{3}{4}, 1\frac{4}{5}, 2\frac{5}{6}, \boxed{?}, 4\frac{7}{8}$

\therefore The missing fraction

$$= \frac{17+10}{6+1} = \frac{27}{7} = 3\frac{6}{7}$$
7. (D) When a decimal number is divided by 10, the decimal shifts left by 1 place.
So, $9.826 \div 10 = 0.9826$

8. (D) As $2805 \div 2.55 = 1100$,

$$280.5 \div 25.5 = \frac{1100}{100} = 11$$
9. (A) Total marks = $75 + 25 = 100$
Required ratio = $75 : 100 = 3 : 4$
10. (C) Sum of the three angles in a triangle is 2 right angles.
11. (B) $90 + x + y + z = 360$;
 $x + y + z = 360 - 90 = 270$.
12. (D) Perimeter of the given figure
 $3.8 + 4.4 + 2.6 + 3.8 + 4.2 + 6.3 + 4.6 + 7.2 + 4.3 + 8.2 + 1.7 + 3.5 + 1.4 + 4.5 + 3.6 + 4.2 = 68.3 \text{ cm}$.
13. (B) Area of rectangle = length x breadth.
14. (C) The Celsius scale is divided into 100 equal divisions each representing a degree.
15. (A) Time at noon = 12
1 h 25 min before noon
 $= 12 - 1 \text{ h } 25 \text{ min}$
 $= 10 \text{ h } 35 \text{ min}$
 \therefore Rajesh left the office at 10 : 35 a.m.
16. (D) Number of students who choose the most popular fruit is orange = 30%.
Number of student who choose the least popular fruit

$$= 100 - 25 - 30 - 15 - \frac{1}{5} \times 100^{20}$$

 $= 100 - 90 = 10$.

Ratio of number of students who choose the most popular 1 unit to the number of students who choose the least popular unit = 30 : 10

$$= 3 : 1.$$

17. (D) Amount with Tanish = ₹ 63
More amount needed to buy 9 pens = ₹ 18
 \therefore Amount needed to buy 9 pens = ₹ (63 + 18) = ₹ 81
Hence, cost of 1 pen = ₹ $81 \div 9$ = ₹ 9
18. (C) The area of a square = 144 sq. m
i.e., side \times side = 144 sq. m
= (12×12) sq. m
 \therefore The side of the square = 12 m
19. (B) $0.777 = 7 \times 0.111$
 $= 7 \times \frac{1}{9} = \frac{7}{9}$
20. (C) Number of turns = $1 \text{ km} \div 5 \text{ m}$
 $= 1000 \text{ m} \div 5 \text{ m} = 200$
21. (C) Area of rectangle A : Area of rectangle B
 $= (8 \times 5) \text{ cm}^2 : (15 \times 4) \text{ cm}^2$
 $= 40 : 60 = 2 : 3$
22. (C) $3y + 2y = 180^\circ$
 $\Rightarrow y = 180^\circ \div 5 = 36^\circ$
 $x = 2y = 2 \times 36^\circ = 72^\circ$
23. (A) Of the given statements **only (i) is true.**
24. (B) In the given figure, **CD and IJ** are parallel lines
25. (B) A car has 4 wheels and a motorcycle has 2 wheels. By 'guess and check' method, There were **25 cars.**

Number of cars	Number of motorcycles	Total number of wheels
35	65	$35 \times 4 = 140$ $65 \times 2 = 130$ $140 + 130 = 270$
25	75	$25 \times 4 = 100$ $75 \times 2 = 150$ $100 + 150 = 250$
75	25	$75 \times 4 = 300$ $25 \times 2 = 50$ $300 + 50 = 350$
65	35	$65 \times 4 = 260$ $35 \times 2 = 70$ $260 + 70 = 330$

26. (B) $\frac{1}{2} \times 8 \times 4 = 16 \text{ m}^2$

27. (D) $P + Q = 105$

$$P - Q = 45$$

$$\text{So, } 2P = 105 + 45 = 150$$

$$\Rightarrow P = 75$$

$$\text{Then, } Q = P - 45 = 75 - 45 = 30.$$

$$\therefore (P \times Q) \div (P \div Q) = \frac{P \times Q \times Q}{P} = Q \times$$

$$Q = 30 \times 30 = 900$$

28. (A) Ratio of the lengths of AB and BC is 2 : 5.

$$\text{Given } AB = 6 \text{ cm,}$$

$$2 \text{ units} = 6 \text{ cm.}$$

$$\text{Hence, } 5 \text{ units} = \frac{6}{2} \times 5 = 15 \text{ cm}$$

$$\therefore \text{The length of AC is } (6 + 15) \text{ cm} = 21 \text{ cm}$$

29. (B) $\angle AOB = \angle DOC$

$$\Rightarrow \angle AOB = \frac{180^\circ - 88^\circ}{2} = 46^\circ$$

$$\angle p = \angle AOB = 46^\circ \text{ (Vertically opposite angles.)}$$

30. (B) From the figure, the 5th mark denotes the height of pole X which is 225 cm.

$$\text{So, each marking is at } \frac{225}{5} \text{ cm} = 45 \text{ cm}$$

$$\text{Pole Y is at the 4th mark. So, the height of pole Y} = 4 \times 45 \text{ cm}$$

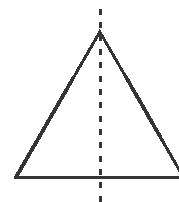
$$= 180 \text{ cm}$$

$$\text{The required difference} = 3 \text{ m} - 180 \text{ cm}$$

$$= (300 - 180) \text{ cm} = 120 \text{ cm}$$

$$\text{So, pole Y is 120 cm less than 3 m.}$$

31. (C)



32. (C) $(8 + 4 + 2 + ?) \text{ cm} = 19 \text{ cm}$

$$(14 + ?) \text{ cm} = 19 \text{ cm}$$

$$\therefore \text{The length of the missing side} = (19 - 14) \text{ cm} = 5 \text{ cm}$$

33. (C) $\frac{3}{4} \times 9000 - \frac{2}{3} \times 900$

$= 3 \times 2250 - 2 \times 300 = 6150$

34. (A) Perimeter of square $= 4 \times 4.5 \text{ cm} = 18.0 \text{ cm}$
Perimeter of regular hexagon = Perimeter of square

\therefore Each side of hexagon $= \frac{18}{6} = 3 \text{ cm}$

35. (C) If sum of both the angles are 180° , they are said to be supplementary.

For options, $40^\circ + 50^\circ = 90^\circ \neq 180^\circ (x)$

$35^\circ + 150^\circ = 90^\circ \neq 180^\circ (x)$

$0^\circ + 180^\circ = 180^\circ (\checkmark)$

$70^\circ + 90^\circ = 160^\circ \neq 180^\circ (x)$

\therefore 0° & 180° are supplementary

\therefore Answer is option (C).

36. (D) For option (A); cost of 1 is ₹ 18.

For (B): cost of 2 is ₹ 35

\Rightarrow cost of 1 is $35 \div 2 = ₹ 17.5$

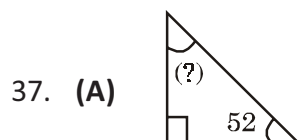
For (C): cost of 4 is ₹ 70

\Rightarrow cost of 1 is $70 \div 4 = ₹ 17.5$

For (D): cost of 5 is ₹ 85

\Rightarrow cost of 1 is $85 \div 5 = ₹ 17$

\therefore Answer is option (D).



Sum of three angles of a triangle is 180° .

From data, right angle $= 90^\circ$

Second angle $= 52^\circ$

\therefore Third angle $= 180^\circ - (90^\circ + 52^\circ)$

$= 180^\circ - (142^\circ) = 38^\circ$

\therefore Answer is option (A).

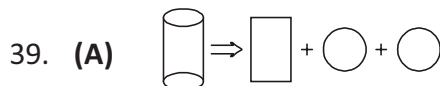
38. (B) No. of 10 paisa coins = No. of 50 paisa coins.

\Rightarrow Total value $= ₹ 30$

\therefore Coins $= \frac{30}{(50 + 10) \text{ paisa}} = \frac{3000}{60}$

\therefore He has 50 coins of 10 paisa and 50 coins of 50 paisa.

\therefore Total coins $= (50 + 50)$
 $= 100.$



40. (D) Average of A, B and C = 10 years

$$\frac{A+B+C}{3} = 10$$

$$A + B + C = 30 \text{ yr.}$$

$$\frac{A+C}{2} = 9 \Rightarrow A+C=18$$

$$\text{Now, } (A + C) + B = 30 \text{ yr.}$$

$$18 + B = 30 \Rightarrow B = 30 - 18 = 12 \text{ yrs.}$$

41. (A) $\frac{(11+A)}{(97-94)} = 5$. Solving the denominator, we get $97 - 94 = 3$. Now to get the result equal $(97 - 94)$ to 5, 3 must be divide by 15. And to obtain 15 in the numerator, we must add 4, such that $4 + 11 = 15$. This $A = 4$.

42. (A) Srujan answered questions correctly = 38
Srujan answered questions in correctly = $50 - 38 = 12$

Percentage of the questions were answered in correctly

$$= \frac{12}{50} \times 100$$

$$= 24\%.$$

43. (A) Distance travelled in 36 answers =

$$= \frac{45 \text{ km}}{60 \text{ min}} \times 36 \text{ min}$$

$$= \frac{45 \text{ km}}{5} \times 3$$

$$= 27 \text{ km.}$$

44. (A) $14 + \frac{8}{10} + \frac{108}{100} + \frac{345}{1000}$
 $= 14 + 0.8 + 1.08 + 0.345 = 16.225$

$$\begin{array}{r} 14.000 \\ 0.800 \\ 1.080 \\ (+) 0.345 \\ \hline 16.225 \end{array}$$

45. (A) Part of the book read = $\frac{3}{5}$
 \therefore Part of the book left to be read
 $= 1 - \frac{3}{5} = \frac{2}{5}$
 No. of pages left to be read = 80
 $\therefore \frac{2}{5}$ part = 80
 \therefore No. of pages in the book = $80 \times \frac{5}{2}$
 $= 40 \times 5 = 200$

GENERAL SCIENCE

46. (A) The given figure shows the action of pulling out of nail by hammer. It is an example of I order lever.
47. (C) Oxygen helps in burning.
48. (D) Earthworms are called as farmer's friends as they help in making the soil and enrich the soil with nutrients.
49. (C) Ferns do not feed on dead matter unlike fungi. Although both ferns and fungi reproduce through spores, only ferns are able to make their own food in the presence of sunlight.
50. (A) A plant depends on its leaves to make food. If all the leaves are removed, the plant slowly wilt and is no longer able to make its own food, Thus, it wilt and die.
51. (A) The waterdroplets formed on the leaves of plant on a cold morning is due to condensation of water vapour in air.
52. (B) The feet of frogs and ducks are webbed; this adaptation helps them to swim faster in water.
53. (B) X in the given figure is lungs. Lungs are the respiratory and excretory in function.
54. (D) As the air pressure is pushing the card up the water in glass does not spill when it is inverted upside down.
55. (A) The position of the sun, the moon and the earth during lunar eclipse is Sun \rightarrow Earth \rightarrow Moon.
56. (D) Water, explosive mechanism, wind and animals help in seed dispersal.
57. (B) An ice pack is applied in the case of a nose bleed.
58. (C) There are three types of levers.
59. (A) Weather condition existing in an area determines the shape of the houses in that area.
60. (C) Green plants synthesise their food in the presence of sunlight. If there is no sunlight, they cannot prepare their food.
61. (C) Boiling, evaporation and melting processes utilise heat energy.
62. (B) Our teeth help us to bite our food into smaller sizes as we cannot swallow everything whole. We then chew to even smaller pieces to be mixed with saliva for easier swallowing. Babies and some elderly people need food that is mashed before they eat as they do not have teeth to help them grind the food into smaller pieces.
63. (C) The density of the solid is less than the water hence it floats on water.
64. (B) A force in water acts on the wood in the upward direction, this force is called upthrust or buoyant force.
65. (A) To separate salt crystals from the salt, water evaporation method of separation is used. When salt solution is placed Under the Sunlight the water gets evaporated leaving the salt behind.
66. (A) While playing at the swings, we should wait for our turn.
67. (C) Paper is obtained from the wood pulp of the trees. hence, by recycling, reducing and reusing the papers. We can save forests.
68. (B) It is useful to have a long small intestine as the length means greater surface area exposed for the absorption of digested food into the bloodstream. The length of the intestine does not have any effect on the production of digestive juices.
69. (B) When the moon comes between the sun and the earth all positioned in a straight line, solar eclipse is formed.
70. (C) Image is formed on the retina.
71. (A) Pivot joint helps in moving of our head.

72. **(D)** Limestone, Sandstone and shale are sedimentary rocks.
73. **(D)** A plastic glass is a man made material madeup of chemicals and is non biodegradable substance. Hence it remains the same eucuthough it is buried in the soil for several layers.
74. **(C)** Pulley is used in window blinds to go up and down.
75. **(B)** Gneiss is formd by the metamorphosis of granite.
76. **(B)** Oranges are rich in vitamin C.
77. **(B)** Earthworm breathe through skin.
78. **(B)** The roots will grow out first when the seedling absorbs water. Next, the shoot will appear followed by its leaves as it grows. Once the seedling reaches maturity. It will grow flowers which will go through pollination and fertilization. Fruit are then developed.
79. **(B)** When air is blown into the balloon, it takes up the space inside it.
80. **(D)** Fern reproduct by spores.
81. **(B)** A grasshopper is a consumer that eats grass. Grass is a producer.
82. **(B)** The part shown by P is gill. Gill helps in respiration.
83. **(C)** Mica, quartz and feldspar are granite.
84. **(B)** Brain is the controlling centre.
85. **(C)** The moon undergoes periodic changes.
86. **(C)** Ice changes to water by the absorption of heat and process is called melting.
87. **(A)** Gas A is nitrogen.
88. **(C)** Oxygen is used up in burning & respiration.
89. **(C)** Motor nerve carries orders from brain to the muscles.
90. **(C)** Coal is used as fuel.

GENERAL AWARENESS

91. **(D)** 92. **(D)** 93. **(D)**
 94. **(C)** 95. **(D)** 96. **(A)**
 97. **(B)** 98. **(B)** 99. **(A)** 100. **(B)**

===== *The End* =====