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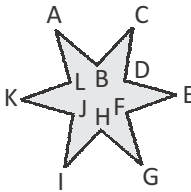
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## NATIONAL LEVEL SCIENCE TALENT SEARCH EXAMINATION

Paper Code: UN 421

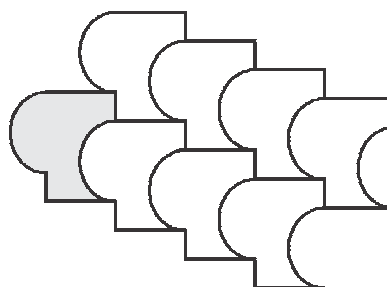
Solutions for Class : 4

### Mathematics

1. (C) 1 2 1  
1 2 3 2 1  
1 2 3 4 3 2 1  
1 2 3 4 5 4 3 2 1  
1 2 3 4 5 **6** 5 4 3 2 1
2. (C) Fifth multiple of 7 =  $7 \times 5 = 35$   
Seventh multiple of 5 =  $5 \times 7 = 35$   
Their difference =  $35 - 35 = 0$
3. (B)  $\frac{3}{4} + \frac{2}{4} = \frac{3+2}{4} = \frac{5}{4}$  is an **improper fraction**
4. (C) 
- A, B, C, D, E, F, G, H, I, J, K and L, are the **12 corners** in the given figure.
5. (A) 

T.Th	Th	H	T	O
9	6	4	3	1
- In 96431, 6 is in the thousands place.  
∴ It stands for 6000 which can be written as  $6 \times 100 \times 10$ . So, the number that should be placed in the box is **10**.
6. (D) P is meaningless as VIX or VXI is not correct.  
Q is XVI and R = XIV  
∴ The difference between Q and R is  $16 - 14 = 2$ .

7. (A) If the product of 80 whole number is 80, then their sum can't be **80**.
8. (C) Multiples of a number are obtained when a given number is multiplied by 1, 2, 3 and so on. So, the smallest non-zero multiple of a number is the **number itself**.
9. (C) Fraction of pizza Maneesh ate =  $\frac{3}{16}$   
Fraction of pizza his brother ate =  $\frac{3}{8}$   
Fraction of pizza they eat altogether  
 $= \frac{3}{16} + \frac{3}{8}$   
 $= \frac{3+6}{16} = \frac{9}{16}$
10. (D)  $= 777 + 555 + 333 + 111 - 666 - 444 - 222$   
 $= \underline{777} - \underline{666} + \underline{555} - \underline{444} + \underline{333} - \underline{222} + 111$   
 $= 111 + 111 + 111 + 111$   
 $= \mathbf{444}$
11. (A) The shape given in option (A) can be tessellated, as shown.



12. (C)

L	TTh	Th	H	T	O
4	6	8	5	4	3

Place value of 4 =  $4 \times 100000 = 400000$

The digit '6' is in the **ten thousands** place.

13. (D) The least number having factors 2, 5, 6 = 30

The least number having factors 4, 8 = 8

$\therefore P = 30, Q = 8 \Rightarrow P + Q = 30 + 8 = 38$

14. (D) Thirty-five and four hundredths = 35.04

$\therefore$  The decimal that shows Sharan's time = **35.04** seconds.

15. (C)  $8 \times 6 = 2 \times \square \times 8$

$$8 \times 6 = 48 = 2 \times \boxed{3} \times 8$$

(Since  $6 = 2 \times 3$ .)

16. (A) Consider 1, 20 as two positive whole numbers.

$$1 + 20 = 21, 1 \times 20 = 20 = (21 > 20)$$

If a number is multiplied with 1, the product is the number itself, but when 1 is added to a number, the sum is 1 more than the number.

$\therefore$  The sum of 2 positive whole numbers is greater than their product, if one of the number is **1**.

17. (D) In the figure in option (D), 10 out of 16 triangles are shaded.

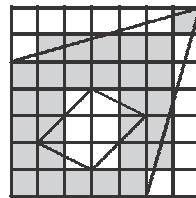
$\therefore$  The fraction is  $\frac{10}{16} = \frac{5}{8}$ . Hence, the required figure is in option (D).

18. (D) Between the 16 dots in border X, there are 16 lengths which needed 16 m of rope. In border Y, there are 24 lengths between the 24 dots. So, it needs **24 m** of rope.

19. (C) Only **shape Z** has a square shaped face.



20. (A) The shading can be redrawn as shown.



Given each square represents  $1 \text{ cm}^2$ .

$\therefore$  The area of the shaded part is  **$29 \text{ cm}^2$** .

21. (C) Given  $\triangle + \square + \triangle + \square + \triangle = 9$

$$\square + \triangle + \square = 7$$

$$\Rightarrow \triangle + 7 + \triangle = 9$$

$$\Rightarrow \triangle + \triangle = 9 - 7 = 2$$

$$\therefore \triangle = 1$$

$$\Rightarrow \square + 1 + \square = 7$$

$$\Rightarrow \square + \square = 7 - 1 = 6$$

$$\therefore \square = 3$$

$$\text{Hence, } \triangle + \square = 1 + 3 = 4$$

22. (C) Arrange all the 12 squares side by side.

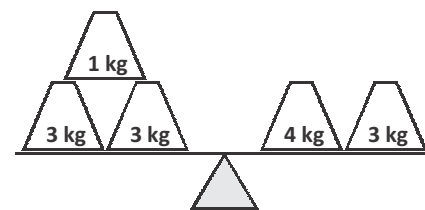


$\therefore$  The perimeter of the rectangle formed =  $2(24 + 2)$

$$= 2 \times 26$$

$$= 52$$

23. (C)



$\therefore$  The scale is balanced by placing **7 kg** on each side of the scale.

24. (A) Number of books = 18

$$2 \text{ groups of } 9 = 2 \times 9 = 18$$





$$3 \text{ groups of } 6 = 3 \times 6 = 18$$

$\therefore$  Rahul can stack the books in **2 groups of 9** (or) **3 groups of 6**.



40. (A) Number sticks picked in 10 min = 18  
 Number of sticks picked in 60 min  

$$= \frac{18 \times 60}{10} = 108$$
 ( $\therefore$  1 hour = 60 minutes.)  
 $\therefore$  Deepu could pickup **108 sticks** in 1 hour.
41. (C)  $542809 = 500000 + 40000 + 2000 + 800 + 9$
42. (D) Weight of 1 grain of rice = 0.01 g.  
 we know that 1 kg = 1000 g.  
 $0.01 \text{ g} \times 100000 = 1000 \text{ g} = 1 \text{ kg}$   
 $\therefore$  In 1 kg of rice there are **100000** grains.
43. (B) Factors of 38 = 1, 2, 19, 38  
 Factors of 48 = 1, 2, 3, 4, 6, 8, 12, 16, 24, 48  
 Factors of 58 = 1, 2, 29, 58  
 Factors of 68 = 1, 2, 4, 17, 34, 68  
 $\therefore$  Among the given options **48** is divisible by most whole numbers.
44. (B) Quantity of cement in 12 bags = 996 kg  
 Quantity of cement in 1 bag =  $996 \text{ kg} \div 12 = \mathbf{83 \text{ kg}}$

45. (C)   $\times$   = 24 = 1  $\times$  24  
 $2 \times 12$   
 $3 \times 8$   
 $4 \times 6$   
 $\Rightarrow 1 + 24 = 25; 2 + 12 = 14; 3 + 8 = 11;$   
 $4 + 6 = 10$   
 $\therefore$   = 4,  = 6, since the sum of 4 and 6 is the smallest value.

$\therefore$   +  = 4 + 6 = **10**

### General Science

46. (C) In the given figure of solar system, planet labelled R is the Jupiter.
47. (A) Prickly pear is a desert plant.
48. (B) Mouth  $\rightarrow$  foodpipe  $\rightarrow$  stomach  $\rightarrow$  small intestine  $\rightarrow$  large intestine shows the correct sequence of food.
49. (B) Climber coils around the stems of other plants for support and to get sunlight to make its food.
50. (B) Plants take in carbon dioxide released by animals during day time for the process of photosynthesis and they release oxygen which is utilised by living organisms for respiration.
51. (C) A sugarcane plant is propagated by its stem.
52. (D) A tooth decay starts at the surface of the tooth and grows inward. When bacteria reaches the nerves within the pulp, it causes pain.
53. (C) Raincoat is a water proof and non-absorbent material.
54. (B) Cockroach life cycle has three stages.  
 Egg  $\rightarrow$  Nymph  $\rightarrow$  Adult
55. (B) Polar bear and grasshopper merge with their surroundings.
56. (A) Incisors helps to cut the food.
57. (D) The gullet is present between the mouth and stomach.
58. (C) Herbivores feed on plants to obtain food. The plants prepare their own food by using solar energy.
59. (A) Turtle uses its shell for protection.
60. (C) Heat is a form of energy which changes solids to liquids and liquids to gases. For example,  
 ice  $\xrightarrow{\text{heat}}$  water  $\xrightarrow{\text{heat}}$  water vapour
61. (A) A cabbage is a leaf part of the plant.
62. (A) Ice is a solid. Definite shape and volume is present in solids.
63. (C) The force responsible for the coconut to fall on the ground is gravitational force.
64. (C) Wheat grain is a monocotyledon seed.
65. (C) The water droplets food on the surface of cold soft drink bottle is due to condensation of watervapour present on the cold surface in the air.
66. (B) We get oil from both plants and animals sources.
67. (C) In a battery energy is stored in the form of chemical energy.
68. (A) Claypot is made from clay which is a non-living material. Pepper, paper and cane chair are obtained from living objects, i.e., plants.
69. (B) The three states of matter are solids, liquids and gas. Steam is a gas, juice is a liquid and pencil is a solid.
70. (B) Large intestine absorbs water from indigested food.

71. **(D)** Diarrhoea can occur due to the drinking of contaminated water.
72. **(A)** Tall and straight trees with needle like leaves without flowers are usually found in hilly areas.
73. **(A)** Living organisms require water to survive.
74. **(B)** The given figure is water cycle.
75. **(B)** Monkey, whale and bat are mammals. They give birth to their young ones.
76. **(D)** Telescope is used to observe the things that are far away.
77. **(D)** All living organisms like plants and animals are interdependent.
78. **(B)** Vitamin C is found in goose berry and citrus fruit. It prevents scurvy, heal wounds and preserves health of the skin.
79. **(C)** The spots of leopard helps them to merge with the surroundings and help them to catch their prey and protect from hunters.
80. **(A)** Boiling kills the germs in water.
81. **(C)** Water hyacinth is a floating plant and hydrilla is a underwater plant.
82. **(D)** Clay can hold the highest amount of water due to its sticky nature.
83. **(D)** Rain, fog and dew are the precipitation forms of water.
84. **(B)** Webbed feet helps to swim easily in water.
85. **(C)** Rat is an omnivore. It eat both plant, products and animals.
86. **(D)** Oxygen gas is produced during photosynthesis.
87. **(A)** An iron ball lying on the ground has no force acting on it. Force makes a body move.
88. **(C)** Canines help in tearing food.
89. **(C)** If we touch electrical appliances with wet hands. It may cause a electric shock.
90. **(B)** Tadpole undergoes changes the most to become an adult frog.

