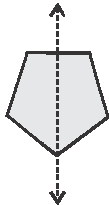## NATIONAL LEVEL SCIENCE TALENT SEARCH EXAMINATION

Paper Code: UN439 (UPDATED)
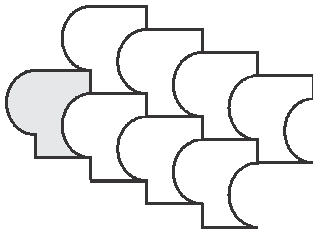### Solutions for Class : 4

MATHEMATICS

1. **(D)** 5 lakhs = 500000 = 500 thousands

2. **(C)** The place values of the two 7's in 73071 are 70000 and 70. Their product = 4900000

3. **(B)** 1565 = MDLXV

4. **(C)** Apples are left to be sold by shopkeeper = 480 − 13 − 244.

5. **(D)** 3164 + 23205 = 26369

6. **(B)** Since 3 × 7 = 21, and

   523 × 7 = 3661, the missing digit is 3.

7. **(D)** If 😊 😊 stands for 30,each

   😊 stands for 15.

   So, 😊 😊 😊 😊 😊 stands for

   5 × 15 = 75.

8. **(B)** The odd numbers between 5 and 12 are 7, 9 and 11. Their sum is 7 + 9 + 11 = 27.

9. **(B)** Total number of rectangles in the given figure = 24

   No. of rectangles to be shaded to show

   $\frac{3}{4}$ of it shaded = $\frac{3}{4}$ × 24 = 18

   No. of shaded rectangles in the given figure = 6

   ∴ More no. of rectangles to be shaded = 18 − 6 = 12

10. **(B)** 1 minute = 60 seconds

    $1\frac{1}{4}$ min = $\frac{5}{4}$ min = $\frac{5}{4}$ × 60 s = 75s

    ∴ The required fraction = $\frac{40}{75} = \frac{8}{15}$

11. **(B)** 2875g − 2kg 750g

    = 2875 − 2750 = 125g

    The missing number = 125.Option A could be the three pieces of the cube when it is separated into three pieces.

12. **(D)** Given figure has no lines of symmetry.

13. **(A)** Option (A) could be the three pieces of the cube wen it is separated into three pieces.

14. **(D)** $\frac{1}{4}$ × 60 = 15 minutes.

15. **(D)** Breadth of the rectangle = 40 cm

    Length = 3 × breadth = (3 × 40) m = 120 m

    ∴ Perimeter = 2(l + b) = 2(40 + 120)

    = 2 × 160 = 320 mts.

16. **(A)** 4a = 48 cm a

    a = $\frac{\cancel{48}^{12}}{\cancel{4}}$ = 12 cm.

17. **(A)** Largest number formed by using the digits 5, 4, 2, 6, 0 = 65420

    Smallest number formed by digits 5, 4, 2, 6, 0 = 20456

    = 65420 − 20456

    = 44964.

18. **(D)** In option (D), $\frac{4}{12} = \frac{1}{3}$ part is shaded.

    Rest all options quarter part is shaded.

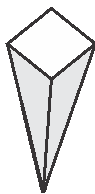19. **(B)** The required number = 20 − 7 + 5 + 10 = 28

20.	**(D)**	The given figure consists of three obtuse angles and an acute angle.	31.	**(D)**	In the figure in option (D), 10 out of 16 triangles are shaded.

20. **(D)** The given figure consists of three obtuse angles and an acute angle.

21. **(B)** There are 13 halves in this shape. 13 × 1/3 = 13/3.

22. **(C)** ₹ 658 × 12 = ₹7896

23. **(D)** 11 and 13 are prime numbers that differ by 2. So, they are twin primes.

24. **(D)** The figure in option (D) is symmetrical as shown.

25. **(D)** $Q \div Q = 1$

$\Rightarrow R = 1$

26. **(A)** $13 + 6 \div 2 + 5 \times 4$

$= 13 + 3 + 20$

$= 16 + 20 = 36$

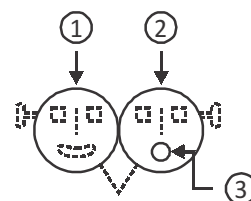27. **(A)** The shape given in option (A) can be tessellated, as shown.

28. **(C)** Cost of a biscuit packet = ₹ 4

Cost of 9 packets = 9 × ₹ 4 = ₹ 36

After buying 9 packets Aryan had ₹ 2 left.

∴ Amount he had at first = ₹36 + ₹2 = ₹38

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

30. **(A)**

From the model, $\dfrac{1}{7}$ of his salary was left.

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

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

32. **(D)** A : CD = 500 − 100 = 400

B : CM = 1000 − 100 = 900

C : DC = 500 + 100 = 600

D : MC = 1000 + 100 = 1100

∴ **D** has the largest number.

33. **(D)** There are no cross marks which are in triangle but not in rectangle.

34. **(D)** Minuend = Subtrahend + Difference

= 4409 + 72352 = 76761

```
  72352
+  4409
───────
  76761
```

35. **(A)** The increase in sales is evident between week 2, week 3 and week 4, week 5.

Increase in sales in week 2 to week 3 = (14 − 9) × 100 = 500

Increase in sales in week 4 to week 5 = (16 − 9) × 100 = 700

∴ The increase in sales is maximum between week 4 and week 5.

36. **(B)** $\dfrac{7}{10} \div 5 = \dfrac{7}{10} \times \dfrac{1}{5} = \dfrac{7}{50}$ m

37. **(B)** The figure in option (B) completes the given figure with the dotted line as the line of symmetry.

38. **(B)** Multiples of 6 : 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, ...

Multiples of 9 : 9, 18, 27, 36, 45, 54, ...

The first three common multiples of 6 and 9 are 18, 36 and 54.

∴ Their sum = 18 + 36 + 54 = 108.

39. **(B)** Figure with only three circles is option (B).

∴ Answer is option (B).

40. **(A)** Detergent left = 1.2 l -- 0.2. l

= 1 l

= 1000 m l

∴ Answer is option (A).

41. **(C)** 29 = 10 + 10 + 9

= 10 + 10 + (10 - 1)

= XXIX

∴ Answer is option (C).

42. **(D)** $\dfrac{1}{2} \times \dfrac{4}{4} = \dfrac{4}{8}$

$\dfrac{5}{8} \times \dfrac{1}{1} = \dfrac{5}{8}$

$\dfrac{3}{4} \times \dfrac{2}{2} = \dfrac{6}{8}$

Next fraction is $\dfrac{7}{8}$.

43. **(B)** Cost of 1 packet = ₹ 5

No. of packets from ₹ 30 without offer = $\dfrac{30}{5}$

No. of packets with offer = 6 + 3 = 9.

44. **(C)** 3 necklaces + 3 rings → ₹ 1860

1 necklace + 1 ring → ₹ 1860 ÷ 3 = ₹ 620

Since 3 necklaces cost as much as 7 rings,

7 rings + 3 rings → ₹ 1860

10 rings → ₹ 1860

1 ring → ₹ 1860 ÷ 10 = ₹ 186

∴ 1 necklace → ₹ 620 − ₹ 186 = ₹ 434

The cost of 1 necklace is ₹ **434.**

45. **(A)** For above circle, 202 + 104 + 201 + 301 = 808

For left circle, 104 + 201 + 81 + 422 = 808

Same way, for right circle

201 + 301 + 81 + (X) = 808

⇒ (X) = 808 − 583

= 225

BIOLOGY

46. **(C)** During the process of transpiration green plants release water vapour into the atmosphere.

47. **(C)** The force responsible for the apple to fall on the ground is due to gravitational force.

48. **(A)** Microscope is used to observe microbes.

49. **(A)** Aquatic plants release oxygen during day time due to the photosynthesis process. Hence, fish will get more oxygen during day time.

50. **(A)** Cooling changes liquids like water to solids and (water vapour) gases to liquids.

51. **(B)** During photosynthesis oxygen is released.

52. **(C)** Earthworms decompose the organic material like dried leaves to mineral nutrients and make the soil rich in nutrients and airy.

53. **(B)** Nepenthes and sundew are autotrophs that grow in mineral deficient soils mushroom and mould are fungi that grow in dark and damp places.

54. **(B)** In the given table the animal X is bat. Bat is a mammal as it has hair and gives birth to young and animal with six legs is insect and it reproduce by laying eggs.

55. **(D)** Waste water from kitchen is used to water the plants.

56. **(C)** Tools are simple machines. They make our work easier. Some increase the speed of work and some change the direction of the force used.

57. **(C)** Condensation is the process of the reduction of a vapour gas to liquid on cooling.

58. **(D)** Rabbit, moles and rat are burrowing animals.

59. **(C)** The water flowing from the fountain is man-made.

60. **(B)** 'X' is water in the liquid state and Y marbles in solid state.

61. **(B)** Producers or green plants are called autotrophs.

62. **(D)** By the action of bacteria on plaque. It produces acids that causes cavities.

63. **(C)** Cockroach have a three stage life cycle. Adult female cockroach lays eggs. The eggs hatch into nymph and these develop into adults.

64. **(A)** Insicors teeth help to bite or to cut the food. Hence it is difficult for Kishore to cut into an apple.

65. **(B)** In lungs exchange of gases take place where deoxygenated blood rich in carbon dioxide is changed to oxygenated by adding oxygen and the removal of carbon dioxide.

66. **(D)** Thick cuticle reduces transpiration.

67. **(C)** By boiling the water the germs present in it are killed.

68. **(D)** After digestion, simple food substances like glucose are absorbed into the blood from the small intestine.

69. **(B)** The given plants are classified based on habit is xerophytes or desert plants.

70. **(C)** Plants that grow on high walls get water from the air.

71. **(D)** Afforestation, (planting vegetation) building embankments along river banks and practicing terrace farming on hill slopes prevent erosion of soil by water.

72. **(C)** Solar energy $\rightarrow$ Electrical energy $\rightarrow$ Light energy.

73. **(C)** Removing the lid from the container involves a pulling action as the lid is being moved towards us.

74. **(D)** The animal is an earthworm. It likes to live in damp and shady places. The leaf litter is the most suitable place for the earthworm to reside.

75. **(B)** Fungi and bacteria help to break down dead matter into simpler substances.

76. **(B)** The tendrils actually help the plant to anchor itself onto other plants or structures for support so that it is able to obtain sufficient amount of sunlight to make food. The tendrils do not store food of transport food to all parts of the plant. The roots absorb water for the plant.

77. **(B)** Axe is used to cut the branches. Sickle is used to cut the crop, spade is used to shovel the earth and crow bar is used to dig the soil.

78. **(D)** Organs used for respiration.

79. **(C)** Molars helps to crush and grind the food.

80. **(C)** The energy stored in the cells is called chemical energy. When a bulb is connected to a cell with wires it glows.

81. **(D)** The given plant is an aquatic plant. Part labelled X is swollen due to the presence of air sacs and it help the plant to float.

82. **(A)** Plant shoot respond to light. Hence it grows towards sunlight.

83. **(C)** Sandy soil has large grains of soil. Hence highest amount of water passes through sandy soil.

84. **(C)** Vitamins C prevents bleeding or gums, swelling of joints and help to heal wounds.

85. **(D)** Distillation is used to remove soluble impurities.

86. **(C)** Circulatory system carries oxygen to all parts of the body.

87. **(C)** The given observations state about a solid object. Pebble is a solid substance that has definite shape and volume and cannot be compressed.

88. **(D)** The force of gravity on the moon is 1/6 of that on the earth.

89. **(C)** Fish is rich in iodine. Iodine prevents the risk of giotre.

90. **(C)**. The given figure is a satellite.

GENERAL AWARENESS

91. **(C)**   92. **(B)**   93. **(B)**

94. **(B)**   95. **(C)**   96. **(A)**

97. **(A)**   98. **(D)**   99. **(B)**   100. **(A)**