NATIONAL LEVEL SCIENCE TALENT SEARCH EXAMINATION - UN412

Solutions for Class : 4

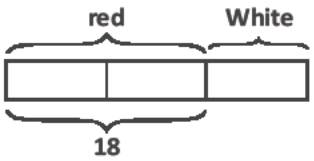
Mathematics

1. **(D)** $5 \times 8 = 40$

Greatest factor of $15 \rightarrow 15$

$40 + 15 = \mathbf{55}$

2. **(B)**



2 units $\rightarrow$ 18

1 unit $\rightarrow$ $18 \div 2 = 9$

3 units $\rightarrow$ $3 \times 9 = \mathbf{27}$

3. **(C)** The word **DAD** given in option (C), is not symmetrical along the dotted line.

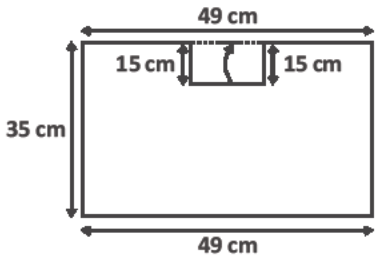
4. **(A)**

$$\begin{array}{r} 4\,6\,\overset{7}{\cancel{8}}\,\overset{1}{1}\,8 \\ 1\,4\,6\,6\,3 \\ \hline 3\,2\,\mathbf{1}\,5\,5 \end{array}$$

5. **(C)** 6 h 35 min + 35 min = **7 h 10 min**

6. **(B)** All numbers from 4450 to 4549 is 4500 when rounded off to the nearest hundred **4549** is the greatest among the numbers.

7. **(D)**



$35 + 35 + 49 + 49 + 15 + 15 = \mathbf{198\ cm}$

8. **(B)**

Product	Sum
144 =	1×144 $1 + 144 = 145$
$= 2 \times 72$	$2 + 72 = 74$
$= 3 \times 48$	$3 + 48 = 51$
$= 4 \times 36$	$4 + 36 = 40$
$= 6 \times 24$	$6 + 24 = 30$
$= 8 \times 18$	$8 + 18 = \mathbf{26}$
$= 9 \times 16$	$9 + 16 = 25$
$= 12 \times 12$	$12 + 12 = 24$

Jatin is **18 years** old.

9. **(D)**

First, multiply the kilograms;

$4 \times 3\ kg = 12\ kg$

Then, multiply the grams:

$4 \times 480\ g = 1920\ g$

$= 1\ kg\ 920\ g$

$12\ kg + 1\ kg\ 920\ g = \mathbf{13\ kg\ 920\ g}$

Leena has **13 kg 920 g** of flour altogether.

10. **(A)**

 $= 819 \div 7 = 117$

 $\div 9 = 117 \div 9 = \mathbf{13}$

11. **(D)** The pupil who took the least time is the fastest runner.

12. **(D)**

$$\begin{array}{r} {}^{1}2\,{}^{1}4\,{}^{1}7\ 8 \\ +\ 1\ 9\ 9\ 7 \\ \hline 4\ 4\ 7\ 5 \end{array}$$

4475 ≈ 4500

∴ 4475 when rounded off to the nearest hundred is **4500**.

13. **(B)** The time shows **7: 10 p.m.**

14. **(B)** Hasan □□□

Sister □□□□□

8 units → 24 4 4 = 16

1 unit → 16 ÷ 8 = 2

3 units → 3 × 2 = 6

Hasan is **6 years** old now.

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

16. **(B)** 53899 < 54598 < 58455 < 58459

17. **(A)** 5 + 5 + 18 + 18 + 5 + 5 = **56 cm**

18. **(D)** 1656 = **MDCLVI**

19. **(B)** Option (A) : 63 ÷ 9 = 7

Option (B) : **109** ÷ 9 = 12 ; **Remainder = 1**

Option (C) : 117 ÷ 9 = 13

Option (D): 126 ÷ 9 = 14

20. **(C)** 7 ℓ 50 mℓ = 7050 mℓ

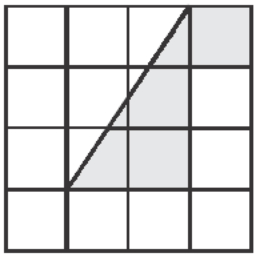
7050 mℓ ÷ 5 = 1410 mℓ

The truck uses 1410 mℓ of petrol for each kilometre it travels.

27 × 1410 mℓ = 38070 mℓ = 38 ℓ 70 mℓ

It needs **38 ℓ 70 mℓ** of petrol to travel a distance of 27 km.

21. **(B)** Divide the figure into 16 small squares.



Since the area of the triangle is half that of the area of 6 small squares, it has the same area as 3 small squares.

Number of small squares shaded = 3 + 1 = 4

Total number of small squares = 16

Fraction of the square shaded = $\frac{4}{16} = \frac{\mathbf{1}}{\mathbf{4}}$

22. **(B)** 278 ÷ 12 = 23 ; Remainder 2

23 + 1 = 24

The least number of boxes is **24 boxes.**

23. **(C)** 17 + 8 + 29 = 54

65 54 = 11

She saw **11 tigers.**

24. **(C)** The opposite sides are parallel in a rectangle.

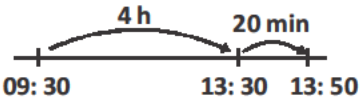
25. **(A)** 5 + 90 + 600 + 70000 = 70695 ≈ **70700**

26. **(B)** 8 + 4 + 5 + 4 + 8 = **29 cm**

27. **(B)** $3\frac{2}{3} = \frac{9+2}{3} = \frac{11}{3} = \frac{22}{6} = 22 \times \frac{1}{6}$

There are **22 sixths.**

28. **(D)**



The duration is **4 h 20 min.**

29. **(D)** The total mark cannot exceed 259.

259 76 89 = 94

The highest possible mark Nithin could get for Science is **94.**

30. **(B)** No. of divisions for 1 litre = 5

Each division measures = 1 ℓ ÷ 5

= 1000 mℓ ÷ 5

= 200 mℓ

Capacity of water in the container
= 1600 mℓ

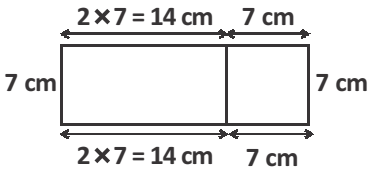
∴ Amount of water needed to fill up the container to 2 ℓ mark = (2000 1600 mℓ)

= 400 mℓ

31. **(B)** Number between 30 and 50 that is common multiple of 6 and 8 = 48

∴ The required result = 45 + 48 = **93**

32. **(B)**



14 + 7 + 7 + 7 + 14 + 7 = **56 cm**

33. **(A)** 81 ÷ 3 = 27

27 ÷ 3 = **9**

34. **(A)** 225 + 100 + 375 = 700

700 ÷ 100 = 7

7 × ₹ 200 = ₹ 1400

He earned ₹ **1400** for the first 3 days.

35. **(D)** P : CD = 500 100 = 400

Q : CM = 1000 100 = 900

R : DC = 500 + 100 = 600

S : MC = 1000 + 100 = 1100

∴ **S** has the largest number.

36. **(B)** The clock shows 6: 45 and 55 s.

70 s = 1 min 10 s

1 min 10s after 6: 45 and 55 s is 6: 46 and 65 s or **6: 47 and 5 s**

37. **(C)** 41574 500 = 41074

41574 + 500 = 42074

38. **(C)** 40 kg ÷ 9 kg = **4** packs R 4 kg

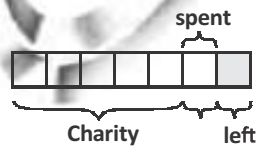
4× ₹ 150 = ₹ 600

1 kg → ₹ 20

4 kg → ₹ 20×4 = ₹ 80

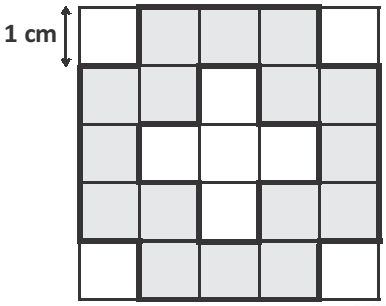
₹ 600 + ₹ 80 = ₹ **680**

39. **(A)**



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

40. **(D)**



Outer perimeter = 20 cm

Inner perimeter = 12 cm

20 + 12 = **32 cm**

41. **(D)** Multiples of 9: **9**, 18, **27**, 36, **45**, 54, **63**, 72, ...

42. **(B)** AC + DE + GJ = (2 + 1 + 3) cm

= 6 cm = **BH**

43. **(A)** Hospital P → 5000 patients

Hospital S → 10000 patients

44. **(B)** **300 tens** = 3000

45. **(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.**

General Science

46. **(B)** The figure in option 'B' correctly represents the exchange of gases between green plants and animals during photosynthesis.

47. **(A)** The figure in option (A) shows that it uses stored chemical energy to glow a bulb.

48. **(C)** Lungs and Moist skin in frogs help to breathe on land and in underwater.

49. **(A)** Figure in Option (A) shows falling of a coconut towards earth. This shows that a freely falling body falls on earth due to gravitational pull of the earth.

50. **(C)** Mouth, stomach and small intestine play a part in the digestion of food due to the presence of digestive enzymes in it.

51. **(A)** A force can be applied to a moving object to change its direction, speed but not the mass and volume.

52. **(A)** A snake eats other animals hence it is called a predator.

53. **(A)** All the given animals are egg laying animals.

54. **(D)** The water drops on the inside edge of the glass is formed by the condensation of the rising steam.

55. **(D)** An opossum that eats fruit and fish is an omnivore.

56. **(D)** Topsoil is rich in humus.

57. **(A)** In the given figure mushroom that is labelled as '1' is a fungi.

58. **(D)** The force that pulls the iron block downwards and causes the spring to stretch is due to gravitational force.

59. **(A)** Thick skin of cactus plant helps to save water by preventing transpiration in plants.

60. **(A)** The life cycle of housefly starts with eggs $\rightarrow$ larva $\rightarrow$ pupa $\rightarrow$ adult.

61. **(C)** Rain, snow and sleet are the forms of precipitation of water.

62. **(B)** The leaf help the plant in synthesizing the food by using light energy.

63. **(C)** The part labelled as 'X' is stomata. Stomata help in exchange of gases. During photosynthesis and respiration it gives out oxygen and during respiration it takes in oxygen from air.

64. **(A)** Mangroves grow in marshy soil. The roots of a plant need air to breathe hence the grow above the soil to take in air.

65. **(C)** Air is made up of 78% nitrogen, 21% oxygen and 1% water vapour and other gases (including 0.03% carbon dioxide).

66. **(A)** The seashells are a part of the molluses. Molluscs are the animals living in the sea.

67. **(D)** In electric iron electrical energy is converted to heat energy. In a radio electrical energy is changed to sound energy and in a tube light electrical energy is converted to light energy.

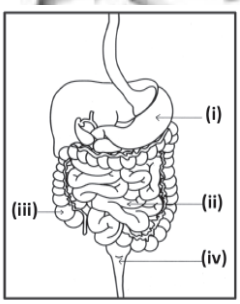
68. **(D)** Young of cockroach are called nymph. Nymph resemble their parents in their external structures.

69. **(A)** The products of respiration that are released during exhalation are carbon dioxide and water vapour. Therefore the air that we exhale contains water vapour which will condense when it touches the window.

70. **(C)** The roots of plants absorbs water and mineral salts from the soil.

71. **(B)** The cycle of a butterfly starts from an egg. After 10 days a caterpillar will hatch out which feeds on leaves and breaths through its spiracles. In this stage the caterpillar will moult around 5 or 6 times and 3 weeks from that will become a pupa. The pupa weaves itself inside a cocoon where it develops into a butterfly this process is called Metamorphosis.

72. **(B)** The part labeled ii is the small intestine. This is where majority of the digested food is absorbed. The small intestine as you can see from the picture is the longest tract in the digestive tract.

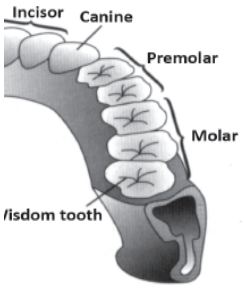


73. **(A)** Tadpole in their early development breathes with their gills.

74. **(A)** Hydrophytes are plants that live in water as their habitat.

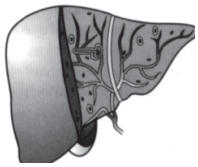
75. **(C)** Calcium, phosphorous and Vitamin D are important for the development of our bones and teeth. Vitamin D helps to regulate the absorption of calcium and phosphorous in our body.

76. **(C)** Canine teeth are used to tear food into pieces.



77. **(B)** Malaria is spread by the mosquito

78. **(C)** The label X refers to the liver. It produce bile which helps to break down fats into fatty acids.



79. **(A)** The figure in option 'A' is a virus.
80. **(A)** Photosynthesis release oxygen
81. **(C)** During the process of transpiration green plants release water vapour into the atmosphere.
82. **(C)** In the given figure P_Water, Q_Food, R_Carbon dioxide, S_Oxygen
83. **(A)** Moulting is the process whereby an animal sheds its outer covering when it grows larger in size.
84. **(D)** Egg $\rightarrow$ Larva $\rightarrow$ Pupa $\rightarrow$ Adult is the correct order of the life cycle of a mosquito.
85. **(C)** Flowers bear fruit and seeds that are needed for reproduction.
86. **(C)** The energy always transfer in a single direction. In a food chain energy transfer takes, place from greenplants to herbivores.
87. **(B)** Leafblade, petiole and veins are the parts of a leaf.
    Thalamus is a part of the flower.
88. **(A)** Sundew plant is an autotroph.
89. **(C)** Mushroom is an example of a fungus or non-greenplant.
90. **(A)** The number of heart movements per minute gives. rise to or determine the rate of breathing.