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NATIONAL LEVEL SCIENCE TALENT SEARCH EXAMINATION

CLASS - 4

Question Paper Code : UN497

KEY

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

SOLUTIONS

MATHEMATICS

01. (A) 1 kg = 1000 g = 2 pineapples + 350 g

1000 g – 350 g = 2 pineapple

650 g = 2 pineapples weight

02. (D) Length of wire P = $80 \times \frac{3}{2}$ = 120 cm and

length of wire Q = $46 \times \frac{5}{2}$ = 115 cm

Since 120 > 115, wire P is longer than wire Q

03. (D) 516 < DCVI is correct as

DCVI = 500+100 + 5 + 1 = 606

CCLVII = 100 + 100 + 50 + 5 + 1 + 1

= 257 ≠ 256

CDVIII = (500 – 100) + 5 + 1 + 1 + 1

= 400 + 8 = 408

MD = 1500

04. (C) Ajay's total distance = 23 km 43 m + 12 km 27 m + 16 km 342 m

⇒ 23043 + 12027 + 16342 m

⇒ 51412 m ⇒ 51 km 412 m

Vijay total distance

= 5 km 247 m + 16 km

37 m + 13 km 73 m

$\Rightarrow$ 5247 m + 16037 m + 13073 m

$\Rightarrow$ 34357 m = 34 km 357 m

The total distance Ajay cover more than Vijay is

$\Rightarrow$ 51 km 42 m – 34 km 357 m

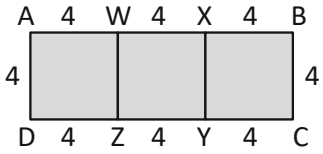
$\Rightarrow$ 51412 m – 34357 m

$\Rightarrow$ 17055 m

$\Rightarrow$ 17 km 55 m

05. (C) $23 \times 7 = 161$

06. (B)

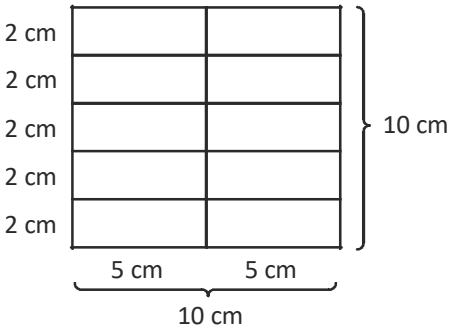


Area of rectangle ABCD = L × D

= 12 m × 4 m = 48 m^2

07. (B) The sum of fifty (L) and sixty (LX) in Roman Numeral is CX, which represent 110.

08. (C) Ayaan needs a minimum of 10 cards in order to make a square.



09. (C) To maximize the number of songs used, Goutham should use as many of the shortest length songs as possible. (This is because he can always trade a longer song for a shorter songs and shorten the total time used).

If Goutham uses all 50 songs of 3 minutes in length, this takes 150 minutes.

3 hours - 3 60 minutes = 180 minutes.

There are 180 – 150 = 30 minutes left, so he can play an additional 305 = 6 songs that are 5 minutes in length.

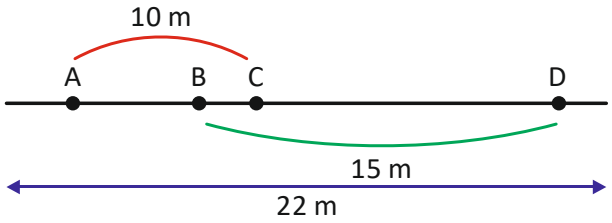
In total, he plays 50 + 6 = 56 songs.

10. (C) The smallest multiple of 32 is 32 and the largest factor of 32 is 32.

Difference = 32 – 32 = 0

11. (C) 22 m – 15 m = 7 m

10 m – 7 m = 3 m



12. (A) Perimeter of rectangle = 2(26 cm + 9 cm) = 70 cm

Perimeter of square = 4 × 12 = 48 cm

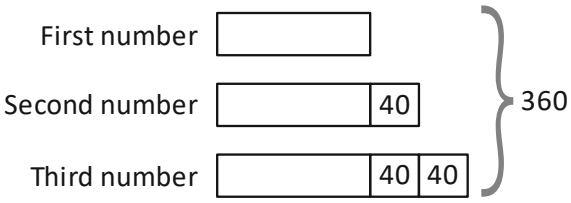
Difference = 70 cm – 48 cm = 22 cm

13. (B) 8 thousands + 10 tens + 1 one

= 8000 + 100 + 1 = 8101

8101 – 101 = 8000 = 800t ens

14. (A)



360 – 40 – 40 – 40 = 240

3 units = 240

1 unit = 240 ÷ 3 = 80

The smallest number is 80.

15. (D) There are 8 spaces between 5 and 6.

Each space = 1 ÷ 8 = $\frac{1}{8}$

$A = 5 + \frac{6}{8} = 5\frac{6}{8}$

$B = 6 + \frac{2}{8} = 6\frac{1}{4}$

16. (C) Total number of pens and pencils = 116

Total number of packets and boxes = 20

We fix the number of packets and boxes as 20.

She had 80 pencils and 36 pens

80 – 36 = 44

She had 44 more pencils than pens.

17. (D) Total capacity of 3 cups

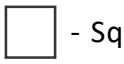
= 3 × 450 = 1350 ml

Hence, total capacity of jug = 2 × 1350

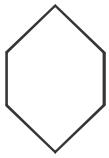
= 2700 ml

= 2 l 700 ml

18. (A) There are 6 basic geometrical shapes in the given figure.

 - Square;  - Rectangle ;

 - Triangle;  - Pentagon

;  - Hexagon ;  - Trapezium.

19. (B) Weight of 3 apples + 2 oranges = 255 g

Weight of 2 apples + 3 oranges = 285 g

Hence, weight of 5 apples + 5 oranges

= (255 + 285) g = 540 g

∴ Weight of 1 apple + 1 orange = 540 g ÷ 5

= 108 g

20. (C) 94 cm + 17 cm = 111 cm

= 1 m 11 cm

Varun's height is 1 m 11 cm

1 m 11 cm + 29 cm = 1 m 40 cm

Sowmya's height is 1 m 40 cm

21. (C) 8467 – 2038 = 6429

So the digit in the hundreds place is wrong.

22. (A) 108 ÷ 3 = 36 (number of sticks needed)

36 ÷ 12 = 3

23. (B) 8 × 61 = 488

400 + 88 = 488

24. (A) 11 cm × 7 = 77 cm

19 – 7 = 12 (remaining pieces)

8 cm × 12 = 96 cm

77 cm + 96 cm = 173 cm

1 m 73 cm

25. (B) Nine thousand, two hundred and thirteen written as a numeral is 9213.

GENERAL SCIENCE

26. (C) Nervous system transfers information from brain to different parts of body.

27. (A) Humus helps in the growth of plant.

28. (C) Oxygen is essential for the process of burning.

29. (B) P - Liver - Secrete bile juice

Q - Stomach - Churning of food takes place

R - Small intestine - Absorption of food takes place

S - Mouth - Saliva mixes with food

30. (B) The teeth that are used for cracking hard food are premolars.

31. (C) camouflage

32. (A) Solid has definite shape and volume.

33. (D) Cows have external ears.

34. (C) The roots that are presents above the ground are called aerial roots.

35. (B) 'S' represents evaporation in which water changes into water vapour.

36. (D) Food rich in vitamin and mineral give us strength to flight against diseases.

37. (D) Malaria is caused by the bite of a female mosquito which carries a protozoa.

38. (A) Elephant is a herbivorous animal, rest others are carnivorous animals.

39. (C) Air currents are not caused due to condensation. Rest all are caused due to condensation.

40. (C) In radish, food is stored in roots. Hence, the edible part of radish are their roots.

41. (C) Kidneys are responsible for eliminating liquid wastes. Lungs eliminate gaseous waste. Small intestine is responsible for absorption of digested food and heart is responsible for circulation of blood.

42. (D) Frictional force is responsible for stopping a moving body.

43. (B) Vitamins are needed in small quantities for the maintenance of vital biochemical reactions in the body.

44. (D) P - Heart, Q - Kidney, R - Lungs, S - Stomach

45. (D) The life cycle of a butterfly involves different stages in the order: Eggs → Caterpillar → Pupa and then finally into adult butterfly.

46. (B) Ginger - modified stem

Radish - modified root

Spinach - leaf is edible

Rice - seed is the edible part

47. (B,D) Air occupies space. Air exerts pressure on the walls of the balloon and it expands.

48. (D) Evaporation increases with an increase in the area of exposure.

49. (B) Dead leaves are important for soil because they become manure and provide nourishment to the soil. Therefore, option (B) is correct. Once leaves are shed. New leaves arrive on the tree, but this process does not help the soil. Dead leaves do not provide colour to the soil. It only gives nourishment to the soil. Thus, option (A), (C) and (D) are incorrect.

50. (C) During photosynthesis light energy is converted to chemical energy.

51. (A) Air is a mixture of gases. About 78% is nitrogen, 20.9% is oxygen and the remaining 1.1% is mainly argon and carbon dioxide. Air also contains varying amounts of water vapour, dust particles and smoke.

52. (D) Energy from wind, sun and running water are eco-friendly.

53. (A) The imaginary line that divided the earth into two halves is called equator.

54. (D) Swelling, inability to move bone and pain are symptoms of fracture.

55. (B) When you will remove your hand, you will find that the card stays in place and the water does not flow out. This is because air exerts pressure on the card from below to keep the card in place. Here, the pressure exerted by air upwards is more than the pressure exerted by water downwards.

CRITICAL THINKING

56. (C) Smith tells the truth on Mondays, Thursdays and Saturdays and lies on Tuesday, Wednesday, Friday and Sunday.

Now, If he made the statement on Wednesday then it means he is telling the truth because he tells the truth on Thursday. Thus he cannot make this statement on Wednesday.

If he made the statement on Friday, then it means he is telling the truth because he tells the truth on Saturday. Thus he cannot make this statement on Friday.

If he made this statement on Sunday, then it means he is telling the truh because he tells the truth on Monday. Thus he cannot make this statement on Sunday.

Mon	Tue	Wed	Thur	Fri	Sat	Sun
Truth	Lie	Lie	Truth	Lie	Truth	Lie

57. (D) 6 tricycles, 2 bicycles

If we count all as bicycles,

$8 \times 2 = 16$

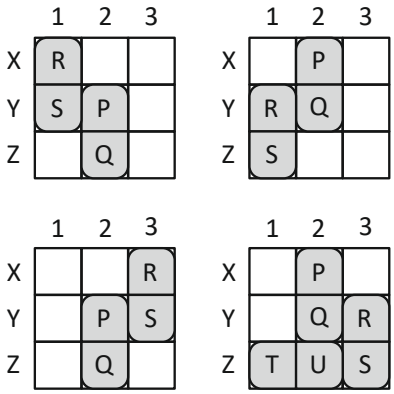
$22 - 16 = 6$

There are 6 tricycles and 2 bicycles.

58. (A) Point P

59. (C) Keerthi, Rohini and Asmitha were born in Australia, Canada and India respectively.

60. (B) One way to approach this is to work from the four possible placements of the R/S tile, where each placement forces the subsequent placement of the P/Q tile.



The first three options leave nowhere for the T/U tile so that the T has a blank square above it. Only the last option allows this, and S goes into square Z3.