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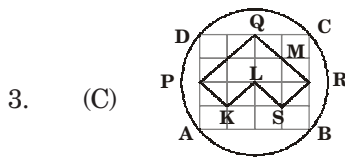
NATIONAL LEVEL SCIENCE TALENT SEARCH EXAMINATION - 2011

SOLUTIONS FOR CLASS : 5

Mathematics

1. (B) 2 & 11

2. (D) $\pi(2r)^2 = 4\pi r^2 \neq 2(\pi r^2)$



$$AK = KL = LM = MC = \frac{10}{4} = 2.5 \text{ cm.}$$

$$\text{perimeter} = 8 \times 2.5 = 20 \text{ cm}$$

4. (B) For every 10 m John, run,
Anne will run 11 m.
when John has completed 90 m.

$$\text{distance covered by Anne} = \frac{90}{10} \times 11 = 99 \text{ m.}$$

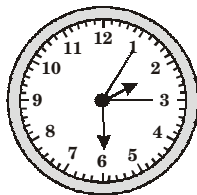
Anne has to run 1 km more to complete the race.

Therefore, John will win the race.

5. (B) $9.2 \times 1000 = 9200 \text{ gm} \Rightarrow 9000 \text{ gm}$

6. (C)

7. (B) At 2.30 the hour hand



between 2 and 3 and the minute hand is on 6.

Hence the angle between the two hands is

$$90^\circ + \frac{1}{2} \times 30^\circ = 105^\circ.$$

$$(\text{or}) \quad M\left(\frac{M}{5} - H\right) - \frac{M}{2}$$

$$30\left(\frac{30}{5} - 2\right) - \frac{30}{2}$$

$$30(6 - 2) - 15$$

$$120 - 15 = 105^\circ$$

8. (C) $1 + 2 + 3 + 4 + 5 + 6 + 7 = 28$

$$\text{average amount added per number} = 28 \div 7 = 4$$

\therefore New average = old + average added per number.

$$= 23 + 4 = 27.$$

9. (B) $H = 28, L = 336, a = 112, b = ?$
 $ab = LH$

$$112 \times b = 28 \times 336 \Rightarrow b = \frac{28 \times 336}{112} = 84$$

10. (B) Reciprocal of $\frac{7}{5}$ is $\frac{5}{7}$

11. (C)

12. (D) $0.05 \times 0.09 \times 5$

$$= \frac{5}{100} \times \frac{9}{100} \times 5 = \frac{225}{10000} = 0.0225$$

13. (B) $100 - (7 \times 8) + 4 \div 2$
 $= 100 - 56 + 2$
 $= 44 + 2$
 $= 46$

14. (D) The side of the smallest square is one eighth of AB

$$\text{i.e., } \frac{2016}{8} = 252 \text{ cm.}$$

$$15. (A) \frac{2 + 4 + 6 + 8 + 10 + 12}{6} = \frac{42}{6} = 7$$

16. (C) $\rightarrow 200 \text{ gm}$
 $\rightarrow 150 \text{ gm.}$

500g \rightarrow (i) 200, 200, 50, 50

(ii) 200, 200, 100

(iii) 50, 50, 50, 50, 100, 200

3 ways.

17. (B) 1, 2, 3, 6 are the divisors of 6.

$$1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{6} = \frac{12 + 6 + 4 + 2}{12} = \frac{24}{12} = 2$$

18. (A) 30, 70, 90 (3)
 19. (D) 180 km - 4hr
 Average of first 3 hrs. = 50 km/hr.
 $= 50 \times 3$
 $= 150$ km
 Speed in the final hour = 180 - 150 = 30 km
20. (B) $P = \frac{80}{100}C = 0.8C$
 $C = \frac{90}{100}C = 0.9C$
 $\frac{P}{Q} = \frac{0.8}{0.9} = \frac{8}{9} \times 100\% = 88.88\%$
21. (D) $5^3 + 4^3 + 3^3 = 216 = 6^3$
 $\therefore 6.$
22. (C) gain % = $\frac{4}{20} \times 100 = 20\%$
23. (D) When 7 pencil's are tranfered.
 Box Q will have 9 more penecils than Box P.
24. (B) 3, 5, 8 seconds respectively.
 $3 \times 5 \times 8 = 120$
 $\therefore \frac{120}{60} = 2$ min.
 Therefore, the 3 sets of lights will flash together at 12:02 p.m
25. (B) TD, TS and CQ.
26. (D) $810 = P \cdot \frac{6 \times 9}{100}$
 $\frac{810 \times 100}{6 \times 9} = P$
 Rs. 1500 = P.
27. (A) $\frac{5}{6} \times \frac{2}{3} = \frac{10}{18} = \frac{5}{9}$
28. (C)
29. (C) $\frac{3}{4} \times \text{brick} + \frac{3}{4} = \text{brick weight}$
 weight of brick = 3 kgs.
30. (C)
31. (B) 2011, 2003, 1995, 1987, 1979, **1971**
32. (C) Clue 1 : Date can be between 10 & 29
 Clue 2 : Multiple of 7 : 14, 21, 28
 Only 21 is not a multiple of 2.
 As ... are 29 days. So his birth month is February.
33. (C) Sum = Rs. x Amount = Rs. 2x
 Interest = A - P = 2x - x = Rs. x
 $I = \frac{PTR}{100} \Rightarrow x = \frac{x \times 8 \times R}{100}$
 $R = \frac{100}{8} = 12\frac{1}{2}\%$

34. (D)
 35. (B) Third angle = $180 - (40 + 60)$
 $= 180 - 100 = 80^\circ$
36. (D) 0.81
37. (C)
38. (C) $2(l + b) = 16$
 $l + b = 8$
 $1 + 7, 2 + 6, 3 + 5,$
 rectangles.
39. (D)
40. (B) Co-primes
41. (D)
42. (B) Let Y salary be 100
 X salary is 50% more than y's.
 $= 150.$
 y's below x's is = $\frac{150 - 100}{150} \times 100 = \frac{50}{150} \times 100$
 $= \frac{1}{3} \times 100 = 33\frac{1}{3}\%$

43. (D)
 44. (B)
 45. (B)

General Science

46. (D) The process of scattering or spreading of seeds to different places is called dispersal.
47. (B) The nose and the tongue have receptors that can detect chemicals in food and drink.
48. (D) Ice melt and form into puddle of water due to the absorption of heat.
49. (D) Muscles work by shortening or contacting the muscles are attached to the bones and moves these bones in different direction. A joint is necessary to lift the arm.
50. (C) The given figure is called backbone or vertebral column. It protects the spinalcord.
51. (B) Oyster breathe through certain special structures called gills.
52. (D) Gravitational force attracts things to come down.
53. (B) Bean reproduces by seeds, ginger from buds developed on underground stem, fern by spores.
54. (D) A solar eclipse is formed when the Sun, the Moon and the Earth are in a straight line.
55. (B) The baby plant (seedling) gets its food from the seed leaves.
56. (D) Some seeds are thrown away by the fruit itself. The walls of the fruit curl while drying and throw out the seeds.
57. (D) If a person catch fire, roll him on the ground or wrap in a blanket to put out the flame.

58. (C) The kind of a lever depends on the relative positions of the effort, load and the fulcrum. The lever in which the load L and the effort E are on either side of the fulcrum are called First kind of lever.
59. (C) Migration is the periodic movement of animals from one place to another and back to their original homes.
60. (A) The arrangement of the thumb and the finger is such that they can be brought opposite to one another and makes them capable of holding and working with things easily.
61. (C) Air pollution is caused by dust, smoke, poisonous gases and solid impurities, released into the air by homes and factories.
62. (B) Plant \Rightarrow grasshopper \Rightarrow bird \Rightarrow snake
63. (A) When we breathe air enters our body through those nose and windpipe into the lungs.
64. (B) The given figure is of a bryophyllum plant leaf. The buds on the edges of the leaves grow into new plants.
65. (B) Plants respond to stimuli. The plant bends towards the light which comes through the hole.
66. (B) Cow is a mammal. Mammals give birth to youngones.
67. (D) Cockroach and grasshopper has the three stage life cycles.
68. (C) Seeds of madar are small light and have hair. Therefore, these seeds are easily carried to distant places by wind.
69. (A) In frogs, hind limbs are much longer than the forelimbs. These help the frog in jumping.
70. (B) Pivot joint is found between the skull and the first two vertebrates of the spine. This joint help our head to move sideways, upward or downward.
71. (C) Fruit protect the seeds.
72. (D) In the given situation Ravi is watching television. He uses his sense of hearing and sight.
73. (B) Venus fly trap is an insectivorous plant. It closes its lid when an insect enters it.
74. (C) Hydra, starfish and lizard can regenerate their lost parts.
75. (C) The heat of the hot body is the stimulus and withdrawing the land is the response. This is known as reflex action.
76. (A) An X-ray diagnosis helps the doctor to locate the fractured part or region and the seriousness of the fracture and suggest treatment for that.
77. (D) Fruits and vegetables are rich in vitamins and minerals. Vitamins and minerals protect our body from diseases, hence it is called protective food.
78. (B) A fire caused by an electrical short circuit should not be put out by using water since there is a danger of electrocution. Use sand as fire extinguisher.
79. (A) In the given figure part 'X' supports the foot. It acts as fulcrum when it rests on the ground.
80. (C) Overcooking food destroys the vitamins and other minerals.
81. (C) Cholera is a communcile disease. It spreads through flies. Flies carry the germs of these diseases from rubbish heap. When they sit on our food, they transfer the germs to the food.
82. (D) Air is present in containers, soil and in water.
83. (D) Ozone layer is present at the bottom of the stratosphere. Ozone is a form of oxygen. It traps some of the Sun's rays and prevents some harmful rays from reaching the Earth.
84. (B) The brain is like a master computer. It controls and coordinates all your actions. It thinks and gives you information about various things.
85. (D) Insecticides cause soil and water pollution.
86. (C) Coal is formed from the remains of dead plants and animals.
87. (D) Air that enters through other holes creates air pressure and pushes the milk out from the other hole.
88. (D) A lever is a simple machine.
89. (C) Kwashiorkor disease is protein deficiency in diet. Fish is a rich source of protein.
90. (C) Sedimentary rocks were built up over many millions of years. They are made up of layers of sediments. Sandstone is a sedimentary rock used as a building material.

