Sample Questions

for

ASAT

(ALLEN Scholarship Admission Test)

CLASSROOM CONTACT PROGRAMME

PRE-NURTURE & CAREER FOUNDATION : CLASS-X
(FOR IX to X MOVING STUDENTS)

ALLEN
CAREER INSTITUTE
KOTA (RAJASTHAN)

path to success

HAVE CONTROL ⟶ HAVE PATIENCE ⟶ HAVE CONFIDENCE ⟹ 100% SUCCESS

MENTAL ABILITY

1. T is the son of P. S is the son of Q. T is married to R. R is Q's daughter. How is S related to T?

   (1) Brother
   (2) Uncle
   (3) Father-in-law
   (4) Brother-in-law

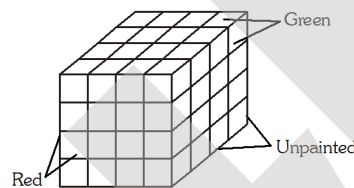2. In the following question some numbers are given in the shape of figures

   ⬡ ÷ ▭ = 2, ⬡ ÷ △ = 5,

   ▭ + △ = 7, △ × ▯ = 18

   What is the value of ▯ ?

   (1) 9
   (2) 6
   (3) 3
   (4) 2

3. A cube of side 4 cm is painted red on one pair of adjacent surfaces, green on the other pair of adjacent surfaces and two remaining adjacent surfaces are left unpainted. Now the cube is divided into 64 smaller cubes of side 1 cm each.
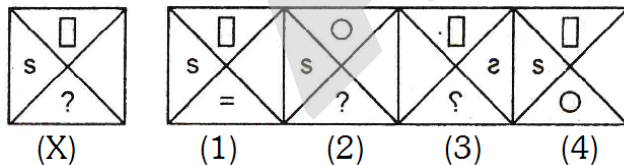

   How many smaller cubes have two surfaces painted?

   (1) 4
   (2) 8
   (3) 16
   (4) 14

4. If "PAPER" is written as "RDTJX", "MOTHER" would be:

   (1) ORVLMG
   (2) PQUJGT
   (3) ORXMKY
   (4) None of these

5. Choose the correct mirror image from alternatives 1, 2, 3 and 4 of the figure (X).

6. A + B means A is the son of B, A – B means A is the wife of B, A × B means A is the brother of B, A ÷ B means A is the mother of B, A = B means A is the sister of B. Which of the following represents P is the maternal-uncle of Q?

   (1) R × P ÷ Q
   (2) P × R ÷ Q
   (3) P + R ÷ Q
   (4) P + R × Q

7. How many c's are there in between two consonants in the following series?

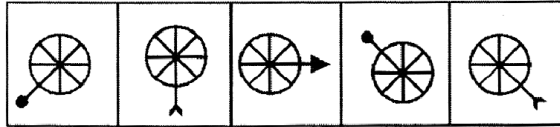   c a b c d c d c e c g c o c i c j c k c c k

   (1) 4
   (2) 5
   (3) 6
   (4) 11

8. I run along the sides of a square field ABCD where C is to the North-East of A and D is to the South-East of B. Starting from A in anti-clockwise direction, in which direction shall I be running after crossing C?
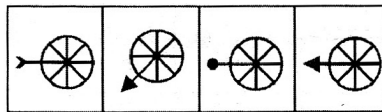
   (1) East   (2) West   (3) North   (4) South

9. Find out the one figure form the answer figures that will continue the series.

   Problem Figures

   Answer Figures

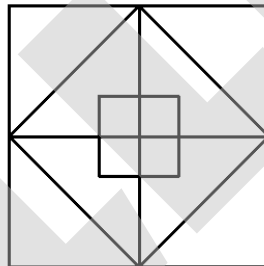   (1)   (2)   (3)   (4)

10. Find the missing letters/numbers of the series below :
    Q1F, S2E, U6D, W21C, ?

    (1) Y66B   (2) Y44B   (3) Y88B   (4) Z88B

11. In the following figure, how many squares are there?

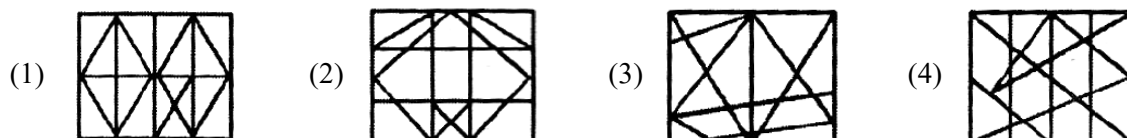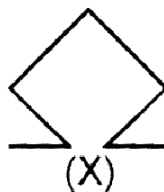

    (1) 8   (2) 11   (3) 10   (4) 9

12. Find the missing number in the place of Question mark.
    32, 33, 37, 46, ? , 87

    (1) 59   (2) 61   (3) 62   (4) None of these

13. In the following question, choose the correct alternative figure in which the question figure (X) is embedded.

    (X)

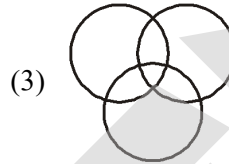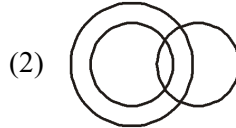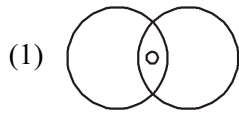
    (1)   (2)   (3)   (4)

14. A cube of side 4 cm is painted red on one pair of adjacent surfaces, green on the other pair of adjacent surfaces and two remaining adjacent surfaces are left unpainted. Now the cube is divided into 64 smaller cubes of side 1 cm each.
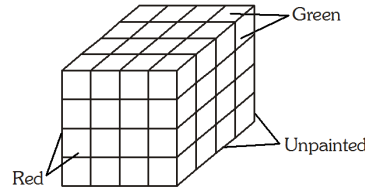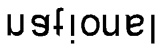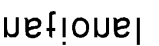
How many smaller cubes have three surfaces painted?

(1) 2   (2) 4   (3) 8   (4) 6

15. Choose the best suitable alternative diagram marked 1, 2, 3 and 4. So that represent the best relationship amongest the three given groups.

Snakes, Land creatures, Water creatures

16. Find the missing term.

8	11	15
25	34	46
74	101	(?)
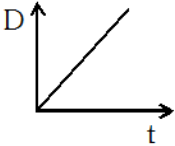
(1) 138   (2) 139   (3) 140   (4) 137

17. Choose the alternative which shows the correct water-image of that word.

national

18. If TRIANGLE is coded as SSHBMHKF, then SQUARE would be

(1) RRIASF   (2) RPVBSF   (3) RRTBQF   (4) RPVBSD

19. Choose the best suitable alternative diagram marked 1, 2, 3 and 4, the one that represent the best relationship amongest the three given groups.

Males, Nephews, Nieces
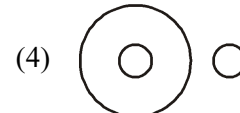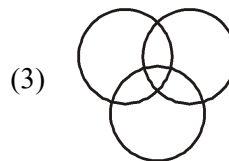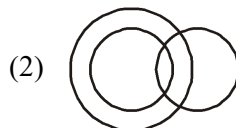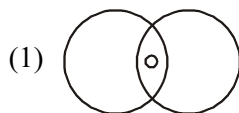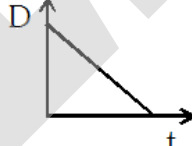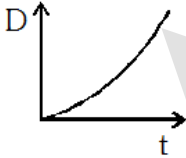
20. At my house I am facing West, then I turn left and go 10 m, then I turn 90° anti-clockwise and go 5 m, and then I go 5 m to the South and from there 5 m to the West. In which direction am I from my house?

(1) East   (2) West   (3) North   (4) South
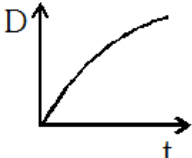
PHYSICS

21. Identify a physical quantity which is not a vector.

    (1) Displacement   (2) Acceleration   (3) Distance   (4) Force

22. Area under a 'v-t' graph represents a physical quantity which has the unit

    (1) m^2 (2) m   (3) m^3 (4) m/s

23. The value of quantity 'G' in the law of gravitation

    (1) depends on mass of earth only.

    (2) depends on radius of earth only.

    (3) depends on both mass and radius of earth.

    (4) is independent of mass and radius of earth.

24. Work done is measured by :

    (1) Force × time   (2) Mass × time

    (3) Force × displacement   (4) Mass × distance

25. A canon after firing recoils due to

    (1) conservation of energy   (2) backward thrust of gases

    (3) Newton's third law of motion   (4) Newton's first law of motion

26. A particle is moving in a circular path of radius 'r'. The displacement after half a circle would be

    (1) πr   (2) 2r   (3) Zero   (4) 2πr

27. Which of the following is not a unit of power ?

    (1) N.m/sec   (2) J./sec   (3) kg. m^2/ $(sec)^3$ (4) $\dfrac{N.J}{m^3 (sec)^2}$

28. The gravitational force between two objects is F. If masses of both objects are halved without changing distance between them, then the gravitational force between them would become

    (1) F/4   (2) F/2   (3) F   (4) 2F

29. In SONAR, we use

    (1) Ultrasonic waves   (2) Infrasonic waves

    (3) Radio waves   (4) Audible sound waves

30. The force of attraction between two unit point masses seperated by a unit distance is called

    (1) gravitational potential   (2) acceleration due to gravity

    (3) gravitational field   (4) universal gravitational constant

31. The numerical ratio of displacement to distance for a moving object is

    (1) less than 1   (2) equal to 1

    (3) greater than 1   (4) less than or equals to 1

32. What about the planets is true ?

(1) Heavenly bodies which revolve around the sun.

(2) Revolve in closed elliptical orbits.

(3) Have no light of their own.

(4) All of the above

33. Work done by a frictional force when a body slides over a rough surface is :

(1) Zero　　　　　　　　　　　　　　(2) Negative

(3) Positive　　　　　　　　　　　　 (4) May be negative or positive

34. The action and reaction forces referred to the third law of motion.

(1) must act on the same object.

(2) may act on different objects.

(3) must act on different objects.

(4) need not be equal in magnitude but must have the same direction.

35. Kg-m/s^2 is the unit of

(1) Momentum　　　(2) Speed　　　(3) Acceleration　　　(4) Force

36. Which of the following distance-time graph is not possible :

37. Tides occur mainly due to :

(1) Gravitational pull of moon　　　　(2) Gravitational pull of earth

(3) Gravitational pull of sun　　　　　(4) All are correct

38. When a bus starts suddenly the passengers standing on it, Lean backwards in the bus. This is an example of :

(1) Newton's first law　　　　　　　　(2) Newton's second law

(3) Newton's third law　　　　　　　　(4) None of Newton's laws

39. Work done by force of gravity on a box lying on the roof of a bus moving with a constant velocity on a straight road is :

(1) Positive　　　(2) Zero　　　(3) Negative　　　(4) Can't say

40. Which is not true for mechanical waves ?

(1) Mechanical waves travel through vacuum

(2) Mechanical waves need elastic medium

(3) Example of mechanical waves is sound wave

(4) None of these

41. A car increases its speed from 20 m/sec to 50 m/sec in 10 seconds. Its acceleration is :

(1) 30 m/s^2

(2) 3 m/s^2

(3) 18 m/s^2

(4) None of these

42. Force of gravitation between two bodies of mass 1 kg each kept at a distance of 1m is :

(1) 6.67 N

(2) 6.67×10^{-9} N

(3) 6.67×10^{-11} N

(4) 6.67×10^{-7} N

43. A body is projected vertically upwards with a velocity of 98 m/sec. What is the time for which body will remain in air ?

(1) 5 sec

(2) 10 sec

(3) 15 sec

(4) 20 sec

44. If positive work is done on an object, its kinetic energy :

(1) Decreases

(2) Increases

(3) Remains same

(4) None of these

45. A note of 250 Hz frequency travels through a solid. What is the wavelength if the velocity of sound in the solid is 12.5 km/s :

(1) 100 m

(2) 50 m

(3) 25 m

(4) 10 m

CHEMISTRY

46. In washing machines, wet clothes are dried by using the process of

    (1) Centrifugation (2) Evaporation

    (3) Sedimentation (4) Filtration.

47. The total number of molecules in 10 g of calcium carbonate is :

    (1) 6.02×10^{21} (2) 6.02×10^{22} (3) 6.02×10^{23} (4) 6.02×10^{24}

48. Pumice stone is an example of

    (1) Gel (2) Emulsion (3) Foam (4) Solid foam

49. A volatile liquid has :

    (1) low b.p. and weaker interparticle forces.

    (2) high b.p. and weaker interparticle forces.

    (3) high b.p. and stronger interparticle forces.

    (4) low b.p. and stronger interparticle forces.

50. The molecular formula P_2O_5 means that :

    (1) A molecule contain 2 atoms of P and 5 atoms of O.

    (2) The ratio of the mass of P to the mass of O in the molecule is 2 : 5.

    (3) The ratio of the mass of P to mass of O in the molecule is 5 : 2.

    (4) None of these

51. The number of neutrons in $_{13}Al^{27}$ is:

    (1) 15 (2) 27 (3) 13 (4) 14

52. Which of the following describes a liquid state :

    (1) Definite volume and definite shape.

    (2) Definite volume and no definite shape.

    (3) Definite shape but no definite volume.

    (4) Neither definite shape nor definite volume.

53. Which statement is false about 'True solution' :

    (1) It is homogeneous in nature

    (2) It shows scattering when light is passed through true solution

    (3) In true solution, particles of solute do not settle down

    (4) A true solution can completely pass through filter paper

54. Which sub-atomic particle is not present in an ordinary hydrogen atom ?

    (1) Proton (2) Neutron (3) Electron (4) None of these

55. Which of the following statements is incorrect regarding solubility :

    (1) Solubility of a solid in a liquid is always defined at a particular temperature

    (2) Solubility of a solid in a liquid is negligibly affected by changes in pressure

    (3) Solubility of a gas in a liquid increases with increase in temperature

    (4) A saturated solution can be made unsaturated by adding some amount of solvent to the saturated solution

56. Which statement is correct regarding structure of an atom :

    (1) Atom possess empty space   (2) Atom possess central nucleus

    (3) Electrons revolve around the nucleus   (4) All of these

57. Select the correct statement :

    (1) Diffusion is not possible in solids in any condition.

    (2) Solids have limited free surfaces.

    (3) Liquids always have fixed shape.

    (4) None of these.

58. Which of the following statements is incorrect :

    (1) Gram atomic mass of any element always contains 1 mole of that element

    (2) A collection of 6.023×10^{24} particles is called 1 mole

    (3) Atomic mass and gram atomic mass have the same numerical value

    (4) None of these

59. What happens to the volume of the resulting solution when sugar is dissolved in it :

    (1) Volume will increase

    (2) Volume will decrease

    (3) Volume first increases then decreases

    (4) No change in volume

60. Chromatography technique is used for the separation of :

    (1) Mixture of amino acids   (2) Dye stuffs

    (3) Plant pigments   (4) All of the above

61. The balancing of chemical equation is based upon :

    (1) Law of definite proportion

    (2) Law of multiple proportions

    (3) Law of conservation of mass

    (4) None of these

62. Two chemical species X and Y combine together to form a product P which contains both X and Y

    $$X + Y \rightarrow P$$

    X and Y cannot be broken down into simpler substances by any chemical method. Which of the following concerning the species X, Y and P are correct?

    (i) P is a compound

    (ii) X and Y are compounds

    (iii) X and Y are elements

    (iv) P has a fixed composition

    (1) (i), (ii) and (iii),

    (2) (i), (ii) and (iv)

    (3) (ii), (iii) and (iv)

    (4) (i), (iii) and (iv)

63. Column II represents how rate of evaporation changes for factors given in column I. Match them correctly :

	Column I		Column II
(a)	Increase in surface area	(p)	Increases
(b)	Decrease in temperature	(q)	Decreases
(c)	Decrease in humidity	(r)	Unchange
(d)	Increase in wind speed	(s)	May increase or decrease.

    (1) a – p, b – r, c – s, d – r

    (2) a – r, b – p, c – p, d – s

    (3) a – p, b – r, c – p, d – p

    (4) None of these

64. The ratio by mass of C and O in CO_2 is :

    (1) 1 : 2   (2) 3 : 14   (3) 3 : 8   (4) 3 : 11

65. Rutherford's α - particle scattering experiment eventually led to the conclusion that :

    (1) Most of the space in the atom is empty.

    (2) The atoms contains a central nucleus containing positive charges.

    (3) Both (1) and (2)

    (4) Neutrons are deep in the nucleus.

66. At higher altitudes :

    (1) Boiling point of a liquid increases

    (2) Boiling point of a liquid decreases

    (3) No change in boiling point

    (4) None of these

67. If 11 gms of NaCl is dissolved in 99 gms of water, the concentration (mass %) of the solution formed is

    (1) 11.1%

    (2) 10%

    (3) 88.9%

    (4) None of these

68. Number of electrons and protons in an atom of element 'X' is 27 each. The no. of electrons and protons in X^{-3} and X^{+4} respectively are :

    (1) 24, 27, 31, 27

    (2) 30, 27, 23, 27

    (3) 23, 30, 27, 31

    (4) 27, 30, 27, 31

69. During the separation of two liquids by fractional distillation :

    (1) The component with lower melting point separates first

    (2) The component with higher melting point separates first

    (3) The component which is less volatile separates first

    (4) The component which is more volatile separates first

70. A dipositive ion has 16 protons. What is the no. of electron in its tetrapositive ion ?

    (1) 16

    (2) 14

    (3) 12

    (4) 10

BIOLOGY

71. Which among the following is/are prokaryote ?

    (1) Pseudomonas bacteria   (2) Mycoplasma

    (3) Nostoc (blue green algae)   (4) All of these

72. The wall of cork cells are thickened by the deposition of -

    (1) Suberin   (2) Cutin   (3) Lignin   (4) Pectin

73. Which of the following resource is inexhaustible form of energy ?

    (1) Solar energy   (2) Wind energy   (3) Tidal energy   (4) All of these

74. In plants cell wall is generally made up of –

    (1) Chitin   (2) Cellulose

    (3) Peptidoglycan   (4) None of these

75. Small pox and measles are caused by –

    (1) Virus   (2) Protozoan   (3) Bacterium   (4) Nematode

76. The muscles bound connected to the bones are –

    (1) Cardiac muscle   (2) Striated muscle

    (3) Non striated muscle   (4) Involuntary muscle

77. Which of the following are not placed in five kingdom classification of whittaker ?

    (1) Viruses   (2) Bacteria   (3) Algae   (4) Protozoa

78. The movement of food in the alimentary canal or the contraction and relaxation of blood vessels are due to :

    (1) Voluntary muscle   (2) Involuntary muscle

    (3) Cardiac muscle   (4) All of these

79. Green manure is rich in–

    (1) Nitrogen   (2) Calcium   (3) Molybdenum   (4) Iodine

80. Which the following is prokaryotic pathogen ?

    (1) Fungi   (2) Protozoan   (3) Bacteria   (4) Virus

81. Which of the following is flatworm ?

    (1) Ascaris   (2) Tapeworm   (3) Sea anemone   (4) Hydra

82. Nucleus is found in –

    (1) Sieve tube and companion cell   (2) Mature RBC and WBC

    (3) WBC and platelets   (4) WBC and companion cell

83. Ozone layer is present in–

(1) Troposphere (2) Mesosphere

(3) Stratosphere (4) Ionosphere

84. Which of the following is longest animal cell ?

(1) Voluntary muscle (2) Neuron

(3) Monocyte (4) Fiber

85. Malaria is caused by–

(1) Protozoa (2) Algae

(3) Fungi (4) Bacteria

86. Pisces and amphibians are–

(1) Non chordates

(2) Vertebrates

(3) Diploblastic

(4) Acoelomate

87. The largest cell among WBC is :

(1) Monocyte (2) Lymphocyte

(3) Basophil (4) Neutrophil

88. Nodules in the roots of legume plants contain :

(1) Carbon fixing bacteria

(2) Potassium fixing bacteria

(3) Sulphur fixing bacteria

(4) Nitrogen fixing bacteria

89. Following are a few definitions of osmosis. Read carefully and select the correct definition:

(1) Movement of water molecules from a region of its higher concentration to a region of its lower concentration through a semipermeable membrane

(2) Movement of solvent molecules from its higher concentration to lower concentration through impermeable membrane.

(3) Movement of solvent molecules from higher concentration to lower concentration of solution through a permeable membrane

(4) Movement of solute molecules from lower concentration to higher concentration of solution through a semipermeable membrane

90. Chronic disease is–

(1) Elephantiasis

(2) Asthma

(3) Both (1) and (2)

(4) Common cold

91. Part of neuron which first receive nerve impulse is :

(1) Cyton

(2) Axon

(3) Dendron

(4) Terminal arborization

92. Plant groups in which reproductive organs are very inconspicuous are called–

(1) Cryptogamae

(2) Phanerogamae

(3) Angiosperms

(4) None of these

93. Fibrous tissue of great strength which put limited flexibility and connect bone to muscle :

(1) Ligament

(2) Tendon

(3) Adipose tissue

(4) Bone

94. Which one of the following species of honeybee is an Italian species?

(1) Apis dorsata

(2) Apis florea

(3) Apis cerana indica

(4) Apis mellifera

95. The disease caused due to worm is

(1) Tetanus

(2) Rabies

(3) Sleeping sickness

(4) Filariasis

MATHEMATICS

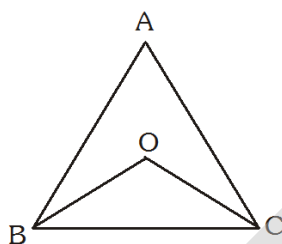**96.** The diagonals of a quadrilateral ABCD, AC and BD intersect in O, if BO = OD, then ar ($\triangle$ABC)=

(1) $\dfrac{1}{2}$ ar ($\triangle$ADC) (2) ar ($\triangle$BAD)

(3) ar ($\triangle$BCD) (4) ar ($\triangle$ADC)

97. The dimensions of a hall are 40 m, 25 m and 20m. If each person requires 200 cubic metres. Then the number of persons who can be accommodated in the hall are :

(1) 120 (2) 150 (3) 140 (4) 100

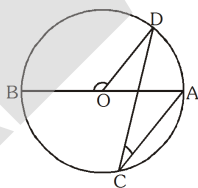**98.** If BO and CO are angle bisector of $\angle$ABC, $\angle$ACB and OB = OC, then $\triangle$ABC is :

(1) Equilateral (2) Isosceles

(3) Scalene (4) Any of the above

99. $5.23\overline{47}$ is equal to :

(1) $\dfrac{51824}{9900}$ (2) $\dfrac{52324}{9900}$

(3) $\dfrac{52347}{9900}$ (4) None of these

100. In the given figure, AOB is a diameter of a circle with centre O. If $\angle$ACD = 30°, find $\angle$BOD.

(1) 30° (2) 60° (3) 120° (4) 240°

101. If a + b + c = 6 then the value of $(2-a)^3 + (2-b)^3 + (2-c)^3 - 3(2-a)(2-b)(2-c)$:

(1) 1 (2) –1 (3) 0 (4) 2

102. The figure formed by joining the mid-points of consecutive sides of a quadrilateral is :

(1) square (2) rectangle (3) rhombus (4) parallelogram

103. Which of the following is the correct sequence to draw a perpendicular bisector of line segment :
(A) Draw a line segment of required length
(B) Join the point of intersection of the intersecting arcs
(C) Draw two arcs on each side by taking end points as centre and more than half the length of line segment as radius
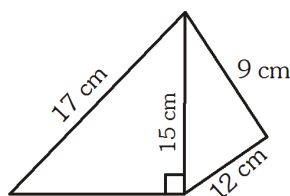
(1) ABC (2) ACB (3) BAC (4) None of these

104. $\dfrac{885 \times 885 \times 885 + 115 \times 115 \times 115}{885 \times 885 + 115 \times 115 - 885 \times 115} = ?$

(1) 1000   (2) 770   (3) 885   (4) 115

105. The average weight of 10 men is decreased by 3 kg when one of them whose weight is 80 kg is replaced by a new person. The weight of the new person is :

(1) 70   (2) 60   (3) 50   (4) 73
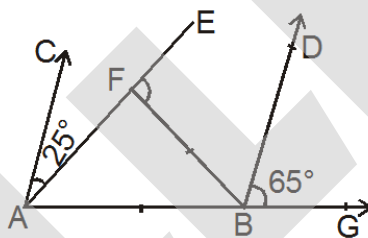
106. Area of given figure :

(1) 104 cm²   (2) 124 cm²   (3) 100 cm²   (4) 114 cm²

107. The linear equation y = 2x + 3 cuts the y axis at:

(1) (0,3)   (2) (0, 2)   (3) $\left(\dfrac{3}{2}, 0\right)$ (4) $\left(\dfrac{2}{3}, 0\right)$

108. In the given figure, AC ∥ BD, ∠CAF = 25°, ∠DBG = 65° and BF = BA. Then, ∠BFE is equal to:

(1) 90°   (2) 155°   (3) 140°   (4) 165°

109. Find the probability of getting a multiple of 2 or prime number when a single dice is thrown.

(1) $\dfrac{5}{6}$ (2) $\dfrac{1}{6}$ (3) $\dfrac{1}{3}$ (4) $\dfrac{1}{2}$

110. If $5^{2x-1} - 25^{x-1} = 2500$ find the value of $\dfrac{x^2 - 1}{x} \times 3$:

(1) $\dfrac{8}{3}$ (2) 8   (3) 24   (4) None of these

111. For an isosceles triangle having base b and each of the equal sides as a, we have

I. Area = $\dfrac{b\sqrt{4a^2 - b^2}}{4}$,   II. Perimeter = (2a + b)   III. Height = $\dfrac{1}{2}\sqrt{4a^2 - b^2}$
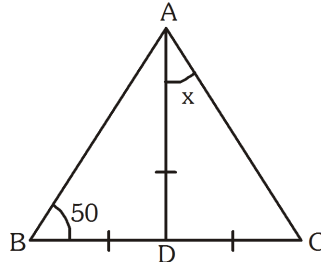
Which of the following is true ?

(1) I only   (2) I and II only
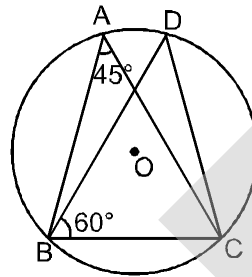
(3) II and III only   (4) I, II and III

112. The perimeter of one face of a cube is 20 m, then its volume is

(1) 800 m³   (2) 1000 m³   (3) 125 m³   (4) 400 m³

113. Find x, if in ΔABC AD = BD= CD and angle ∠ABC = 50°

   (1) 40   (2) 80   (3) 100   (4) 50

114. If $64^{2x-5} = 4 \times 8^{x-5}$ then the value of 3x :

   (1) $\dfrac{17}{9}$ (2) $\dfrac{17}{3}$ (3) 17   (4) $\dfrac{17}{15}$

115. In the following figure, O is the centre of the circle. Find the value of ∠BCD.

   (1) 30°   (2) 45°   (3) 60°   (4) 75°

116. $f(x) = ax^7 + bx^3 + cx - 5$ where a, b, c are constants. If f(−7) = 7 then, f(7) equal to :

   (1) − 17   (2) − 7   (3) 14   (4) 21

117. If ΔABC, D, E and F are respectively, the mid-points of BC, CA and AB. If the lengths of side AB, BC and CA are 17 cm, 18 cm and 19 cm respectively, then the perimeter of ΔDEF equal to:

   (1) 54 cm   (2) 18 cm   (3) 27 cm   (4) 13.5 cm

118. If the length of a diagonal of a quadrilateral is given then we can construct

   (1) a parallelogram   (2) a rhombus

   (3) a square   (4) None of these

119. Value of $\left(\dfrac{x^a}{x^b}\right)^{a+b} \cdot \left(\dfrac{x^b}{x^c}\right)^{b+c} \cdot \left(\dfrac{x^c}{x^a}\right)^{c+a}$ is :

   (1) −1   (2) 0   (3) 1/2   (4) 1

120. The mean of 5 number is 18. If one number is excluded then the mean is 16. Then the excluded number is :

   (1) 24   (2) 26   (3) 22   (4) 28

ASAT : CLASS-X SAMPLE TEST PAPER

ANSWER KEY

Q.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
A.	4	1	4	3	3	2	2	2	4	3	2	3	2	1	1	4	4	3	4	4
Q.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
A.	3	2	4	3	3	2	4	1	1	4	4	4	2	3	4	2	1	1	2	1
Q.	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
A.	2	3	4	2	2	1	2	4	1	1	4	2	2	2	3	4	4	2	4	4
Q.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
A.	3	4	4	3	3	2	2	2	4	3	4	1	4	2	1	2	1	2	1	3
Q.	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
A.	2	4	3	2	1	2	1	4	1	3	3	1	2	4	4	4	4	2	1	3
Q.	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
A.	3	4	2	1	3	4	1	3	1	2	4	3	1	2	4	1	3	3	4	2