



Class-IX

School Accelerated Program

ENTRANCE TEST CUM SCHOLARSHIP TEST (Sample Paper-1)

[Time: 1 Hour 50 Min]

[Max Marks: 400]

A. General:

1. This booklet is a Question Paper containing 100 questions.
2. **Blank Papers, Clipboards, Log Tables, slide rules, calculators, cellular phones, pagers and electronic gadgets** in any form are not allowed to be carried inside the examination hall.
3. The answer sheet, a machine-readable optical mark recognition sheet (OMR Sheet), is provided separately.
4. **DO NOT TAMPER WITH THE OMR OR THE BOOKLET.**
5. Please fill your roll number correctly in the OMR sheet (answer sheet).
6. Both Question Paper and OMR Answer Sheet will be submitted after completion of this examination.

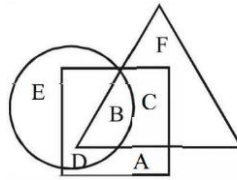
B. Question Paper Format and marking scheme:

1. The Question Paper consists of five parts (Part I: MAT, Part II: Physics, Part III: Chemistry, Part IV: Biology, Part V: Mathematics).
2. Each Question carries +4 marks for correct answer and -1 mark for incorrect answer.

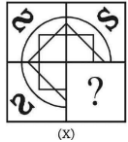
MAT

1. What will come in place of question mark in the following number series?
3F, 6G, 11I, 18L, ?
(a) 21O (b) 25 N (c) 27 P (d) 27Q
 2. What will come in place of question mark in the following number series?
2,3,10,15,26,35,50,63, ?
(a) 80 (b) 82 (c) 83 (d) 84
 3. What will come in place of question mark in the following number series?
41,31,?,17,11,5
(a) 19 (b) 21 (c) 23 (d) 27
 4. Arrange the given words in the sequence in which they occur in the dictionary and then choose the correct sequence.
1. Page 2. Pagan 3. Palisade 4. Pageant
5. Palate
(a) 1,4,2,3,5 (b) 2,4,1,3,5 (c) 2,1,4,5,3 (d) 1,4,2,5,3
 5. In each of the following questions, four terms/words have been given, out of which three are alike in some manner and one is different. Choose the odd one out.
(a) POCG (b) KLIZ (c) BUDX (d) FQMV
 6. If in a certain code language, 'MIRROR' is coded as '13918181518', how will 'APPLE' be coded in the same language ?
(a) 11616125 (b) 3984145 (c) 1162254 (d) 11213147
 7. If 'SKY WAS BLUE' is 123, 'SEA IS BLUE' is 245, 'PEOPLE SWIMMING IN SEA' is 4678, 'PEOPLE LIKE SKY' is 801 and 'BIRDS IN SKY' is 169. Then 'PEOPLE LIKE BIRDS' will have the number.
(a) 809 (b) 104 (c) 036 (d) 806
- Direction (Qs. 8 to 10) :** Read the following information carefully to answer the questions.
- (i) 'A\$ B' means 'A' is mother of 'B' (ii) 'A' #B' means 'A' is father of 'B'
 - (iii) 'A@ B' Means 'A' is husband of 'B' (iv) 'A% B' means 'A' is daughter of 'B'
8. P@Q\$M# T indicates what relationship of P with T
(a) Paternal grandmother (b) Maternal grandmother
(c) Paternal grandfather (d) Maternal grandfather
 9. Which of the following expressions indicates 'R is the sister of H' ?
(a) H \$ D @ F # R (b) R%D@F\$H
(c) R\$D@ F#H (d) H % D @ F \$ R
 10. If F@D% K#H, then how is F related to H ?
(a) Brother-in-law (b) Sister
(c) Sister-in-law (d) Cannot be determined
 11. Jatin leaves his house and walks 12 km towards North. He turns right and walks another 12 km . He turns right again, walks 12 km more and turns left to walk 5 km . How far is he from his home and in which direction?
(a) 7 km East (b) 10 km East
(c) 17 km East (d) 24 km East

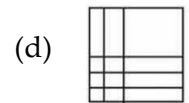
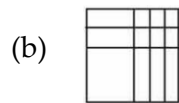
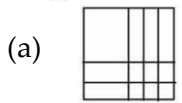
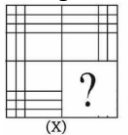
Direction (Qs. 12-13) : In the following diagram, three classes of population are represented by three figures. The triangle represents the school teachers, the square represents the married persons and the circle represents the persons living in joint families.



12. Married persons living in joint families but not working as teachers are represented by
 (a) C (b) F (c) D (d) A
13. Persons who live in joint families, are unmarried and who do not work as teachers are represented by
 (a) C (b) B (c) E (d) D
14. Select a figure from the four alternatives, which when placed in the blank space of figure (X) would complete the pattern.

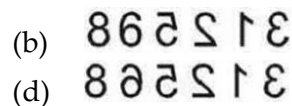
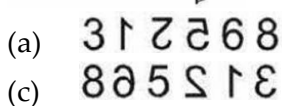


15. Select a figure from the four alternatives, which when placed in the blank space of figure (X) would complete the pattern.

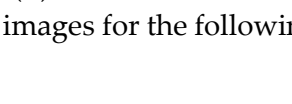
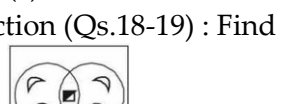


DIRECTIONS (Qs.16-17) : Find the correct option for the mirror images for the following

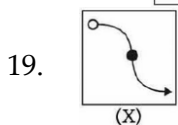
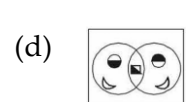
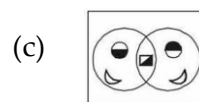
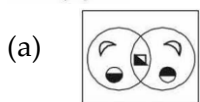
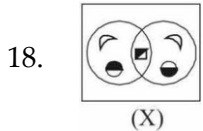
16. 3 1 2 5 6 8 ?



17. jealous ?



Direction (Qs.18-19) : Find the correct option for the water images for the following



- 19.



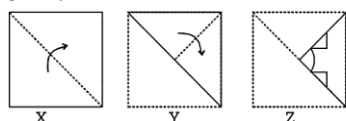
20. In the following question, find from amongst the four response figures, the one which resembles the pattern formed when the transparent sheet, carrying a design, is folded along the dotted line.



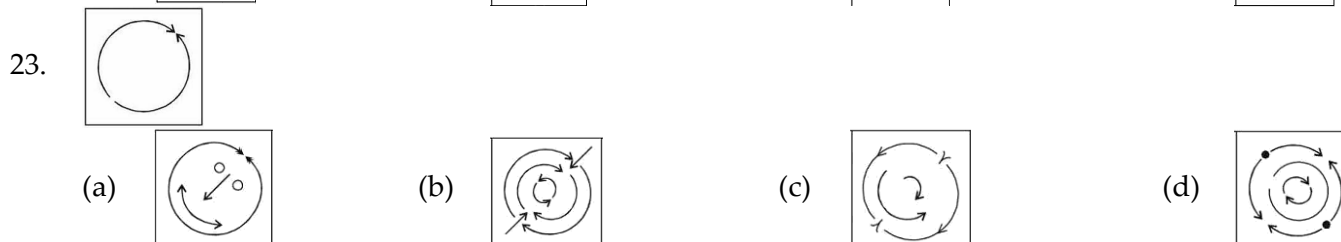
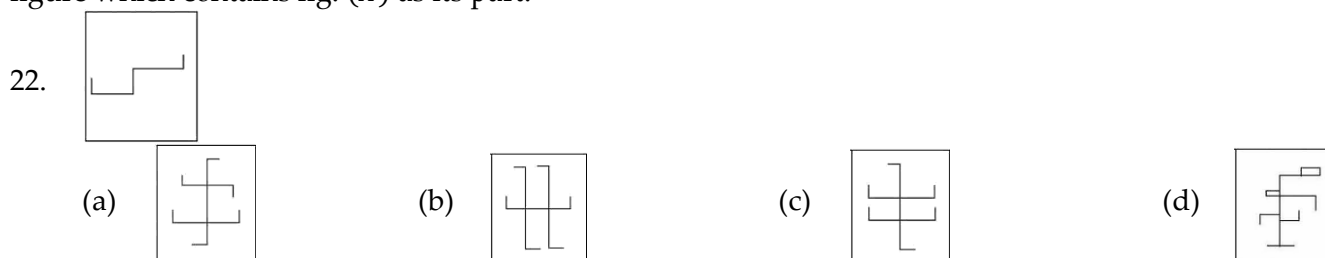
Response Figure



21. Consider the three figures, marked X, Y, and Z showing one fold in X, another in Y and the cut in Z. From amongst the four alternative figures a, b, c and d, select the one showing the unfolded position of Z.



DIRECTIONS (Qs. 22-23) : In each of the following questions, you are given a figure (X) followed by four alternative figures (a), (b), (c) and (d) such that fig. (X) is embeded in one of them. Trace out the alternative figure which contains fig. (X) as its part.



Directions (Q24 to Q26): A machine rearrangement gave input with both numbers and words in a particular set of rules in step by step. Based on the input given below, answer the questions following it.

Input: glass 12 42 kite lights 66 numbers 11 68 pilot

Step I: 68 pilot glass 12 42 kite lights 66 numbers 11

Step II: 66 numbers 68 pilot glass 12 42 kite lights 11

Step III: 42 lights 66 numbers 68 pilot glass 12 kite 11

Step IV: 12 kite 42 lights 66 numbers 68 pilot glass 11

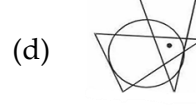
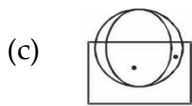
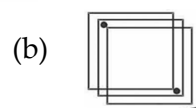
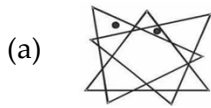
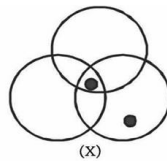
Step V: 11 glass 12 kite 42 lights 66 numbers 68 pilot

And Step V is the last step

Now, based on the above machine arrangement, solve the input given below:

Input: 23 height pencil 54 89 wage loop 61 92 merge

24. Which of the following is the last step?
 (a) 92 wage 23 height pencil 54 89 loop 61 merge
 (b) 23 height 54 loop 61 merge 89 pencil 92 wage
 (c) 89 pencil 92 wage 23 height 54 loop 61 merge
 (d) 61 merge 89 pencil 92 wage 23 height 54 loop
25. How many steps are required get the final result?
 (a) Six (b) Five (c) Three (d) Four
26. What is the 3rd element from left in Step III?
 (a) Pencil (b) Height (c) 89 (d) 61
27. In the following question there is a diagram marked in which one or more dots have been placed in certain positions. Examine the placement of these dots carefully. From the four choices given below dots, select the one in which the placement of dots is similar to that in the diagram marked (X).



28. Find the exact time between 7 am and 8 am when the two hands of a watch meet ?
 (a) 7 hrs 35 min (b) 7 hrs 36.99 min
 (c) 7 hrs 38.18 min (d) 7 hrs 42.6 min
29. On January 12, 1980, it was Saturday. The day of the week on January 12, 1979 was -
 (a) Saturday (b) Friday
 (c) Sunday (d) Thursday
30. In the following question, three statements of numbers following same rules are given. Find the rule and accordingly find the value of the number?
 If $84 \oplus 72 = 45$; $63 \oplus 41 = 33$, $25 \oplus 52 = 33$, then $94 \oplus 82 = ?$
 (a) 45 (b) 59 (c) 56 (d) 65

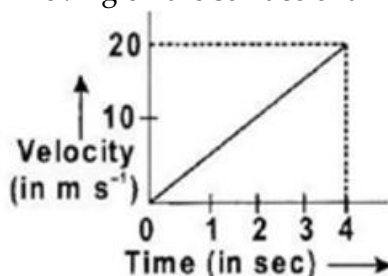
PHYSICS

31. Match the entries in Column I with those in Column II.

	Column-I		Column-II
a.	Force	1.	Nm^{-2}
b.	Weight	2.	Kg
c.	Pressure	3.	N
d.	Impulse	4.	Ns
e.	Mass	5.	Kg wt

- (a) a – 3, b – 2, c – 4, d – 1, e – 5
 (b) a – 5, b – 4, c – 3, d – 1, e – 2
 (c) a – 3, b – 5, c – 1, d – 4, e – 2
 (d) a – 4, b – 2, c – 1, d – 3, e – 5
32. An object of mass 2 kg is sliding with a constant velocity of 4 ms^{-1} on a frictionless horizontal table. The force required to keep the object moving with the same velocity is
 (a) 32 N (b) 0 N (c) 2 N (d) 8 N

33. A force of 0.6 N acting on a particle increases its velocity from 5.0 m s^{-1} to 6.0 m s^{-1} in 2 s. What is the mass of the particle?
- (a) 1.2 kg (b) 2.2 kg (c) 0.2 kg (d) 6.2 kg
34. Which of the following safety features are used in vehicles to reduce the negative effects of inertia?
- (i) Safety seat belts (ii) Automatic air bags (iii) Absorber bumpers
- (a) Only (i) and (ii) (b) Only (ii) and (iii)
(c) Only (i) and (iii) (d) (i), (ii) and (iii)
35. The velocity-time graph of a ball moving on the surface of a floor is given below.

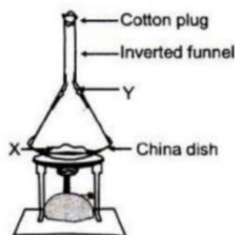


- Calculate the force acting on the ball, if the mass of the ball is 200 g.
- (a) 1 N (b) 2 N (c) 5 N (d) 8 N
36. In which of the following cases of motions, the distance moved and the magnitude of displacement are equal?
- (a) If the car is moving on straight road (b) If the car is moving in circular path
(c) The pendulum is moving to and fro (d) The earth is revolving around the Sun
37. Slope of a velocity - time graph gives
- (a) The distance (b) The displacement (c) The acceleration (d) The speed
38. A particle is moving along a circular track of radius 1 m with uniform speed. Find the ratio of the distance covered and the displacement in half revolution.
- (a) 1:1 (b) 0:1 (c) π :1 (d) π :2
39. A car covers 30 km at a uniform speed of 60 km h^{-1} and the next 30 km at a uniform speed of 40 km h^{-1} . Find the total time taken.
- (a) 30 min (b) 45 min (c) 75 min (d) 120 min
40. A train covers equal displacements in equal intervals of time. Which of the following it does NOT exhibit?
- (a) Zero acceleration (b) Uniform speed
(c) Uniform velocity (d) None of the above
41. A boy is whirling a stone tied with a string in an horizontal circular path. If the string breaks, the stone
- (a) will continue to move in the circular path
(b) will move along a straight line towards the centre of the circular path
(c) will move along a straight line tangential to the circular path
(d) will move along a straight line perpendicular to the circular path away from the boy
42. A body of mass 2 kg is dropped from a height of 1m. Its kinetic energy as it reaches the ground is
- (a) 19.6J (b) 19.6 N (c) 19.6 kg (d) 19.6 m
43. The work done by the weight of a 1 kg mass while it moves up through 1m is :-
- (a) 9.8 J (b) -9.8 J (c) $\frac{1}{9.8}$ J (d) $-\frac{1}{9.8}$ J
44. A man with a box on his head is climbing up a ladder. The work done by the man on the box is:
- (a) Positive (b) Negative (c) Zero (d) Undefined

45. Work done upon a body is:
- (a) A vector quantity (b) A scalar quantity
(c) Always positive (d) Always negative

CHEMISTRY

46. Many elements have non-integral masses because:
- (a) They have isobars
(b) Their isotopes have non integral masses
(c) Their isotopes have different masses
(d) The constituents neutrons, protons & electrons combine to give fractional masses
47. Which of the following has the same number of protons, electrons & neutrons?
- (a) ${}_{27}^{54}\text{X}$ (b) ${}_{27}^{55}\text{X}^{+1}$ (c) ${}_{26}^{54}\text{X}$ (d) ${}_{28}^{55}\text{X}^{+}$
48. When alpha particles are bombarded on a thin metal foil, most of them pass straight through the foil because
- (a) Alpha particles are much heavier than electrons
(b) Alpha particles are positively charged
(c) Most part of the atom is empty
(d) Alpha particles move with high velocity
49. The total number of electrons in a nitrogen atom and chlorine atom is 7 and 17 respectively. Find the number of valence electrons in them :-
- (a) 3, 1 (b) 5, 8 (c) 4, 1 (d) 5, 7
50. Identify X and Y in the given figure.



- (a) X = Mixture of naphthalene and anthracene, Y = Solid naphthalene
(b) X = Mixture of NaCl and water, Y = Solid NaCl
(c) X = Mixture of NaCl and anthracene, Y = Solid anthracene
(d) X = Mixture of sugar and NaCl, Y = Solid sugar
51. Neutron is present in all atom except-
- (a) Protium (b) Deuterium (c) Tritium (d) Helium
52. Ar_{18}^{40} , K_{19}^{40} , Ca_{20}^{40} are _____.
- (a) Isotopes (b) Isobars (c) A & B Both (d) None
53. 1.5 g of solute is dissolved in 15 g of water to form a saturated solution at 298 K. Find out the solubility of the solute at the given temperature.
- (a) 15 g (b) 10 g (c) 5 g (d) 298 g
54. If the components of the substance can be separated by a chemical change only then it is a/an
- (a) Element (b) Compound
(c) Mixture (d) None of these.
55. The fine particles of an insoluble substance dispersed throughout a gas or liquid is called
- (a) Alloys (b) Precipitate (c) Colloidal solution (d) Impurity

56. Equal mass of glucose and water are mixed to prepare a solution. Which is correct about this solution?
- Water is solvent and physical state of solution is solid
 - Glucose is solvent and physical state of solution is solid
 - Glucose is solvent and physical state of solution is liquid
 - Water is solvent and physical state of solution is liquid
57. What would be the mass by volume percentage of a solution which is 20% mass by mass? (density of the solution is 1.02 g mL^{-1})
- 20.4%
 - 22.3%
 - 15.3%
 - 25.3%
58. Electrons were discovered by
- Neils Bohr
 - J.J. Thomson
 - R.A. Milikan
 - Rutherford
59. 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 simple chemical reactions. Which of the following concerning the species X , Y and P are correct?
- P is a compound
 - X and Y are compounds
 - X and Y are elements
 - P has a fixed composition
- (i), (ii) and (iii)
 - (i), (ii) and (iv)
 - (ii), (iii) and (iv)
 - (i), (iii) and (iv)
60. A mixture of sulphur and carbon disulphide is
- heterogeneous and shows Tyndall effect
 - homogeneous and shows Tyndall effect
 - heterogeneous and does not show Tyndall effect
 - homogeneous and does not show Tyndall effect

BIOLOGY

61. Who discovered the cell in 1665?
- Robert Brown
 - Robert Hooke
 - Leeuwenhoek
 - Schleiden
62. Which organelle is known as the "powerhouse" of the cell?
- Lysosome
 - Mitochondria
 - Chloroplast
 - Golgi apparatus
63. The jelly-like substance inside the cell is called:
- Nucleus
 - Cell wall
 - Cytoplasm
 - Vacuole
64. Which of these is present only in plant cells?
- Nucleus
 - Cell wall
 - Mitochondria
 - Cytoplasm
65. What is the energy currency of the cell?
- DNA
 - Protein
 - ATP
 - Glucose
66. Which organelle modifies, sorts, and packages proteins?
- Ribosomes
 - Endoplasmic Reticulum
 - Nucleus
 - Golgi Apparatus
67. Which of these is known as "suicide bags"?
- Plastids
 - Mitochondria
 - Vacuoles
 - Lysosomes
68. Which tissue connects a bone to another bone?
- Tendon
 - Ligament
 - Blood
 - Adipose
69. Where is adipose tissue (fat-storing tissue) primarily found in the body?
- Brain
 - Below the skin
 - Heart
 - Liver

70. What type of muscle tissue is found in the heart?
 (a) Striated muscles (b) Smooth muscles
 (c) Cardiac muscles (d) Voluntary muscles
71. Which tissue connects muscles to bones?
 (a) Ligament (b) Tendon (c) Cartilage (d) Areolar tissue
72. What is the chemical in the cells of cork that makes them waterproof?
 (a) Lignin (b) Cellulose (c) Suberin (d) Chitin
73. The husk of a coconut is made of which tissue?
 (a) Parenchyma (b) Sclerenchyma (c) Collenchyma (d) Aerenchyma
74. Which plant tissue is responsible for transporting food?
 (a) Xylem (b) Phloem (c) Parenchyma (d) Collenchyma
75. Which tissue helps a plant grow in length?
 (a) Lateral meristem (b) Intercalary meristem
 (c) Apical meristem (d) Permanent tissue

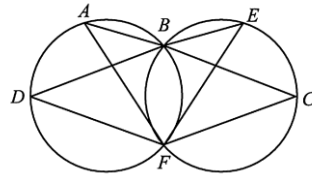
MATHEMATICS

76. If the midpoint of the line segment joining P(1, 3) and Q(5, 7) is M(a, b), what is the value of $a + b$?
 (a) 4 (b) 5 (c) 8 (d) 12
77. What is the distance between the points A(2,3) and B(5,7)?
 (a) 3 (b) 4 (c) 5 (d) 7
78. Find the coordinates of the mirror image of the point (-4, 7) when reflected in the y-axis.
 (a) (4, 7) (b) (-4, -7) (c) (4, -7) (d) (7, -4)
79. If a perfectly horizontal straight line passes through the point (5, - 7), what is the slope of this line?
 (a) 0 (b) 5 (c) -7 (d) Undefined
80. A plant is currently 10 cm tall and grows at a steady rate of 1.5 cm per week. Which linear polynomial represents the height of the plant, $H(w)$, after w weeks?
 (a) $H(w) = 10w + 1.5$ (b) $H(w) = 1.5w - 10$
 (c) $H(w) = 1.5w + 10$ (d) $H(w) = 11.5w$
81. The set of rational numbers is not closed under which of the following mathematical operations?
 (a) Addition (b) Subtraction (c) Multiplication (d) Division
82. Simplify the following expression completely using exponential laws for positive real numbers:

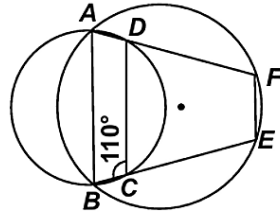
$$\left(\frac{x^a}{x^b}\right)^{a+b} \times \left(\frac{x^b}{x^c}\right)^{b+c} \times \left(\frac{x^c}{x^a}\right)^{c+a}$$

 (a) x^{a+b+c} (b) $x^{a^2+b^2+c^2}$ (c) 1 (d) 0
83. A student is given four distinct fractions. Which of these fractions is guaranteed to create a non-terminating repeating decimal expansion?
 (a) $\frac{9}{24}$ (b) $\frac{11}{80}$ (c) $\frac{14}{35}$ (d) $\frac{7}{45}$
84. Factorise $a^3(b - c)^3 + b^3(c - a)^3 + c^3(a - b)^3$.
 (a) $3abc(a - b)(b - c)(c - a)$ (b) $3(a - b)(b - c)(c - a)$
 (c) $abc(a - b)(b - c)(c - a)$ (d) 0
85. If $x^2 - 3x + 1 = 0$, find the value of $x^3 + \frac{1}{x^3}$.
 (a) 27 (b) 18 (c) 36 (d) 24
86. Simplify the expression: $\frac{a^2 - b^2}{a - b}$.
 (a) $a - b$ (b) $a + b$ (c) ab (d) 1

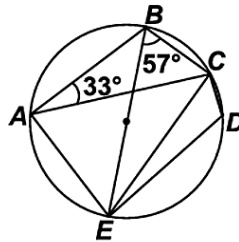
87. In the given figure, $\angle AFD = 25^\circ$ and $DBCF$ is a parallelogram. Find $\angle EFC + \angle FDB + \angle FCB$ if DBE and ABC are straight lines.



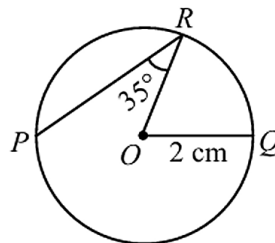
- (a) 85° (b) 75° (c) 100° (d) 60°
88. In given figure, $ABCD$ and $ABEF$ are two cyclic quadrilaterals. If $\angle BCD = 110^\circ$, then $\angle BEF = ?$



- (a) 55° (b) 70° (c) 90° (d) 110°
89. The line BE is a diameter of the given circle. If $\angle BAC = 33^\circ$ and $\angle EBC = 57^\circ$. Then $\angle CAE =$



- (a) 57° (b) 33° (c) 48° (d) 90°
90. In the given figure, O is the centre of the circle. The distance between P and Q is 4 cm. Find the $\angle ROQ$.



- (a) 50° (b) 60° (c) 70° (d) 35°
91. The area of a sector of a circle of radius 15 cm is $30\pi \text{ cm}^2$. Find the length of its corresponding arc.
- (a) 2π (b) 4π (c) 6π (d) 8π
92. The three sides of a triangle are 6 cm, 8 cm, and 10 cm. A new triangle is formed by joining the midpoints of the sides of this triangle. What is the area of the new triangle?
- (a) 6 cm^2 (b) 12 cm^2 (c) 3 cm^2 (d) 24 cm^2
93. An isosceles right-angled triangle has an area of 32 cm^2 . What is the length of its perimeter?
- (a) $16 + 8\sqrt{2} \text{ cm}$ (b) $8 + 8\sqrt{2} \text{ cm}$
(c) $16 + 16\sqrt{2} \text{ cm}$ (d) 24 cm
94. If the side of an equilateral triangle is increased by 20%, by what percentage does its area increase?
- (a) 20% (b) 40% (c) 44% (d) 60%
95. A card is drawn at random from a pack of 52 playing cards. The probability that the card drawn is an ace is:

- (a) $\frac{1}{52}$ (b) $\frac{1}{26}$ (c) $\frac{1}{13}$ (d) $\frac{4}{13}$
96. A box contains 5 red marbles, 8 white marbles, and 4 green marbles. One marble is taken out of the box at random. What is the probability that the marble taken out will not be green?
- (a) $\frac{4}{17}$ (b) $\frac{13}{17}$ (c) $\frac{5}{17}$ (d) $\frac{8}{17}$
97. Two dice are thrown together. The probability of getting a sum less than 4 is:
- (a) $\frac{1}{12}$ (b) $\frac{1}{18}$ (c) $\frac{1}{36}$ (d) $\frac{1}{6}$
98. If k , $2k - 1$, and $2k + 1$ are three consecutive terms of an AP , what is the value of k ?
- (a) 2 (b) 3 (c) 4 (d) 5
99. If the 11th term of an AP is 38 and the 16th term is 73, find its first term.
- (a) -32 (b) -35 (c) -38 (d) 7
100. Find the 8th term of the GP: $1, \frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \dots$
- (a) $\frac{1}{64}$ (b) $\frac{1}{128}$ (c) $\frac{1}{256}$ (d) $\frac{1}{512}$