



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.**

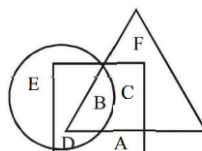
MAT

1. What will come in place of question mark in the following number series?
3F, 6G, 11I, 18L, ?
(a) 210 (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

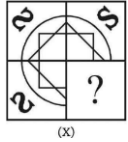
DIRECTIONS (Qs. 8 to 10) : Read the following information carefully to answer the questions.

- (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

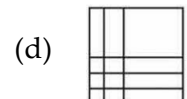
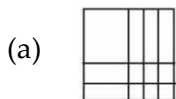
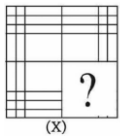
DIRECTIONS (Qs. 12-13) : In the following diagram, three classes of population are represented by three figures. The triangle represents the school teachers, the square represents the married persons and the circle represents the persons living in joint families.



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 ?

- (a) 3 1 2 5 6 8
 (c) 8 0 5 2 1 8

- (b) 8 6 2 2 1 8
 (d) 8 0 2 2 1 8

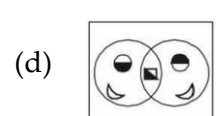
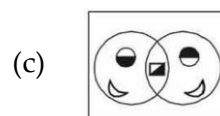
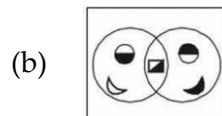
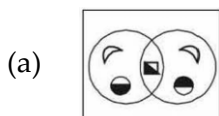
17. jealous ?

- (a) j e a l o u s
 (c) s o u l s e j

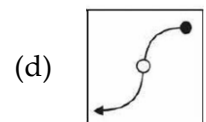
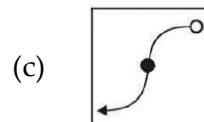
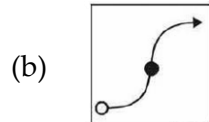
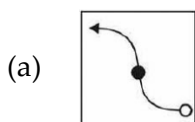
- (b) j e a l o u s
 (d) s u o l s e j

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

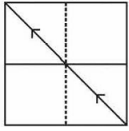
18. (X)



19. (X)



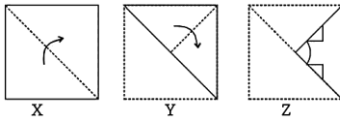
20. In the following question, find from amongst the four response figures, the one which resembles the pattern formed when the transparent sheet, carrying a design, is folded along the dotted line.



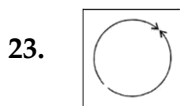
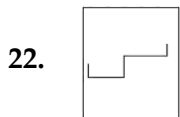
Response Figure



21. ?



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 embedded 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 kite 66 numbers 68 pilot glass 12 lights 11

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

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

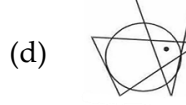
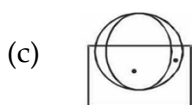
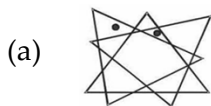
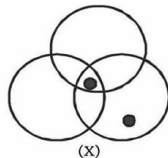
And Step V is the last step

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?
- 92 wage 23 height pencil 54 89 loop 61 merge
 - 23 height 54 loop 61 merge 89 pencil 92 wage
 - 89 pencil 92 wage 23 height 54 loop 61 merge
 - 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) Five
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

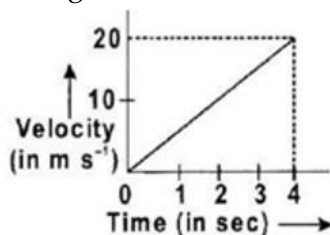
PHYSICS

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 ms^{-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

35. The velocity-time graph of a ball moving on the surface of a floor is given below.

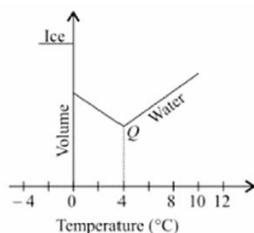


(a) 1 N (b) 2 N (c) 5 N (d) 8 N

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 60kmh^{-1} and the next 30 km at a uniform speed of 40kmh^{-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. Two objects of different masses falling freely near the surface of moon would
 - (a) have same velocities at any instant
 - (b) have different accelerations
 - (c) experience forces of same magnitude
 - (d) undergo a change in their inertia
43. The value of acceleration due to gravity
 - (a) is same on equator and poles
 - (b) is least on poles
 - (c) is least on equator
 - (d) increases from pole to equator
44. A body weighs 12 N on the surface of the moon. What is its weight on the surface of the earth?
 - (a) 72 N
 - (b) 2 N
 - (c) 24 N
 - (d) Zero
45. If suddenly the gravitational force of attraction between the earth and a satellite revolving around it becomes zero, what will happen?
 - (a) The satellite will continue to move in its orbit with the same velocity.
 - (b) The satellite will move tangentially and escape away from its orbit.
 - (c) The satellite will become stationary in its orbit.
 - (d) The satellite will move towards the earth.

CHEMISTRY

46. The high diffusibility of gases is due to
 (a) high intermolecular forces of attraction (b) high kinetic energy of molecules
 (c) restricted translatory motion in upward direction (d) All of the above
47. Study the given graph carefully and select the correct statement(s).



- I. When water is cooled to 4°C, the volume decreases.
 II. Ice and water co-exist at 0°C.
 III. Water has minimum density at point Q.
 IV. The volume of ice is more than that of water.
- (a) I only (b) II and III only (c) I, II and IV only (d) All of these
48. Maximum intermolecular forces of attraction exists in
 (a) Bromine (b) Air (c) Oxygen (d) Copper
49. In which of the following cases, cooking is very slow?
 (a) Pressure cooker at sea level (b) Pressure cooker at higher altitude
 (c) Open vessel at sea level (d) Open vessel at higher altitude
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. When water at 0°C freezes to form ice at the same temperature of 0°C, then it:
 (a) Absorbs some heat (b) Releases some heat
 (c) Neither absorbs nor releases heat (d) Absorbs exactly 3.34×10^5 J/kg of heat
52. The property to flow is unique to fluids. Which one of the following statements is correct?
 (a) Only gases behave like fluids (b) Gases and solids behave like fluids
 (c) Gases and liquids behave like fluids (d) Only liquids are fluids
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?
 (a) Water is solvent and physical state of solution is solid
 (b) Glucose is solvent and physical state of solution is solid
 (c) Glucose is solvent and physical state of solution is liquid
 (d) 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})
- (a) 20.4% (b) 22.3% (c) 15.3% (d) 25.3%
58. Soham, a class 9 student mixed some iron filings and sulphur in a China dish and heated them strongly to obtain a residue. Which of the following is not a characteristic property of the residue?
- (a) It cannot be separated into sulphur and iron filings by normal physical methods.
 (b) Its properties are completely different from iron and sulphur.
 (c) Its composition is same throughout.
 (d) Its appearance is different from iron and sulphur but it shows chemical properties of both iron and sulphur.
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?
- (i) P is a compound (ii) X and Y are compounds
 (iii) X and Y are elements (iv) P has a fixed composition
- (a) (i), (ii) and (iii) (b) (i), (ii) and (iv) (c) (ii), (iii) and (iv) (d) (i), (iii) and (iv)
60. A mixture of sulphur and carbon disulphide is
- (a) heterogeneous and shows Tyndall effect
 (b) homogeneous and shows Tyndall effect
 (c) heterogeneous and does not show Tyndall effect
 (d) homogeneous and does not show Tyndall effect

BIOLOGY

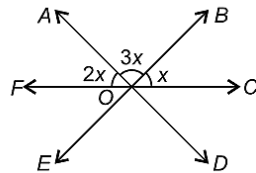
61. The longest cell in the human body is
- (a) Nerve Cell (b) Muscle Cell (c) Liver Cell (d) Kidney Cell
62. Plasmolysis occurs due to
- (a) Absorption (b) Endosmosis (c) Osmosis (d) Exosmosis
63. The barrier between the protoplasm and the external environment in an animal cell
- (a) Cell Wall (b) Nuclear Membrane
 (c) Tonoplast (d) Plasma Membrane
64. Who proposed the cell theory?
- (a) Schleiden & Schwann (b) Watson and Crick
 (c) Darwin and Wallace (d) Mendel and Morgan
65. Which of the following is a prokaryotic cell?
- (a) Spirogyra (b) Amoeba
 (c) Chara (d) Escherichia coli
66. All are membrane-bound cell organelles except
- (a) Mitochondria (b) Ribosomes (c) Lysosomes (d) None of these
67. Chromosomes are concerned with
- (a) Respiration (b) Assimilation
 (c) Transmission of hereditary characters (d) Nutrition
68. RER are associated with the synthesis of
- (a) Proteins (b) Lipids
 (c) Steroids (d) Carbohydrates
69. Which one is an incorrect matching pair
- (a) Ribosome: Protein Synthesis (b) Chloroplast: Photosynthesis
 (c) Golgi Apparatus: Breakdown of complex molecules (d) Nucleus: Controls functions of the cell

70. Which is called a 'digestive bag'?
- (a) Lysosome (b) Mesosome (c) Chromosomes (d) Ribosome
71. Which are the two types of tissues?
- (a) Meristematic and permanent (b) Meristematic and temporary
(c) Meristems and temporary (d) None of the above
72. Parenchyma is a type of
- (a) complex tissue (b) simple tissue (c) xylem (d) phloem
73. Plant length is increased by
- (a) apical meristems (b) lateral meristems (c) phloem (d) parenchyma
74. _____ tissue forms new cells in plants.
- (a) Meristematic (b) Simple
(c) Permanent (d) None of the above
75. Collenchyma mainly forms
- (a) hypodermis (b) epidermis (c) phloem (d) inner cortex

MATHEMATICS

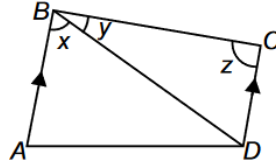
76. If $N = \frac{\sqrt{5+2}+\sqrt{5-2}}{\sqrt{5+1}} - \sqrt{3-2\sqrt{2}}$ then N equals _____.
- (a) 1 (b) $2\sqrt{2} - 1$ (c) $\frac{\sqrt{5}}{2}$ (d) $\frac{2}{\sqrt{5+1}}$
77. If $x = (7 + 4\sqrt{3})$, then $\left(x + \frac{1}{x}\right) =$ _____.
- (a) $8\sqrt{3}$ (b) 14 (c) 49 (d) 48
78. $\frac{7\sqrt{3}}{(\sqrt{10}+\sqrt{3})} - \frac{2\sqrt{5}}{(\sqrt{6}+\sqrt{5})} - \frac{3\sqrt{2}}{(\sqrt{15}+3\sqrt{2})} =$
- (a) 1 (b) 2 (c) $\frac{1}{2}$ (d) 3
79. Which of the following numbers has the terminating decimal representation?
- (a) $\frac{5}{12}$ (b) $\frac{8}{35}$ (c) $\frac{7}{24}$ (d) $\frac{13}{80}$
80. The value of k for which $(x + 2)$ is a factor of $(x + 1)^7 + (3x + k)^3$ is _____.
- (a) -7 (b) 7 (c) -1 (d) $-6 - 3^{(7/3)}$
81. When $p(x) = x^3 + ax^2 + 2x + a$ is divided by $(x + a)$, the remainder is
- (a) 0 (b) a (c) $-a$ (d) $2a$
82. If $x = \frac{a-b}{a+b}, y = \frac{b-c}{b+c}, z = \frac{c-a}{c+a}$, then the value of $\frac{(1+x)(1+y)(1+z)}{(1-x)(1-y)(1-z)}$ is
- (a) abc (b) $a^2b^2c^2$ (c) 1 (d) -1
83. Given that $x = 2$ is a solution of $x^3 - 7x + 6 = 0$. The other solutions are _____.
- (a) -1, 3 (b) 1, -3 (c) 1, -2 (d) -1, -2
84. The product $(a + b)(a - b)(a^2 - ab + b^2)(a^2 + ab + b^2)$ is equal to _____.
- (a) $a^6 + b^6$ (b) $a^6 - b^6$ (c) $a^3 - b^3$ (d) $a^3 + b^3$
85. The value of 'x' in the ordered pair $(x, -8)$ if the ordinate of the pair is 4 more than the abscissa is _____.
- (a) -4 (b) -8 (c) -12 (d) 4
86. The point $(-5, 6)$ lies in
- (a) Ist quadrant (b) IInd quadrant (c) IIIrd quadrant (d) IVth quadrant
87. The graph of the linear equation $2x + 5y = 10$ meets the x-axis at the point
- (a) (2, 0) (b) (0, 2) (c) (5, 0) (d) (0, 5)
88. Each of the points $(-2, 2), (0, 0), (2, -2)$ satisfies the linear equation
- (a) $x - y = 0$ (b) $-2x + y = 0$
(c) $x + y = 0$ (d) $x - 2y = 0$

89. In the given figure, find the value of $\angle EOD$.



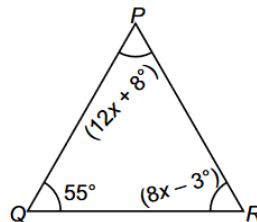
- (a) 25° (b) 70° (c) 80° (d) 90°

90. In the figure, $AB \parallel DC$. If $x = \frac{4}{3}y$ and $y = \frac{3}{8}z$, find the values of x, y and z respectively.



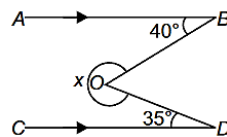
- (a) $30^\circ, 45^\circ, 86^\circ$ (b) $48^\circ, 36^\circ, 96^\circ$ (c) $48^\circ, 36^\circ, 90^\circ$ (d) $36^\circ, 45^\circ, 96^\circ$

91. The value of x , in the given triangle is _____.



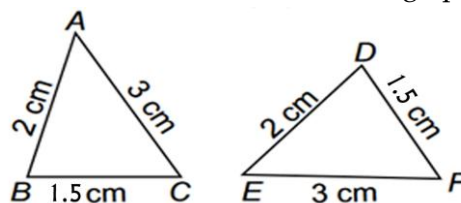
- (a) 4° (b) 5° (c) 6° (d) 8°

92. In the given figure, $AB \parallel CD$. Find the value of x .



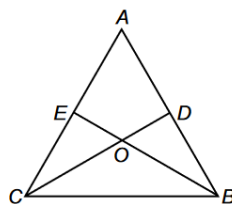
- (a) 189° (b) 215° (c) 285° (d) 280°

93. If the given triangles are congruent, then which of the following options is CORRECT?



- (a) $\triangle ABC \cong \triangle DEF$ (b) $\triangle ABC \cong \triangle EDF$
(c) $\triangle ABC \cong \triangle FDE$ (d) $\triangle ACB \cong \triangle EDF$

94. In the given figure, if $AE = AD$ and $BD = CE$, then _____.

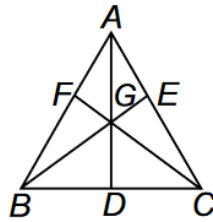


- (a) $\triangle BEC \cong \triangle BDC$ (b) $\triangle AEB \cong \triangle ADC$
(c) $BC = CD$ (d) None of these

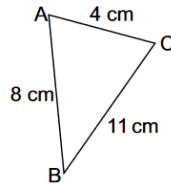
95. In $\triangle DEF$ and $\triangle PQR$, $DE = DF$, $\angle F = \angle P$ and $\angle E = \angle Q$. The two triangles are

- (a) Isosceles but not necessarily congruent (b) Isosceles and congruent
(c) Congruent but not isosceles (d) Neither congruent nor isosceles

96. In $\triangle ABC$, the medians AD , BE and CF pass through G . If $BG = 6$, then BE is_____.



- (a) 9 (b) 6 (c) 3 (d) 1
97. In the given figure, the area of the $\triangle ABC$ is



- (a) 13.24 cm^2 (b) 12.28 cm^2
 (c) 11.32 cm^2 (d) 15.37 cm^2
98. The difference between the semi-perimeter and the sides of a $\triangle ABC$ are 8 cm, 7 cm and 5 cm respectively. The area of the triangle is
 (a) $20\sqrt{7} \text{ cm}^2$ (b) $10\sqrt{14} \text{ cm}^2$ (c) $20\sqrt{14} \text{ cm}^2$ (d) 140 cm^2
99. The area of a parallelogram $ABCD$ in which $AB = 12 \text{ cm}$, $BC = 9 \text{ cm}$ and diagonal $AC = 15 \text{ cm}$ is $k \text{ cm}^2$. Find the value of $\frac{k-100}{4}$.
 (a) 3 (b) 4 (c) 2 (d) 5
100. Find the cost of laying grass in a triangular field of sides 50 m, 65 m and 65 m at the rate of ₹ 7 per m^2 .
 (a) ₹ 9500 (b) ₹ 11000 (c) ₹ 10500 (d) ₹ 12500