



Class – VII

School Integrated Program

ENTRANCE TEST CUM SCHOLARSHIP TEST

[Time: 3 Hours]

[Max Marks: 300]

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:

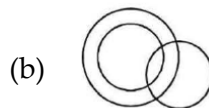
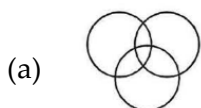
1. *The Question Paper consists of five parts (Part I: MAT, Part II: Physics, Part III: Chemistry, Part IV: Biology, Part V: Mathematics).*
2. *Each Question carries +3 marks for correct answer and -1 mark for incorrect answer.*

MAT

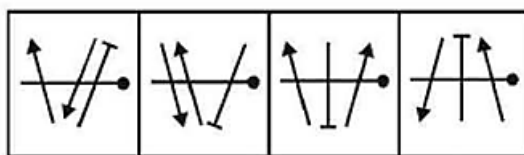
1. In the series given below, how many 8s are there each of which is exactly divisible by its immediate preceding as well as succeeding numbers?
 2 8 3 8 2 4 8 2 4 8 6 8 2 8 2 4 8 3 8 2 8 6
- (a) One (b) Two (c) Three (d) Four

2. How many 7s are there in the following number series which are preceded by 9 and also followed by 6?
 7 8 9 7 6 5 3 4 2 8 9 7 2 4 5 9 2 9 7 6 4 7
- (a) Two (b) Three (c) Four (d) Five

3. Which of the following diagrams correctly represents the relationship among readers, writers and poets?



4. Choose the figure which is different from the others.



(1)

(2)

(3)

(4)

(a) (1)

(b) (2)

(c) (3)

(d) (4)

Direction (Q. 5-6): In each of the questions given below, find the next term to fill the blank space.

5. 3,5,10,12,24,26,___.

(a) 52

(b) 30

(c) 28

(d) 48

6. 3,6,5,20,7,42,9,___.

(a) 60

(b) 54

(c) 72

(d) 66

7. Lalit walks 8 km east, turns south-west and walks another 8 km . He again takes a turn towards north-west and walks another 8 km. In which direction from his starting point is he standing now?

(a) North-East

(b) South-East

(c) West

(d) East

8. Which of the following number does not fit in the sequence?

3,7,9,11,13,17,19

(a) 3

(b) 7

(c) 17

(d) 9

9. *L, M, N* and *O* are brothers. *L* is darker than *O*, *N* is the fairest of all. *M* is fairer than *O*. Who is the darkest of all ?

(a) N

(b) O

(c) L

(d) M

10. Anjali says, "He is the only son of the father of my sister's brother." How is that person related to Anjali?

(a) Uncle

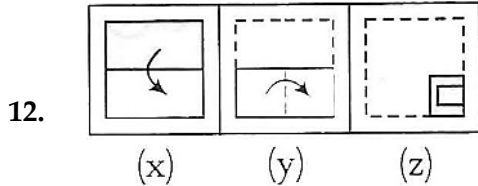
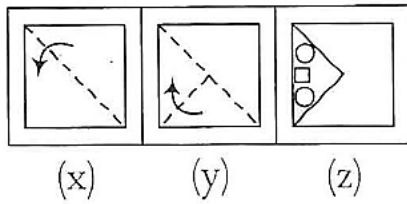
(b) Cousin

(c) Brother

(d) Father

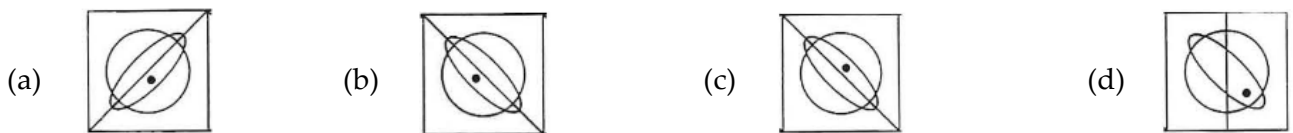
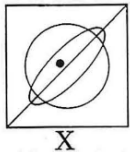
Direction (Q. 11-12): In the following questions, select the answer figure from the given alternatives which is closest to the unfolded paper.

11. Problem Figures

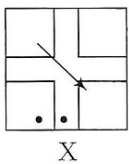


Direction (Q. 13-14): In the following questions, choose the correct water image from amongst the four alternatives *a, b, c* and *d* given along with it.

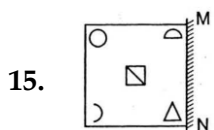
13. Problem Figure

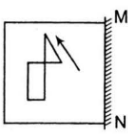
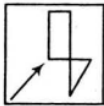
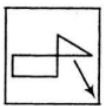
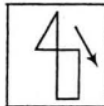


14. Problem Figure

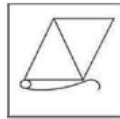


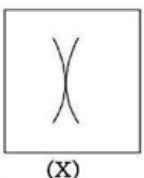
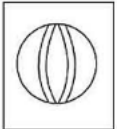
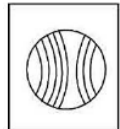
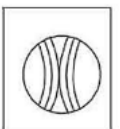
Direction (Q. 15-16): In the following questions, choose the correct mirror image from amongst the four alternatives *a, b, c* and *d* given along with it.



16. 
- (a) 
- (b) 
- (c) 
- (d) 

Direction (Q. 17-18): 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.

17. 
- (a) 
- (b) 
- (c) 
- (d) 

18. 
- (a) 
- (b) 
- (c) 
- (d) 

19. Find the odd word/ letters out from the given alternatives.

- (a) VWY (b) QRT (c) LMO (d) JKL

Direction (Q. 20): Read the information given below carefully and answer the question.

$x + y$ means x is the sister of y .

$x - y$ means x is the son of y .

$x \times y$ means x is the mother of y

$x \neq y$ means x is the father of y

20. Which of the following alternative means 'F is father of J'?

- (a) $F + G \neq H \times I - J$ (b) $J \neq I + H \neq G + F$
 (c) $F + G - H \times I - J$ (d) $J + I - H \times G - F$

21. If in a code language PARENT is written as BDFGJK and CHILDREN is written as MOXQUFGJ, how is REPRINT written in that code?

- (a) FGBFXGD (b) BGBFXJK (c) FGBUXJK (d) FGBFXJK

22. If the letters in PRABA are coded as 27595 and THILAK are coded as 368451, how can BHARATI be coded?

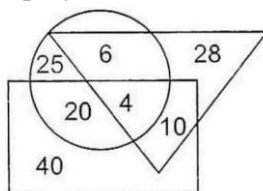
- (a) 9657538 (b) 9567538 (c) 9675538 (d) 9567568

23. Jaya's position from the left in a row of students is 12th and Rekha's position from the right is 20th. After interchanging their positions Jaya becomes 22nd from the left. How many students are there in the row?

- (a) 30 (b) 31 (c) 41 (d) 34

24. Manish ranked sixteenth from the top and twenty-ninth from the bottom among those who has passed an examination. Six boys did not participate in the examination and five failed in it. How many boys were there in the class?
- (a) 40 (b) 44 (c) 50 (d) 55

Direction (Q. 25-26): On the basis of the following Venn-diagram, answer the questions given below. The rectangle represents artists, the circle represents player and the triangle represents doctors



25. How many artists are players but not doctors?
- (a) 25 (b) 20 (c) 10 (d) 30
26. How many artists are neither player nor doctor?
- (a) 40 (b) 10 (c) 30 (d) 25
27. In the following question, three statements are given followed by four conclusions numbered I, II, III & IV. You have to take the given statements to be true even if they seem to be at variance from the commonly known facts & then decide which of the following conclusions logically follows from the given statements disregarding commonly known facts.

Statements:

Some Cats are Rats.

All bats are tables.

All Rats are Bats.

Conclusion:

I. Some Cats are bats

II. All bats are rats

III. All tables are cats

IV. All bats are cats

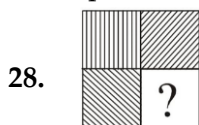
(a) Only I & II follow

(b) Only II follows

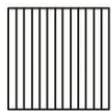
(c) Only I & IV follow

(d) None of these

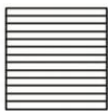
Direction (Q. 28-29): In each of the following questions, select a figure from the four alternatives, which when placed in the space where the question mark is shown in figure (X) would complete the figure.



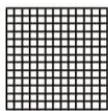
(X)



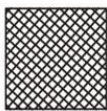
(1)



(2)



(3)



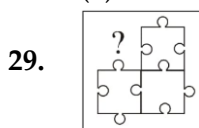
(4)

(a) 1

(b) 2

(c) 3

(d) 4



(X)



(1)



(2)



(3)



(4)

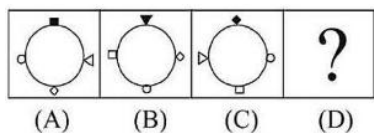
(a) 1

(b) 2

(c) 3

(d) 4

30. In the following question, a figure series is given out of which the last figure is missing, Find which one would complete the series.

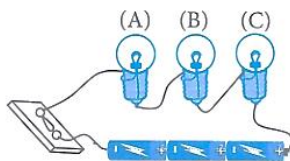


PHYSICS

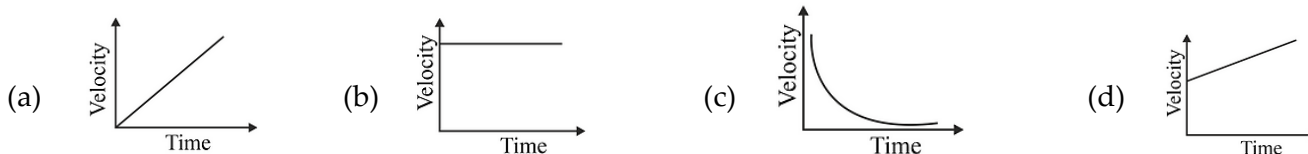
31. A car at 7:30 am is moving at a constant speed of 4km/min and an odometer reading recorded is 28568 km. What would be the odometer reading at 9:15am?

(a) 28673 km (b) 28988 km (c) 29255 km (d) 28568 km

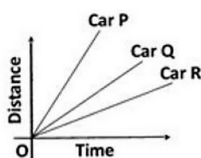
32. Then the switch is turned ON in the circuit with bulbs A, B, and C (as shown), which of the following statements is true?



- (a) Bulb C glows before the others.
 (b) Bulbs B and C glow together, and bulb A glows after a delay.
 (c) All bulbs A, B, and C light up at the same moment.
 (d) The bulbs light up one after another in the order A, then B, then C.
33. A body moves with uniform velocity. Which of the graphs shown here is a graph of velocity against time for this motion?

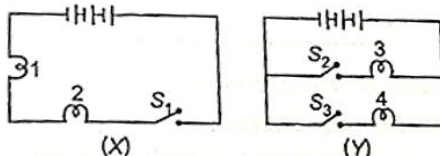


34. Study the given distance-time graph for three cars P, Q and R in a race.

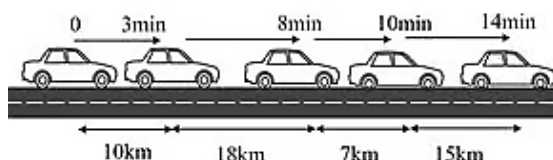


Which of the three cars win the race?

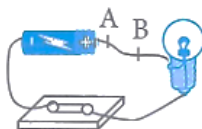
- (a) Car P (b) Car Q
 (c) Car R (d) Both Q and R
35. Which of the following statements is correct for a particle travelling with a constant speed along a straight road?
- (a) Its position remains constant as time passes.
 (b) It covers equal distances in unequal time intervals.
 (c) Its acceleration is zero.
 (d) It changes its direction of motion.
36. Observe the given circuit diagrams (X and Y) and following statement are shown based on two circuit. Which of the statements are correct.



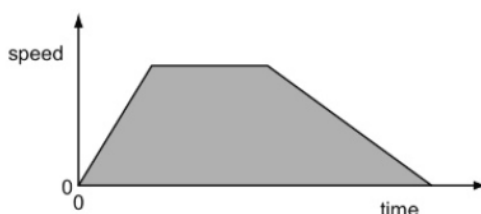
- (I) If switch is closed in X, then both bulbs will glow
 (II) Bulb 2 in circuit X will glow, even when the bulb 1 is fused, and switch S_1 is closed.
 (III) In circuit Y, bulb 3 will glow if only switch S_2 is closed.
 (IV) In circuit Y, Both bulbs will only glow if both switches are closed
- (a) I, II and III are correct (b) I, III and IV are correct
 (c) I and II are correct (d) I and IV are correct
37. If a car is moving at the speed of 72km/hr for 30min and then with 60km/hr for 30min. What is the distance travelled by car during whole motion.
 (a) 72km (b) 66km (c) 54km (d) 60km
38. The bike rider applies brakes and brings the velocity of the bike from 90 km/hr to halt in 30s. Then the acceleration of the bike is _____ m/s^2 .
 (a) $-5/6$ (b) $-9/2$ (c) 3 (d) 27
39. Which of the following relations is correct?
 (a) $\text{Speed} = \frac{1}{\text{Distance} \times \text{Time}}$ (b) $\text{Distance} = \text{Speed} \times \text{Time}$
 (c) $\text{Speed} = \frac{\text{Distance}}{\text{Time}}$ (d) Both 'b' and 'c'
40. Which device is used as a safety device in electrical circuits to prevent damage?
 (a) Switch (b) Electric bulb (c) Fuse (d) Conductor
41. A pendulum takes 0.5 s to make one oscillation about its mean position. How long will it take to make 5 oscillations?
 (a) 5 s (b) 7.5 s (c) 2.5 s (d) 10 s
42. A car follows the given path as shown in figure. What will be average speed of the car?



- (a) 1.25 km/h (b) 33.33 km/h (c) 214.28 km/h (d) 48 km/h
43. When current flows through insulated copper wire AB (see figure), how does the wire behave?



- (a) Deflects a magnetic needle placed near it. (b) Becomes red hot.
 (c) Gives electric shock. (d) Behaves like a fuse.
44. The glowing filament in an electric bulb becomes white-hot due to which effect of electric current?
 (a) Magnetic effect (b) Heating effect
 (c) Chemical effect (d) Physical effect
45. A graph between speed vs time is shown below. What does the area of the shaded portion in the graph represent?



- (a) Distance (b) Uniform motion (c) Time (d) Speed

CHEMISTRY

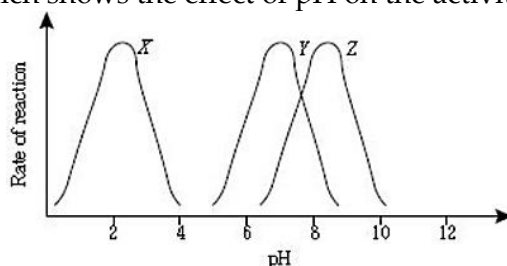
46. A student finds that a liquid turns blue litmus red and gives no colour change with turmeric paper. The liquid is most likely:
 (a) Lime water (b) Vinegar.
 (c) Soap solution (d) Baking soda solution

47. Hydrangea flowers grow pink or red in certain soils. This indicates that the soil is:
(a) Highly acidic (b) Basic
(c) Neutral (d) Rich in ascorbic acid
48. Red ants inject a liquid when they bite. Which of the following is the most scientifically sound household remedy to neutralize this?
(a) Applying lemon juice (b) Applying moist baking soda
(c) Washing with tamarind water (d) Applying pure vinegar
49. A solution of washing powder is tested with red and blue litmus paper. What will be the observation?
(a) Red litmus turns blue; blue litmus remains blue.
(b) Blue litmus turns red; red litmus remains red.
(c) Both red and blue litmus papers lose their colour.
(d) No change in either litmus paper.
50. What is the chemical name for the substance found in 'lime water'?
(a) Calcium carbonate (b) Calcium oxide
(c) Calcium hydroxide (d) Calcium chloride
51. In the context of the history of chemistry, Acharya P.C. Ray highlighted ancient Indian metallurgy. The extraction of metals often involved treating metallic oxides with certain fluxes. If a flux acts to neutralize the impurity, the flux itself must be:
(a) Basic (b) Acidic (c) Neutral (d) Metallic
52. A mixture of hydrochloric acid and sodium hydroxide is allowed to react completely. The water is then evaporated. The resulting solid is subjected to a conductivity test in its solid state and fails to conduct electricity. Why?
(a) The reaction produced a covalent compound.
(b) The resulting salt (NaCl) consists of ions locked in a rigid crystal lattice, preventing the flow of charge.
(c) The neutralization process destroys the electrical properties of the atoms.
(d) The solid formed is unreactive metal.
53. Why are electrical wires often made of copper but power transmission lines suspended from tall towers are often made of aluminium cables reinforced with a steel core?
(a) Aluminium is a better conductor than copper.
(b) Copper is too ductile to span long distances.
(c) Aluminium is lighter than copper and cheaper, while the steel core provides the necessary tensile strength.
(d) Steel is the best conductor of electricity.
54. Carbon exists in different solid forms (allotropes) such as diamond and graphite. Diamond is the hardest known natural substance and an electrical insulator, while graphite is soft and conducts electricity. Despite these metallic-seeming properties of graphite, carbon is classified as a non-metal. Why?
(a) Graphite is a metal, diamond is a non-metal.
(b) Carbon's oxides (like CO_2) are acidic, a defining characteristic of non-metals.
(c) Carbon is sonorous.
(d) Carbon can only exist as a gas at room temperature
55. Sulfur dioxide (SO_2) dissolves in water. In an industrial area with heavy sulfur emissions, how does this process impact the local environment during a rainstorm?
(a) It neutralizes acidic soils, promoting plant growth.
(b) It causes 'acid rain', which lowers the pH of water bodies, harming aquatic life and accelerating the corrosion of metal and stone structures.
(c) It produces a protective smog layer that shields against UV radiation.
(d) It turns local water bodies highly basic
56. Which of the following is a liquid metal at room temperature?
(a) Sodium (b) Mercury (c) Bromine (d) Gallium

57. The property that allows metals to be drawn into thin wires is called:
 (a) Malleability (b) Ductility
 (c) Sonority (d) Conductivity
58. If magnesium oxide ash is dissolved in water and tested with red litmus paper, the paper turns blue. This indicates that metallic oxides are generally:
 (a) Acidic in nature (b) Basic in nature (c) Neutral in nature (d) Amphoteric
59. When sulfur is burned in air, it produces a gas. If this gas is dissolved in water, the resulting solution will turn:
 (a) Red litmus blue (b) Blue litmus red
 (c) Turmeric paper red (d) No change in litmus paper
60. Which of the following statements about non-metals is generally TRUE?
 (a) They are highly malleable. (b) They are good conductors of heat.
 (c) They are dull in appearance and brittle. (d) They are sonorous.

BIOLOGY

61. Which of the following statements is/are true (T) or false (F) regarding nutrition in organisms?
 (i) Photosynthesis also occurs in leaves having colour other than green.
 (ii) The process of photosynthesis first produces a simple carbohydrate called glucose which then gets converted into a complex carbohydrate called starch.
 (iii) Cuscuta is a yellow-coloured plant but it can synthesize its own food by photosynthesis.
 (iv) In a symbiotic association, Rhizobium bacteria derive their nutrition from fungus.
 (i) (ii) (iii) (iv)
 (a) F T T T
 (b) T T T F
 (c) F F F T
 (d) T T F F
62. Which of the following pair of teeth differ in structure but are similar in function?
 (a) canines and incisors. (b) molars and premolars.
 (c) incisors and molars. (d) premolars and canines.
63. Which of the following statements best describe the organism growing on the given piece of bread?
 (i) It belongs to flowering plants.
 (ii) It reproduces by spores.
 (iii) It is a chlorophyllous organism.
 (iv) It prepares its own food.
 (v) It obtains food from dead and decaying organic matter.
 (a) (ii), (iii) and (iv) (b) (i), (ii) and (v)
 (c) (ii) and (v) (d) (iii) and (iv)
64. Breathing rate in human beings in normal condition is
 (a) 12-15 times in a minute (b) 15-18 times in a minute
 (c) 18-22 times in a minute (d) 22-25 times in a minute
65. The percentage of oxygen in inhaled air is:
 (a) 14.4% (b) 4.4% (c) 16.4% (d) 21%
66. Refer to the given graph which shows the effect of pH on the activities of three enzymes, X, Y and Z.



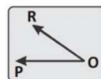
The three enzyme samples, X, Y and Z are taken from which parts of the human alimentary canal?

- | | X | Y | Z |
|-----|----------|----------|-----------|
| (a) | Duodenum | Mouth | Stomach |
| (b) | Mouth | Stomach | Duodenum |
| (c) | Stomach | Duodenum | Mouth |
| (d) | Stomach | Mouth | Intestine |
67. Plenty of boiled water mixed with a pinch of salt and sugar dissolved in it is called
- (a) An Acid (b) A base
(c) An indicator (d) Oral Rehydration solution
68. Read the following statements with reference to the villi of small intestine.
- (i) They have very thin walls.
(ii) They have a network of thin and small blood vessels close to the surface.
(iii) They have small pores through which food can easily pass.
(iv) They are finger-like projections.
- Identify those statements which enable the villi to absorb digested food.
- (a) (i), (ii) and (iv) (b) (ii), (iii) and (iv) (c) (iii) and (iv) (d) (i) and (iv)
69. They are pipe-like, consisting of a group of specialised cells. They transport substances and form a two-way traffic in plants. Which of the following terms qualify for the features mentioned above?
- (a) Xylem tissue (b) Vessels
(c) Root hairs (d) Phloem tissue
70. During the process of exhalation, the ribs move
- (a) down and inwards (b) up and inwards
(c) down and outwards (d) up and outward
71. Cud is the name given to the food of ruminants which is:
- (a) swallowed and undigested (b) swallowed and partially digested
(c) properly chewed and partially digested (d) properly chewed and completely digested
72. The number of incisors, molars, premolars and canines in the buccal cavity is
- (a) 8,4,8,8 (b) 8,12,12,4 (c) 4,8,8,8 (d) 8,8,8,4
73. Read carefully the terms given below. Which of the following set is the correct combination of organs that do not carry out any digestive functions?
- (a) Oesophagus, Large Intestine, Rectum (b) Buccal Cavity, Oesophagus, Rectum
(c) Buccal Cavity, Oesophagus, Large Intestine (d) Small Intestine, Large Intestine, Rectum
74. The rate of exchange of gases in plants is not as fast as in:
- (a) animals (b) insects (c) birds (d) fish
75. During inhalation the ribs:
- (a) move outwards (b) move downwards
(c) move inwards (d) do not move at all

MATHEMATICS

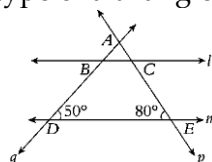
76. What do we call the set of negative numbers and whole numbers?
- (a) Natural numbers (b) Integers
(c) Positive numbers (d) The set of whole numbers
77. Which of the following orders is used while evaluating an expression?
- (a) $[], (), \{$ (b) $\{, (), []$ (c) $[], \{, ()$ (d) $[], [], \{$
78. What is the value of the expression $7 - [13 - \{-2 - 6(6 \text{ of } -5)\}]$?
- (a) -172 (b) 180 (c) 172 (d) 0
79. Which of the following statements holds correct?
- (a) $N \subset W \subset Z$ (b) $Z \subset N \subset W$ (c) $W \subset N \subset Z$ (d) $Z \subset W \subset N$

80. What is the sum of $\frac{3}{4}$, $\frac{7}{6}$ and $1\frac{3}{5}$?
 (a) $3\frac{1}{2}$ (b) $3\frac{31}{60}$ (c) $2\frac{13}{60}$ (d) $\frac{412}{120}$
81. If $4\frac{7}{11} = \frac{x}{11}$, what is the value of x ?
 (a) 51 (b) 7 (c) 44 (d) 28
82. A fraction $\frac{a}{b}$ is said to be irreducible or in lowest terms if the H.C.F. of a and b is ?
 (a) < 1 (b) $1 >$ (c) $= 1$ (d) 0
83. What should be added to $\frac{21}{27}$ to make it 1 ?
 (a) $\frac{26}{27}$ (b) $\frac{2}{9}$ (c) $\frac{5}{27}$ (d) $\frac{7}{27}$
84. What is the arithmetic mean of 1, 2, ..., 9 and 10 ?
 (a) 5.5 (b) 6 (c) 7.5 (d) 10
85. The observation that occurs the maximum number of times is called the _____ of the given data
 (a) Mode (b) Mean
 (c) Median (d) None of these
86. If each entry of a data is increased by 5, how does the mean change?
 (a) Remains the same (b) Increase by 5
 (c) Decrease by 5 (d) Becomes half
87. What is the value of 'x' in $\frac{3x-1}{5} - \frac{1+x}{2} = 3 - \frac{x-1}{2}$?
 (a) -7 (b) 7 (c) 0 (d) 1
88. A number is 3 less than two times the other. If their sum is increased by 7, the result is 37. Find the numbers.
 (a) 9, 11 (b) 11, 19 (c) 11, 13 (d) 9, 13
89. In which of the following cases does an equality NOT hold?
 (a) Adding the same number on both sides.
 (b) Not performing the same operation on both sides.
 (c) Subtracting the same number from both sides.
 (d) Multiplying both sides by the same non-zero number.
90. Solve for x : $3x + 5 > 7$
 (a) $x > 3/2$ (b) $x > 2/3$ (c) $x < 3/2$ (d) $x < 2/3$
91. In $\angle ROP$, what is the vertex?



- (a) R (b) P (c) O (d) PR

92. Which of the following is the set of measures of the sides of a triangle?
 (a) 8 cm, 4 cm, 20 cm (b) 9 cm, 17 cm, 25 cm
 (c) 11 cm, 16 cm, 28 cm (d) 6 cm, 7 cm, 12 cm
93. How many rays can be drawn from a given point?
 (a) 2 (b) 8
 (c) 5 (d) Infinitely many
94. The _____ of a triangle are the line segments joining the vertices of the triangle to the midpoints of the opposite sides.
 (a) Median (b) Centroid (c) Altitude (d) Hypotenuse
95. In a triangle ABC, if $AB^2 = BC^2 + AC^2$ at which vertex is the right angle?
 (a) A (b) C (c) B (d) Either A or B
96. In the figure below, if $l \parallel m$, then what type of a triangle is ABC ?



- (a) Isosceles (b) Scalene

- (c) Equilateral (d) None of these
97. What is the difference between $3a + 2b$ and $-2a - 5b$?
 (a) $5a + 7b$ (b) $5a - 7b$ (c) $-5a - 7b$ (d) $5 - 3b$
98. What is the sum of $3y^2 + 5yz, -2y^2 - 2yz - z^2$ and $-yz + 2z^2$
 (a) $y^2 - 2yz + z^2$ (b) $y^2 + 2yz + z^2$
 (c) $y^2 + 2yz - z^2$ (d) $-y^2 + 2yz - z^2$
99. Simplify $\frac{4}{11}(66x + 44) + \frac{3}{11}(33x - 33)$.
 (a) $33x + 7$ (b) $33x - 7$ (c) $33x - 7x$ (d) $33 + 7x$
100. Evaluate the expression. $p - (p - q) - q - (q - p)$
 (a) $p - q$ (b) $-p + q$ (c) $p + q$ (d) $-(p + q)$