



10. Locate  $\sqrt{3}$  on the number line ?
11. Represent  $\sqrt{9.3}$  on the number line?
12. If  $2^{5x} \div 2^x = 5\sqrt{2^{20}}$ , find x ?
13. Simplify
- a).  $(\sqrt{5} + \sqrt{2})^2$       b).  $\frac{30}{5\sqrt{3}-3\sqrt{5}}$       c).  $\frac{7+3\sqrt{5}}{7-3\sqrt{5}}$
14. Add  $2\sqrt{2} + 5\sqrt{3}$  and  $\sqrt{2} - 3\sqrt{3}$  ?
15. Find a & b, if  $\frac{\sqrt{5} + \sqrt{3}}{\sqrt{5} - \sqrt{3}} = a + b\sqrt{15}$  ?
16. Find a & b, if  $\frac{3 - \sqrt{5}}{3 + 2\sqrt{5}} = a\sqrt{5} - b$  ?
17. Evaluate  $3\sqrt[3]{27} + \sqrt{49} + 5\sqrt{32}$
18. Simplify  $\sqrt{625} - 3\sqrt{125} + 4\sqrt{81} + 5\sqrt{32}$
19. Rationalise the denominator  $\frac{1}{\sqrt{3} + \sqrt{2}}$  and hence evaluate by taking  $\sqrt{2} = 1.4141$  and  $\sqrt{3} = 1.732$  upto three decimal places?
20. If  $a = 3 + 2\sqrt{2}$  then find the value of  $a^2 + \frac{1}{a^2}$ ?
21. If  $X = \frac{\sqrt{3}+1}{\sqrt{3}-1}$ ,  $Y = \frac{\sqrt{3}-1}{\sqrt{3}+1}$  then find  $x^2 + y^2 + xy$ ?
22. Case study based question

In a school one day the maths teacher told the students of class IX about the number systems. She drew a number line and told them the number line represents various types of numbers on it.

Rational numbers can be represented on the number line. A number is called rational number if it can be written in the form of  $\frac{p}{q}$ , where p & q are integers and  $q \neq 0$ .

Based on the information, answer the following questions

- i. A rational number between 2 and 3 is
- a) 1      b)  $\frac{5}{2}$       c) 0      d)  $\frac{1}{2}$
- ii. An irrational number between  $\sqrt{3}$  and  $\sqrt{5}$  is
- a) 2      b) 1      c)  $\sqrt{5}$       d)  $\sqrt{3.5}$
- iii. The  $\frac{p}{q}$  form of 1.3333... is

a)  $\frac{7}{9}$

b)  $\frac{5}{9}$

c)  $\frac{4}{3}$

d)  $\frac{5}{3}$

iv. The product of  $(2 + \sqrt{3})(2 - \sqrt{3})$  is

- a) 4    b) 1    c) -1    d) 0

\*\*\*\*\*

**INTERNATIONAL INDIAN SCHOOL DAMMAM**

**CLASS - 9 QUESTION BANK FOR MID-TERM EXAMINATION**

**MATHEMATICS (2023-'24)**

**CHAPTER -2 POLYNOMIALS**

**Choose the correct option:-**

1. Which of the following is a linear polynomial?

- (a)  $7z - 59$       (b)  $y^2 - 4y + 85$       (c)  $1 + x^3 - 2x$       (d)  $2x^5 + 3x^3 - 11x + 30$

2. If  $X^{20} + 21$  is divided by  $x + 1$ , then the remainder is: -

- (a) 2      (b) 0      (c) 1      (d) 22

3. ZERO of the zero polynomial is

- (a) 0      (b) 1      (c) any real number      (d) not defined

4.  $\sqrt{5}$  is a polynomial of degree

- (a) 3      (b) 0      (c) 1      (d)  $1/2$

5. If  $X^2 + kX + 6 = (X+2)(X+3)$  for all X, then the value of k is:

- (a) 3      (b) 5      (c) 1      (d) 8

6. Which of the following is polynomial in one variable?

- (a)  $6X - 9$       (b)  $y^2 - 2y - 5$       (c)  $1 + \sqrt{x}$       (d)  $2x + 3y - 30$

7. Evaluate the following using suitable identity:  $188 \times 212$

- (a) 39856      (b) 56546      (c) 13456      (d) 8566

**SHORT ANSWER TYPE QUESTIONS:-**

8. If  $p(x) = x^2 - 2\sqrt{2}x + 1$ , then find the value of  $p(2\sqrt{2})$ .

9. If  $x - 3$  is a factor of  $x^2 - kx + 12$ , then find the value of k. Also, find the other factor of the polynomial for this value of k.

10. Without actual division prove that  $(x - 2)$  divides  $2x^4 + x^3 - 5x^2 - 8x - 4$

11. Factorise:  $x^2 - 1 - 2a - a^2$ .

12. Expand the following using suitable identities:

- (i)  $(y - \sqrt{3})^2$       (ii)  $(x - 2y - 3z)^2$       (iii)  $(3x + 2y)^3$       (iv)  $(7p - 2q)^3$

**LONG ANSWER TYPE QUESTIONS:-**

13. If  $x^3 + ax^2 - bx + 10$  is divisible by  $x^2 - 3x + 2$ , find the values of  $a$  and  $b$ .

14. If  $a + b + c = 15$  and  $a^2 + b^2 + c^2 = 83$ , find the value of  $a^3 + b^3 + c^3 - 3abc$

15. Factorise using appropriate identities:

a)  $2x^2 + y^2 + 8z^2 - 2\sqrt{2}xy + 4\sqrt{2}yz - 8xz$

b)  $x^2 + 3x - 10$                       c)  $125x^3 - 64y^3$

16. Find the value of the polynomial  $p(x) = x^4 + 2x^3 - 2x^2 + x - 1$  at  $x = 0$ ,  $x = -1$ ,  $x = -2$

17. Factorise: (i)  $x^3 - 6x^2 + 11x - 6$       (ii)  $x^3 - 23x^2 + 142x - 120$

18. Factorise: a)  $8X^3 + 27Y^3$                       b)  $125P^3 - 343q^3$

19. Without actually calculating the cubes, find the value of:  $(18)^3 + (-15)^3 + (-3)^3$

20. If  $x^2 + \frac{1}{x^2} = 18$  then find the value of  $x - \frac{1}{x}$ .

21. What are the possible expressions for the dimensions of a cuboid whose volume is given below ?

Volume =  $2x^3 + 5x^2 + x - 2$

22. If  $x+y=5$  and  $xy=4$ , find  $x-y$ , using identities.

23. **Assertion :** The degree of the polynomial  $(x^2 - 2)(x - 3)(x + 4)$  is 3.

**Reason :** A polynomial of degree 3 is called a cubic polynomial.

(a) Assertion and Reason both are correct statements and Reason is the correct explanation of Assertion.

(b) Assertion and Reason both are correct statements but Reason is not the correct explanation of Assertion.

(c) Assertion is correct statement but Reason is wrong statement.

(d) Assertion is wrong statement but Reason is correct statement.

24. **Assertion :**  $-7$  is a constant polynomial.

**Reason :** Degree of a constant polynomial is zero.

(a) Assertion and Reason both are correct statements and Reason is the correct explanation of Assertion.

(b) Assertion and Reason both are correct statements but Reason is not the correct explanation of Assertion.

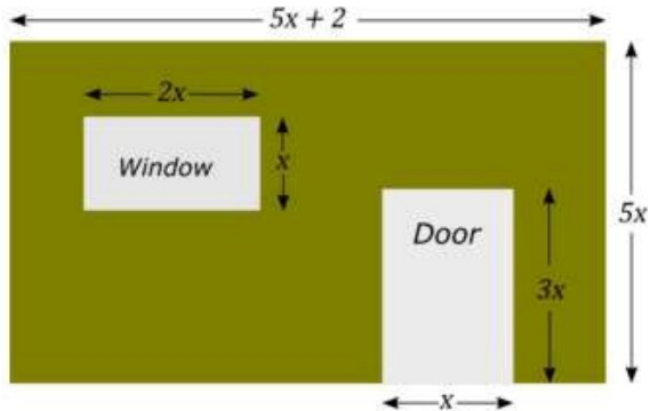
(c) Assertion is correct statement but Reason is wrong statement.

(d) Assertion is wrong statement but Reason is correct statement.

## 25. CASE STUDY

Rahul is a creative person and loves to paint. During the lockdown, he painted a wall of his daughter's room with her favorite color olive green. He did not paint the area covered by the window and the door. The figure shows the dimensions of his daughter's room that he painted.

Based on the above information, answer the following questions.



1. The area of the wall including the door and the window is:

- a)  $25X + 10$  sq.units
- b)  $25X + 10X$  sq.units
- c)  $10X^2 + 10x$  sq.units
- d)  $25X^2 + 10x$  sq.units

2. The area of the wall excluding the door and the window is:

- a)  $25X + 10$  sq.units
- b)  $20X^2 + 10x$  sq.units
- c)  $10X^2 + 10x$  sq.units
- d)  $25X^2 + 10x$  sq.units

3. The area of the door and the window is:

- a)  $25X^2 + 10$  sq.units
- b)  $5X^2$  sq.units
- c)  $10X + 10x$  sq.units

d)  $25X + 10x$  sq.units

4. The area of the wall if its length is decreased by 1 unit and the breadth is increased by 1 unit:

a)  $25X^2 + 10X + 1$  sq.units

b)  $5X^2 - 10X$  sq.units

c)  $10X^2 + 10x$  sq.units

d)  $25X^2 + 10x$  sq.units



**INTERNATIONAL INDIAN SCHOOL DAMMAM**  
**CLASS – 9**     **QUESTION BANK FOR MIDTERM EXAMINATION**  
**MATHEMATICS (2023-2024)**  
**COORDINATE GEOMETRY & LINEAR EQUATIONS IN TWO VARIABLES**

1. The point (0, 5) lies on  
(a) x-axis     (b) y-axis     (c) II quadrant     (d) I quadrant
2. The equation of x-axis is  
(a)  $x = 0$      (b)  $y = 0$      (c)  $x = 0, y = 0$      (d) none of these
3. Quadrant in which the point (-3, -5) lies  
(a) quadrant 1     (b) quadrant II     (c) quadrant IV     (d) quadrant III
4. Abscissa of all the points on the x-axis is  
(a) 0     (b) 1     (c) 2     (d) any number
5. The co-ordinates of the origin are...  
(a) (0, 2)     (b) (2,0)     (c) (0,0)     (d) none
6. Which of the following points lie on the line  $y = x + 1$  ? (a) (2,1)  
(b) (1,2)     (c) (3,2)     (d) (0,0)
7. The perpendicular distance of the point P(5,7) from the y-axis .  
(a) 5 units     (b) 7 units     (c) 12 units     (d) None
8. The perpendicular distance of the point (3, -8) from the x-axis .  
(a) -8 units     (b) 3 units     (c) 8 units     (d) None
9. Mirror image of the point (9, -8) in y-axis is  
(a) (-9, -8)     (b) (9,8)     (c) (-9,8)     (d) (-8,9)
10. The graph of linear equation  $x + 2y = 2$ , cuts the y-axis at (a) (2,0) (b)  
(0, 2)     (c) (0, 1)     (d) (1,1)
11. The linear equation  $2x - 5y = 7$  has  
(a) no solution     (b) unique solution     (c) two solutions     (d) Infinitely many solutions



12. Any point on the y axis is of the form

- (a)  $(y,y)$  (b)  $(0,y)$  (c)  $(x,y)$  (d)  $(x,0)$

13. Equation of a line passing through the origin is

- (a)  $x+y = 1$  (b)  $x = 2y - 4$  (c)  $x+y = 0$  (d)  $y = x-1$

14. Which of the following is the equation of a line parallel to y-axis ?

- (a)  $y=0$  (b)  $x+y = z$  (c)  $y= x$  (d)  $x=a$

15. If  $(2,0)$  is a solution of the linear equation  $2x+3y = k$  , then the value of k is

- (a) 4 (b) 6 (c) 5 (d) 2

16. If the points A  $(2,0)$ , B  $(-6,0)$  and C  $(3, a-3)$  lie on the x axis, then the value of a is

- (a) 0 (b) 2 (c) 3 (d) -6

17. Write the coordinates of the vertices of a rectangle whose length and breadth are 5 and 3 units respectively, one vertex is at the origin, the longer side lies on the x-axis, and one of the vertices lies in the third quadrant.

18. Without plotting the points indicate the quadrant in which they will lie, if

- (i) the ordinate is 5 and abscissa is  $-3$   
(ii) the abscissa is  $-5$  and ordinate is  $-3$   
(iii) the abscissa is  $-5$  and ordinate is 3  
(iv) the ordinate is 5 and abscissa is 3

19. The auto -rickshaw fare in a city is charged as ₹10 for the first kilometer and ₹4 per kilometer for subsequent distance covered. Write a linear equation to express the statement.

20. If the point  $(2k-3, k+2)$  lies on the graph of the equation  $2x+3y+15 = 0$  , find the value of k.

21. Show that the points  $(1,2)$  ,  $(-1, -16)$  ,  $(0, -7)$  lie on the graph of the linear equation  $y = 9x-7$

27. Express the following linear equations in the form  $ax + by + c = 0$  and indicate the value of a , b and c

- (i)  $x = 5y$  , (ii)  $8x = 7$  , (iii)  $4y = 8/3$  (iv)  $3x + 4y = 5$  (v)  $2x + 8 = 11y$  (vi)  $3/5 x = 2y$  (vii)  $3y = -18$

28. The cost of a pen is three times the cost of a pencil .Write a linear equation in two variables to represent this statement . (take the cost of a pen to be ₹x and that of a pencil to be ₹y)

29. Find four solutions for the equation  $x - 5y = 10$  .

30. If the point  $(4,3)$  lies on the linear equation  $3x - ay = 6$  , find whether  $(-2,-6)$  also lies on the same line ?  
Find the coordinates of the point lies on above line (a) abscissa is zero (b) ordinate is zero

31. When a number is divided by another number the quotient and remainder obtained are 9 and 1 respectively .  
Express this information in linear equation (dividend be  $y$  and divisor be  $x$  )

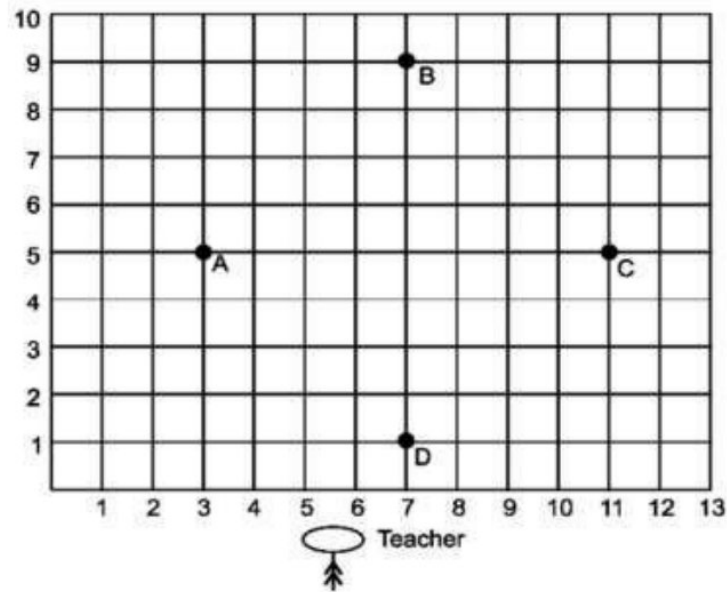
### CASE STUDY I

On his birthday, Manoj planned that this time he celebrates his birthday in a small orphanage centre. He bought apples to give to children and adults working there. Manoj donated 2 apples to each children and 3 apples to each adult working there along with Birthday cake. He distributed 60 total apples.



- (a) How to represent the above situation in linear equations in two variables by taking the number of children as 'x' and the number of adults as 'y'?
- (i)  $2x + y = 60$       (ii)  $2x + 3y = 60$       (iii)  $3x + 2y = 60$       (iv)  $3x + y = 60$ .
- (b) If the number of children is 15, then find the number of adults? (i) 10      (iii) 15      (ii) 25      (iv) 20
- (c) If the number of adults is 12, then find the number of children? (i) 12      (iii) 15      (ii) 14      (iv) 18
- (d) Find the value of b, if  $x = 5$ ,  $y = 0$  is a solution of the equation  $3x + 5y = b$ .  
(i) 12      (iii) 15      (ii) 14      (iv) 18
- (e) Which is the standard form of linear equations in two variables:  $y - x = 5$  ?  
(i)  $1.y - 1.x - 5 = 0$  (ii)  $1.x - 1.y + 5 = 0$  (iii)  $1.x + 0.y + 5 = 0$  (iv)  $1.x - 1.y - 5 = 0$

## CASE STUDY II



Students of a school are standing in rows and columns in their playground for a drill practice. A, B, C and D are the positions of four students as shown in the figure.

(a) What are the coordinates of A and B respectively?

- (i) A(3, 5); B(7, 8)    (ii) A(5, 3); B(8, 7)    (iii) A(3, 5); B(7, 9)    (iv) A(5, 3); B(9, 7)

(b) What are the coordinates of C and D respectively?

- (i) C(11, 5); D(7, 1)    (ii) C(5, 11); D(1, 7)    (iii) C(5, 11); D(7, 1)    (iv) C(5, 11); D(-1, 7)

(c) What is the distance between B and D?

- (i) 5 units    (ii) 14 units    (iii) 8 units    (iv) 10 units

(d) What is the distance between A and C?

- (i) 5 units    (ii) 14 units    (iii) 8 units    (iv) 10 units

(e) What are the coordinates of the point of intersection of AC and

- BD? (i) (7, 5)    (ii) (5, 7)    (iii) (7, 7)    (iv) (5, 5)

**INTERNATIONAL INDIAN SCHOOL - DAMMAM**  
**CLASS - 9 QUESTION BANK FOR MIDTERM EXAMINATION**  
**MATHEMATICS ( 2023 - 24 )**  
**CHAPTER -7 TRIANGLES**

**Q1.** In  $\triangle ABC$  and  $\triangle PQR$ ,  $\angle A = \angle Q$ ,  $\angle B = \angle R$  and  $AB = QR$ , then these triangles are congruent by \_\_\_\_\_ congruence criterion.

- a) SAS                      b) ASA                      c) RHS                      d) None of these

**Q2.** In  $\triangle ABC$ ,  $BC = AB$  and  $\angle B = 100^\circ$ . Then  $\angle A$  is equal to:

- a)  $80^\circ$                       b)  $40^\circ$                       c)  $50^\circ$                       d)  $100^\circ$

**Q3.** If E and F are the midpoints of equal sides AB and AC of a triangle ABC. Then:

- a)  $BF=AC$                       b)  $BF=AF$                       c)  $CE=AB$                       d)  $BF = CE$

**Q4.** If PQR is an equilateral triangle, then each angle equals to: a)

- $90^\circ$                       b)  $180^\circ$                       c)  $120^\circ$                       d)  $60^\circ$

**Q5.** In a right triangle, the longest side is:-

- a) Perpendicular    b) Hypotenuse    c) Base                      d) None of the above

**Q6.** If  $\triangle ABC \cong \triangle PQR$  then which of the following is not true?

- (a)  $BC = PQ$                       (b)  $AC = PR$                       (c)  $BC = QR$                       (d)  $AB = PQ$

**Q8.** For two triangles, if two angles and the included side of one triangle are equal to two angles and the included side of another triangle. Then the congruency rule is:

- a) SSS                      b) ASA                      c) SAS                      d) None of the above

**Q9.** A triangle in which three sides are equal is called:

- a) Scalene triangle    b) Equilateral triangle    c) Isosceles triangle    d) None of the above

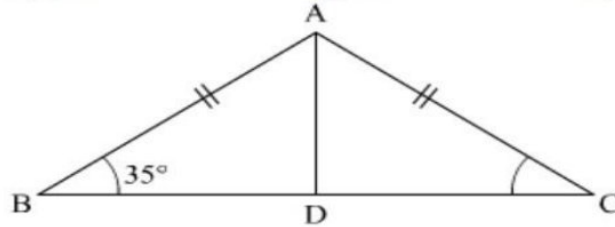
**Q10.** In two triangles DEF and PQR, if  $DE = QR$ ,  $EF = PR$  and  $FD = PQ$ , then

- a)  $\triangle DEF \cong \triangle PQR$                       b)  $\triangle FED \cong \triangle PRQ$                       c)  $\triangle EDF \cong \triangle RPQ$   
d)  $\triangle PQR \cong \triangle EFD$

**Q11.** In  $\triangle ABC$  and  $\triangle PQR$ , if  $\angle A = \angle Q$ ,  $\angle B = \angle R$  and  $PR = AC$ , then two triangles are congruent by \_\_\_\_\_ congruence criterion.

- a) SAS                      b) ASA                      c) AAS                      d) None of these

**Q12.**  $\triangle ABC$  is an isosceles triangle such that  $AB = AC$  and  $AD \perp BC$ . Then,  $\angle BAD =$   
 (a)  $55^\circ$                       (b)  $70^\circ$                       (c)  $35^\circ$                       (d)  $110^\circ$



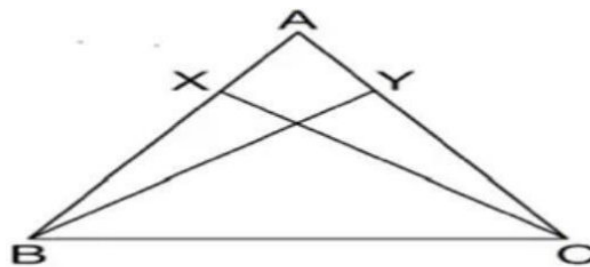
**Q13.** All the medians of a triangle are equal in case of a:

- a) Scalene triangle                      b) Right angled triangle  
 c) Equilateral triangle                      d) Isosceles triangle

**Q14.** If  $\triangle XYZ \cong \triangle PQR$  by SSS congruence rule, then write three equalities of corresponding angles.

**Q15.** In  $\triangle PQR$ ,  $\angle P = \angle R$ ,  $QR = 4$  cm and  $PR = 5$  cm. Then  $PQ =$   
 (a) 5 cm                      (b) 4 cm                      (c) 9 cm                      (d) none of these

**Q16. Assertion :** In the adjoining figure, X and Y are respectively two points on equal sides AB and AC of  $\triangle ABC$  such that  $AX = AY$  then  $CX = BY$ .



Reason: If two sides and the included angle of one triangle are equal to two sides and the included angle of the other triangle, then the two triangles are congruent

- a) both Assertion and reason are correct and reason is correct explanation for Assertion.

- b) b) both Assertion and reason are correct but reason is not correct explanation for Assertion
- c) c) Assertion is true but reason is false.
- d) d) both Assertion and reason are false.

**Q17.** Assertion: Two angles measures  $a - 60^\circ$  and  $123^\circ - 2a$ . If each one is opposite to equal sides of an isosceles triangle, then the value of  $a$  is  $61^\circ$ .

Reason: Sides opposite to equal angles of a triangle are equal.

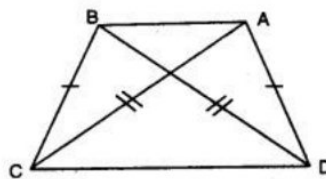
- a) Both Assertion and reason are correct and reason is correct explanation for Assertion.
- b) Both Assertion and reason are correct but reason is not correct explanation for Assertion
- c) Assertion is true but reason is false.
- d) Both Assertion and reason are false.

**Q18.** Assertion: In  $\triangle ABC$ ,  $BC = AB$  and  $B = 80^\circ$ . Then,  $\angle A = 50^\circ$

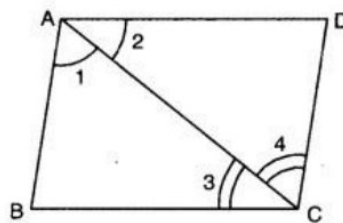
Reason: In a triangle, angles opposite to two equal sides are equal

- a) Both Assertion and reason are correct and reason is correct explanation for Assertion.
- b) Both Assertion and reason are correct but reason is not correct explanation for Assertion
- c) Assertion is true but reason is false.
- d) Both Assertion and reason are false.

**Q19.** In the given figure,  $AD = BC$  and  $BD = AC$ , prove that  $\angle DAB = \angle CBA$ .



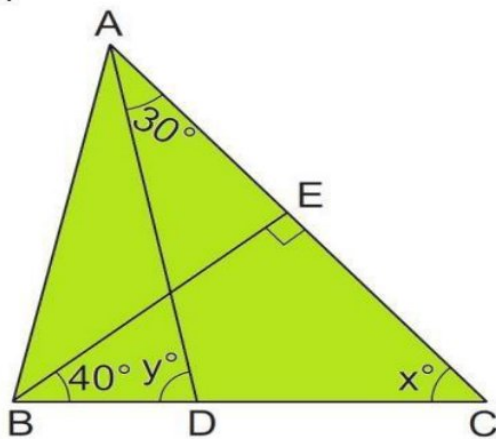
**Q.20.** In the given figure, if  $\angle 1 = \angle 2$  and  $\angle 3 = \angle 4$ , then prove that  $BC = CD$ .



**CASE STUDY 1** Mohan has a triangle field ABC. He divided the whole field into two triangular fields ABD and ACD. After measuring he found that  $BC = AB$ ,  $\angle EBC = 40^\circ$  and  $\angle CAD = 30^\circ$ . Again, he divided the whole field into two triangular fields ABE and CBE. His son is in Class

IX. So, he assumed  $\angle ACD = x^\circ$  and  $\angle ADB = y^\circ$ . He prepared some questions based on his field and he asked his son to solve the questions:

Answer the following

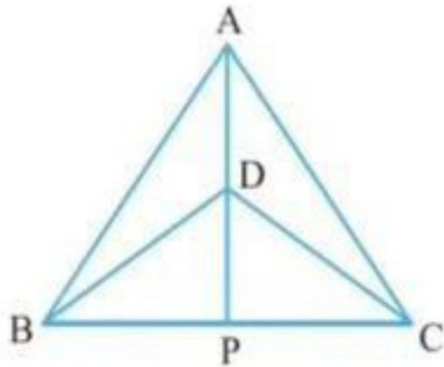


Answer the following questions:

1. Find the value of  $x$ .  
 (a)  $50^\circ$       (b)  $60^\circ$       (c)  $70^\circ$       (d) None of these
2. Find the value of  $y$ .  
 (a)  $90^\circ$       (b)  $80^\circ$       (c)  $70^\circ$       (d) None of these  
 Find  $\angle ADC$ .
3. (a)  $90^\circ$       (b)  $110^\circ$       (c)  $120^\circ$       (d) None of these  
 Find  $\angle BAD$ .
4. (a)  $30^\circ$       (b)  $40^\circ$       (c)  $20^\circ$       (d) None of these

## CASE STUDY - 2

A triangular shaped agricultural field ABC is divided by the farmer in four parts . In two parts of his field he wants to grow sugarcane and other two parts he wants to grow wheat . He want to grow wheat on the field division which are exactly same in shape and size , the same he wants to do for growing sugarcane .



If  $\triangle ABC$  and  $\triangle DBC$  are two isosceles triangles on the same base BC and vertices A and D are on the same side of BC . AD is extended to intersect BC at P .

With reference to the figure given, answer the following questions:

---

(a) If he decides to grow wheat in  $\triangle ABD$  , then which other triangle is of exact shape and size?

- (i)  $\triangle ABD \cong \triangle ABC$   
(iii)  $\triangle ABD \cong \triangle ACP$

- (ii)  $\triangle ABD \cong \triangle DBP$   
(iv)  $\triangle ABD \cong \triangle ACD$

---

(b) If he decides to grow sugarcane in  $\triangle BDP$  , then which other triangle is of exact shape and size ?

- (i)  $\triangle BDP \cong \triangle ADC$   
(iii)  $\triangle BDP \cong \triangle ABC$

- (ii)  $\triangle BDP \cong \triangle CDP$   
(iv)  $\triangle BDP \cong \triangle APC$

---

(c) The combined field of wheat and sugarcane in  $\triangle ABD$  and  $\triangle BDP$  is exactly same in shape and size of which triangle?

- (i)  $\triangle ACP$       (ii)  $\triangle ABC$       (iii)  $\triangle DPC$       (iv)  $\triangle BDC$

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(d) The congruency in part (a) is established by which criteria of congruency?

- (i) SSS      (ii) SAS      (iii) RHS      (iv) ASA

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(e) The congruency in part (b) is established by which criteria of congruency?

- (i) SSS      (ii) SAS      (iii) RHS      (iv) ASA



**INTERNATIONAL INDIAN SCHOOL DAMMAM**

**CLASS - 9 QUESTION BANK FOR MIDTERM EXAMINATION**

**MATHEMATICS (2023 – 2024)**

**CHAPTER-12 HERON'S**

**FORMULA**

1. The perimeter of an equilateral triangle is 60m. Then the area is  
a)  $10\sqrt{3} \text{ m}^2$                       b)  $15\sqrt{3} \text{ m}^2$                       c)  $20\sqrt{3} \text{ m}^2$                       d)  $100\sqrt{3} \text{ m}^2$
  
2. The length of each side of an equilateral triangle having area of  $16\sqrt{3} \text{ cm}^2$  is  
a) 10 cm                                  b) 4 cm                                  c) 6 cm                                  d) 8 cm
  
3. Triangle with three sides a, b, c has semi perimeter,  $s = \text{-----}$  and area  $A = \text{-----}$   
a)  $3a, \sqrt{3/4} a^2$  \_\_\_\_\_                      b)  $a+b+c, \frac{1}{2} bh$   
c)  $(a+b+c)/2, \sqrt{s(s-a)(s-b)(s-c)}$ .                      d)  $3a, \text{base} \times \text{height}$
  
4. The area of an isosceles triangle having base 4cm and the lengths of one of the equal sides 5 cm is ?  
a)  $4\sqrt{21} \text{ cm}^2$                       b)  $84 \text{ cm}^2$                       c)  $42 \text{ cm}^2$                       d)  $2\sqrt{21} \text{ cm}^2$
  
5. The perimeter of a triangle is 45 cm. If its sides are in the ratio 1 : 2 : 2, then its smallest side is  
a) 19 cm                                  b) 9 cm                                  c) 18 cm                                  d) 20 cm
  
6. **Q.** Assertion: The area of an equilateral triangle having side 4 cm is  $3 \text{ cm}^2$ .  
Reason: The area of an equilateral triangle having each side a is  $\left(\frac{\sqrt{3}}{4} a^2\right)$  sq units.  
(a) Both Assertion and Reason are true and Reason is a correct explanation of Assertion.  
(b) Both Assertion and Reason are true but Reason is not a correct explanation of Assertion.  
(c) Assertion is true and Reason is false.  
(d) Assertion is false and Reason is true.

7. **Assertion:** The sides of a triangle are in the ratio of 25 : 14 : 12 and its perimeter is 510 m. Then the greatest side is 250 cm  
**Reason:** Perimeter of a triangle =  $a + b + c$ , where a, b, c are sides of a triangle.  
 (a) Both Assertion and Reason are true and Reason is the correct explanation of 'Assertion'  
 (b) Both Assertion and Reason are true and Reason is not the correct explanation of 'Assertion'  
 (c) Assertion is true but Reason is false  
 (d) Assertion is false but Reason is true
8. The two sides of a triangle is 8 cm and 15 cm and perimeter is 40 cm. Find its area.
9. Find the length of each side of an equilateral triangle having area  $9\sqrt{3}$  cm<sup>2</sup>
10. Find the area of a right triangle in which sides containing the right angle measures 20 cm and 15 cm ?
11. One side of an equilateral triangle is 4 cm. Find its area
12. Using Heron's formula, find the area of an equilateral triangle, the length of one side is 'a'
13. If the area of equilateral triangle is  $16\sqrt{3}$  cm<sup>2</sup>. Find its height
14. If the area of equilateral triangle is  $64\sqrt{3}$  cm<sup>2</sup>. Find its perimeter
15. The sides of a triangle are 12 cm, 13 cm and 15 cm. Find its area .
16. The perimeter of isosceles triangle is 30 cm and one of its equal side is 12 cm. Find its area
17. Find the area of an isosceles triangle, whose equal sides are of length 15 cm and the third side is 12 cm
18. Sides of triangle are in the ratio of 13 : 14 : 15 and its perimeter is 84 cm. Find the area of the triangle
19. The perimeter of a triangular park is 180 cm and its sides are in the ratio of 5:6:7 Find the area of the park
20. The base of triangular field is 880m and its height is 550m. Find the area of the field. Also calculate the charges for supplying water to the field at the

rate of Rs. 25 per square meter

21. The perimeter of an isosceles triangle is 32cm. The ratio of the equal side and its base is 3:2. Find the area of the triangle
22. A floral design on a floor is made up of 18 tiles which are triangular, the sides of triangle being 14cm, 13cm & 15cm. Find the cost of polishing the tiles at the rate of 50 paisa per  $\text{cm}^2$
23. The sides of triangular field are 41m, 40m & 9m. Find the number of rose beds that can be prepared in the field, if each rose bed on an average needs  $900\text{cm}^2$  space.

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**INTERNATIONAL INDIAN SCHOOL DAMMAM**  
**CLASS - 9 QUESTION BANK FOR MIDTERM EXAMINATION**

**MATHEMATICS (2023-24)**

**STATISTICS**

1) Draw a histogram and frequency polygon for the data on marks obtained by 74 students in an examination given in the table below.

Marks	No. Of Students
0 – 10	8
10 – 20	32
20 – 30	18
30 – 40	10
40 – 50	6

2) Represent the following data by means of a frequency polygon.

Marks	Frequency
41 – 44	4
45 – 48	10
49 – 52	15
53 – 56	18
57 – 60	20
61 – 64	12
65 – 68	13

3) In a city following weekly instructions are made a study on cost of living index .Draw a histogram and the frequency polygon for the data.

Cost of living index	Number of weeks
120 - 130	8
130 - 140	12
140 - 150	4
160 - 170	16
170 - 180	4

4) The marks obtained (out of 100) by a class of 80 students are given below :

Construct a histogram to represent the data given:

MARKS	NUMBER OF STUDENTS
10 - 20	6
20 - 30	17
30 - 50	15
50 - 70	16
70 - 100	26

5) Find the range of the following data: 25, 18, 20, 22, 16, 6, 17, 15, 12, 30, 32, 10, 19, 8, 11, 20.

- a. 10
- b. 15
- c. 18
- d. 26

6) What is the class mark of the class interval 90-120?

- a. 90
- b. 105
- c. 115
- d. 120

7) In the class intervals 10-20, 20-30, the number 20 is included in which interval?

- a. 10-20
- b. 20-30
- c. Both the intervals
- d. None of the intervals

8) Find the class width for the grouped frequency distribution of the class intervals 1-20, 21-40, 41-60, ..

- a. 19
- b. 15
- c. 17
- d. 20

9) The difference between the maximum and minimum values of the given observation is called

- a. Class
- b. Class interval
- c. Classmark
- d. Range

10) In a frequency distribution, the mid value of a class is 10 and the width of the class is 6. The upper limit of the class is:

- (a) 6
- (b) 7
- (c) 10
- (d) 13

11) The width of each of five continuous classes in a frequency distribution is 5 and the lower class-limit of the lowest class is 10. The lower class-limit of the highest class is:

- (a) 15
- (b) 30
- (c) 35
- (d) 40

12) To draw a histogram to represent the following frequency distribution:

Class interval	5-10	10-15	15-25	25-45	45-75
Frequency	6	12	10	8	15

the adjusted frequency for the class 25-45 is:

- (a) 6
- (b) 5
- (c) 3
- (d) 2

13) The Class mark of a frequency distribution are as given below:-

38,43,48,53,58

The Class corresponding to the Class mark 43 is

- A] 38-48
- B] 38.5- 48.5
- C] 35.5 – 45.5
- D] 40.5 – 45.5

14) In a Bar graph , the widths of the bar :-

- A] Have no significance
- B] Are proportional to the corresponding heights
- C] Are proportional to the corresponding frequency
- D] Are proportional to the space between two consecutive bars

15) In a frequency distribution, the mid value of a class is 60.5 and the width of the class is 10. The upper limit of the class is:

- A] 55.5
- B] 65.5
- C] 56.5

D] 62.5

16] In a histogram , which of the following is proportional to the frequency of corresponding class:- A] Length of the rectangle

B] Width of the rectangle

C] Area of the rectangle

D] Perimeter of the rectangle

17) **Assertion: Range = Maximum value – Minimum value**

**Reason: The range of the first 6 multiples of 6 is 9.**

a) both Assertion and reason are correct and reason is correct explanation for Assertion

b) both Assertion and reason are correct but reason is not correct explanation for Assertion

c) Assertion is correct but reason is false

d) both Assertions and reason are false

18) **Assertion: the class mark of the class interval 90-120 is 105**

**Reason: Class mark = (upper limit + lower limit)/2**

a) both Assertion and reason are correct and reason is correct explanation for Assertion

b) both Assertion and reason are correct but reason is not correct explanation for Assertion

c) Assertion is correct but reason is false

d) both Assertions and reason are false

19) **Assertion: the class intervals 10-20, 20-30, 20 is included in which interval**

**Reason: the number is always included in the lower limit of the class interval.**



- a) both Assertion and reason are correct and reason is correct explanation for Assertion
- b) both Assertion and reason are correct but reason is not correct explanation for Assertion
- c) Assertion is correct but reason is false
- d) both Assertions and reason are false

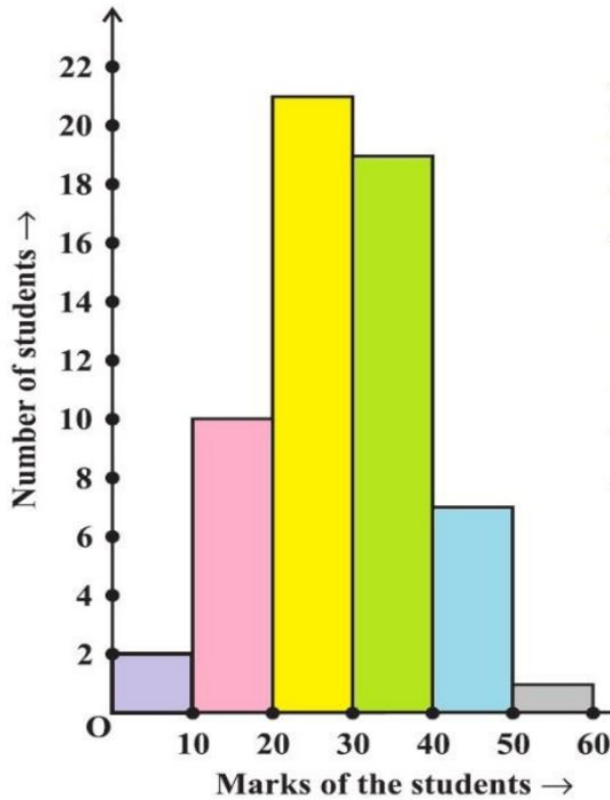
Ans: a) both Assertion and reason are correct but reason is correct explanation for assertion

**20) Assertion: the class width for the grouped frequency distribution of the class intervals 1-20, 21-40, 41-60, .. is 20 Reason: Class width is the same as the class size**

- a) both Assertion and reason are correct and reason is correct explanation for Assertion
- b) both Assertion and reason are correct but reason is not correct explanation for Assertion
- c) Assertion is correct but reason is false
- d) both Assertions and reason are false

### **CASE STUDY QUESTIONS**

Q.1) Anil is a Mathematics teacher in Hyderabad. After Periodic test 3, he asks students to collect the Mathematics marks of all the students of Class IXA, B and C. A student is able to collect marks from some students. Rekha scored least mark 6 in the class and Ram scored highest marks 59 in the class. He prepares the frequency distribution table using the collected marks and draws Histogram using the table as shown in adjoining figure.



- a) What is the width of the class?  
 (i) 10 (ii) 15 (iii) 5 (iv) none of these
- b) What is the total number of students in Histogram?  
 (i) 50 (ii) 60 (iii) 65 (iv) none of these
- c) How many students scored 50% and above marks?  
 (i) 19 (ii) 26 (iii) 27 (iv) none of these
- d) How many students scored less than 50% marks?  
 (i) 19 (ii) 26 (iii) 27 (iv) 33
- e) What is the range of the collected marks?  
 (i) 60 (ii) 59 (iii) 53 (iv) none of these

Q.2) A group of students decided to make a project on Statistics. They are collecting the heights (in cm) of their 51 girls of Class IX-A, B and C of their school. After collecting the data, they arranged the data in the following frequency distribution table form:

Height (in cm)	Number of girls
135 – 140	4
140 – 145	7
145 – 150	18
150 – 155	11
155 – 160	6
160 – 165	5

Based on the information, answer the following questions :

(a) The class interval with highest frequency is :

- (i) 145-150      (ii) 150-155      (iii) 140-145      (iv) 155-160

(b) What is the width of the class?

- (i) 10      (ii) 15      (iii) 5      (iv) none of these

(c) How many students of the height 150 cm and below are there?

- (i) 40      (ii) 29      (iii) 18      (iv) 22

(d) How many students of the height 145 cm and above are there?

- (i) 40      (ii) 29      (iii) 18      (iv) 22

(e) How many students of the height more than 145 cm but less than 155 are there?

- (i) 40      (ii) 29      (iii) 18      (iv) 22