PRACTICE QUESTIONS

CLASS IX

MID TERM

1. On rationalizing the denominator of $\frac{1}{\sqrt{7}-\sqrt{6}}$, we get

   (a) $\frac{\sqrt{7}+\sqrt{6}}{\sqrt{7}-\sqrt{6}}$ (b) $\frac{\sqrt{7}-\sqrt{6}}{\sqrt{7}+\sqrt{6}}$ (c) $\sqrt{7}+\sqrt{6}$ (d) $\sqrt{7}-\sqrt{6}$

2. On rationalizing the denominator of $\frac{1}{\sqrt{5}+\sqrt{2}}$, we get

   (a) $\sqrt{5}-\sqrt{2}$ (b) $\sqrt{2}-\sqrt{5}$ (c) $\frac{\sqrt{5}-\sqrt{2}}{3}$ (d) $\frac{\sqrt{2}-\sqrt{5}}{3}$

3. On rationalizing the denominator of $\frac{1}{\sqrt{7}-2}$, we get

   (a) $\sqrt{7}-2$ (b) $\sqrt{7}+2$ (c) $\frac{\sqrt{7}+2}{3}$ (d) $\frac{\sqrt{7}-2}{3}$

4. On rationalizing the denominator of $\frac{1}{\sqrt{2}}$, we get

   (a) 2 (b) $\sqrt{2}$ (c) $\frac{2}{\sqrt{2}}$ (d) $\frac{\sqrt{2}}{2}$

5. On rationalizing the denominator of $\frac{1}{2+\sqrt{3}}$, we get

   (a) $2-\sqrt{3}$ (b) $\sqrt{3}-2$ (c) $2+\sqrt{3}$ (d) $-\sqrt{3}-2$

6. On rationalizing the denominator of $\frac{1}{\sqrt{3}-\sqrt{2}}$, we get

   (a) $\frac{1}{\sqrt{3}+\sqrt{2}}$ (b) $\sqrt{3}+\sqrt{2}$ (c) $\sqrt{2}-\sqrt{3}$ (d) $-\sqrt{3}-\sqrt{2}$

7. The value of $64^{\frac{1}{2}}$ is :

   (a) 8 (b) 4 (c) 16 (d) 32

8. The value of $32^{\frac{1}{5}}$ is :

   (a) 16 (b) 160 (c) 2 (d) 18

9. The value of $(125)^{\frac{1}{3}}$ is :

   (a) 5 (b) 25 (c) 45 (d) 35

10. The value of $9^{\frac{3}{2}}$ is :

    (a) 18 (b) 27 (c) – 18 (d) $\frac{1}{27}$

1. Which of the following is not a polynomial?
   (a) $x^2+\sqrt{2}x+3$ (b) $x^2+\sqrt{2x}+6$ (c) x^3+3x^2-3 (d) $6x+4$

2. The degree of the polynomial $3x^3 - x^4 + 5x + 3$ is
   (a) –4 (b) 4 (c) 1 (d) 3

3. Zero of the polynomial $p(x) = a^2x$, $a \neq 0$ is
   (a) $x = 0$ (b) $x = 1$ (c) $x = -1$ (d) $a = 0$

4. Which of the following is a term of a polynomial?
   (a) 2x (b) $\frac{3}{x}$ (c) $x^{\sqrt{2}}$ (d) $\sqrt{x}$

5. If $p(x) = 5x^2 - 3x + 7$, then p(1) equals
   (a) –10 (b) 9 (c) –9 (d) 10

6. Factorisation of $x^3 + 1$ is
   (a) $(x + 1)(x^2 - x + 1)$ (b) $(x + 1)(x^2 + x + 1)$
   (c) $(x + 1)(x^2 - x - 1)$ (d) $(x + 1)(x^2 + 1)$

7. If $x + y + 2 = 0$, then $x^3 + y^3 + 8$ equals
   (a) $(x + y + 2)^3$ (b) 0 (c) 6xy (d) –6xy

8. If $x = 2$ is a zero of the polynomial $2x^2 + 3x - p$, then the value of p is
   (a) –4 (b) 0 (c) 8 (d) 14

9. $x+\frac{1}{x}$ is
   (a) a polynomial of degree 1 (b) a polynomial of degree 2
   (c) a polynomial of degree 3 (d) not a polynomial

10. Integral zeroes of the polynomial $(x + 3)(x - 7)$ are
    (a) –3, –7 (b) 3, 7 (c) –3, 7 (d) 3, –7

11. The remainder when $p(x) = 2x^2 - x - 6$ is divided by $(x - 2)$ is
    (a) p(– 2) (b) p(2) (c) p(3) (d) p(–3)

12. If $2\left(a^2+b^2\right)=(a+b)^2$, then
    (a) $a + b = 0$ (b) $a = b$ (c) $2a = b$ (d) $ab = 0$

13. If $x^3 + 3x^2 + 3x + 1$ is divided by $(x + 1)$, then the remainder is
    (a) –8 (b) 0 (c) 8 (d) $\frac{1}{8}$

14. The value of $(525)^2 - (475)^2$ is
    (a) 100 (b) 1000 (c) 100000 (d) –100

1. The point (–2, –5) lies in the
(a) I quadrant (b) II quadrant (c) III quadrant (d) IV quadrant

2. The sign of x-coordinate of a point lying in third quadrant is
(a) + (b) – (c) ± (d) IV quadrant

3. The signs of respective x-coordinate and y-coordinates of a point lying 2nd quadrant are
(a) –, + (b) –, – (c) +, – (d) +, +

4. The point (0, 4) lies on
(a) I quadrant (b) negative x – axis (c) positive x – axis (d) y – axis

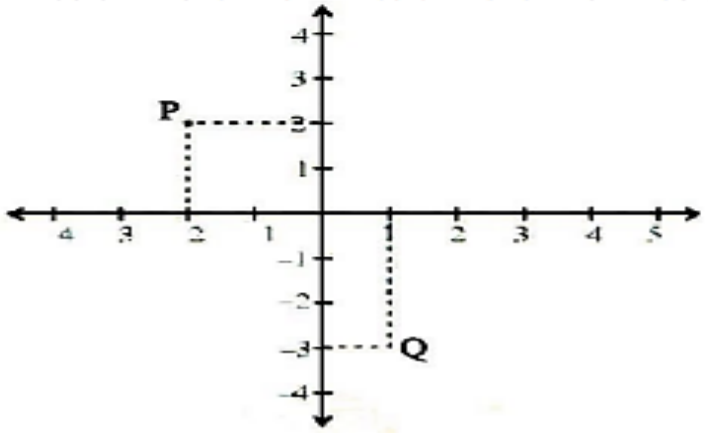
5. The y-coordinate of any point lying on x-axis is
(a) 0 (b) 1 (c) –1 (d) any number

6. The point where the two axes meet, is called
(a) x-coordinate (b) y- coordinate (c) quadrant (d) origin

7. The point (–5, 4) and (4, –5) are situated in
(a) same quadrant (b) I and III quadrant, respectively
(c) Different quadrants (d) IV and II quadrant, respectively

8. The figure obtained by plotting the points (2, 3), (–2, 3),(–2, –3) and (2, –3) is a
(a) trapezium (b) rectangle (c) square (d) rhombus

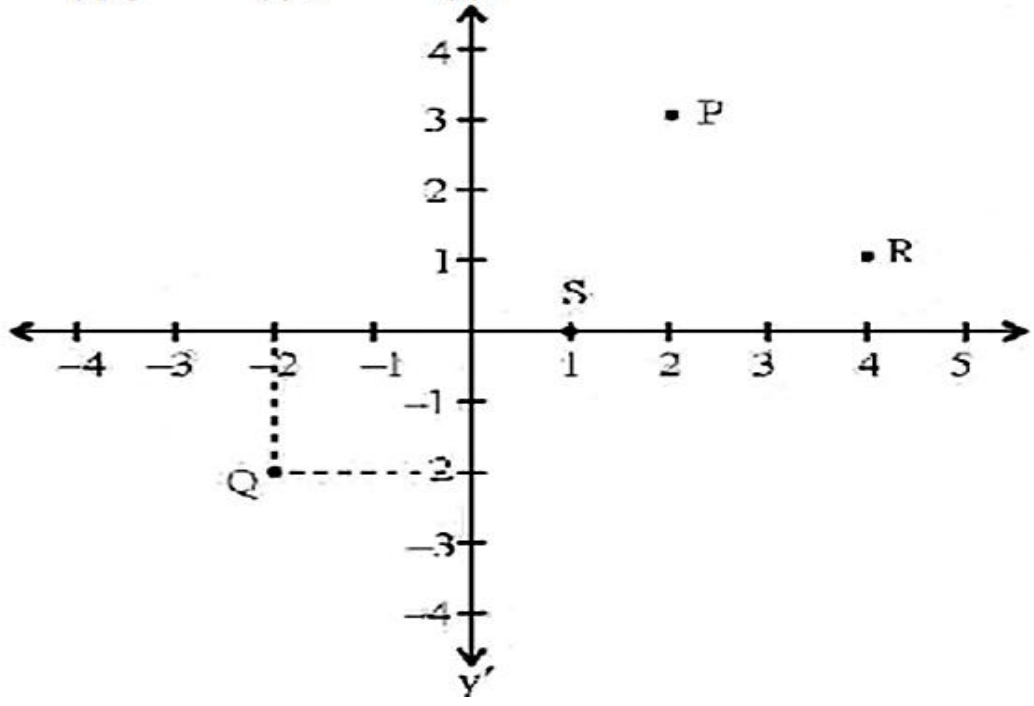
9. In the given figure, on the sides the respective coordinates of points P and Q respectively are:
(a) (–2, –2), (1, 3) (b) (–2, –2), (–1, 3) (c) (–2, 2), (1, –3) (d) (–2, 2), (1, 3)



10. The point (0, –3) lies on
(a) negative side of y – axis (b) negative side of x – axis
(c) positive side of x – axis (d) positive side of y – axis

11. If the coordinates of two points P and Q are (2, –3) and (–6, 5), then the value of (x-coordinate of P) – (x-coordinate of Q) is
(a) 2 (b) –6 (c) –8 (d) 8

12. The point whose y-coordinate is 3 in the given figure is
(a) P (b) Q (c) R (d) S



1. Which of the following is not a linear equation in two variables?
   (a) $ax + by = c$ (b) $ax^2 + by = c$ (c) $2x + 3y = 5$ (d) $3x + 2y = 6$

2. The graph of $ax + by + c = 0$ is
   (a) a straight line parallel to x–axis (b) a straight line parallel to y–axis
   (c) a general straight line (d) a line in the 2^{nd} and 3^{rd} quadant

3. The solution of a linear equation in two variables is
   (a) a number which satisfies the given equation
   (b) an ordered pair which satisfies the given equation
   (c) an ordered pair, whose respective values when substituted for x and y in the given equation, satisfies it
   (d) none of these

4. One of the solution of a linear equation in two variables is
   (a) (3, 2) (b) (3, –2) (c) (2, 3) (d) (–2, –3)

5. The ordered pair (m, n) satisfies the equation $ax + by + c = 0$ if
   (a) $am + bn = 0$ (b) $c = 0$ (c) $am + bn + c = 0$ (d) $am + bn - c = 0$

6. The equation of x – axis is
   (a) $a = 0$ (b) $y = 0$ (c) $x = 0$ (d) $y = k$

7. From the graph of a line, we can find the coordinates of
   (a) only two point lying on the line
   (b) only two points only lying on the line.
   (c) only finite number of points lying on the line.
   (d) only infinite number of points lying on the line.

8. A linear equation in two variables has
   (a) no solution (b) only one solution (c) only two solutions (d) infinitely many solutions

9. An equation of the form $ax + by + c = 0$ represents a linear equation in two variables, if
   (a) $a = 0, b \neq 0$ (b) $a \neq 0, b = 0$ (c) $a = 0, b = 0$ (d) $a = 0, b \neq 0$

10. The graph of the linear equation in two variables $y = mx$ is
   (a) a line parallel to x – axis (b) a line parallel to y – axis
   (c) a line passing through the origin (d) not a straight line

1. The number of dimensions, a solid has:
   (a) 1 (b) 2 (c) 3 (d) 0

2. The number of dimensions, a surface has:
   (a) 1 (b) 2 (c) 3 (d) 0

3. The number of dimensions, a point has:
   (a) 1 (b) 2 (c) 3 (d) 0

4. The three steps from solids to points are:
   (a) solids – surfaces – lines – points
   (b) solids – lines – surfaces – points
   (c) lines – points – surfaces - solids
   (d) lines – surface – points – solids

5. Euclid's division his famous treatise "The Elements" into _____ chapters:
   (a) 13 (b) 12 (c) 11 (d) 9

6. The total number of propositions in the Elements are:
   (a) 465 (b) 460 (c) 13 (d) 55

7. Boundaries of solids are:
   (a) surfaces (b) curves (c) lines (d) points

8. Boundaries of surfaces are:
   (a) surfaces (b) curves (c) lines (d) points

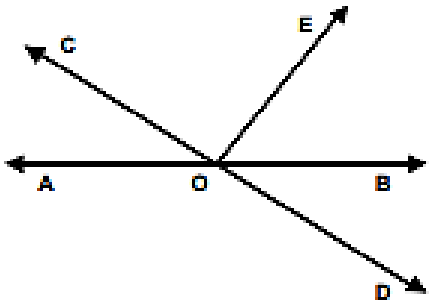
9. A pyramid is solid figure, the base of which is:
   (a) only a triangle (b) only a square
   (c) only a rectangle (d) any polygon

10. In Indus valley civilization (about 300 B. C.) the bricks used for construction work were having dimensions in the ratio :
    (a) 1 : 3 : 4 (b) 4 : 2 : 1 (c) 4 : 4 : 1 (d) 4 : 3 : 2

11. The side faces of a pyramid are
    (a) triangles (b) squares (c) polygons (d) trapeziums

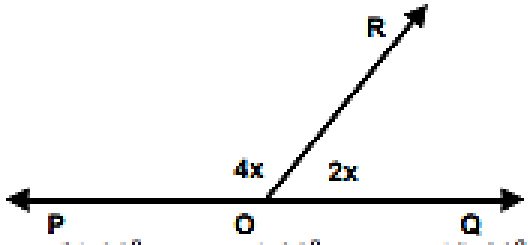
12. Thales belongs to the country:
    (a) Bablyonia (b) Egypt (c) Greece (d) Rome.

1. In fig. AB and CD intersect each other at O. If $\angle AOC + \angle BOE = 70^0$ and $\angle BOD = 40^0$ then the value of $\angle BOE$ is



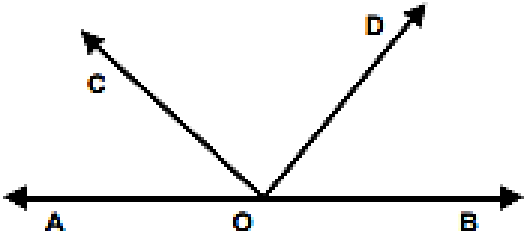
(a) 30^0 (b) 110^0 c) 120^0 (d) 150^0

2. In fig. POQ is a line, $\angle POR = 4x$ and $\angle QOR = 2x$ then the value of x is



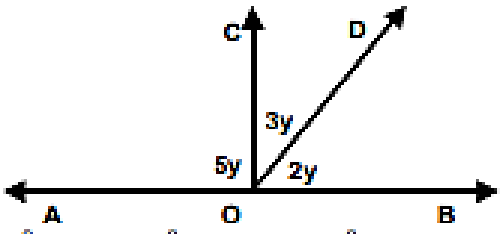
(a) 50^0 (b) 20^0 c) 30^0 (d) 90^0

3. In the given fig. $\angle AOC + \angle BOD = 75^0$, then the value of $\angle COD$ is



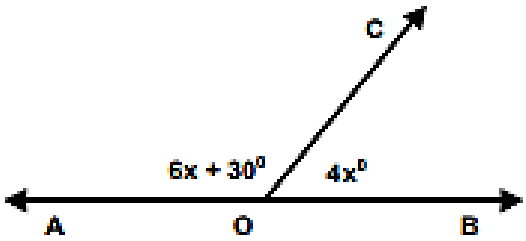
(a) 130^0 (b) 105 c) 120^0 (d) 75^0

4. In the fig. the value of y is:



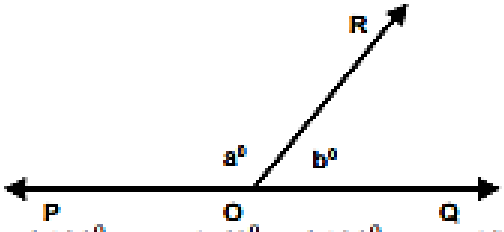
(a) 60^0 (b) 18^0 c) 30^0 (d) 90^0

5. In fig., the value of x is:



(a) 60^0 (b) 15^0 c) 30^0 (d) 45^0

6. In fig. $\angle POR$ and $\angle QOR$ form a linear pair if $a - b = 80^0$ then values of a and b respectively are:

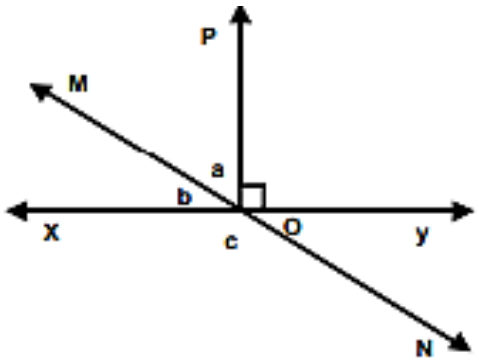


(a) 130^0 and 50^0 (b) 50^0 and 130^0 c) 60^0 and 120^0 (d) 40^0 and 140^0

7. For two parallel lines sum of interior angles on the same side of a transversal line is
(a) 100^0 (b) 180^0 c) 90^0 (d) 360^0

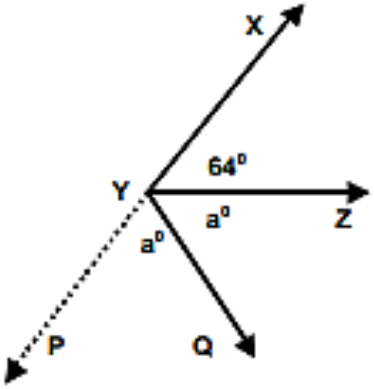
8. In fig., lines XY and MN intersect each other at point O. If $\angle POY = 90^0$ and a : b = 2 : 3 then the value of $\angle C$ is

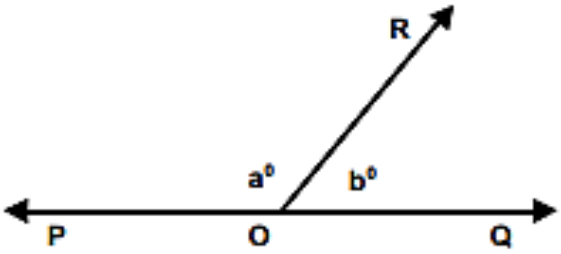
(a) 140^0 (b) 120^0 c) 80^0 (d) 95^0



9. In fig. $\angle XYZ = 640$ and XY is produced to point P. If ray YQ bisect $\angle ZYP$ then the value of $\angle XYQ$ is

(a) 122^0 (b) 126^0 c) 302^0 (d) 258^0

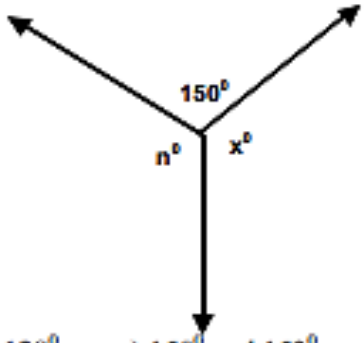




10. In fig., b is more than one-third of a right angle than a. The values of a and b are:

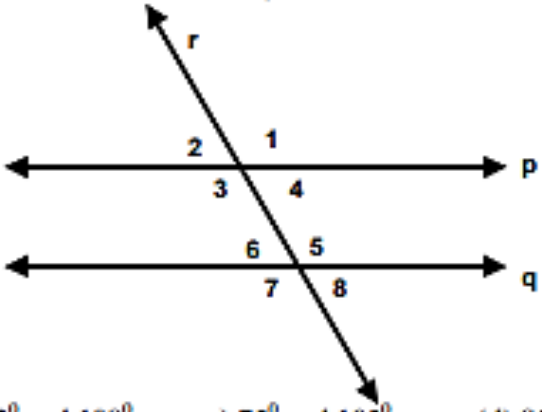
(a) 95^0 and 85^0 (b) 105^0 and 75^0 c) 60^0 and 120^0 (d) 65^0 and 115^0

11. In fig., $n - x = 3^0$ then values of x and n are:



(a) 126^0 and 129^0 (b) 125^0 and 128^0 c) 150^0 and 153^0 (d) none of these

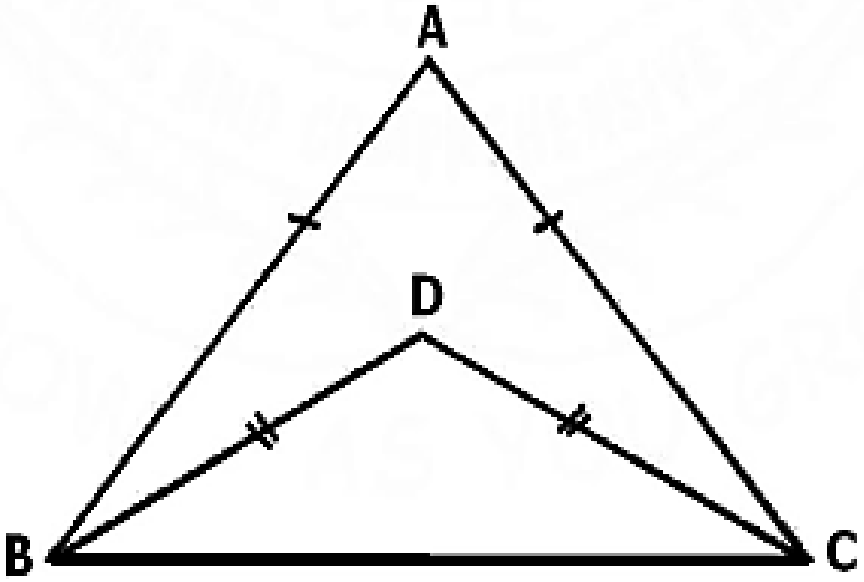
12. In fig., q || r and p is transversal. If $\angle 1$ and $\angle 2$, 3 : 2 then the values of $\angle 3$ and $\angle 4$ are:



(a) 108^0 and 72^0 (b) 72^0 and 108^0 c) 75^0 and 105^0 (d) 85^0 and 95^0

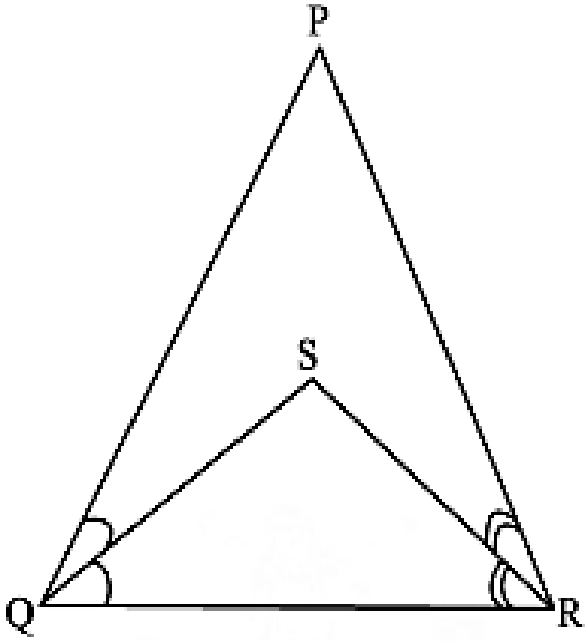
1. If one angle of a triangle is equal to the sum of other two angles, then the triangle is
   (a) an Equilateral triangle (b) an Isosceles triangle
   (c) an obtuse triangle (d) a right triangle .

2. In the given figure, the ratio ∠ABD : ∠ACD is
   (a) 1 : 1 (b) 2 : 1 (c) 1 : 2 (d) 2 : 3



3. ∠x and ∠y are exterior angles of a ΔABC, at the points B and C respectively. Also ∠B > ∠C, then relation between ∠x and ∠y is
   (a) ∠x > ∠y (b) ∠x < ∠y (c) ∠x = ∠y (d) none of these

4. In the given figure, PQ > PR, QS and RS are the bisectors of ∠Q and ∠R respectively, then
   (a) SQ > SR (b) SQ < SR (c) SQ = SR (d) none of these

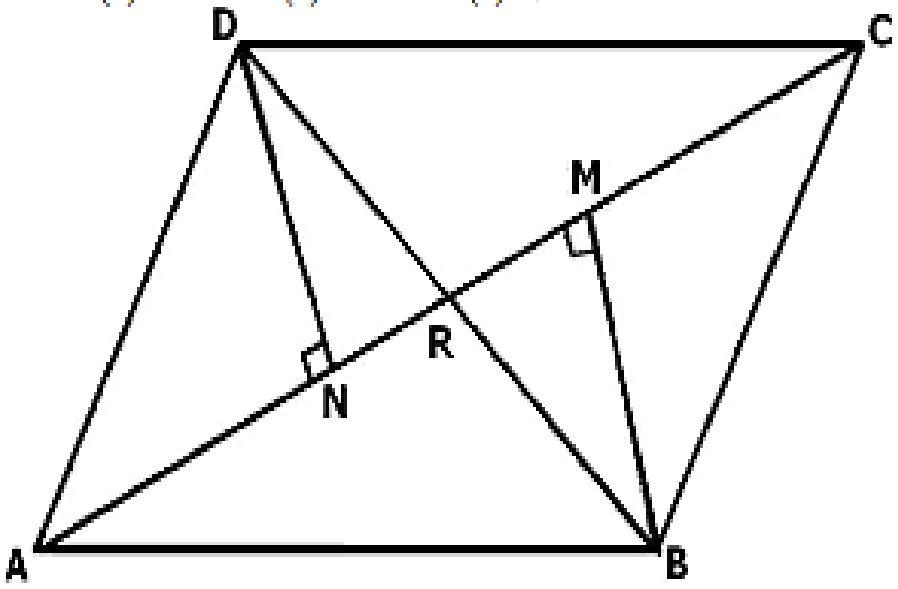


5. If the bisector of vertical angle of a triangle is perpendicular to the base of triangle is
   (a) an Equilateral triangle (b) a scalene triangle
   (c) an obtuse angled triangle (d) an acute angled triangle .

6. In a ΔABC and ΔPQR, three equality relations between same parts are as follows:
   AB = QP, ∠B = ∠P and BC = PR
   State which of the congruence conditions applies:
   (a) SAS (b) ASA (c) SSS (d) RHS

7. D, E , F are the midpoints of the sides BC, CA and AB respectively of ΔABC, then ΔDEF is congruent to triangle
   (a) ABC (b) AEF
   (c) BFD, CDE (d) AFE, BFD, CDE

8. In quadrilateral ABCD, BM and DN are drawn perpendicular to AC such that BM = DN. If BR = 8 cm, then BD is
   (a) 4 cm (b) 2 cm (c) 12 cm (d) 16 cm



9. If ΔABC ≡ ΔPQR and ΔABC is not congruent to ΔRPQ, then which of the following is not true:
   (a) BC = PQ (b) AC = PR (c) QR = BC (d) AB = PQ

10. D is a point on the side BC of a ∠ABC such that AD bisects ΔBAC. Then
    (a) BD = CD (b) BA > BD (c) BD > BA (d) CD > CA

1. The sides of a triangle are 3 cm , 4 cm and 5 cm. Its area is
   (a) 12 cm^2 (b) 15 cm^2 (c) 6 cm^2 (d) 9 cm^2

2. The area of isosceles triangle whose equal sides are equal to 3 cm and other side is 4 cm. Its area is
   (a) 20 cm^2 (b) $4\sqrt{5}$ cm^2 (c) $2\sqrt{5}$ cm^2 (d) 10 cm^2

3. The area of a triangular sign board of sides 5 cm , 12 cm and 13 cm is
   (a) $\frac{65}{2}$ cm^2 (b) 30 cm^2 (c) 60 cm^2 (d) 12 cm^2

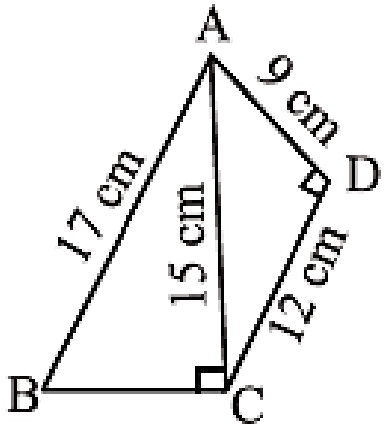
4. The side of a triangle are in the ratio of 25 : 14 : 12 and its perimeter is 510m. The greatest side of the triangle is
   (a) 120 m (b) 170 m (c) 250 m (d) 270 m

5. The perimeter of a right triangle is 60 cm and its hypotenuse is 26 cm. The other two sides of the triangle are
   (a) 24 cm. 10 cm (b) 25 cm. 9 cm (c) 20 cm. 14 cm (d) 26 cm. 8 cm

6. The area of quadrilateral ABCD in which AB = 3 cm, BC = 4 cm, CD = 4 cm, DA = 5 cm and AC = 5 cm is
   (a) 15.2 cm^2 (b) 14.8 cm^2 (c) 15 cm^2 (d) 16.4 cm^2

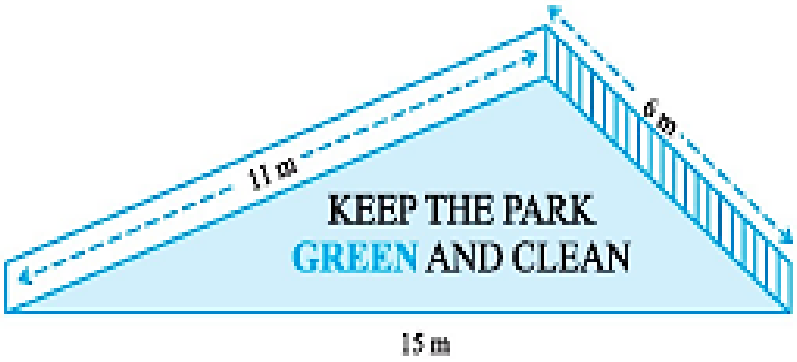
7. The area of trapezium in which the parallel sides are 28 m and 40 m, non parallel sides are 9 m and 15 m is
   (a) 286 m^2 (b) 316 m^2 (c) 306 m^2 (d) 296 m^2

8. The area of quadrilateral ABCD in the below figure is
   (a) 57 cm^2 (b) 95 cm^2 (c) 102 cm^2 (d) 114 cm^2



9. A traffic signal board indicating 'SCHOOL AHEAD' is an equilateral triangle with side a, then height of the traffic signal is:
   (a) $\frac{\sqrt{3}}{2}a^2$ (b) $\frac{\sqrt{3}}{4}a^2$ (c) $\frac{\sqrt{3}}{2}a$ (d) none of these

10. There is a slide in a park. One of its side walls has been painted in some colour with a message "KEEP THE PARK GREEN AND CLEAN". If the sides of the wall are 15 m, 11 m and 6 m, The area painted in colour is:



(a) $10\sqrt{2}$ m^2 (b) $20\sqrt{2}$ m^2 (c) $30\sqrt{2}$ m^2 (d) none of these

11. An isosceles right triangle has area 8 cm2. The length of its hypotenuse is

(a) $\sqrt{32}$ cm (b) $\sqrt{16}$ cm (c) $\sqrt{48}$ cm (d) $\sqrt{24}$ cm

12. The edges of a triangular board are 6 cm, 8 cm and 10 cm. The cost of painting it at the rate of 9 paise per cm2 is

(a) Rs 2.00 (b) Rs 2.16 (c) Rs 2.48 (d) Rs 3.00

13. The area of an isosceles triangle having base 2 cm and the length of one of the equal sides 4 cm, is

(a) $\sqrt{15}$ cm^2 (b) $\sqrt{\frac{15}{2}}$ cm^2 (c) $2\sqrt{15}$ cm^2 (d) $4\sqrt{15}$ cm^2

14. The sides of a triangle are 35 cm, 54 cm and 61 cm, respectively. The length of its longest altitude

(a) $16\sqrt{5}$ cm (b) $10\sqrt{5}$ cm (c) $24\sqrt{5}$ cm (d) 28 cm

15. If the area of an equilateral triangle is $16\sqrt{3}$ cm2, then the perimeter of the triangle is

(a) 48 cm (b) 24 cm (c) 12 cm (d) 36 cm

53. Simplify: (*i*) $\sqrt[4]{\sqrt[3]{2^2}}$ (*ii*) $\sqrt[3]{2}.\sqrt[4]{2}.\sqrt[12]{32}$

54. If $\sqrt{2}=1.4142$, then find the value of $\sqrt{\frac{\sqrt{2}+1}{\sqrt{2}-1}}$.

55. If $\sqrt{3}=1.732$, then find the value of $\sqrt{\frac{\sqrt{3}+1}{\sqrt{3}-1}}$.

56. Find the value of a if $\frac{6}{3\sqrt{2}-2\sqrt{3}}=3\sqrt{2}-a\sqrt{3}$

57. Evaluate the following expressions:

(*i*) $\left(\frac{625}{81}\right)^{-\frac{1}{4}}$ (*ii*) $27^{\frac{2}{3}}\times 27^{\frac{1}{3}}\times 27^{-\frac{4}{3}}$ (*iii*) $(6.25)^{\frac{3}{2}}$

(*iv*) $(0.000064)^{\frac{5}{6}}$ (*v*) $\left(17^2-8^2\right)^{\frac{1}{2}}$

58. Express $0.6+0.\overline{7}+0.4\overline{7}$ in the form of $\frac{p}{q}$, where p and q are integers and $q\neq 0$.

59. Simplify: $\frac{7\sqrt{3}}{\sqrt{10}+\sqrt{3}}-\frac{2\sqrt{5}}{\sqrt{6}+\sqrt{5}}-\frac{3\sqrt{2}}{\sqrt{15}+3\sqrt{2}}$

60. If $\sqrt{2}=1.414, \sqrt{3}=1.732$, then find the value of $\frac{4}{3\sqrt{3}-2\sqrt{2}}+\frac{3}{3\sqrt{3}+2\sqrt{2}}$.

61. Simplify:

(*i*) $\left[5\left(8^{\frac{1}{3}}+27^{\frac{1}{3}}\right)^3\right]^{\frac{1}{4}}$ (*ii*) $\sqrt{45}-3\sqrt{20}+4\sqrt{5}$ (*iii*) $\frac{\sqrt{24}}{8}+\frac{\sqrt{54}}{9}$

(*iv*) $\sqrt[4]{12}\times\sqrt[6]{7}$ (*v*) $\sqrt[4]{28}\div\sqrt[3]{7}$ (*vi*) $\sqrt[3]{3}+2\sqrt{27}+\frac{1}{\sqrt{3}}$

(*vii*) $\left(\sqrt{3}-\sqrt{5}\right)^2$ (*viii*) $\sqrt[4]{81}-8\sqrt[3]{216}+15\sqrt[5]{32}+\sqrt{225}$

(*ix*) $\frac{3}{\sqrt{8}}+\frac{1}{\sqrt{2}}$ (*x*) $\frac{\sqrt[3]{3}}{3}-\frac{\sqrt{3}}{6}$

62. If $a=\frac{3+\sqrt{5}}{2}$ then find the value of $a^2+\frac{1}{a^2}$.

63. Simplify: $(256)^{\left(-4^{\frac{-3}{2}}\right)}$

64. Find the value of $\frac{4}{(216)^{\frac{-2}{3}}}+\frac{1}{(256)^{\frac{-3}{4}}}+\frac{2}{(243)^{\frac{-1}{5}}}$

65. If $a=5+2\sqrt{6}$ and $b=\frac{1}{a}$ then what will be the value of a^2+b^2?

22. If $x^3 + ax^2 + bx + 6$ has $(x - 2)$ as a factor and leaves a remainder 3 when divided by $(x - 3)$, find the values of a and b.

23. Find the value of $x^3 + y^3 + 15xy - 125$ if $x + y = 5$.

24. Without actually calculating, find the value of $(25)^3 - (75)^3 + (50)^3$.

25. Factorise each of the following cubic expressions:

(i) $8x^3 - y^3 - 12x^2y + 6xy^2$

(ii) $27q^3 - 125p^3 - 135q^2p + 225qp^2$

(iii) $8x^3 + 729 + 108x^2 + 486x$

(iv) $27x^3 - \frac{1}{216} - \frac{9}{2}x^2 + \frac{1}{4}x$

26. Factorise:

(i) $x^3 + 216y^3 + 8z^3 - 36xyz$

(ii) $a^3 - 64b^3 - 27c^3 - 36abc$

27. Factorise: $\left(\frac{1}{2}x - 3y\right)^3 + \left(3y - \sqrt{3}z\right)^3 + \left(\sqrt{3}z - \frac{1}{2}x\right)^3$

28. Give one example each of a binomial of degree 35, and of a monomial of degree 100.

29. Find a zero of the polynomial $p(x) = 2x + 1$.

30. Verify whether 2 and 0 are zeroes of the polynomial $x^2 - 2x$.

31. Find the zero of the polynomial in each of the following cases:

(i) $p(x) = x + 5$ (ii) $p(x) = x - 5$ (iii) $p(x) = 2x + 5$

(iv) $p(x) = 3x - 2$ (v) $p(x) = 3x$ (vi) $p(x) = ax$, $a \neq 0$

32. Find the value of each of the following polynomials at the indicated value of variables:

(i) $p(x) = 5x^2 - 3x + 7$ at $x = 1$.

(ii) $q(y) = 3y^3 - 4y + \sqrt{11}$ at $y = 2$.

(iii) $p(t) = 4t^4 + 5t^3 - t^2 + 6$ at $t = a$.

33. Divide $p(x)$ by $g(x)$, where $p(x) = x + 3x^2 - 1$ and $g(x) = 1 + x$.

34. Divide the polynomial $3x^4 - 4x^3 - 3x - 1$ by $x - 1$.

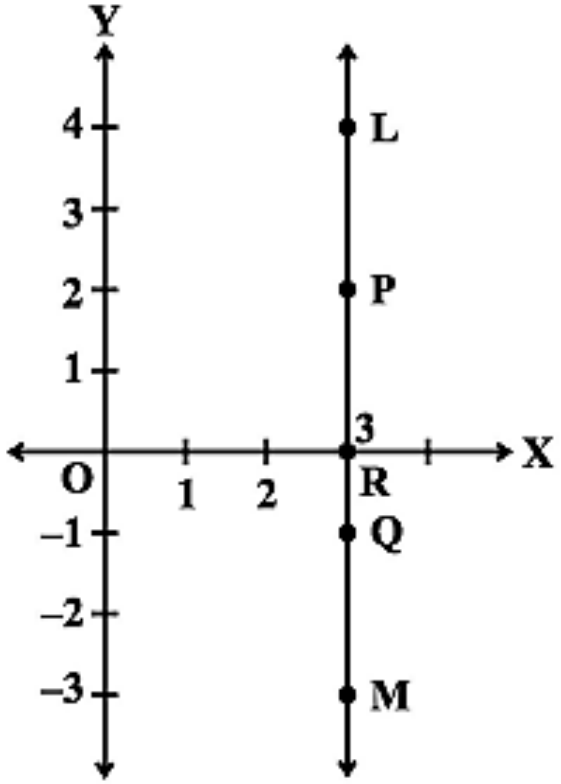
35. Find the remainder obtained on dividing $p(x) = x^3 + 1$ by $x + 1$.

36. Find the remainder when $x^4 + x^3 - 2x^2 + x + 1$ is divided by $x - 1$.

30. Without plotting the points indicate the quadrant in which they will lie, if
(i) ordinate is 5 and abscissa is – 3
(ii) abscissa is – 5 and ordinate is – 3
(iii) abscissa is – 5 and ordinate is 3
(iv) ordinate is 5 and abscissa is 3

31. In which quadrant or on which axis each of the following points lie?
(– 3, 5), (4, – 1), (2, 0), (2, 2), (– 3, – 6)

32. In the below Figure, LM is a line parallel to the *y*-axis at a distance of 3 units.
(i) What are the coordinates of the points P, R and Q?
(ii) What is the difference between the abscissa of the points L and M?



33. Which of the following points lie on *y*-axis?
A (1, 1), B (1, 0), C (0, 1), D (0, 0), E (0, – 1), F (– 1, 0), G (0, 5), H (–7, 0), I (3, 3).

34. Plot the points (*x*, *y*) given by the following table. Use scale 1 cm = 0.25 units

x	1.25	0.25	1.5	–1.75
y	–0.5	1	1.5	–0.25

35. A point lies on the *x*-axis at a distance of 7 units from the *y*-axis. What are its coordinates? What will be the coordinates if it lies on *y*-axis at a distance of –7 units from *x*-axis?

36. Find the coordinates of the point
(i) which lies on *x* and *y* axes both.
(ii) whose ordinate is – 4 and which lies on *y*-axis.
(iii) whose abscissa is 5 and which lies on *x*-axis.

37. Taking 0.5 cm as 1 unit, plot the following points on the graph paper : A (1, 3), B (– 3, – 1), C (1, – 4), D (– 2, 3), E (0, – 8), F (1, 0)

38. Plot the points P (1, 0), Q (4, 0) and S (1, 3). Find the coordinates of the point R such that PQRS is a square.

46. Solve: $\frac{x}{2}-\frac{1}{5}=\frac{x}{3}+\frac{1}{4}$

47. Solve: $\frac{x}{2}-\frac{3x}{4}+\frac{5x}{6}=21$

48. Solve: $x+7-\frac{8x}{3}=\frac{17}{6}-\frac{5x}{2}$

49. Solve: $\frac{3x+4}{2-6x}=\frac{-2}{5}$

50. Solve: $\frac{7x+4}{x+2}=\frac{-4}{3}$

51. The ages of Rahul and Haroon are in the ratio 5:7. Four years later the sum of their ages will be 56 years. What are their present ages?

52. Baichung's father is 26 years younger than Baichung's grandfather and 29 years older than Baichung. The sum of the ages of all the three is 135 years. What is the age of each one of them?

53. Lakshmi is a cashier in a bank. She has currency notes of denominations Rs 100, Rs 50 and Rs 10, respectively. The ratio of the number of these notes is 2:3:5. The total cash with Lakshmi is Rs 4,00,000. How many notes of each denomination does she have?

54. I have a total of Rs 300 in coins of denomination Re 1, Rs 2 and Rs 5. The number of Rs 2 coins is 3 times the number of Rs 5 coins. The total number of coins is 160. How many coins of each denomination are with me?

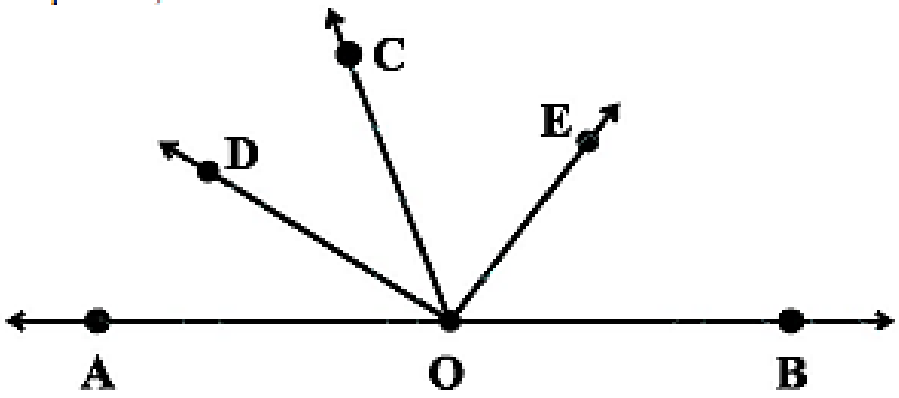
55. The organisers of an essay competition decide that a winner in the competition gets a prize of Rs 100 and a participant who does not win gets a prize of Rs 25. The total prize money distributed is Rs 3,000. Find the number of winners, if the total number of participants is 63.

56. The digits of a two-digit number differ by 3. If the digits are interchanged, and the resulting number is added to the original number, we get 143. What can be the original number?

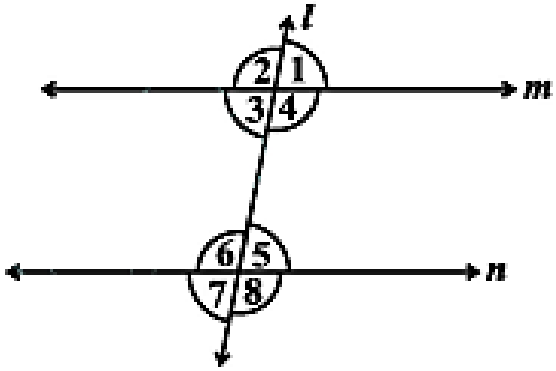
57. Arjun is twice as old as Shriya. Five years ago his age was three times Shriya's age. Find their present ages.

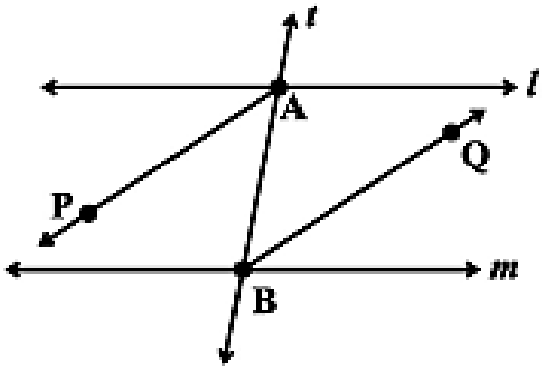
58. A positive number is 5 times another number. If 21 is added to both the numbers, then one of the new numbers becomes twice the other new number. What are the numbers?

38. In the below Figure, OD is the bisector of $\angle AOC$, OE is the bisector of $\angle BOC$ and OD $\perp$ OE. Show that the points A, O and B are collinear.



39. In the below Figure, $\angle 1 = 60°$ and $\angle 6 = 120°$. Show that the lines m and n are parallel.

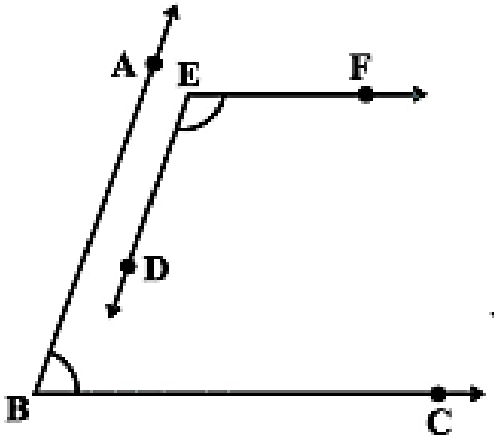


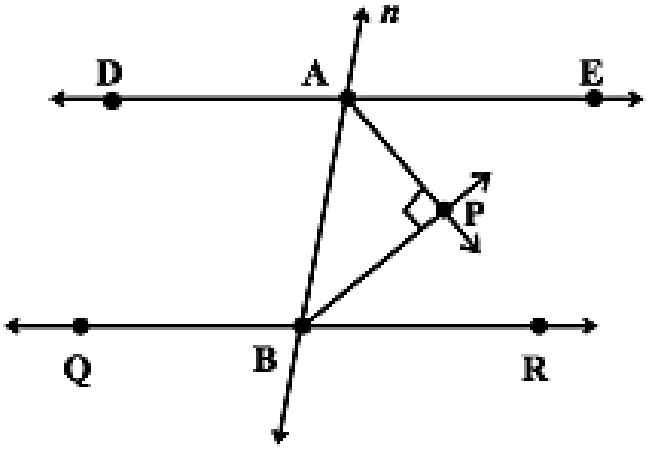


40. AP and BQ are the bisectors of the two alternate interior angles formed by the intersection of a transversal t with parallel lines l and m (see above right sided Figure). Show that AP || BQ.

41. If in the above right sided Figure for Q40, bisectors AP and BQ of the alternate interior angles are parallel, then show that l || m.

42. In the below Figure, BA || ED and BC || EF. Show that $\angle ABC = \angle DEF$





43. In the above right sided Figure, DE || QR and AP and BP are bisectors of $\angle EAB$ and $\angle RBA$, respectively. Find $\angle APB$.

55. ABCD is quadrilateral such that AB = AD and CB = CD. Prove that AC is the perpendicular bisector of BD.

56. Two lines *l* and *m* intersect at the point O and P is a point on a line *n* passing through the point O such that P is equidistant from *l* and *m*. Prove that *n* is the bisector of the angle formed by *l* and *m*.

57. Line segment joining the mid-points M and N of parallel sides AB and DC, respectively of a trapezium ABCD is perpendicular to both the sides AB and DC. Prove that AD = BC.

58. ABCD is a quadrilateral such that diagonal AC bisects the angles A and C. Prove that AB = AD and CB = CD.

59. ABC is a right triangle such that AB = AC and bisector of angle C intersects the side AB at D. Prove that AC + AD = BC.

60. P is a point on the bisector of ∠ABC. If the line through P, parallel to BA meet BC at Q, prove that BPQ is an isosceles triangle.

61. ABCD is a quadrilateral in which AB = BC and AD = CD. Show that BD bisects both the angles ABC and ADC.

62. ABC is a right triangle with AB = AC. Bisector of □vA meets BC at D. Prove that BC = 2 AD.

63. O is a point in the interior of a square ABCD such that OAB is an equilateral triangle. Show that ΔOCD is an isosceles triangle.

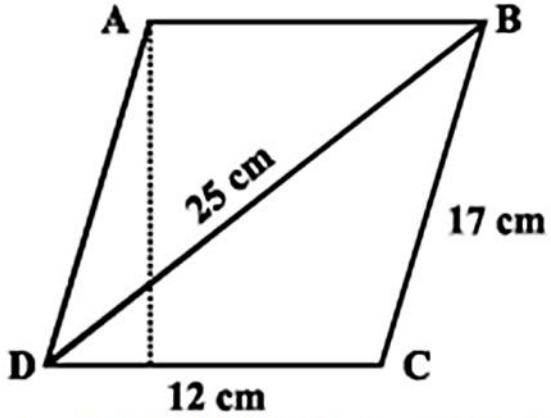
64. ABC and DBC are two triangles on the same base BC such that A and D lie on the opposite sides of BC, AB = AC and DB = DC. Show that AD is the perpendicular bisector of BC.

65. ABC is an isosceles triangle in which AC = BC. AD and BE are respectively two altitudes to sides BC and AC. Prove that AE = BD.

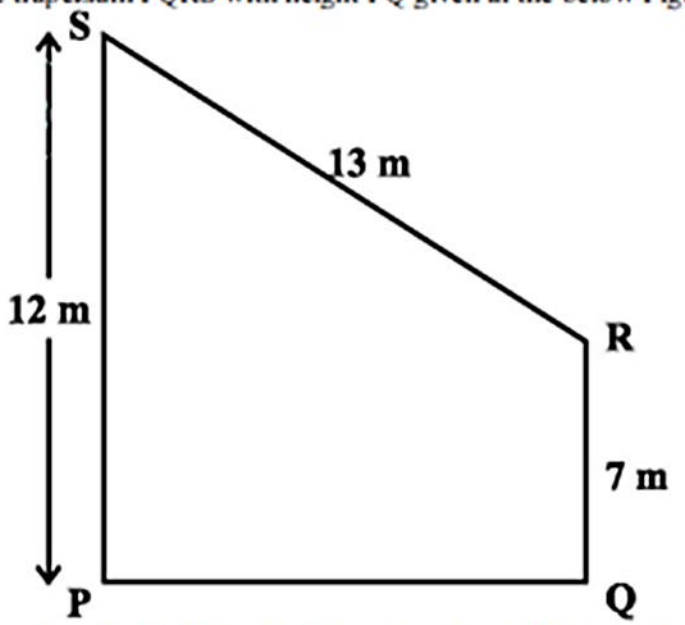
66. Prove that sum of any two sides of a triangle is greater than twice the median with respect to the third side.

67. Show that in a quadrilateral ABCD, AB + BC + CD + DA < 2 (BD + AC).

41. Find the area of a parallelogram given in the below Figure. Also find the length of the altitude from vertex A on the side DC.



42. Find the area of the trapezium PQRS with height PQ given in the below Figure



43. If each side of a triangle is doubled, then find the ratio of area of the new triangle thus formed and the given triangle.

44. The perimeter of a triangle is 50 cm. One side of a triangle is 4 cm longer than the smaller side and the third side is 6 cm less than twice the smaller side. Find the area of the triangle.

45. The area of a trapezium is 475 cm^2 and the height is 19 cm. Find the lengths of its two parallel sides if one side is 4 cm greater than the other.

46. A rectangular plot is given for constructing a house, having a measurement of 40 m long and 15 m in the front. According to the laws, a minimum of 3 m, wide space should be left in the front and back each and 2 m wide space on each of other sides. Find the largest area where house can be constructed.

47. A field is in the shape of a trapezium having parallel sides 90 m and 30 m. These sides meet the third side at right angles. The length of the fourth side is 100 m. If it costs Rs 4 to plough $1m^2$ of the field, find the total cost of ploughing the field.

48. The sides of a triangle are 35 cm, 54 cm and 61 cm, respectively. Find the length of its longest altitude.