

S. 25

Holiday Homework

Q1. Determine whether $\sqrt{50}$ is rational or irrational.

Justify your answer.

Ans $\sqrt{50} = \sqrt{25 \times 2} = 5\sqrt{2}$

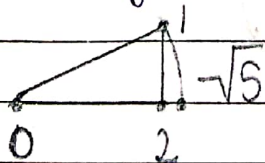
$\sqrt{2} = 1.414213...$

$\therefore \sqrt{50}$ is irrational because multiplication of Rational and Irrational number is always irrational.

Q2. Represent $\sqrt{5}$ on the number line using geometric construction.

Ans 1. Make a line segment 2 cm

2. from the right end make a 90° line segment 1 cm



3. Open compass from O to upwards 1 and then make an arc.

$\therefore$ figure is geometrical representation of $\sqrt{5}$

Q3. What type of decimal expansion does $\frac{7}{8}$ have?
is it terminating or non-terminating?

Ans $\frac{7}{8} = 0.875$

it is terminating decimal

Q4. Rationalise the denominator of $\frac{1}{\sqrt{7} - \sqrt{6}}$

Ans $\frac{1}{\sqrt{7} - \sqrt{6}} \times \frac{\sqrt{7} + \sqrt{6}}{\sqrt{7} + \sqrt{6}}$

$$= \frac{\sqrt{7} + \sqrt{6}}{(\sqrt{7})^2 - (\sqrt{6})^2}$$

$$= \frac{\sqrt{7} + \sqrt{6}}{7 - 6}$$

$$= \sqrt{7} + \sqrt{6} \quad \text{Ans}$$

5. Simplify $\left(\frac{2^3 \times 3^2}{6} \right)^2$

Ans $\left(\frac{2^3 \times 3^2}{6} \right)^2$

$$= \left(\frac{2^3 \times 3^2}{2 \times 3} \right)^2$$

$$= (2^2 \times 3) 2$$

$$= 24 \text{ Ans}$$

Q6. What is the degree and type of the polynomial $5x^3 - 4x^3 + 7x - 1$?

Ans Type - Cubic

degree - 3

Q7. Add $(2x^2 + 3x - 4)(2x^2 + 3x - 4)$ and $(x^2 - 5x + 2)(x^2 - 5x + 2)$

$$\text{Ans } (2x^2 + 3x - 4)(2x^2 + 3x - 4)$$

$$= 4x^4 + 6x^3 - 8x^2 + 6x^3 + 9x^2 - 12x - 8x^2 - 12x + 16$$

$$= 4x^4 + 6x^3 + 6x^3 - 8x^2 + 9x^2 - 8x^2 - 12x - 12x + 16$$

$$= 4x^4 + 12x^3 - 7x^2 - 24x + 16 \quad (1)$$

$$(x^2 - 5x + 2)(x^2 - 5x + 2)$$

$$= x^4 - 5x^3 + 2x^2 - 5x^3 + 25x^2 - 10x + 2x^2 - 10x + 4$$

$$= x^4 - 5x^3 - 5x^3 + 2x^2 + 25x^2 + 2x^2 - 10x - 10x + 4$$

$$= x^4 - 10x^3 + 29x^2 - 20x + 4 \quad (2)$$

$$= 4x^4 + 12x^3 - 9x^2 - 24x + 16 + x^4 - 10x^3 + 29x^2 - 20x + 4$$

$$= 4x^4 + x^4 + 12x^3 - 10x^3 - 9x^2 + 29x^2 - 24x - 20x + 16 + 4$$

$$= 5x^4 + 2x^3 + 20x^2 - 44x + 20 \text{ Ans}$$

Q8. Find the zeros of the polynomial $f(x) = x^2 - 9$

Ans $f(x) = x^2 - 9$

$$= 3^2 - 9$$

$$= 9 - 9 = 0 \quad \text{zero polynomial is 3 Ans}$$

Q9. Factorise: $x^2 + 5x + 6$

Ans $x^2 + 6x - x + 6$

$$= x(x + 6) -$$

$$= x^2 + 2x + 3x + 6$$

$$= x(x + 2) + 3(x + 2)$$

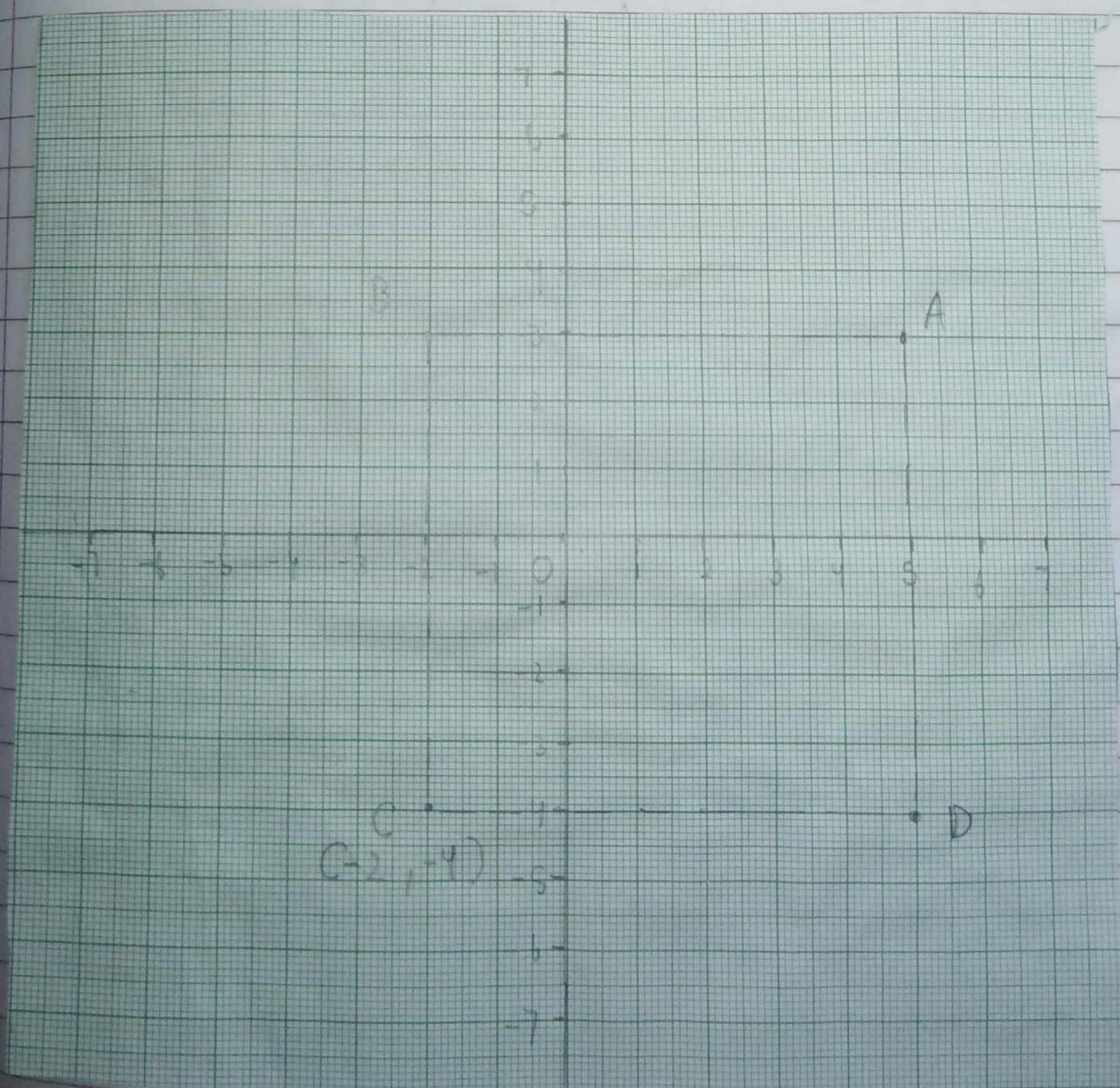
$$= (x + 3)(x + 2) \text{ Ans}$$

Q10. Write the coordinates of the point where the x-axis and y-axis intersect.

Ans. Origin

Q11. Points $A(5,3)$, $B(-2,3)$ and $D(5,-4)$ are three vertices of a square $ABCD$. Plot these points on graph paper and hence find the coordinates of the vertex C .

Ans.



Q12. For what value of k ; $x=2$, $y=3$ is a solution of the equation $(k+1)x = (2k+3)y-1$.
Also write the equation.

$$\text{Ans } (k+1)2 - (2k+3)3 - 1 = 0$$

$$= 2k + 2 - 6k + 9 - 1 = 0$$

$$= 2k + 2 - 6k + 9 - 1 = 0$$

$$= 2k - 6k + 2 + 9 - 1 = 0$$

$$= -4k + 10 = 0$$

$$= -4k = -10$$

$$= k = \frac{-10}{-4}$$

$$= k = \frac{10}{4} \text{ Ans}$$

Q13. Write a linear equation for the following.

(i) Perimeter of a rectangle is 36 cm.

$$\text{Ans } 2(l+b) = 36 \text{ Ans}$$

(ii) There are two numbers m and n such that three times m is 10 more than n .

Ans $3m = m + 10$ Ans

Q11 If two angles $(3x - 10)^\circ$ and $(2x - 20)^\circ$ are supplementary, then find the value of x .

Ans $(3x - 10) + (2x - 20) = 180^\circ$

$$= 3x - 10 + 2x - 20 = 180^\circ$$

$$= 3x + 2x - 10 - 20 = 180^\circ$$

$$= 5x - 30 = 180^\circ$$

$$= 5x = 180^\circ + 30$$

$$= 5x = 210^\circ$$

$$= x = \frac{210}{5}$$

$$= x = 42$$

$$= x = 42$$

$x = 42$. Ans

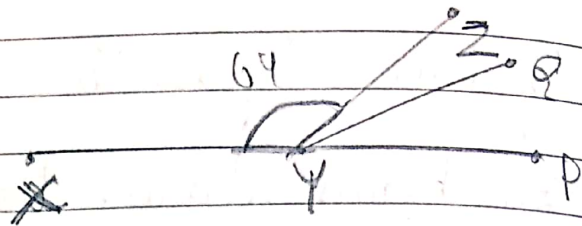
Q15. It is given that $\angle CYZ = 64^\circ$ and XY is produced to point P . Draw a figure from the given information. If ray YQ bisect $\angle ZYP$, find $\angle XYQ$ and reflex $\angle QYP$.

Ans

Given that

$$\angle XYZ = 64^\circ$$

YA bisect $\angle ZYP$



To find

(i) $\angle XYA$

(ii) $\angle QYP$

Sol $\angle XYZ + \angle ZYP = 180^\circ$ (linear pair)

$$= 64^\circ + \angle ZYP = 180^\circ$$

$$\Rightarrow \angle ZYP = 180^\circ - 64^\circ$$

$$= \angle ZYP = 116^\circ$$

$$\Rightarrow \angle ZYA = \frac{116}{2} = 58^\circ$$

$$= \angle XYA = 64^\circ + 58^\circ$$

$$= 122^\circ \text{ Ans}$$

Reflex $\angle QYP = 360^\circ - 58^\circ$

$$= 302^\circ \text{ Ans}$$