**General Instructions:-**

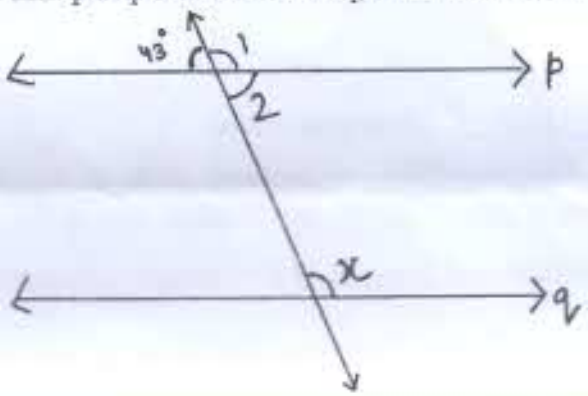
1. **All** Questions are Compulsory
2. The Question Paper consists of **31** questions, divided into **4** sections **A, B, C & D**.
   **Section A** Comprises of **4** questions of **1** mark each.
   **Section B** Comprises of **6** questions of **2** mark each.
   **Section C** Comprises of **10** questions of **3** mark each.
   **Section D** Comprises of **11** questions of **4** mark each.
3. There is no overall choice
4. Use of calculators is not permitted

## SECTION- A (1 mark each)

**Q1.** Find the area of an equilateral triangle whose one side is (2x) cm.

**Q2.** Simplify $(4+\sqrt{2})(4-\sqrt{2})$.

**Q3.** In the figure, if line p is parallel to line q, then find the value of x.



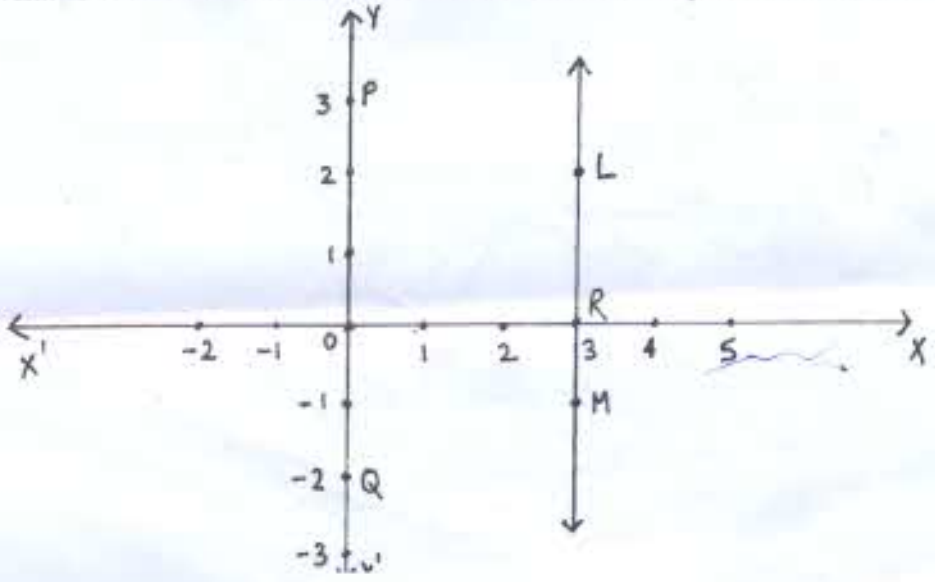

**Q4.** Is it possible to construct a triangle with length of its sides as 8cm, 7cm and 4cm? Give reason for your answer.

## SECTION- B (2 marks each)

**Q5.** Factorise $(5x-6y)^3+(6y-7z)^3+(7z-5x)^3$ using suitable identity.

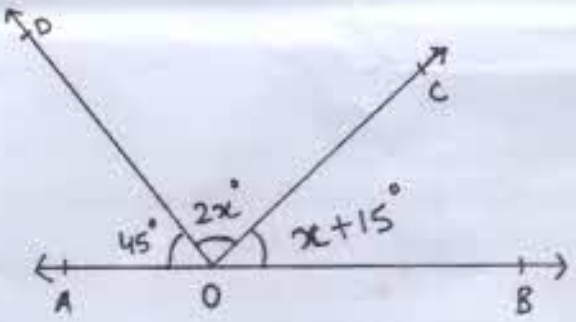
**Q6.** Verify that $\frac{1}{3}$ is a zero of the polynomial $6x^3+x^2-10x+3$.

**Q7.** In the adjoining figure, LM is a line parallel to the y-axis at a distance of 3 units.
(i) What are the coordinates of the points R and Q ?
(ii) What is the difference between the abscissa of the points L and M ?

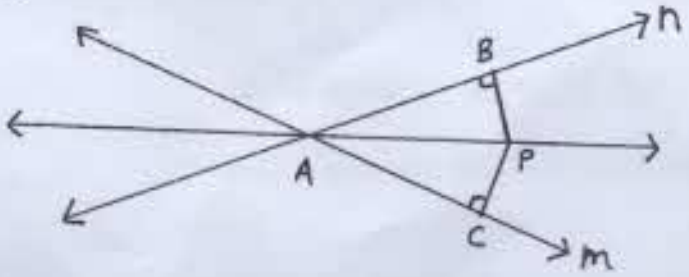


**Q8.** Find one rational number and one irrational number between 3.64279 and $3.65\overline{32}$.

**Q9.** In the given figure, $\angle AOD = 45^0$, $\angle DOC = 2x$, $\angle COB = x + 15^0$ and AOB is a line. Find the value of x.




**Q10.** P is a point equidistant from two lines n and m intersecting at point A. Show that the line AP bisects the angle between them.




## SECTION- C (3 marks each)

**Q11.** If both $x - 2$ and $x - \frac{1}{2}$ are factors of $p(x) = qx^2 + 5x + r$, show that $q = r$.

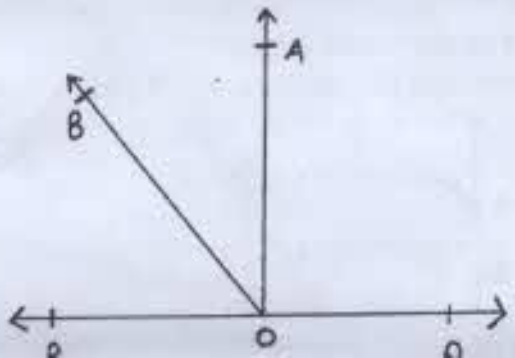
**Q12.** Give possible expressions for the length and breadth of a rectangle whose area is $y^2 - 12\sqrt{3}y + 105$.

**Q13.** If $x + \frac{1}{x} = 5$, evaluate $x^3 + \frac{1}{x^3}$.

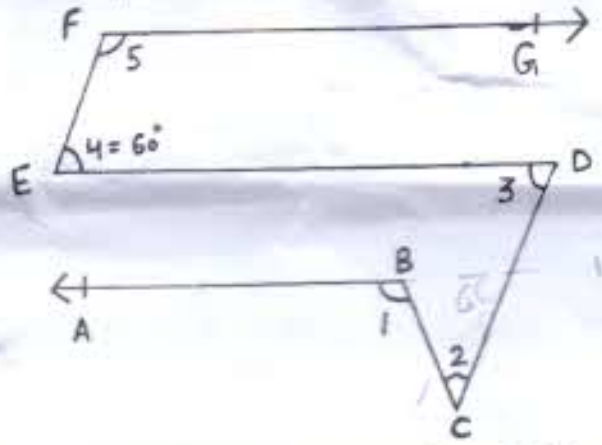
**Q14.** Express $15.7\overline{12}$ in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$.

**Q15.** Represent $\sqrt{7.1}$ on the number line.

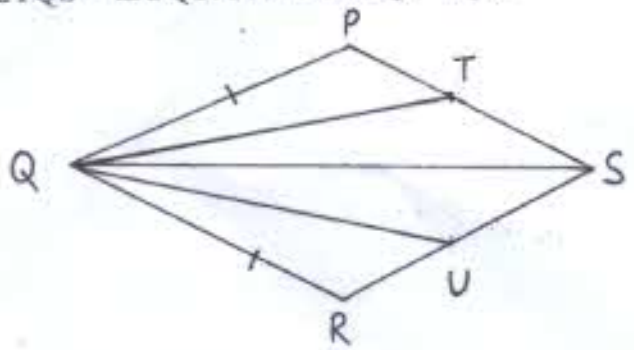
**Q16.** In the figure, POQ is a line. Ray OA is perpendicular to line PQ. OB is another ray lying between rays OP and OA. Prove that $2 \angle AOB = \angle QOB - \angle POB$.



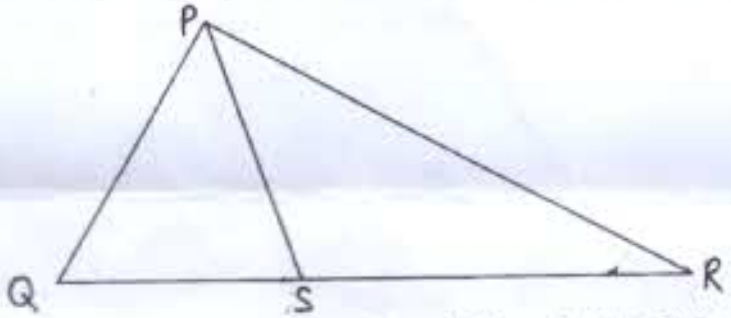
If AB ∥ DE, DE ∥ FG, CD ∥ EF, $\angle 2 = 55^0$ and $\angle 4 = 60^0$, then find $\angle 1$, $\angle 3$ and $\angle 5$.




**Q18.** PQRS is a quadrilateral T and U are points on PS and RS respectively such that PQ = RQ, $\angle PQT = \angle RQU$ and $\angle TQS = \angle UQS$. Prove that QT = QU.




**Q19.** In the given figure, PR > PQ and PS bisects $\angle QPR$. Prove that $\angle PSR > \angle PSQ$.




**Q20.** If a point A lies between two points X and Y such that XA = YA, then using Euclid's geometry prove that $XA = \frac{1}{2}XY$. Explain by drawing the figure.

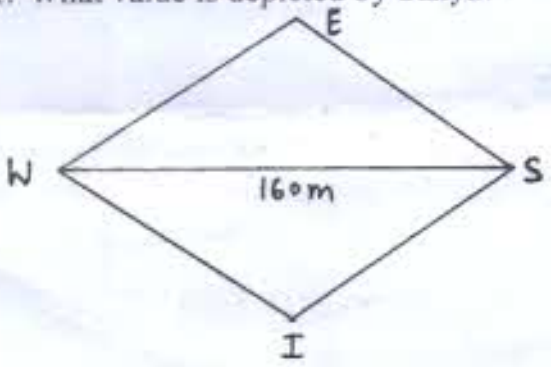
## SECTION- D (4 marks each)

**Q21.** Use Factor theorem to factorise $f(x) = x^3 + 6x^2 + 11x + 6$.

**Q22.** If A nad B be the remainders when the polynomials $x^3 + 2x^2 - 5ax - 7$ and $x^3 + ax^2 - 12x + 6$ are divided by $(x + 1)$ and $(x - 2)$ respectively and $2A + B = 6$, find the value of a .

**Q23.** If $a + b + c = 5$ and $ab + bc + ca = 10$, then prove that
$a^3 + b^3 + c^3 - 3abc = -25$

**Q24.** Sanya has a piece of land which is in the shape of a rhombus. She wants to give one part of land to her son and the other part to her daughter to produce crops by dividing the total land by one of the diagonals of length 160m. If the perimeter of the land is 400m, how much area of each of them will get? What value is depicted by Sanya?



**Q25.** Plot points p(−2, 2), Q (−8, 2), R (−2, −6), and S(−8, −6), on a graph. Join them in order. Name the geometric figure formed and find its area.

**Q26.** Simplify $\left[5\left(8^{\frac{1}{3}} + 27^{\frac{1}{3}}\right)^3\right]^{1/4} + \frac{(729)^{\frac{1}{2}}}{(27)^{\frac{2}{3}}}$

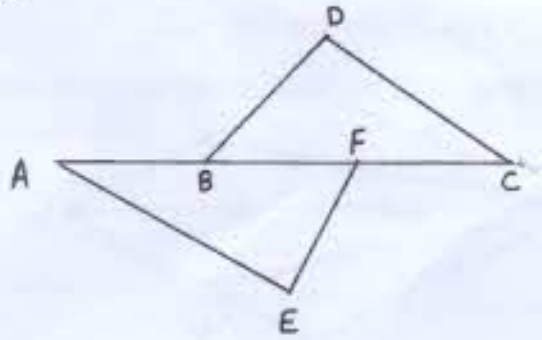
**Q27.** If $\frac{\sqrt{2}-\sqrt{3}}{3\sqrt{2}+2\sqrt{3}} = a + b\sqrt{6}$ where a and b are rational numbers, then find the values of a and b.

**Q28.** In the given figure, AB = CF, EF = BD and ∠AFE = ∠CBD, prove that

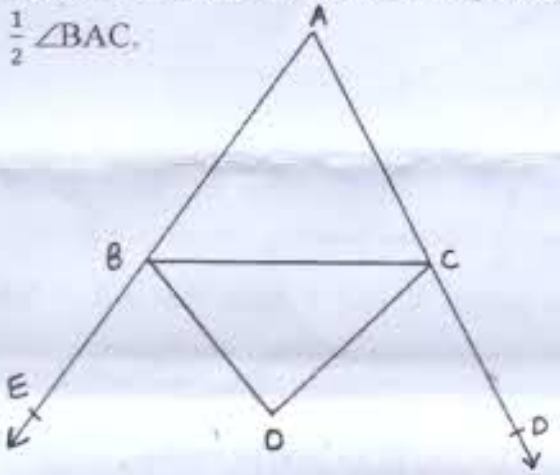
(i) Δ AFE ≅ Δ CBD

(ii) AE = CD

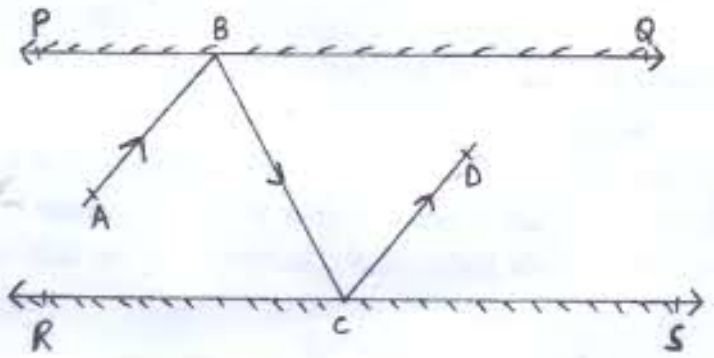
(iii) ∠FAE = ∠BCD




**Q29.** In the figure, the sides AB and AC of Δ ABC are produced to points E and D respectively. If bisectors BO and CO of ∠CBE and ∠BCD respectively meet at point O, then prove that $\angle BOC = 90^0 - \frac{1}{2}\angle BAC$.



**Q30.** In the figure, PQ and RS are two mirrors placed parallel to each other. An incident ray AB strikes the mirror PQ at B, the reflected ray moves along the path BC and strikes the mirror RS at C and again reflects back along CD. Prove that
AB ∥ CD.




**Q31.** Prove that two triangles are congruent if two angles and the included side of one triangle are equal to two angles and the included side of other triangle (ASA congruence rule).

***** **THE END** *****