SUMMATIVE ASSESSMENT–1

CLASS–IX (SET–I)

SUBJECT : MATHEMATICS

Time: 3 hours **M.M. : 90**

General Instructions :

(i) All questions are compulsory.

(ii) The question paper consists of 31 questions divided into four sections A, B, C and D. Section A comprises of 4 questions of 1 mark each; Section B comprises of 6 questions of 2 marks each; Section C comprises of 10 questions of 3 marks each and Section–D comprises of 11 questions of 4 marks each.

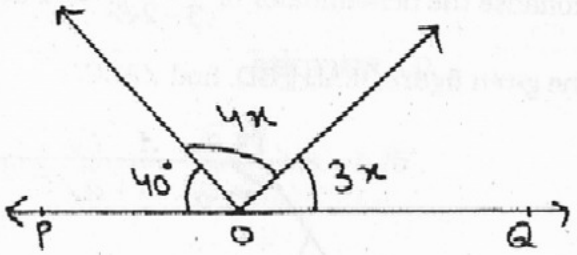
(iii) Use of calculator is not permitted.

SECTION – A

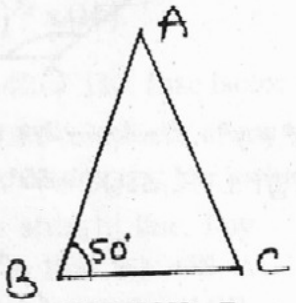
Q1. Find k, if $(x + 3)$ is a factor of $(3x^2 + kx + 6)$.

Q2. If $p(x) = x^3 - x^2 + x - 3$, then find p(0).

Q3. Find the value of x, if POQ is a line.



Q4. In ΔABC, AC = AB and $\angle B = 50°$. Find the value of $\angle C$.



SECTION – B

Q5. Find two rational numbers between $\frac{1}{2}$ and $\frac{2}{3}$.

Q6. Without calculating the cubes, find the value of $(16)^3 + (-4)^3 + (-12)^3$.

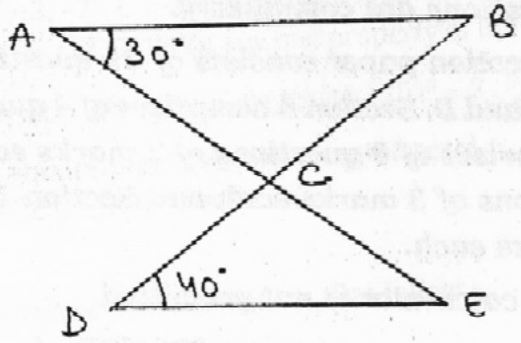
Q7. The base of an isosceles triangle is 12cm and its perimeter is 32cm. Find its area.

Q8. If a point C lies between two points A and B such that AC = BC, then prove that

$$AC = \frac{1}{2} AB.$$

Q9. Check whether '3' is a zero of the polynomial : $2x^4 + x^3 - 14x^2 - 19x - 6$.

Q10. In the figure, AB || DE. Find ∠ACD.

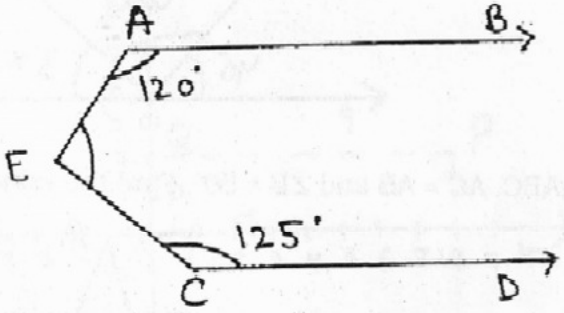


SECTION–C

Q11. Represent $\sqrt{3}$ on number line.

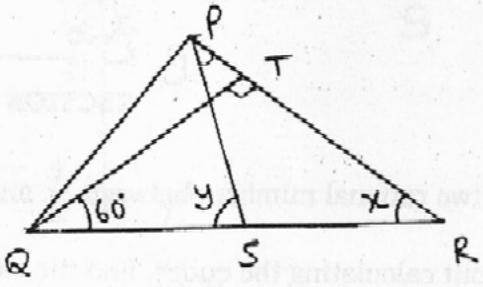
Q12. Rationalise the denominator of $\frac{1}{3-2\sqrt{2}}$ and hence find its value if $\sqrt{2} = 1.4$

Q13. In the given figure, if AB || CD, find ∠AEC.



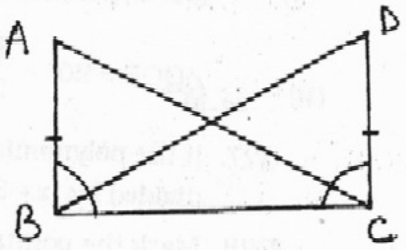
Q14. Factorise : $4x^2 + y^2 + z^2 - 4xy - 2yz + 4xz$.

Q15. In the figure, QT ⊥ PR, ∠TQR = 60°, ∠SPR = 40°. Find the values of x and y.



Q16. Find the area of a park in the shape of a quadrilateral ABCD having $\angle C = 90°$, AB = 9cm, BC = 12cm, CD = 5cm and AD = 8cm. (Use $\sqrt{35} = 5.9$)

Q17. In the given figure AB = CD and $\angle ABC = \angle DCB$.



Prove that

(i) $\Delta ABC \cong \Delta DCB$

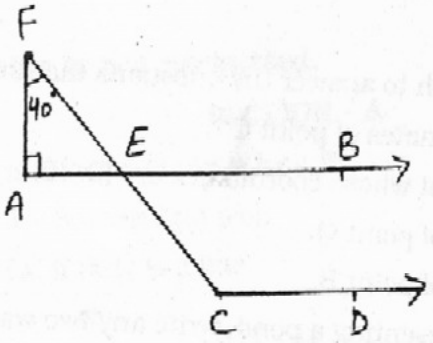
(ii) AC = DB.

Q18. (i) Factorise : $6y^2 - 5y - 6$

(ii) Find the value of 98×102

Q19 There is a pond in the shape of a rhombus. The perimeter of the pond is 40m and its diagonal is 16m. Find the area of the pond.

Q20 In the given figure, if AB || CD, $\angle FAE = 90°$ and $\angle AFE = 40°$, find $\angle ECD$.



SECTION – D

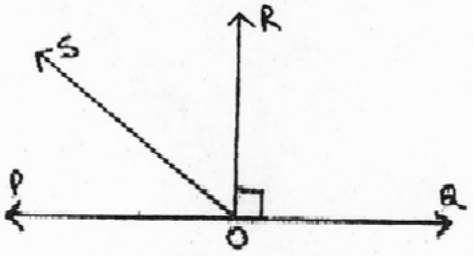
Q21. Find 'a' and 'b' if $\frac{\sqrt{5}-1}{\sqrt{5}+1} - \frac{\sqrt{5}+1}{\sqrt{5}-1} = a + b\sqrt{5}$

Q22. Evaluate : $\frac{(25)^{3/2} \times (243)^{3/5} \times (4)^{3/2}}{(16)^{5/4} \times (8)^{4/3} \times (15)^2}$

Q23. Factorise : $x^3 - 23x^2 + 142x - 120$. (use factor theorem).

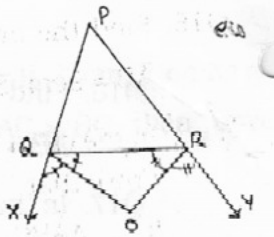
Q24. Prove that two triangles are congruent, if any two angles and the included side of one triangle are equal to two angles and the included side of other triangle.

Q25. In the figure, POQ is a straight line. Ray OR is perpendicular to line PQ. OS is another ray lying between rays OP and OR.



Prove that $\angle ROS = \frac{1}{2}(\angle QOS - \angle POS)$.

Q26. The sides PQ and PR of ΔPQR are produced to points X and Y respectively. The bisectors QO and RO of $\angle RQX$ and $\angle QRY$ respectively meet at point O then prove that



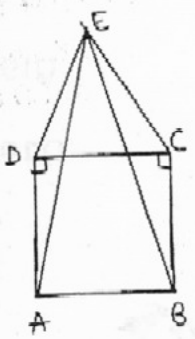
$$\angle QOR = 90° - \frac{1}{2}\angle P$$

Q27. If the polynomials $ax^3 + 4x^2 + 3x - 4$ and $x^3 - 4x + a$ leave the same remainder when divided by $(x - 3)$, find the value of a.

Q28. Mark the points A (2, 2), B (2, –2), C (–2, –2) and D (–2, 2) on a graph paper and join these points. Name the figure ABCD. Write any one property of the figure so obtained.

Q29. Verify $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$, Hence, factorise $125x^3 - 2\sqrt{2}\ y^3$.

Q30. In the figure, ABCD is a square and ΔDEC is an equilateral triangle. Prove that (i) $\Delta ADE \cong \Delta BCE$ (ii) AE = BE.



Q31. Use the following graph to answer the questions that follow :

(i) Write the coordinates of point C.

(ii) Identify the point whose coordinates are (0, –5)

(iii) Write abscissa of point Q.

(iv) Write ordinate of point B.

(v) If PQRS is representing a pond, write any two ways to reduce water pollution.