SUMMATIVE ASSESSMENT–1 (2013–2014)

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.

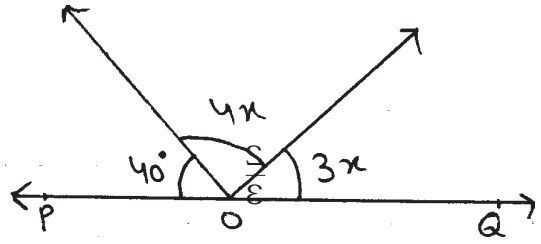
(iii) Use of calculator is not permitted.

SECTION – A

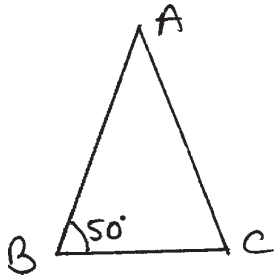
Q1. Find k, if $(x + 3)$ is a factor of $(3x^2 + kx + 6)$.

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 .

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

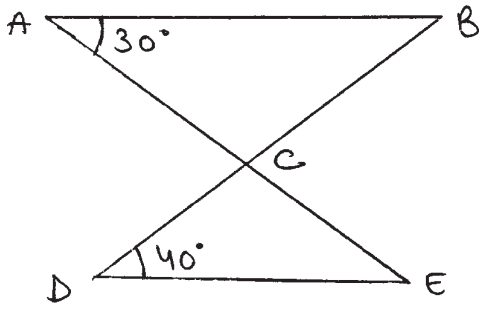
Q7. The base of an isosceles triangle is 12cm and its perimeter is 32cm. Find its area.

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

AC = 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.

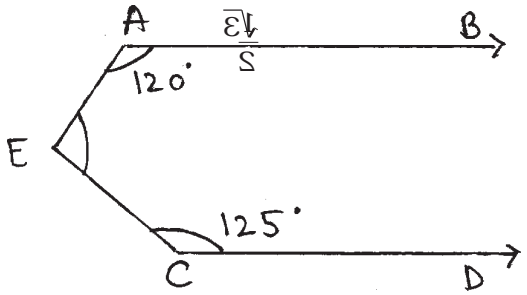


SECTION–C

Q11. Represent on number line.

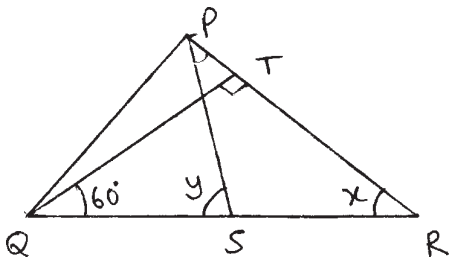
Q12. Rationalise the denominator of $\frac{1}{3-2\sqrt{2}}$ and hence find its value if $\sqrt{2} = 1.4$

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



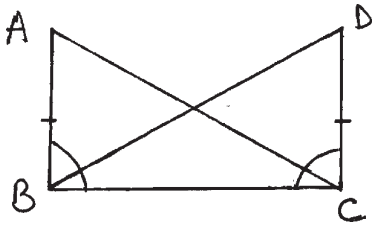
Q14. Factorise : $4x^2 + y^2 + z^2 - 4xy - 2yz + 4xz$.

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) $\Delta ABC \cong \Delta DCB$

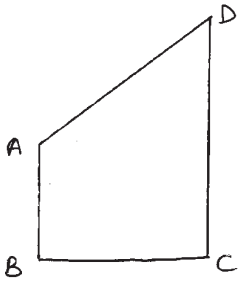
(ii) AC = DB.

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

(ii) Find the value of 98×102

Q19. Prove that the angles opposite to equal sides of an isosceles triangle are equal.

Q20. AB and CD are respectively the smallest and the longest sides of a quadrilateral ABCD as shown in the given figure. Prove that $\angle A > \angle C$.



SECTION – D

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

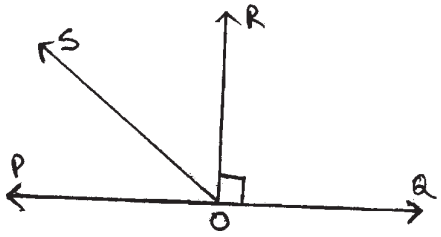
Q22. Evaluate : $\frac{(25^{3/2} \times (243^{3/5} \times (4^{3/2}}{(16^{5/4} \times (8^{4/3} \times (15^{2}}$

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.

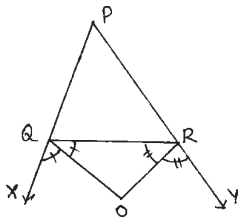
Q25. In the figure, POQ is a straight line. Ray OR is perpendicular to line PQ. OS is another ray lying between rays OP and OR.

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

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

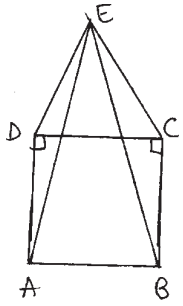


Q27. If the polynomials $ax^3 + 4x^2 + 3x - 4$ and $x^3 - 4x + a$ leave the same remainder when divided by $(x - 3)$, find the value of a.

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 $125x^3 - 2y^3$.

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 :

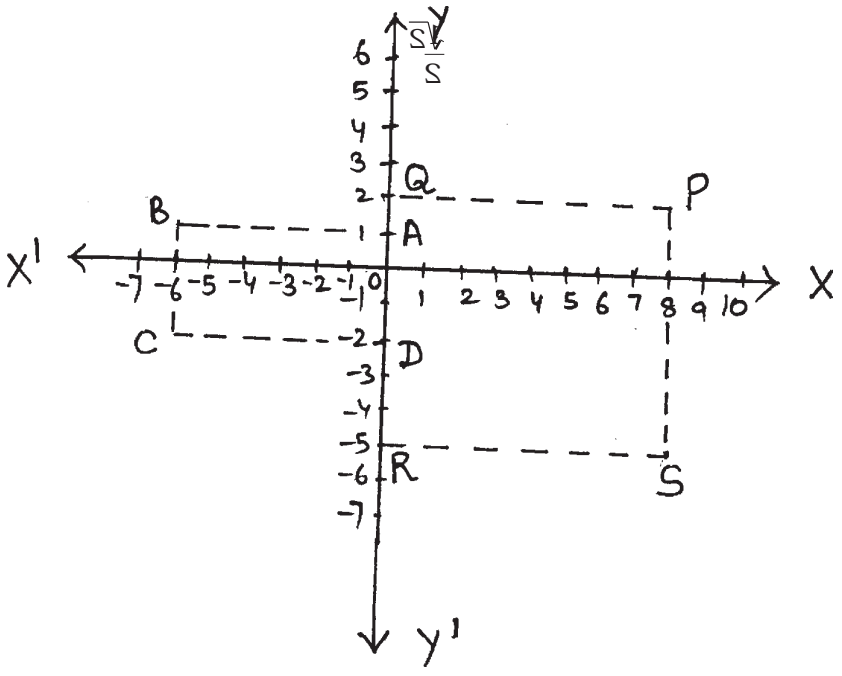
(i) Write the coordinates of point C.

(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.



SUMMATIVE ASSESSMENT–1 (2013–2014) 9/2013

CLASS–IX (SET–II)

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. If $x^{51} + 51$ is divided by $x + 1$ then, find the remainder.

Q2. What is the degree of a zero polynomial?

Q3. What is the measure of an exterior angle of a triangle whose interior opposite angles are 43° and 27°?

Q4. In ΔABC if AB = BC then which two angles will be equal? Give reason.

SECTION – B

Q5. Express $1.\overline{43}$ in the form $\frac{q}{p}$.

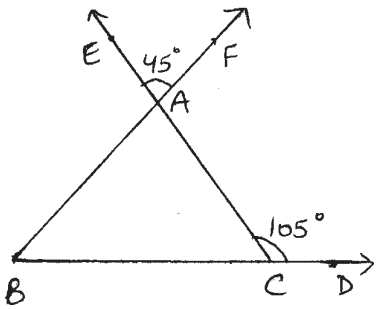
Q6. Show that $(x - 2)$ is a factor of the polynomial $f(x) = 2x^3 - 3x^2 - 17x + 30$.

Q7. In the given figure, A, B and C are three points on a line and B lies between A and C, then prove that AB + BC = AC.

Q8. Give the dimensions of rectangle if its area is $y^2 + 13y + 12$.

Q9. Find the area of a triangle with perimeter 42cm and two sides 14cm and 13cm.

Q10. In the given figure, the side BC, CA and AB of a ΔABC have been produced to D, E and F respectively. If ∠ACD = 105° and ∠EAF = 45°, find all the angles of the ΔABC.



SECTION–C

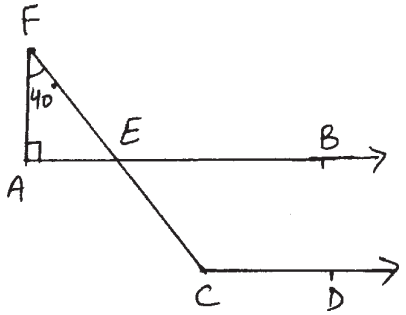
Q11. Represent $\sqrt{7.9}$ on the number line.

Q12. Rationalise the denominator of $\frac{6}{\sqrt{5}+\sqrt{3}}$ and hence find its value if $\sqrt{5}$ = 2.2 and $\sqrt{3}$ = 1.7

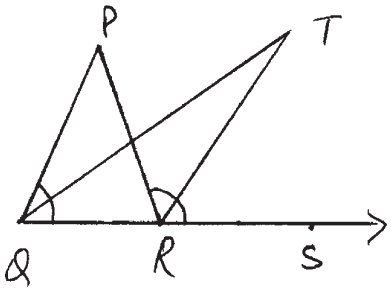
Q13. There is a pond in the shape of a rhombus. The perimeter of the pond is 40m and its diagonal is 16m. Find the area of the pond.

Q14. Factorise : $4x^2 + 9y^2 + 4z^2 - 12xy + 12yz - 8zx$.

Q15. In the given figure, if AB ∥ CD, ∠FAE = 90° and ∠AFE = 40°, find ∠ECD.

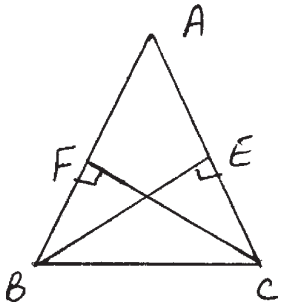


Q16. In the given figure, the side QR of ΔPQR is produced to a point S. If the bisectors of ∠PQR and ∠PRS meet at point T, then prove that ∠QTR = $\frac{1}{2}$ ∠QPR.

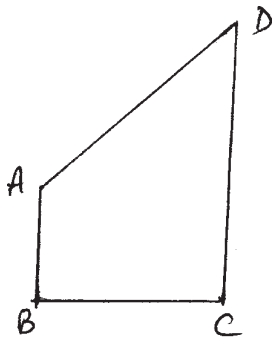


Q17. Show that 2 and $\frac{1}{3}$ are the zeroes of the polynomial $f(x) = 3x^3 - 2x^2 - 7x - 2$.

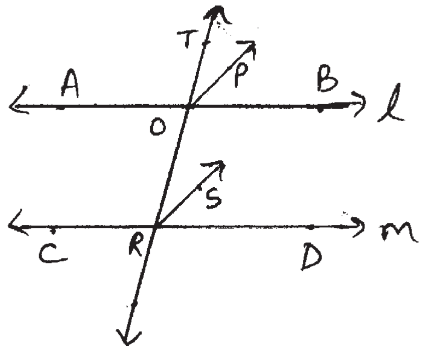
Q18. ABC is an isosceles triangle in which altitudes BE and CF are drawn to equal sides AC and AB respectively. Show that these altitudes are equal.



Q19. AB and CD are respectively the smallest and the longest sides of a quadrilateral ABCD as shown in the given figure. Prove that ∠B > ∠D.



Q20. In the given figure, $l \parallel m$ and TR is a transveral. If OP and RS are respectively bisectors of corresponding angles TOB and ORD, prove that OP || RS.



SECTION – D

Q21. Find a and b if

$$\sqrt{\varepsilon}a + b = \frac{I+\sqrt{\varepsilon}}{I-\sqrt{\varepsilon}} + \frac{I-\sqrt{\varepsilon}}{I+\sqrt{\varepsilon}}$$

Q22. Simplify : $\left(\frac{81}{16}\right)^{-3/4} \times \left(\frac{25}{9}\right)^{-3/2} \div \left(\frac{5}{2}\right)^{-3}$

Q23. Factorise : $x^3 + 5x^2 - 2x - 24$ using factor theorem.

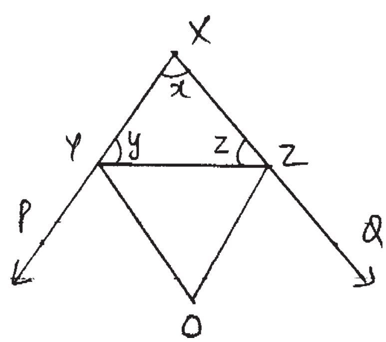
Q24. If the polynomials $2x^3 + ax^2 + 3x - 5$ and $x^3 + x^2 - 4x + a$, leave the same remainder when divided by $x - 2$, find the value of a.

Q25. 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.

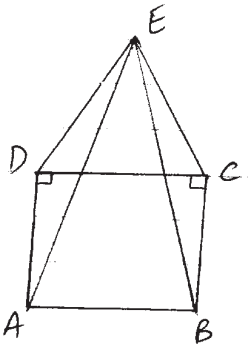
Q26. Verify $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$ and hence factorise $27a^3 + 5\sqrt{5}b^3$.

Q27. Plot the points A (0, 3), B (5, 3), C (4, 0) and D (–1, 0) on the graph paper. Identify the figure ABCD. Write any one property of the figure so obtained.

Q28. The sides XZ and YZ of ΔXYZ are produced to points P and Q respectively. If bisectors YO and ZO of $\angle ZYP$ and $\angle YZQ$ respectively meet at point O then, prove that $\angle YOZ = 90^\circ - \frac{1}{2}\angle YXZ$.

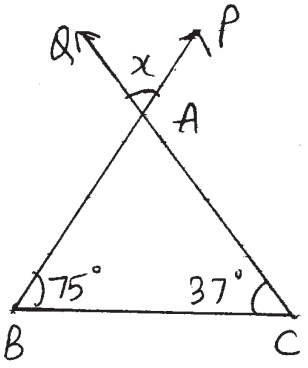


Q29. In the given figure, ABCD is a square and ΔDEC is an equilateral triangle. Prove that (i) ΔADE ≅ ΔBCE (ii) AE = BE.



Q30. (i) If two lines intersect each other prove that the vertically opposite angles are equal.

(ii) Using above, find the value of *x* in the given figure.



Q31. Use the following graph to answer the following questions.

(i) Write the coordinates of the point P.

(ii) Write the abscissa of point N.

(iii) Write the ordinate of point A.

(iv) Name the point whose coordinates are (2, 0).

(v) If AOCB is representing a park, write two ways to keep the surroundings of the park clean.