AFBBS

Tushar Ahuja
IX-F
43

# SUMMATIVE ASSESSMENT-I (2015-16)
## MATHEMATICS
## CLASS-IX

Time allowed : 3 hours                                    Maximum Marks : 90

**General Instructions :**
1.  All questions are **compulsory**.
2.  The question paper consists of **31** questions divided into **four sections A, B, C, 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.
3.  There is no overall choice in this question paper.
4.  Use of calculator is not permitted.

## SECTION-A

Question numbers **1** to **4** carry **1** mark each.

1.  Identify a rational number among the following numbers:                  (1)

$$\sqrt{\frac{25}{6}}, \sqrt{\frac{20}{4}}, 2.\overline{27}, \sqrt{2}.\sqrt{3}$$

2.  Write the degree of the polynomial $2 + 3x + x^2 + x^4$.                  (1)

3.  The measures $(30 - a)°$ and $(125 + 2a)°$ of two angles are supplement of each other. Find the value of a.                  (1)

4.  Find the reflection of the point $(4, -4)$ in x-axis.                  (1)

## SECTION-B

Question numbers **5** to **10** carry two marks each.

5.  Simplify: $8\sqrt{3} - 2\sqrt{3} + 4\sqrt{3}$                  (2)

6.  Expand $(2x - 3y + 5z)^2$ using suitable identity.                  (2)

7.  In the given figure AC = BD, then prove that AB = CD.                  (2)

A———————D
   B  C

8.  ABC is a right angled triangle in which $\angle B = 90°$ and AB = BC. Find $\angle A$ and $\angle C$.                  (2)

9.  On which axes the following points lie?                  (2)

$(0, 4), (-5, 0), (5, 0)$ and $(0, -3)$

10. Find the perimeter of an isosceles right angled triangle having an area of 5000 m²
(Use $\sqrt{2}$ = 1.41). (2)

**SECTION-C**

Question numbers **11** to **20** carry three marks each.

11. Represent $\sqrt{5}$ on the number line. (3)

12. Express $2.\overline{4178}$ in the form $\dfrac{p}{q}$, where p and q are integers and $q \neq 0$. (3)

13. By actual division, find the remainder, when polynomial $2x^4 - 3x^3 + 4x^2 - 5x - 1$ is divided by $(x^2 + x + 1)$. (3)
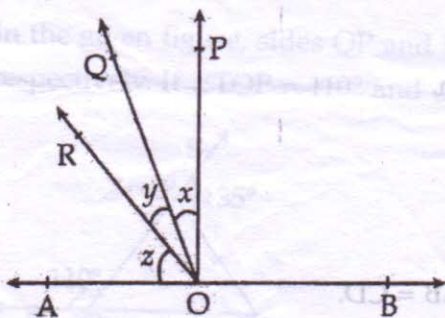
14. Factorise: $x^4 - y^4$ (3)

15. In a triangle ABC, X and Y are the points on AB and BC respectively. If AB = BC and BX = BY, show that AX = CY. (3)
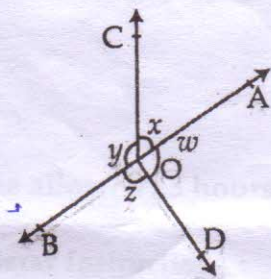
16. In the given figure, line *l* is the bisector of an angle $\angle A$ and B is any point on *l*. BP and BQ are perpendiculars from B to be arms of $\angle A$. Show that (i) $\triangle APB \cong \triangle AQB$ and (ii) BP = BQ. (3)
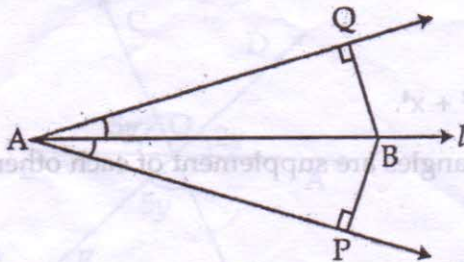


17. In the given figure, PO $\perp$ AB. If $x : y : z = 1 : 3 : 5$, then find the measures of $x$, $y$ and $z$. (3)
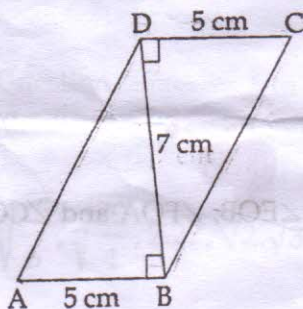
18. In the figure, if $x + y = w + z$, then prove that AOB is a straight line. (3)



19. Plot the points $(x, y)$ given in the following table on the cartesian plane, choosing suitable units of distances on the axes: (3)

| x | 2 | 4 | −4 | −2 | 6 | 0 |
|---|---|---|----|----|---|---|
| y | 5 | −3 | 3 | 5 | −1 | 2.5 |

20. In the given figure, BD is diagonal of a quadrilateral ABCD. Find the area of the quadrilateral ABCD. (3)



SECTION-D

Question numbers 21 to 31 carry four marks each.

21. Simplify: (4)

$$\frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}} + \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$$

22. (a) Find 'x' if: (4)

$$\left(\frac{3}{4}\right)^6 \times \left(\frac{16}{9}\right)^5 = \left(\frac{4}{3}\right)^{x+2}$$

(b) Simplify:

$$(27)^{2/3} - \sqrt{9} \times 10° + \left(\frac{1}{169}\right)^{\frac{-1}{2}}$$

IX/Mathematics     3     **P.T.O.**

23. Factorise: (4)

$$x^3 - 3x^2 - 9x - 5$$

24. Find the value of 'k', if: (4)

$x + 2$ is a factor of $4x^3 + 3x^2 - 4x + k$

25. If $x = 3 + \sqrt{5}$. Find $\left(x - \dfrac{1}{x}\right)^2$ (4)

26. If two lines intersect each other then prove that the vertically opposite angles are equal. (4)

27. There is a triangular park PQR whose angles P, Q and R are in ratio 2 : 3 : 5 respectively. Three friends Rashmi, Sita and Geeta go daily on morning walk and walk along these three side PQ, QR and PR respectively. Who walks maximum distance among these three? Who walks least? Why morning walk is necessary for us? (4)

28. Evaluate $a^3 + b^3$ if $a + b = 5$ and $ab = \dfrac{11}{3}$. (4)

29. Prove that the sum of the angles of a triangle is 180°. (4)

30. In given figure determine the value of y and hence find $\angle EOB$, $\angle FOA$ and $\angle COD$. (4)
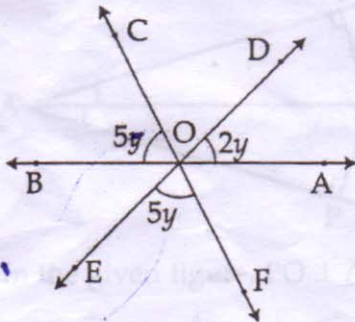


31. In the given figure, sides QP and RQ of a triangle PQR are produced to points S and T respectively. If $\angle TQP = 110°$ and $\angle RPS = 135°$, find $\angle PRQ$. (4)