

**Sample Paper – 2014
Class – IX
Subject – Mathematics**

Multiple Questions & Concept Understanding

Max. Marks : 90

Time: 3 Hrs.

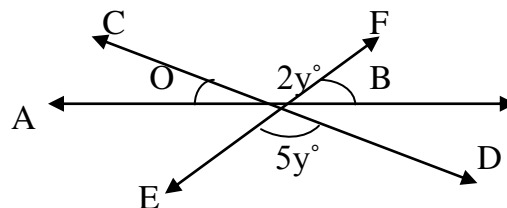
General Instructions :-

1. All Questions are compulsory.
2. The paper consists of 34 questions divided into four section A, B, C and D.
3. (i) Section A contains 8 MCQs of 1 mark each.
(ii) Section B contains 6 questions of 2 marks each.
(iii) Section C contains 10 questions of 3 marks each.
(iv) Section D contains 10 questions of 4 marks each.

Section - A

- Q. 1 Which of the following numbers can be represented as non-terminating and repeating decimals?
(a) $\frac{39}{24}$ (b) $\frac{3}{16}$ (c) $\frac{3}{11}$ (d) $\frac{137}{25}$
- Q. 2 When $p(x) = x^3 - ax^2 + x$ is divided by $(x-a)$, the remainder is-
(a) 0 (b) a (c) 2a (d) 3a
- Q. 3 The zeroes of the polynomial $p(x) = 2x^2 + 5x - 3$, are-
(a) $-3, \frac{1}{2}$ (b) $3, \frac{1}{2}$ (c) $3, -\frac{1}{2}$ (d) 0
- Q. 4 The factorization of $6 - 5x - x^2$, yields
(a) $(x-6)(x+1)$ (b) $(x-6)(x-1)$ (c) $(x+6)(x+1)$ (d) $(x+6)(1-x)$
- Q. 5 The sum of all the interior angles of a polygon of n-sides, $n \geq 3$ is
(a) $n \times 180^\circ$ (b) $(n-1) \times 180^\circ$ (c) $(n-2) \times 180^\circ$ (d) $(n-3) \times 180^\circ$

Q. 6 Find the value of $y - 5y^\circ$

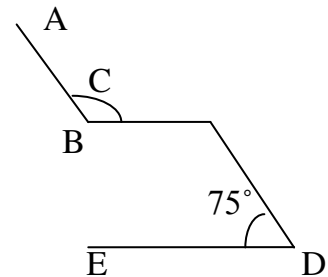


- (a) 15° (b) 30° (c) 45° (d) 60°

- Q. 7 The percentage increase in the area of a triangle if its each side is doubled is-
 (a) 100% (b) 200% (c) 300% (d) 400%
- Q. 8 If the ratio of three angles of a triangle is 1:2:3, the smallest angle is-
 (a) 15° (b) 30° (c) 45° (d) 60°

Section - B

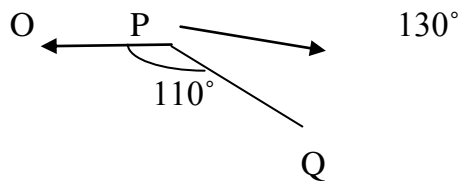
- Q. 9 If $x=7+4\sqrt{3}$, find the value of $\sqrt{x} + \frac{1}{\sqrt{x}}$
- Q.10 Factorize the polynomial: $7a^3+ 56b^3$.
- Q.11 If $(x+1)$ and $(x-1)$ are factors of mx^3+x^2-2x+n , find the value of m .
- Q.12 Write the postulate 5 of Euclid's Postulates.
- Q.13 Find the value of x , if $AB\parallel CD$ and $BC\parallel ED$. x°



- Q.14 In a ΔABC , if $AB=AC$ and $\angle A=70^\circ$, find $\angle B$ and $\angle C$.

Section - C

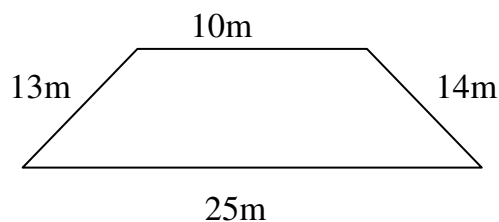
- Q.15 If $x=2+\sqrt{3}$, find the value of $x^3+\frac{1}{x^3}$.
- Q.16 Find a and b where
- $$\frac{7+\sqrt{5}}{7-\sqrt{5}} - \frac{7-\sqrt{5}}{7+\sqrt{5}} = a + 7\sqrt{5}b$$
- Q.17. Represent 3.765 on number line.
- Q.18 Express $0.12\overline{3}$ in $\frac{p}{q}$ form.
- Q.19 Show that 1 is a zero of the polynomial $x^3-23x^2+142x-120$. Also, find the other zeroes of the polynomial.
- Q.20 In fig., $OP\parallel RS$. Determine $\angle PQR$. $\angle R$ $\angle S$



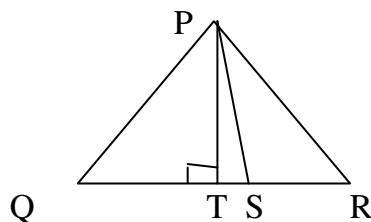
- Q.21 Find six rational numbers between 3 and 4.
- Q.22 State and Prove angle sum property of a triangle.
- Q.23 Prove that the sides opposite to equal angles of a triangle are equal.
- Q.24 Sides of a triangle are in the ratio of 12:17:25 and its perimeter is 540 cm. Find its area.

Section - D

- Q.25 If $a=2+\sqrt{3}+\sqrt{5}$ and $b=3+\sqrt{3}-\sqrt{5}$, find the value of $a^2+ b^2- 4a- 6b- 3$.
- Q.26 If $a+b+c=5$ and $ab+bc+ca=10$, find the value of $a^3+b^3+c^3-3abc$.
- Q.27 Find the value of a and b so that the polynomial (x^3-10x^2+ax+b) is exactly divisible by $(x-1)$ as well as $(x-2)$.
- Q.28. Find the area of the field which is in shape of trapezium.

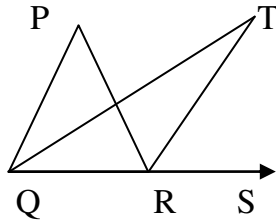


- Q.29 The three vertices of ΔABC are A (1,4), B (-2,2) and C(3,2). Plot these points on a graph paper and calculate the area of ΔABC .
- Q.30 In the Fig. PS is the bisector of the $\angle P$ and PT is perpendicular to QR, then show that angle TPS is half of the difference between $\angle Q$ and $\angle R$.



- Q.31 State and prove ASA congruence rule.

Q.32 In fig., the side QR of $\triangle PQR$ is produced to a point S. If the bisectors of $\angle PQR$ and $\angle PRS$ meet at point T, then prove that $2 \angle QTR = \angle QPR$.



Q.33 An umbrella is made by stitching 12 triangular pieces of cloth, each measuring (50 cm \times 20 cm \times 50 cm). Find the area of the cloth used in it.

Q.34 The sides AB and AC of $\triangle ABC$ are produced to points E and D respectively. If bisectors BO and CO of $\angle CBE$ and $\angle BCD$ respectively meet at point O, then prove that

$$\angle BOC = 90^\circ - \frac{1}{2} \angle BAC.$$

ANSWER KEY

- | | |
|------|-------------------------|
| 1. c | 26. -25 |
| 2. b | 27. a=23, b= -14 |
| 3. a | 28. 196m ² |
| 4. d | 29. 5 sq.units. |
| 5. c | 30. ----- |
| 6. a | 31. ----- |
| 7. c | 32. ----- |
| 8. b | 33. 5880cm ² |
| 9. 4 | 34. ----- |
10. $7(a+2b)(a^2-2ab+4b^2)$
11. $m=2$
12. For every line L and for every point P not lying on L, there exists a unique line M passing through P and parallel to L.
13. 105°
14. 55°
15. 52

16. $0, \frac{1}{11}$

17. -----

18. $\frac{37}{300}$

19. 10,12

20. 60°

21. $\frac{22}{7}, \frac{23}{7}, \frac{24}{7}, \frac{25}{7}, \frac{26}{7}, \frac{27}{7}$

22. -----

23. -----

24. 9000cm^2

25. 0

Paper Submitted By:

Name SHIVANSHU ATREY

Email shivanshu_atrey@hotmail.com

Phone No. 9001002213, 9772202213