

PRACTICE PAPER - 2019-20
Class - X
Sub. - Mathematics (Standard)

Time : 3.00 Hrs.

M.M. : 80

SECTION-A

(20x1=20)

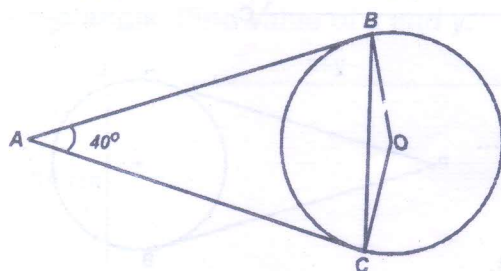
Q.1 to Q. 20 are multiple choice questions.

- Q.1** If two positive integers p and q can be expressed as $p = ab^2$ and $q = a^3b$, where a, b being prime numbers, then LCM (p, q) is equal to -
 (a) ab (b) a^2b^2 (c) a^3b^2 (d) a^2b^3
- Q.2** The number of polynomials having zeroes as (-2) and (5) is -
 (a) 1 (b) 2 (c) 3 (d) More than 3
- Q.3** If $x = 2$ is a solution of the equation $x^2 - 5x + 6K = 0$, the value of K is.....
 (a) 1 (b) -1 (c) 2 (d) -2
- Q.4** If $(P-1), (P+3), (3P-1)$ are in AP, then value of P is -
 (a) 5 (b) 4 (c) 2 (d) 1
- Q.5** In $\triangle ABC$ $AB = 6\sqrt{3}$ cm, $AC = 12$ cm and $BC = 6$ cm. The angle B is -
 (a) 30° (b) 60° (c) 120° (d) 90°
- Q.6** If $P(\frac{a}{3}, 4)$ is the mid-points of the line segment joining the points $Q(-6, 5)$ and $R(-2, 3)$ then the value of a is -
 (a) -4 (b) -12 (c) 12 (d) -6

Q.7 In given fig -

$\angle BAC = 40^\circ$,

then $\angle BOC = ?$

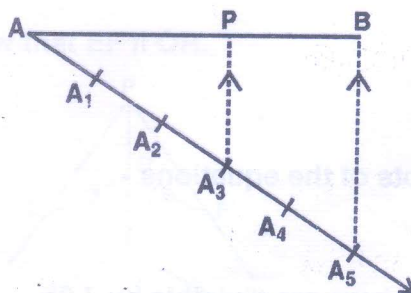


- (a) 40° (b) 140° (c) 50° (d) 45°

Q.8 In given fig.

$AA_1 = A_1A_2 = A_2A_3 = A_3A_4 = A_4A_5$

Value of ratio $\frac{AP}{AB} = ?$



- (a) 2 : 3 (b) 3 : 5 (c) 5 : 3 (d) 1 : 3

(P.T.O.)

Q.9 If $\cos 9\alpha = \sin \alpha$ and $9\alpha < 90^\circ$, the value of $\tan 5\alpha$ is -

- (a) $\frac{1}{\sqrt{3}}$ (b) $\sqrt{3}$ (c) 1 (d) 0

Q.10 If the area of a circle is numerically equal to its circumference, then the radius of the circle is -

- (a) 2 units (b) 0 units (c) (-1) units (d) 0.2 units

Q.11 If $\sin A = \cos A$ and $0^\circ < A < 90^\circ$, then value of A is.....

Q.12 $\frac{23}{23 \times 5^2}$ is terminated after.....decimal places.

Q.13 If α and β are the zeroes of $P(x) = ax^2 + bx + c$, $a \neq 0$ then $\alpha + \beta =$

Q.14 The pair of linear equations $a_1x + b_1y + c_1 = 0$; $a_2x + b_2y + c_2 = 0$ has a unique solution then

$$\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$$

Q.15 Find discriminant of $x^2 + 4x + 4 = 0$

Q.16 The 10th term of an AP 2, 7, 12 is _____ ?

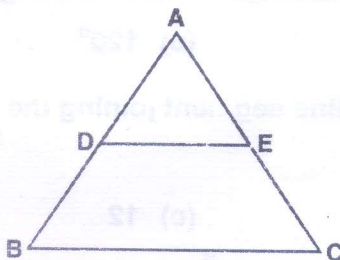
Q.17 Distance between origin (0,0) and (3,4) is.....

Q.18 In given figure $DE \parallel BC$

$$AB = 5.6 \text{ cm}$$

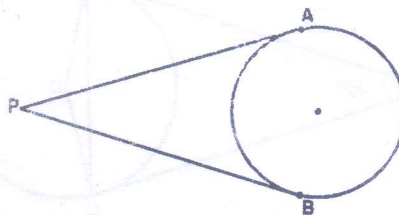
$$AD = 1.6 \text{ cm}$$

find $AE : EC$.



Q.19 In given

PA is equal to



Q.20 How many tangents can a circle have.

SECTION-B

(6x2=12)

Q.21 Solve for x and y

$$99x + 101y = 1499$$

$$101x + 99y = 1501$$

Q.22 Find the nature of the roots of the equations -

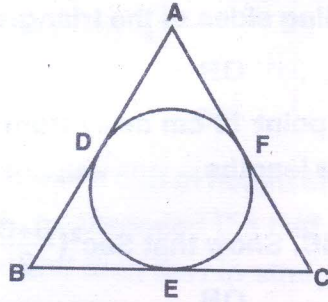
$$2x^2 - 6x + 3 = 0$$

Q.23 How many three digit numbers are divisible by 7 ?

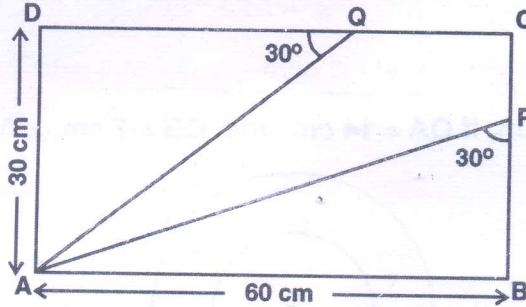
Q.24 If the points A (4, 3) and B (x, 5) are on the circle with centre O (2, 3). Find the value of x.

(3)

Q.25 In given figure, if $AB = AC$ prove that $BE = EC$



Q.26 In the given figure, ABCD is a rectangle in which line segment AP and AQ are drawn. Find the length (AP + AQ)



SECTION-C

(8x3=24)

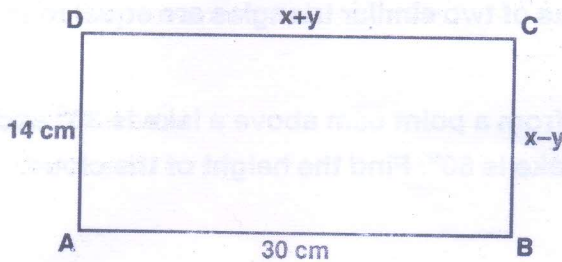
Q.27 Prove that $3 + 2\sqrt{5}$ is an irrational number.

OR

Prove that $(5 + \sqrt{3})(5 - \sqrt{3})$ is a rational number.

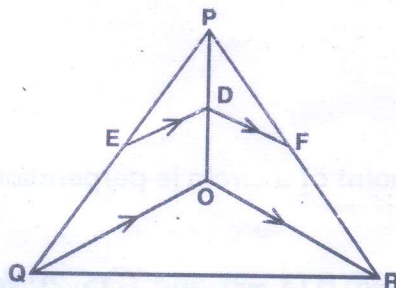
Q.28 Find all the zeroes of the polynomial $x^4 - 5x^2 + 2x^2 + 10x - 8$, if two of its zeroes are $\sqrt{2}$ and $-\sqrt{2}$.

Q.29 In figure, ABCD is a rectangle. Find value of x and y.



Q.30 If the sum of all the terms of an AP 1, 4, 7, 10, x is 287, find x.

Q.31 In figure $DE \parallel OQ$ and $DF \parallel OR$. Show that $EF \parallel QR$.



OR

State and prove pythagoras theorem.

(P.T.O.)

(4)

Q.32 Draw a triangle ABC with side BC = 6 cm, AB = 5 cm and $\angle ABC = 60^\circ$. Then construct a triangle whose sides are $\frac{3}{4}$ of the corresponding sides of the triangle ABC.

OR

Draw a circle of radius 6 cm. From a point 10 cm away from its centre, construct the pair of the tangents to the circle and measure the lengths.

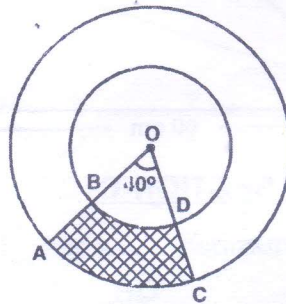
Q.33 If A, B, C are interior angles of a ΔABC . Show that $\sec^2\left(\frac{B+C}{2}\right) - 1 = \cot^2 \frac{A}{2}$

OR

Prove that :-

$$\frac{1 + \sec A}{\sec A} = \frac{\sin^2 A}{1 - \cos A}$$

Q.34 Find the area of shaded region, if OA = 14 cm and OB = 7 cm, $\angle AOC = 40^\circ$



SECTION-D

(6x4=24)

Q.35 State and prove basic proportionality theorem.

OR

Prove that the ratio of the areas of two similar triangles are equal to the ratio of the square of their corresponding sides.

Q.36 Angle of elevation of a cloud from a point 60m above a lake is 30° and the angle of depression of the reflection of cloud in the lake is 60° . Find the height of the cloud.

Q.37 Prove that -

$$\sqrt{\frac{1 + \sin A}{1 - \sin A}} = \frac{\cos A}{1 - \sin A} = \sec A + \tan A$$

OR

Prove geometrically that -

(i) $\sin^2 \theta + \cos^2 \theta = 1$

(ii) $\sec^2 \theta = 1 + \tan^2 \theta$

Q.38 Prove that the tangent at any point of a circle is perpendicular to the radius through the point of contact.

Q.39 The vertices of ΔABC are A (4, -6) B (3, -2) and C (5, 2). Verify that a median of ΔABC divides it into two triangles of equal areas.

(5)

Q.40 Solve :-

$$\frac{1}{a+b+x} = \frac{1}{a} + \frac{1}{b} + \frac{1}{x} \quad \left(\begin{array}{l} x \neq -(a+b) \\ x \neq 0 \end{array} \right)$$

OR

A fox and an eagle lived at the top of a cliff of height 6m whose base was at a distance of 10 m from a point A on the ground. The fox descended the cliff and went straight to the point A. The eagle flew vertically up to a height 'x' and then flew in straight line to point A, the distance, travelled by each being the same find the value of x.
