

PRE-BOARD EXAMINATION-1 (DECEMBER – 2019)

CLASS: IX

MATHEMATICS

Time: 3 hours

MAX. MARKS: 80

General Instructions:

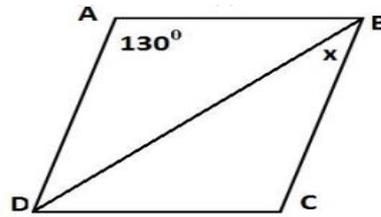
- i) All questions are compulsory.
- ii) The question paper consists of 40 questions divided into four sections A, B, C, and D.
- iii) Section A comprises of 20 questions of 1 mark each. Section B comprises of 6 questions of 2 marks each. Section C comprises of 8 questions of 3 marks each. Section D comprises of 6 questions of 4 marks each.
- iv) Use of calculators is not permitted

SECTION-A**Multiple Choice Questions:**

- 1 The value of n for which \sqrt{n} be a rational number is 1
(a) 2 (b) 4 (c) 3 (d) 5
- 2 If m and n are two natural numbers and $m^n = 32$, then n^{mn} is 1
(a) 5^2 (b) 5^3 (c) 5^{10} (d) 5^{12}
- 3 The curved surface area of a sphere is 616 cm^2 . Its radius is 1
(a) 7 cm (b) 5 cm (c) 6 cm (d) 8 cm
- 4 If the coordinates of the two points P and Q are $(-2, 3)$ and $(-3, 5)$, then the value of $[(\text{abscissa of P}) - (\text{abscissa of Q})]$ is 1
(a) -2 (b) 1 (c) -1 (d) -5
- 5 The radius of the circle is 5 cm and the distance of the chord from the centre of the circle is 4 cm then, the length of the chord is 1
(a) 8 cm (b) 7 cm (c) 6 cm (d) 5 cm
- 6 If $P(E) = 0.37$, then $P(\text{not } E)$ will be 1
(a) 0.37 (b) 0.63 (c) 0.57 (d) none of these
- 7 Two parallelograms are on equal bases and between the same parallels. The ratio of their areas is 1
(a) 1 : 2 (b) 1 : 1 (c) 2 : 1 (d) 3 : 1

8 In the figure ABCD is a rhombus, then the

- (a) 20°
- (b) 25°
- (c) 30°
- (d) 50°



value of x is

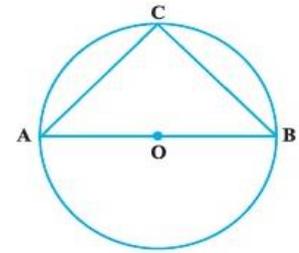
1

9 What is the $\frac{p}{q}$ form of the number $0.\bar{3}$

- (a) $\frac{1}{9}$
- (b) $\frac{1}{3}$
- (c) 9
- (d) 3

10 In the figure if AOB is a diameter of the circle and $AC = BC$ then, $\angle CAB$ is equal to

- (a) 35°
- (b) 60°
- (c) 90°
- (d) 45°



1

Fill in the blanks :

11 The value of $(\sqrt{11} + \sqrt{7})(\sqrt{11} - \sqrt{7})$ is _____.

1

12 If $a + b + c = 0$, then the value of $a^3 + b^3 + c^3$ is _____

1

OR

Degree of the polynomial $4x^4 + 0x^3 + 0x^5 + 5x + 7$ is _____.

13 The length of each side of an equilateral triangle having an area $9\sqrt{3} \text{ cm}^2$ is _____.

1

14 If $(2,0)$ is a solution of the linear equation $2x + 3y = k$, then the value of k is _____.

1

15 The sum of all the probabilities of an event is _____.

1

Answer the following :

16 Find the value of a , if $x - 2$ is a factor of $x^3 - 3x + 5a$.

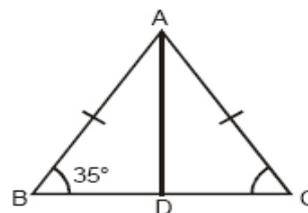
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17 Angles of a triangle are in the ratio $2 : 4 : 3$. Find the smallest angle of the triangle.

1

18 In the given figure, AD is the median. Find $\angle BAD$.

1



OR

In ΔPQR , $\angle P = 70^\circ$ and $\angle Q = 30^\circ$. Which side of this triangle is the longest?

- 19 The sides of a triangle are 3cm,4cm and 5cm. Find the area of the triangle. 1
- 20 Express $\sqrt{3}y = 2x$ as linear equation in two variables in standard form. 1

SECTION-B

- 21 Simplify $\left(\frac{64}{125}\right)^{-\frac{2}{3}}$ 2

OR

Represent $\sqrt{5}$ on the number line.

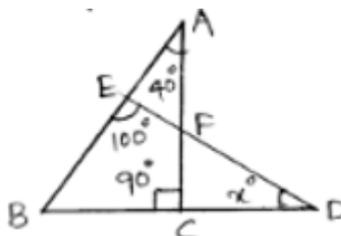
- 22 On one page of a telephone directory, there are 200 phone numbers. The frequency distribution of of their unit digits is given below: 2

Unit digit	0	1	2	3	4	5	6	7	8	9
Frequency	19	22	23	19	21	24	23	18	16	15

One of the numbers is chosen at random from the page.

What is the probability that the unit digit of the chosen number is

- (i) 5
- (ii) less than 3
- 23 In the given figure, find x. 2



- 24 Find the solution of the linear equation $x + 2y = 8$ which represents a point on (i) the x -axis 2
(ii) the y -axis
- 25 Ten observations 6,14,15,17, $x + 1$, $2x - 13$,30,32,34,43 are written in ascending order. The median of the data is 24. Find the value of x . 2

OR

If the mean of the observations $x, 2x + 1, 2x + 5, 2x + 9$ is 30, what is the mean of last two observations?

- 26 The base of an isosceles triangle is 12 cm and its perimeter is 32 cm. Find its area. 2

SECTION-C

- 27 Find the values of a and b in $\frac{3-\sqrt{5}}{3+2\sqrt{5}} = a\sqrt{5} - \frac{b}{11}$ 3
- 28 Show that $2x + 1$ is a factor of the polynomial $2x^3 - 11x^2 - 4x + 1$. 3

- 29 Plot the points (x, y) given by the following table. 3

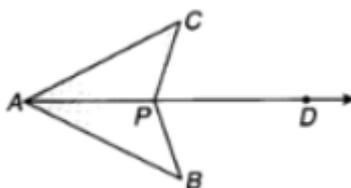
x	2	4	-4	-2	6	0
y	5	-3	3	5	-1	2

- 30 If a triangle and a parallelogram are on the same base and between the same parallels, then prove that the area of the triangle is equal to half the area of the parallelogram. 3
- 31 Construct a triangle whose sides are 3.6 cm , 3.0 cm and 4.8 cm . Bisect the smallest angle and measure each part. 3

OR

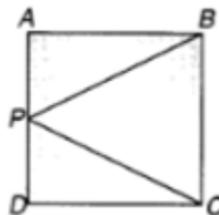
Draw a line segment $PQ=8.4\text{ cm}$. Divide it into 4 equal parts, using ruler and compass.

- 32 In the given figure, AD is the bisector of $\angle BAC$ and $\angle CPD = \angle BPD$. Prove that $\triangle CAP \cong \triangle BAP$ and $CP=BP$. 3

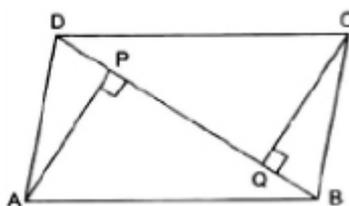


OR

In the figure below, $ABCD$ is a square and P is the mid-point of AD . BP and CP are joined. Prove that $\angle PCB = \angle PBC$.



- 33 In the given figure AP and CQ are perpendiculars to the diagonal BD of a parallelogram $ABCD$. Prove that $AP=CQ$. 3



- 34 Find the quotient and the remainder when $x^3 - 3x^2 + 4x - 5$ is divided by $x - 2$. 3

OR

Without finding the cubes, factorise $(2r - 3s)^3 + (3s - 5t)^3 + (5t - 2r)^3$

SECTION-D

- 35 Prove that the angle subtended by an arc at the centre is double the angle subtended by it at any point on the remaining part of the circle. 4

- 36 Construct a ΔXYZ in which $\angle Y = 40^\circ, \angle Z = 30^\circ$ and $XY + YZ + ZX = 10 \text{ cm}$ 4

OR

Construct a triangle ABC , in which $BC = 7 \text{ cm}, \angle B = 75^\circ$ and $AB + AC = 13 \text{ cm}$.

- 37 Draw the graph of the linear equation $3x + 4y = 6$. At what points the graph cuts the x -axis and the y -axis. 4

- 38 A solid cylinder has total surface area of 462 cm^2 . Its curved surface area is one third of its total surface area. Find the volume of the cylinder. 4

OR

The radius and height of a cone are in the ratio 3: 4 and its volume is 301.44 cm^3 . Find the radius and slant height of the cone.

- 39 The lengths of the sides of a triangle are 7cm, 13cm and 12cm. Find the length of perpendicular from the opposite vertex to the side whose length is 12cm. 4

OR

A floral design on a floor is made up of 16 tiles which are triangular, the sides of a triangle being 9 cm, 28 cm, and 35 cm. Find the cost of polishing the tiles at the rate of 50paise per cm^2 . ($\sqrt{6} = 2.45$)

- 40 Draw a histogram and frequency polygon for the following data. 4

Age (in years)	No. or persons
0 - 4	3
4 - 8	6
8 - 12	8
12 - 16	10
16 - 20	8
20 - 24	5
24 - 28	3