Gujarat State Board
Class IX Mathematics
Sample Paper - 1

Time: 2 hrs   **Total Marks: 60**

General Instructions:

1. There are **30** objective type questions in this part and all are compulsory.
2. The questions are serially numbered from **1** to **30** and each carries **1** mark.
3. You are supplied with separate OMR sheet with the alternatives (A) ○ (B) ○ (C) ○, (D) ○ against each question number. For each question, select the correct alternative and darken the circle ○ as ● completely with the pen against the alphabet corresponding to that alternative in the given OMR sheet.

- From the following **1** to **30** questions, select the correct alternative from the given four answers and darken the circle with pen against the alphabet, against number in OMR sheet.
- Each question carries **1** mark.

Part-A

For each question, select the correct alternative from those given below each question to make the statement true: [1 mark each]   30

1.

There are _____ rational numbers between two given numbers.
  (A) two
  (B) can't say
  (C) finitely many
  (D) infinitely many

2.

The cost of one mathematics textbook is Rs. (x + 4), then _____ textbooks can be purchased for Rs. (x³ + 64).

(A) $x^2 + 8x + 16$

(B) $x^2 - 8x - 16$

(C) $x^2 - 4x + 16$

(D) $x^2 - 4x - 16$

3.

If U = {x | x ∈ N, x < 5}, A = {x | x ∈ N, x ≤ 2} then A' =

(A) {1, 2}

(B) {1, 2, 3, 4, 5}

(C) {3, 4}

(D) {3, 4, 5}

4.

The number 0.235 is

(A) a natural number

(B) a real number

(C) an irrational number

(D) a rational number

5.

If t is a transversal between two parallel lines l and m, interior angles on the same sides of the transversal are _____ .

(A) supplementary

(B) linear pair

(C) complementary

(D) congruent

6.

If a = b = c, then a³ + b³ + c³ − 3 abc =

(A) a³

(B) 2a³

(C) 3a³

(D) 0

7.

If m ∠A = 81° and m ∠B = _____, then ∠A and ∠B are called complementary angles.

(A) 99°

(B) 18°

(C) 81°

(D) 9°

8.

_____ should be added to $x^3 - 76$ so that the resulting polynomial is divisible by $x - 4$.

(A) 5

(B) –5

(C) 12

(D) –12

9. If P – Q – R, _____ is the ray opposite to $\overrightarrow{QR}$.

(A) $\overrightarrow{PQ}$

(B) $\overrightarrow{QP}$

(C) $\overrightarrow{RQ}$

(D) $\overrightarrow{RP}$

10. If ΔABC is not a right angled triangle, then _____.

(A) $AB^2 + BC^2 = AC^2$

(B) AB + BC = AC

(C) AC > AB + BC

(D) AC < AB + BC

11.

For ΔABC, BC _____ ΔABC.

(A) ∈

(B) ∉

(C) ⊂

(D) ⊄

12.

For ΔABC, if m∠A = 40°, m∠C = 50°, then the, smallest side of ΔABC is _____

   (A) $\overline{AB}$
   (B) $\overline{BC}$
   (C) $\overline{AC}$
   (D) Cannot be determined

13. Every line has at least _____ distinct points.
   (A) 1
   (B) 2
   (C) 3
   (D) 4

14. _____ represents ray XY.
   (A) $\overline{XY}$
   (B) $\overrightarrow{YX}$
   (C) $\overleftarrow{XY}$
   (D) $\overrightarrow{XY}$

15.

The measure of an angle is equal to $\frac{1}{3}$ rd the measure of its supplementary angles. The measure of the angle is
   (A) 15°
   (B) 30°
   (C) 45°
   (D) 60°

16.

If distinct points A and B lie in a plane X, then X ∩ $\overleftrightarrow{AB}$ = _____ .
   (A) {A, B}
   (B) $\overleftrightarrow{AB}$
   (C) Plane X
   (D) AB

17.

Euclid stated that all right angles are equal to each other in the form of a/an

_____.

(A) proof
(B) definition
(C) postulate
(D) axioms

18.

. The measure of an angle always lies between _____ .
(A) 0° and 90°
(B) 90° and 180°
(C) 0° and 100°
(D) 0° and 180°

19. Point (4, 0) lies on _____.
(A) $\overrightarrow{OX'}$
(B) $\overrightarrow{OY}$
(C) $\overrightarrow{OX}$
(D) $\overrightarrow{OY'}$

20. If (x³ + 28) is divided by (x + 3), the remainder is _____.
(A) 0
(B) 1
(C) –1
(D) 2

21. The linear equation 4x – y + 8 = 0 has _____ .
(A) no solution
(B) unique solutions
(C) only two solutions
(D) infinitely many solutions

22.

The number of dimensions a point has is _____.

  (A) 1

  (B) 4

  (C) 0

  (D) 2

23.

Point (5, −2) lies in the _____ quadrant.

  (A) I

  (B) II

  (C) III

  (D) IV

24.

. $\dfrac{\pi}{4}$ is

  (A) a natural number

  (B) an irrational number

  (C) a rational number

  (D) a whole number

25.

If B = {1, 2, 3, 4}, then number of subsets of A are =

  (A) 2

  (B) 4

  (C) 8

  (D) 16

26. If x – 2 is a factor of $3x^4 - 2x^3 + 7x^2 - 21x + k$, then the value of k is

    (A) 2

    (B) 9

    (C) 18

    (D) –18

27. $\sqrt{16}$ is not

    (A) a natural number

    (B) a real number

    (C) an irrational number

    (D) a whole number

28.

The $\dfrac{p}{q}$ form of $0.\overline{01}$ is

    (A) $\dfrac{1}{99}$

    (B) $\dfrac{10}{99}$

    (C) $\dfrac{100}{99}$

    (D) $\dfrac{101}{99}$

29.

'Lines are parallel to each other if they do not intersect', is a/an _____.

    (A) definition

    (B) axioms

    (C) postulate

    (D) proof

30.

. x + y = 0 passes through the _____ quadrants and the origin.
   (A) I and II
   (B) II and III
   (C) II and IV
   (D) III and IV

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Part-B

General Instructions:
1. There are three sections in this part with questions from 1 to 11.
2. All the questions are compulsory. Internal options are given.
3. Draw figures wherever required. Retain all the lines of construction.
4. The numbers on the right side represent the marks of the question.

SECTION A

Solve the following briefly: [2 marks each]

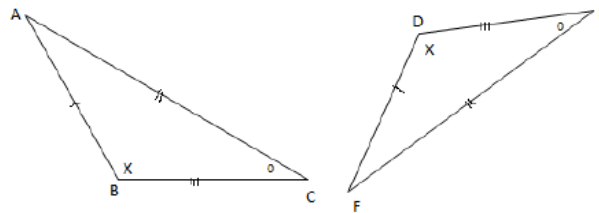1. If A – B – C, BC = 3 and AC = 9, then find AB.

2.

In which quadrant does the following point lie?

$$\left(\frac{1}{2}, \frac{-1}{2}\right)$$

3.

The following figures depict two congruent triangles (corresponding congruent parts are marked using the same signs.) State which correspondence between them is a congruence.

OR

In ΔABC, if AB = 8, BC = 5, then prove that 3 < AC < 13.

4.

Find the value of the following polynomials at value of x specified:

$p(x) = x^4 + 2x^3 - x + 5$, at $x = 2$

5.

Simplify

$$\left(\sqrt{3} - \sqrt{7}\right)\left(3 + \sqrt{5}\right)$$

OR

Simplify

$$16^{\frac{4}{3}} \times 4^{\frac{2}{3}}$$

SECTION B

Solve the following: [3 marks each]

6. In an isosceles triangle, if the measure of the third angle is 60° more than the measures of its congruent angles, then find the measures of all the angles of the triangle.

7.

In a class Rs. $(2x + 3)$ were collected from each student for a relief fund. If the total sum collected was Rs. $(2x^3 + x^2 - 5x - 3)$, find the number of students in the class.

OR

Find the value of $(-7)^3 + (12)^3 + (-5)^3$ by using an appropriate identity.

8.

If $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$, $A = \{1, 2, 4, 6, 8\}$, then find A', and also verify that $A \cup A' = U$.
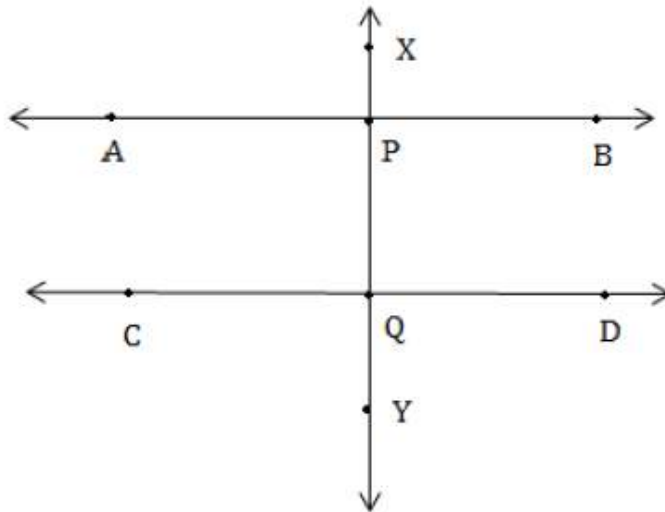
9.

Find the value of:

$$\frac{(81)^{\frac{1}{4}}}{(625)^{\frac{1}{4}}} + \frac{(216)^{\frac{1}{3}}}{(8)^{\frac{1}{3}}} - (729)^{\frac{1}{6}}$$

SECTION C

Solve the following: [4 marks each]

10.

.Draw the graphs of y = x + 1 and x + y – 3 = 0 on the same graph paper and find the point at which these lines intersect.

11.

Prove that if a line is perpendicular to one of the two given parallel lines, then it is also perpendicular to the other line.

OR

The measures of two supplementary angles differ by 34°. Find the measures of the angles.