

## GUJARAT BOARD CLASS 10 MATHS SAMPLE PAPER- SET 2

**Time: 75 Minutes**

**Total Marks: 50**

**General Instructions:**

1. There are 50 objective type questions in this part and all are compulsory.
2. The questions are serially numbered from 1 to 50 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 50 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**

1.

If A and B are complementary angles, then  $\sin A \cdot \sec B =$

- (A) 1
- (B)  $\frac{3}{2}$
- (C)  $-\frac{1}{2}$
- (D)  $\frac{3}{4}$

2.

The distance of A(x, y) from the origin is

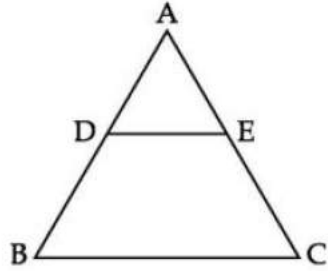
- (A)  $x^2 + y^2$
- (B)  $|x - y|$
- (C)  $|x + y|$
- (D)  $\sqrt{x^2 + y^2}$

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3.

In the given figure,  $DE \parallel BC$ , if  $AB = 7.6$  cm,  $AD = 1.9$  cm, then  $AE : EC$  is

- (A) 2 : 3
- (B) 1 : 3
- (C) 1 : 1
- (D) 4 : 3



4.

The tops of two poles of height 18 m and 12 m are connected by a wire making an angle of measure  $30^\circ$  with the horizontal. The length of the wire is

- (A) 12 m
- (B) 10 m
- (C) 8 m
- (D) 4 m

5.

The sum of probability of event A and the probability of event  $\bar{A}$  (not A) is .....

- (A) 0
- (B) 1
- (C) 0.5
- (D) 0.4

6.

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If  $\tan^2 \theta = \frac{8}{7}$ , then  $\frac{(1 + \sin \theta)(1 - \sin \theta)}{(1 - \cos \theta)(1 + \cos \theta)}$  is .....

- (A)  $\frac{7}{8}$
- (B)  $\frac{8}{7}$
- (C)  $\frac{49}{64}$
- (D)  $\frac{64}{49}$

7.

If the angle of elevation of the top of a tower at a distance of 400 m from its foot has measure of  $30^\circ$ , then the height of tower is.....

- (A)  $200\sqrt{2}$
- (B)  $\frac{400}{\sqrt{3}}$
- (C)  $200\sqrt{3}$
- (D)  $\frac{400}{\sqrt{2}}$

8.

If  $\theta$  is the measure of an acute angle and  $\sqrt{3} \sin \theta = \cos \theta$ , then  $\theta =$

- (A)  $30^\circ$
- (B)  $45^\circ$
- (C)  $60^\circ$
- (D)  $90^\circ$

9.

If the radius of a circle is increased by 10%, then corresponding increase in the area of the circle is

- (A) 19%
- (B) 10%
- (C) 21%
- (D) 20%

10.

In  $\Delta ABC$ , correspondence  $ABC \leftrightarrow BAC$  and  $ABC \leftrightarrow ACB$  is similarity. Then  $\Delta ABC$  is a/an ..... triangle.

- (A) Equilateral
- (B) Isosceles
- (C) Scalene
- (D) Right angled

11.

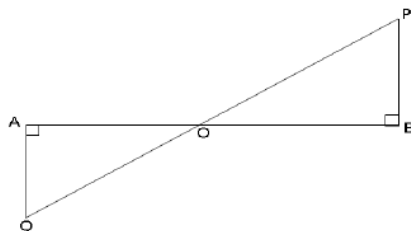
The roots of a given quadratic equation  $(x - 7)^2 - 16 = 0$  are \_\_\_\_\_.

- (A) 3 and 4
- (B) 3 and 11
- (C) -3 and -11
- (D) -3 and -6

12.

In the adjoining figure, PB & QA are perpendiculars to AB. If PO = 6 cm, QO = 9 cm and area of  $\Delta POB = 120 \text{ cm}^2$ , find the area of  $\Delta QOA$ .

- (A)  $180 \text{ cm}^2$
- (B)  $240 \text{ cm}^2$
- (C)  $270 \text{ cm}^2$
- (D) None of the above



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13.

If the radius of the base of a cylinder is doubled and the height remains unchanged, its curved surface area \_\_\_\_\_.

- (A) becomes half
- (B) three times the original
- (C) becomes double
- (D) does not change

14.

The ratio of corresponding sides of two similar triangles is 4 : 9. Then, the ratio of their areas is \_\_\_\_\_.

- (A) 4 : 9
- (B) 2 : 3
- (C) 3 : 2
- (D) 16 : 81

15.

If the sum of the three consecutive terms of A.P. is 48 and the product of the first and the last is 252, then  $d =$

- (A) 2
- (B) 3
- (C) 4
- (D) 16

16.

If the length of the rectangle is one more than the twice its width, and the area of the rectangle is 300 square meter. What is the measure of the width of the rectangle?

- (A) 25
- (B) 12
- (C) 24
- (D) -25

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17.

The quadratic equation ..... has 3 as one of its root.

(A)  $x^2 + x - 6 = 0$

(B)  $x^2 - x - 6 = 0$

(C)  $x^2 - x + 6 = 0$

(D)  $x^2 + x + 6 = 0$

18.

A quadratic equation has two equal roots, if \_\_\_\_\_.

(A)  $D < 0$

(B)  $D > 0$

(C)  $D = 0$

(D) D is non-perfect square

19.

Determine value of  $p(x) = 3x^2 + 7x + 4$  at  $x = 1$ .

(A) 14

(B) 10

(C) 11

(D) 7

]

20.

The ratio of the radii of two cones having equal height is 2 : 3. Then the ratio of their volumes is.....

(A) 4 : 6

(B) 8 : 27

(C) 3 : 2

(D) 4 : 9

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21.

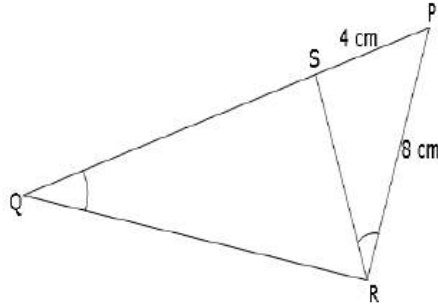
For arithmetic progression  $-2, -4, -6, -8, \dots$ , the common difference (d) is \_\_\_\_.

- (A) 2
- (B)  $-2$
- (C) 4
- (D)  $-8$

22.

In the adjoining figure,  $\angle PQR = \angle PRS$ . If  $PR = 8$  cm,  $PS = 4$  cm, find  $PQ$ .

- (A) 16 cm
- (B) 8 cm
- (C) 32 cm
- (D) 18 cm



23.

The co-ordinates of the foot of the perpendicular from  $P(5, -1)$  to the x-axis are .....

- (A)  $\left(\frac{5}{2}, -\frac{1}{2}\right)$
- (B)  $(5, 0)$
- (C)  $\left(\frac{3}{2}, -1\right)$
- (D)  $(-3, 2)$

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24.  
If  $3 + 5 + 7 + 9 + \dots$  up to the  $n$  term = 288, then  $n = \dots\dots\dots$

- (A) 12
- (B) 15
- (C) 16
- (D) 17

25.

The volume of a cone with radius 2 cm and height 6 cm is  $\dots\dots\dots\text{cm}^3$ .

- (A)  $8\pi$
- (B)  $12\pi$
- (C)  $14\pi$
- (D)  $16\pi$

26.

If the area and the circumference of a circle are numerically equal, then the radius of the circle is  $\dots\dots\dots$

- (A)  $\frac{\pi}{2}$
- (B) 2
- (C) 1
- (D)  $\pi$

27.

If  $\cos^2 45 - \cos^2 30 = x \cdot \cos 45 \cdot \sin 45$ , then  $x = \dots\dots\dots$

- (A) 2
- (B)  $\frac{3}{2}$
- (C)  $-\frac{1}{2}$
- (D)  $\frac{3}{4}$



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28.

The cubic polynomial  $p(y) = y^3 - y$  has .....zeroes.

- (A) 0
- (B) 1
- (C) 2
- (D) 3

29.

The area of a minor sector of  $\odot (0, 10)$  is 150. The length of the corresponding arc is..... ( $\pi = 3.14$ ).

- (A) 60
- (B) 90
- (C) 30
- (D) 15

30.

If an arc of a circle subtended an angle of measure  $\theta$  at the center, then the area of the minor sector is .....

- (A)  $\frac{\pi r \theta}{180}$
- (B)  $\frac{\pi r^2 \theta}{180}$
- (C)  $\frac{\pi r \theta}{360}$
- (D)  $\frac{\pi r^2 \theta}{360}$

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31.

A kite is flying at a height of 75 metres from ground level, attached to a string inclined at  $60^\circ$  to the horizontal. The length of the string to the nearest metre is.....

- (A) 55 m
- (B) 87 m
- (C) 60 m
- (D) 100m

32.

Three times the square of natural number is 363. Find the number.

- (A) 11
- (B) 36
- (C) 12
- (D) 13

33.

The radii of a frustum of cone are 5 cm and 9 cm and height is 6 cm, then the volume is ..... $\text{cm}^3$ .

- (A)  $320\pi$
- (B)  $151\pi$
- (C)  $302\pi$
- (D)  $98\pi$

34.

The length of an arc subtending an angle of  $60^\circ$  at the center of a circle whose area is 616 is .....

- (A)  $\frac{22}{3}$
- (B) 66
- (C)  $\frac{44}{3}$
- (D) 33

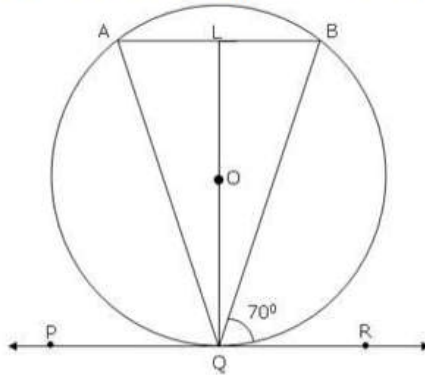
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35.  
Three times the square of natural number is 363. Find the number.

- (A) 11
- (B) 36
- (C) 12
- (D) 13

36.

In the figure, PQR is a tangent to the circle at Q whose centre is O. AB is a chord parallel to PR and angle BQR =  $70^\circ$ , then angle AQB is equal to



- (A)  $20^\circ$
- (B)  $40^\circ$
- (C)  $35^\circ$
- (D)  $45^\circ$

37.

If 4 is a root of the quadratic equation  $x^2 + ax - 8 = 0$ , then a = .....

- (A) 2
- (B) 4
- (C) -2
- (D) -4

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38.

The probability of an event is less than or equal to .....

- (A) -1
- (B) -0.1
- (C) -0.5
- (D) 1

39.

The length of a plot in metres is 1 more than twice its breadth and the area of a rectangle plot is  $528 \text{ m}^2$ . Which of the following quadratic equations represents the given situation.....

- (A)  $x^2 + x - 528 = 0$
- (B)  $x^2 + 2x - 528 = 0$
- (C)  $2x^2 + x + 528 = 0$
- (D)  $2x^2 + x - 528 = 0$

40.

If  $M = 26$  and  $\bar{x} = 36$ , then  $Z = \dots\dots\dots$

- (A) 6
- (B) 5
- (C) 4
- (D) 3

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41.  
For  $2x + 3y = 7$  and  $3x + 2y = 3$ ,  $x - y = \dots\dots\dots$

- (A) 4
- (B) -4
- (C) -2
- (D) 2

42.  
For some data  $Z - M = 2.5$ . If the mean of the data is 20, then  $Z =$

- (A) 21.25
- (B) 22.75
- (C) 23.75
- (D) 22.25

43.  
The distance between the points (3,4) and (8,-6) is.....

- (A)  $\sqrt{5}$  units
- (B)  $2\sqrt{5}$  units
- (C)  $3\sqrt{5}$  units
- (D)  $5\sqrt{5}$  units

44.  
The cumulative frequency of class 20 – 30 of the frequency distribution given below is .....

Class	0-10	10-20	20-30	30-40	40-50
Frequency	7	15	13	17	10

- (A) 25
- (B) 35
- (C) 15
- (D) 40

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45.

If A (1, 2) and B(3, -2 ) are given points, then ..... is the midpoint of AB.

- (A) P (2, 1)
- (B) P (-1, 0)
- (C) P (2, 0)
- (D) P (0, 0)

46.

Find the value of the discriminant of the following quadratic equation:

$$5x^2 + x + 2 = 0$$

- (A) 5
- (B) 1
- (C) -39
- (D) 41

47.

The zeros of  $p(x) = x^2 + 4x + 3$  are \_\_\_\_\_.

- (A) 1 and 3
- (B) -1 and 3
- (C) 1 and -3
- (D) -1 and -3

48.

Find the G.C.D. of 210 and 55.

- (A) 2
- (B) 3
- (C) 5
- (D) 4

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49.

Find the solution to the following system of linear equations:

$$2x - 5y + 4 = 0; 2x + y - 8 = 0$$

- (A) (2, 3)
- (B) (-1, 2)
- (C) (3, 2)
- (D) (3, -2)

50.

The product of the zero of the polynomial  $x^2 - 4x + 3$  is

- (A) 1
- (B) 3
- (C) 4
- (D) -4

51.

Points (3, 4), (-1, 4) and \_\_\_\_\_ are collinear.

- (A) P(-5, 4)
- (B) Q (2, 3)
- (C) R(3, 2)
- (D) S(4, 2)

**Part B**

**Time: 2 Hrs**

**Total Marks: 50**

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**General Instructions:**

1. There are total four sections in PART B and total 17 questions.
  2. All the questions are compulsory. Internal options are available in certain questions.
  3. Draw figure, wherever necessary. Maintain the lines and arcs of the construction.
  4. The numbers on the right side represents the mark of the question.
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**SECTION A**

Answer the following very short answer questions: [2 marks each]

**16**

1. Obtain the value of the following polynomial at the given values of x:  
 $p(x) = 2x^3 + 3x^2 + 7x + 9$ ; at  $x = 0, 1$

2. Add the following:  
 $3 + 6 + 9 + \dots + 300$

**OR**

Find the sum of the first 20 terms of the following A.P.:  
2, 6, 10, 14, ..... upto 20 terms

3. Find the square root of  $9 + 2\sqrt{14}$ .
4. Solve the pair of equations by elimination method:  
 $4x - 19y + 13 = 0$ ,  $13x - 23y = -19$



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5.

In  $\triangle ABC$ ,  $m\angle B = 90^\circ$ , find the measure of the remaining parts of the triangles for  $m\angle A = 30$ ,  $AC = 10$ .

OR

Prove that:  $\sqrt{\frac{1 - \sin\theta}{1 + \sin\theta}} = \sec\theta - \tan\theta$

6.

In rectangle ABCD,  $AC = 25$  and  $CD = 7$ . Find the perimeter of the rectangle.

7.

If  $\sum f_i x_i = 19260$  and  $\sum f_i = 400$ , then find the mean  $\bar{x}$ .

8.

Find the distance between  $(2, -3)$ ,  $(7, 9)$ .

### SECTION B

Solve the following: [3 marks each]

12

9. Solve for x & y

$$\frac{x}{2} + \frac{y}{4} = \frac{3}{4}; 2x - y = 4$$

10. Rodney stood 30 m away from the light house in such a way that the angle of elevation of the top of the light house from his eyes was  $45^\circ$ . Rodney's height is 1.4 m. Find the height of the light house.

11. Two unbiased coins are tossed. Calculate the probability of getting

- i. Exactly two heads
- ii. At least two tails
- iii. No tail

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12. Find the mode of the following frequency distribution:

Class	0 - 7	7 -14	14- 21	21-28	28-35	35-42	42-49	49 -56
Frequency	26	31	35	42	82	71	54	19

**OR**

12. Find the median of the following frequency distribution:

Value of variable	12	13	14	15	16	17	18	19	20
Frequency	7	10	15	18	20	10	9	8	3

### SECTION C

Solve the following: [4 marks each]

**12**

13. Two concentric circles are given. Prove that all chords of the circle with the larger radius which touch the circle with the smaller radius are congruent.
14. Two circular pieces of equal radii and maximum area, touching each other are cut out from a rectangular card board of dimensions 14 cm × 7 cm. Find the area of the remaining card board. Use  $\pi = \frac{22}{7}$

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15. A wooden toy was made by scooping out a hemisphere of same radius from each end of a solid cylinder. If the height of the cylinder is 10 cm, and its base is of radius 3.5 cm, find the volume of wood in the toy. Use  $\pi = \frac{22}{7}$

OR

15. The rain water from a roof  $22 \text{ m} \times 20 \text{ m}$  drains into a conical vessel having a base of diameter 2 m and height 3.5 cm. If the vessel is just full, find the rainfall in mm.

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### SECTION D

Solve the following questions from No. 16 to 17. (Each question carries 5 marks).

16. Construct a triangle with sides 4 cm, 5 cm, 7 cm and then construct a triangle similar to it whose sides have length in the ratio 2 : 3 to the length of the corresponding sides of the first triangle.
17. State and prove the 'Fundamental Theorem of Proportionality.'

OR

17. In  $\Delta ABC$ ,  $m\angle B = 90^\circ$ . Prove that  $AC^2 = AB^2 + BC^2$ .