

Gujarat State Board Class X

Mathematics Sample Paper -Set 3

Part – A: Time: 1 Hour/Marks: 50

Part – B: Time: 2 Hours/Marks: 50

(Part – A)

Time: 1 Hour

Maximum Marks: 50

Instructions:

1. There are 50 objective type questions in Part - A and all are compulsory.
 2. The questions are serially numbered from 1 to 50 and each carries 1 mark.
 3. Read each question carefully, select proper alternative and answer in the O.M.R. sheet.
 4. The OMR sheet is given for answering the questions. The answer of each question is represented by (A) , (B) , (C) , (D) . Darken the circle as completely of the correct answer with ball – pen.
 5. Rough work to be done in the space provided for this purpose in the Test Booklet only.
 6. Set No. of Question Paper printed on the upper-most right side of the Question Paper is to be written in the column provided in the OMR sheet
-

1. If T and R are mid points of the sides AB and AC respectively in triangle ABC. Then which of the following option is right?

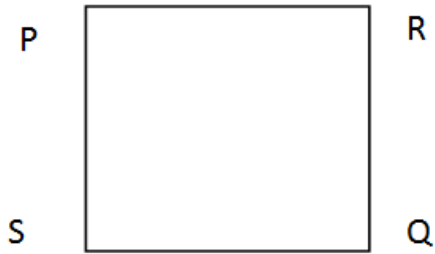
a) $\frac{AT}{TB} = \frac{AR}{AC}$

b) $\frac{AB}{AT} = \frac{AR}{AC}$

c) RT is parallel BC

d) $AT = AR$

2. The coordinates of two vertices $P(2,3)$ and $R(6,3)$ of square $PRQS$ are given .Find the coordinate of the vertices Q and S ?



a) $S(2,1)$; $R(6,1)$

b) $S(2,3)$; $R(6,1)$

c) $S(2,1)$; $R(6,3)$

d) $S(6,3)$; $R(2,1)$

3. What will be the coordinate of the point of a line on y axis that is perpendicular to y axis, if the coordinate of other end is $(6,9)$?

a) $(0,6)$

b) $(0,9)$

c) $(6, -9)$

d) $(-6,9)$

4. What will be coordinate for centroid of a triangle if the coordinates of the vertices are $(3,6)$; $(6,9)$; $(9,18)$?

a) $(9,6)$

b) $(6,9)$

c) $(6,11)$

d) $(11,6)$

5. The coordinate of the end points of a line are $(4,5)$ and $(6,7)$ what can be the coordinates of the point in exact center of the line?

a) $(6,4)$

b) (4,7)

c) (5,6)

d) (4,6)

6. If $12 \cos 2\theta + 8 \sin 2\theta = 7$, then what is the value of $\tan \theta$?

a) $\frac{1}{\sqrt{2}}$

b) $\frac{1}{2}$

c) $\frac{1}{\sqrt{3}}$

d) $\sqrt{3}$

7. Find the value of $\tan^2 \theta - \sec^2 \theta$ for $0 < \theta < 90$?

a) 1

b) 0

c) -1

d) ∞

8. Which option is equal to the value of $\tan 30$?

a) $\frac{\sin 30}{1 + \cos 30}$

b) $\frac{\sin 60}{1 + \cos 60}$

c) $\frac{\cos 60}{1 + \sin 60}$

d) $\frac{\sin 60}{1 + \cos 30}$

9. $\cos^2 60 - \sin^2 45 = x \cos 30$ what is the value of x ?

a) $-\frac{1}{2}$

b) $-\frac{2}{3}$

c) $\frac{1}{2}$

d) $\frac{2}{3}$

10. A girl is standing on a tower and watching a car and bike on the road if the angle between the tower and the bike is 45 degree and angle between car and tower is 60 degree. Then which of the following statements is true?

a) Car is farther than bike

b) Bike is farther than car

c) Bike and car are at same distance

d) The distance between tower and vehicles cannot be determined.

11. In a right angled triangle if the two angles are of 45 degrees then the sides of the triangle shall be in a ratio :

a) 1: 1: 2

b) 1: 2: 3

c) 2: 2: $\sqrt{3}$

d) 1: 1: $\sqrt{2}$

12. A man standing on the top of a tower of length 10 m is seeing the top of a building. The angle at which the elevation is seen is 45 degrees. If the distance between the tower and building is 15 m. what is the height of the building?

a) 15m

b) 10m

c) 20m

d) 25m

13. The sides of a triangle DEF are $DE = 12$; $EF = 10$; $DF = 4$. the area of triangle will be?

a) $3\sqrt{13}$

b) $9\sqrt{39}$

c) $3\sqrt{39}$

d) $9\sqrt{13}$

14. The coordinate of two vertices of a triangle are $(0, 8)$ and $(7, 1)$. What is the length of the side?

a) $2\sqrt{7}$

b) $7\sqrt{2}$

c) $2\sqrt{2}$

d) $7\sqrt{7}$

15. The angle subtended by an arc of length 22cm is 60 degrees. What is the length of radius of the circle?

a) 7

b) 14

c) 21

d) 49

16. In a certain circle an arc subtends an angle θ at the centre. if radius of circle is r and length of arc is one fourth of its circumference. Find θ ?

a) 90

b) 60

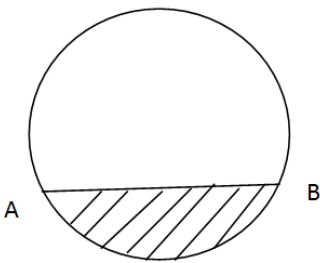
c) 45

d) 30

17. If a circle's radius is decreased by 10 percent then what will be the percent change in area?

- a) 90 % of original
- b) 81% of original
- c) 10% of original
- d) 20% of original

18. The shaded region in the figure is called?



- a) Major sector
- b) Minor sector
- c) Major segment
- d) Minor segment

19. The height of a cylinder is double its radius. If the surface area of the cylinder is 6π , then what is the value of radius and height?

- a) $R = 3, h = 6$
- b) $R = 2, H = 1$
- c) $R = 6, H = 2$
- d) $R = 1, H = 2$

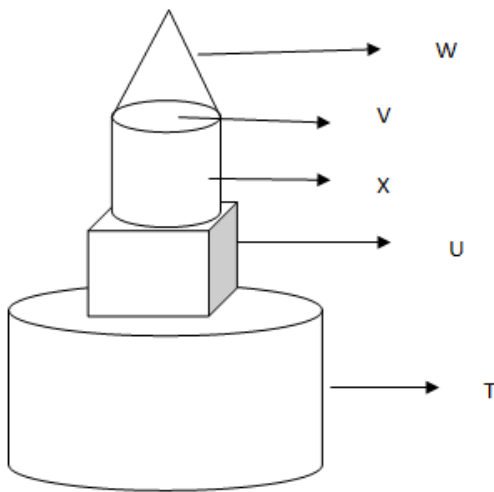
20. The curved surface area of a cone is given as 135π . If radius of cone is 9 cm what is height of cone?

- a) 15cm
- b) 14cm
- c) 12cm
- d) 9cm

21. The volume of a sphere is given to be 38808 cm^3 . Find the value of its diameter?

- a) 20
- b) 21
- c) 40
- d) 42

22.

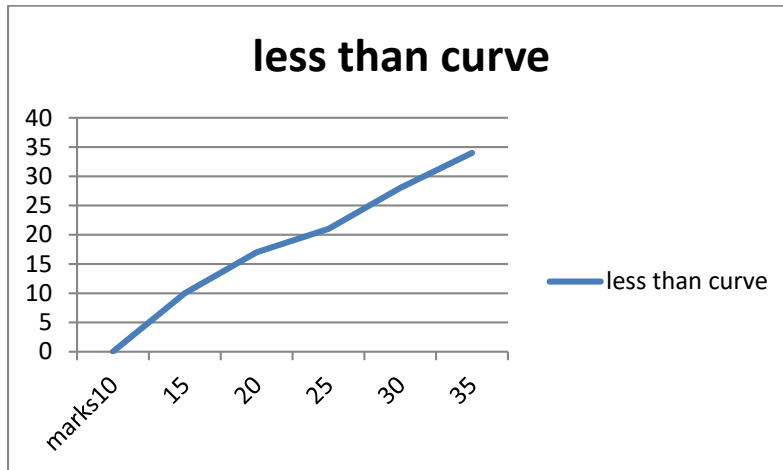


If W is curved surface area of cone; V is area of base; X is curved surface area of cylinder; U is area of side of cube and is total surface area of bigger cylinder. Then the total surface area of the figure will be?

- a) $T + 6U + X + 2V + W$
- b) $T + 5U + X - 2V + W$
- c) $T - U + X - 2V + W$

d) $T + 5U + X - V + W$

23. A less than chart with marks scored out of 50 and number of students getting those marks is given if $\frac{N}{2} = 17$ and corresponding marks is 19. Then median marks in percent will be?



- a) 40%
- b) 38%
- c) 46%
- d) 49%

24. If $F + Z = 34$ and $F - Z = 4$ find the value of F ?

- a) 15
- b) 17
- c) 19
- d) 21

25. The readings of an experiment are 5, 6, 4, 7, 6, 8, 4, 6, 5, 9, 6. What is the mode of the data?

- a) 5
- b) 6

c) 4

d) 8

26. A pool is full of colored balls. What is the probability of finding a violet ball?

yellow	blue	red	violet	Total
200	250	350	150	950

a) $\frac{4}{19}$

b) $\frac{5}{19}$

c) $\frac{7}{19}$

d) $\frac{3}{19}$

27. A card is tossed three times the probability of getting atleast two face side of the card is?

a) $\frac{3}{8}$

b) $\frac{1}{2}$

c) $\frac{3}{4}$

d) $\frac{1}{8}$

28. If an odd integer X is taken; then $X(X + 2)$ will be----

a) Always odd

b) Always even

c) A prime number

d) Either even or odd

29. The decimal expansion of $\frac{1}{28}$ upto fifth place will be?

- a) 0.31754
- b) 0.03751
- c) 0.03571
- d) 0.03174

30. If A and B are the zeroes of polynomial $P(x) = 5x^2 - 3x + 2d$, and $A + B = -\frac{3}{8}(AB)$, then the value of "d" is _____.

- a) -4
- b) 6
- c) -2
- d) 1

31. The degree of given polynomial is $(x^2 - 3)(x + x^2 + x^3 + 4)(x^2 + 1)$?

- a) 5
- b) 6
- c) 7
- d) 8

32. How many zeroes will be there for the equation $x^4 - x^2$?

- a) 2
- b) 4
- c) 1
- d) 0

33. The roots of a cubic polynomial $ax^3 + bx^2 + cx + d = 0$; $a \neq 0$; is X, Y, Z . the what will be the value of $\frac{1}{\frac{1}{X} + \frac{1}{Y} + \frac{1}{Z}}$?

a) $-\frac{c}{d}$

b) $-\frac{d}{c}$

c) $\frac{c}{a}$

d) $-\frac{d}{a}$

34. The standard form for the given equation $\frac{x}{7} + \frac{y}{3} = \frac{6}{7}$ will be?

a) $7x + 3y - 6 = 0$

b) $3x + 7y - 18 = 0$

c) $7x + 3y + 18 = 0$

d) $3x + 7y + 6 = 0$

35. In a three digit number the digit at hundred's place is 3. The digit at ten's place is half of digit at one's place. And sum of all the digits is three times the digit at hundred's place. What is the number?

a) 336

b) 324

c) 348

d) 312

36. Two lines $3x + 6y + 9 = 0$ and $2x + ky + 4 = 0$ for what value of k the lines don't intersect each other?

a) $k = 6$

b) $k = 7$

c) $k = 4$

d) $k = 8$

37. What is the point of intersection of the lines $3x + 2y = 1$ and $5x + 6y = 3$?

a) $(0,0)$

b) $(0, \frac{1}{2})$

c) $(0,2)$

d) $(\frac{3}{4}, 0)$

38. Which one of the following is the solution set for quadratic equation $4x^2 + 5x - 9 = 0$

a) $\{-\frac{9}{4}, 1\}$

b) $\{0,1\}$

c) $\{1, \frac{9}{4}\}$

d) $\{1, 2\}$

39. The discriminant of the equation $x^2 + kx - 9 = 0$ is 8. What is the value of k ?

a) 12

b) 10

c) 15

d) 14

40. For the given quadratic equation $6x^2 + 13x + 6 = 0$ which of the following statements are true?

a) The roots are equal

b) The roots are not equal

c) The discriminant is equal to 0

d) The discriminant is not equal to 0.

e) The roots are imaginary

Answer statements

a) Both A and C are true

b) Both B and D are true

c) B, D and E are correct

d) Only A is true.

41. The solution for the given quadratic equation will be $x^2 + \frac{2}{3}x + \frac{1}{9}$?

a) $\frac{1}{9}$

b) $-\frac{1}{3}$

c) $\frac{2}{9}$

d) $-\frac{2}{3}$

42. Anshika was watching her toddler stacking blocks one on other in a certain pattern shown below. Uppermost row had one block second row had again one block third row had 2 blocks fourth row again had 2 blocks and so on. There were 16 rows in total. How many blocks are there in total?



a) 84

- b) 72
- c) 60
- d) 96

43. Which one of the following statements is true for the equation $\frac{x}{B} = \frac{(B+1)}{x}$

- a) The roots of equation are $-B, -(B + 1)$
- b) Roots of equation are $B, (B + 1)$
- c) Roots of equation are whole numbers and equal.
- d) Roots may not be whole numbers.

Answer statements

- a) Only B is correct
- b) A and C are correct
- c) B and D are correct
- d) Only D is correct

44. A boy lives on third floor of a building. If each step is 15 cm in length and there are 90 steps to reach third floor if building has 7 floors what is the height of the topmost floor from ground?

- a) 40.5 m
- b) 31.5 m
- c) 38.5 m
- d) 43.5 m

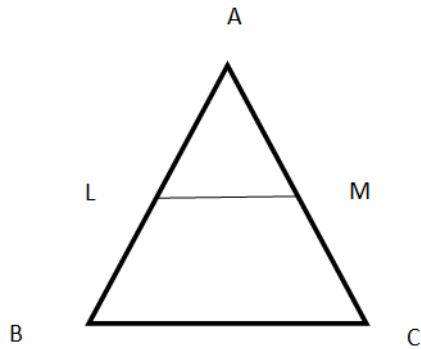
45. If $4k - 5, 7k, 10k + 5$ are three numbers in AP with a common difference of 20 then what will be the value of k ?

- a) 7
- b) 6

c) 5

d) 4

46. In the figure given below $\frac{AL}{AB} = \frac{5cm}{8cm}$; if LM is parallel $BC = 16cm$ find the length of LM ?



a) 5 cm

b) 10cm

c) 12 cm

d) 16 cm

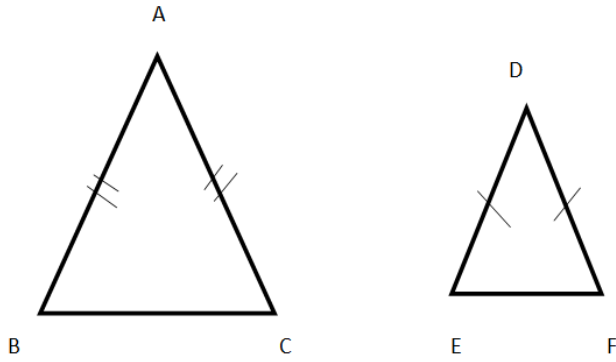
47. In the given figure the correspondence triangles and their angles are similar then which of the following statements is true?

a) Angle ABC is similar to angle DEF

b) Angle ABC is similar to angle DFE

c) Angle ABC is similar to angle FDE

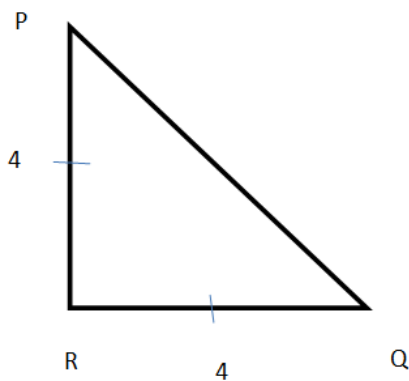
d) Angle ACB is similar to angle DEF



Answer statements

- a) A,B,D are correct
- b) All four are correct
- c) Only B and D are correct
- d) Only C is correct

48. In figure, $R = 90$ in isosceles triangle PQR , then $PQ^2 = \underline{\hspace{2cm}}$.



- a) 82
- b) $2\sqrt{8}$
- c) $4\sqrt{2}$
- d) $16\sqrt{2}$

49. Two triangles are said to be similar only if:

- a) All sides are equal.
- b) Two sides and one angle is equal
- c) All angles are equal
- d) Two angle and one side is equal.

Answer statement

- a) All are true
- b) Only B, C, D are true
- c) A, B, D are true
- d) Either one of all is true

50. The measure of sides of certain triangles are given. This of the following triangles can be right angled triangle

- a) $B = 6; h = 8; hyp = 12$
- b) $B = 8; H = 6; hyp = 10$
- c) $B = 12; H = 16; hyp = 20$
- d) $B = 12; H = 9; hyp = 15$

Answer statements

- a) All four are right angled triangle
- b) B, C, D are right angled triangle
- c) A, B, D are right angled triangle
- d) Only B and D are right angled triangle

(Part – B)

Time: 1 Hours

Maximum Marks: 50

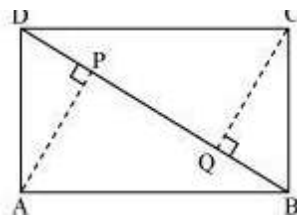
Instructions:

1. Write in a clear handwriting.
 2. There are four sections in Part –B of the question paper and total 1 to 17 questions are there.
 3. All the questions are compulsory. Internal options are given.
 4. The numbers at the right side represent the marks of the question.
 5. Draw figure wherever required. Retain all the lines of construction.
 6. Start new section on new page.
-

SECTION – A

Answer the following questions: [2 marks each]

1. The lengths of diagonals of a rhombus are $\left(\frac{5+\sqrt{2}}{2}\right)$ and $\left(\frac{5-\sqrt{2}}{2}\right)$. Find the length of the side?
2. Prove that $(2x + 4)$ is a factor of $8x^3 + 9x^2 + 30x + 88$?
3. RQ is a segment. The point T is on the perpendicular bisector of segment RQ such that length of TR exceeds length of AB by 8 cm. If the perimeter of ΔABP is 64 cm. Find the sides of ΔTRQ .
4. The student of a school went for a quiz competition which had 6 rounds. It was seen that their score for each round was in arithmetic progression. If first round score was 29 and second round score was 46. What was their total score in competition?
5. In the below given figure CQ falls on BD dividing it in a length of 3cm and 12 cm. what will be the measure of PB+QD?



6. The coordinates of incentre of a triangle passes through (a, b) the length of whose sides are $PQ = 4$; $RQ = 3$; $PR = 5$. If coordinates of its vertices are $P(-2, 5)$ $Q(4, 8)$ $R(1, 2)$ then what will be the values of a and b ?

7. What will be the value of $4\sin^2 50^\circ + 8\sec^2 20^\circ + 5\cot^2 45^\circ + 4\cos^2 50^\circ - 8\tan^2 20^\circ - 5\operatorname{cosec}^2 45^\circ$?

OR

In triangle PQR, angle $Q = 90^\circ$ and $\tan P = \frac{4}{5}$, find $\sin P$ and $\sin R$?

8. Find the mean of the scores of a player in seven of his matches if the scores are 34, 55, 48, 61, 50, 49, 60?

SECTION – B

Answer the following: [3 marks each]

9. If sum of one fifth of marks in English paper and one fourth of marks of Hindi paper is 36. If marks scored in Hindi is bare minimum marks needed to pass and marks in English is 10 more than that then what is the marks scored in English if passing percent is 50%?

10. A road leads to a watch tower 40 meters high. At a height of 30m the angle of depression for the end of the road that is near the watch tower is 60° on reaching the top the angle of depression for other end of road is again 60° . If length of road is 5 m what is the distance needed to travel on road to reach the tower?

11. Find the value of x if mean is 33

Range	10-20	20-30	30-40	40-50	50-60
frequency	7	8	x	6	5

OR

Find the median for the table given

Less than	100	80	60	40
frequency	40	30	25	10

12. Four coins are thrown at the same time. What is the probability that:-

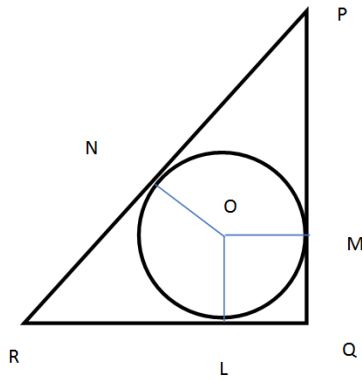
a) We get only two heads on the first attempt.

b) We get only three tails in first attempt.

SECTION – C

Solve the following: [4 marks each]

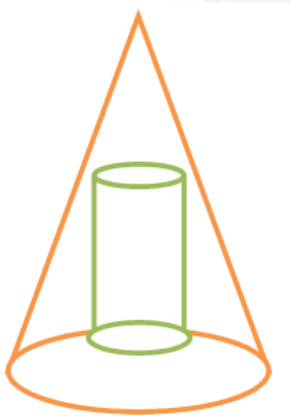
13.



In the above given figure $PQ = 16\text{CM}$; $RQ = 12\text{CM}$; PQR is right angled triangle. find the value of radius of the circle?

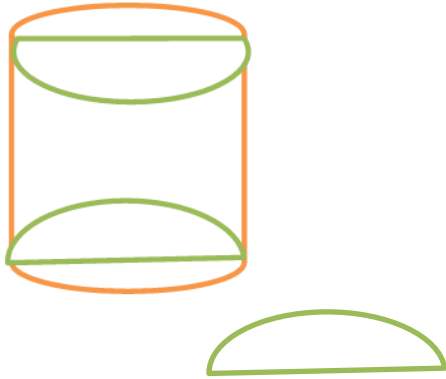
14. An auditorium is made in the form of a sector. The radius of the sector is 42 m. the meeting point of the 2 radii forms an angle of 60 degrees. If one person needs 1.2 m^2 of space. How many people can be accommodated in the auditorium? If cost of lighting the boundary of room is rupees $\frac{50}{m}$ what will be cost of lighting the corners of the whole room?

15. As shown in the figure below there is a cone with a cylindrical space in it. The cone is to be filled with water leaving the cylindrical part. If base radius is 35 cm and height is 18 cm and radius of cylinder is 14 cm whose height is 12cm. what will be the amount of water that can be filled if the conical space above has to remain empty?



OR

As shown below in the figure a cylinder with radius 12 cm and height 21 cm has two hemispheres in inside the cylinder. What is the volume of area between the hemispheres?



SECTION – D

Answer the following questions in detail. [Each question carries 5 marks].

16. Draw a triangle with sides of length $SR = 6\text{cm}$; $RT = 5.5\text{cm}$ and $ST = 6.2\text{cm}$ and then construct a triangle that is $\frac{4}{5}$ of the original triangle?

17. Prove that a point drawn on a side of triangle splits the line whose ratio is equal to ratio of other two sides then the angle of the opposite vertices will be divided equally by the line drawn from that point?

OR

If angle $P = 95^\circ$ and angle $O = 65^\circ$ then find the value of angle o , if OM and ON are angle isectors?

