

CLASS IX (2019-20)
MATHEMATICS (041)
SAMPLE PAPER-08

Time : 3 Hours

Maximum Marks : 80

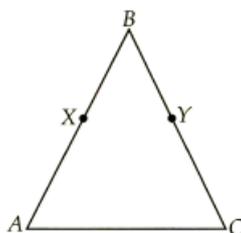
General Instructions :

- (i) All questions are compulsory.
- (ii) The questions 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) There is no overall choice. However, an internal choices have been provided in two questions of 1 mark each, two questions of 2 marks each, three questions of 3 marks each, and three questions of 4 marks each. You have to attempt only one of the alternatives in all such questions.
- (v) Use of calculators is not permitted.

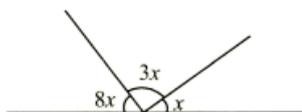
SECTION A

Q.1-Q.10 are multiple choice questions. Select the most appropriate answer from the given options.

- Q1. Which of the following statement is not true? [1]
- (a) Between two integers, there exist infinite number of rational numbers.
 - (b) Between two rational numbers, there exist infinite number of integers
 - (c) Between two rational numbers, there exist infinite number of rational numbers.
 - (d) Between two real numbers, there exists infinite number of real numbers.
- Q2. Find the value of $x + y + z$ if $x^2 + y^2 + z^2 = 18$ and $xy + yz + zx = 9$ [1]
- (a) 9
 - (b) 3
 - (c) 6
 - (d) 8
- Q3. Abscissa of $(2, 3)$ is [1]
- (a) -2
 - (b) 3
 - (c) 2
 - (d) none of these
- Q4. $8y = 9$ when written as an equation in two variables, is [1]
- (a) $x + 8y = 9$
 - (b) $0 \cdot x + 8y + 9 = 0$
 - (c) $0 \cdot x + 8y - 9 = 0$
 - (d) $0 \cdot x + 8y = 0$
- Q5. In the given figure, if $AB = BC$ and $BX = BY$, then [1]



- (a) $AX = CY$
 - (b) $AC = XY$
 - (c) $AY = CX$
 - (d) none of these
- Q6. Calculate the value of x . [1]



- (a) 270°
- (b) 70°
- (c) 15°
- (d) 45°

Q7. In ΔABC , if $\angle C > \angle B$, then [1]

- (a) $BC > AC$
- (b) $AB > AC$
- (c) $AB < AC$
- (d) $BC < AC$

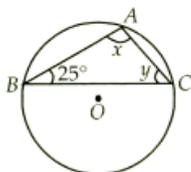
Q8. In a parallelogram $ABCD$, $\angle A = 115^\circ$. The measure of $\angle D$ is equal to [1]

- (a) 115°
- (b) 65°
- (c) 135°
- (d) 165°

Q9. Area of an isosceles triangle, the measure of one of its equal side being 5 cm and the third side 4 cm is [1]

- (a) $2\sqrt{21} \text{ cm}^2$
- (b) $21\sqrt{2} \text{ cm}^2$
- (c) $22\sqrt{3} \text{ cm}^2$
- (d) $23\sqrt{3} \text{ cm}^2$

Q10. In the given figure, O is the centre of the circle. For what values of x and y , chord BC will pass through the centre of circle where points A, B and C are on the circle? [1]



- (a) $x = 90^\circ, y = 60^\circ$
- (b) $x = 75^\circ, y = 30^\circ$
- (c) $x = 65^\circ, y = 90^\circ$
- (d) $x = 90^\circ, y = 65^\circ$

(Q.11-Q.15) Fill in the blanks :

Q11. If the lengths of two sides of an isosceles triangle are 4 cm and 10 cm, then the length of the third side is cm. [1]

Q12. An isosceles right-angled triangle has an area 8 cm^2 . The value of perimeter of triangle is cm. [1]

OR

If height of a triangle is halved then its area will become of original area.

Q13. The solid bounded by two concentric spherical surfaces is called a [1]

Q14. The is the difference between the greatest and the least value of the variate. [1]

Q15. An for an experiment is the collection of some outcomes of the experiment. [1]

(Q.16-Q.20) Answer the following :

Q16. Find the zero of a polynomial $2x + 4$. [1]

Q17. Are there any points which do not lie in any of the quadrants? If yes, where do they lie? [1]

Q18. If a point C lies between two points A and B such that $AC = BC$, then prove that $AC = AB/2$, explaining by drawing the figure. [1]

Q19. If the sides of an equilateral triangle are tripled, then find its new area. [1]

Q20. Give an example of data that you collect from your day-to-day life. [1]

SECTION B

Q21. Simplify : $\frac{6}{3\sqrt{2} - 2\sqrt{3}}$. [2]

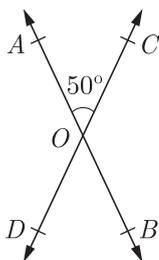
OR

If $\frac{\sqrt{3}-1}{\sqrt{3}+1} = a + b\sqrt{3}$, find the value of a and b .

Q22. If one angle is equal to four times of its complement. Find the angle. [2]

OR

In the given figure, if $\angle AOC = 50^\circ$, then find $(\angle AOD + \angle COB)$.

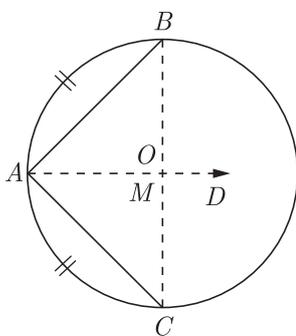


Q23. Express y in terms of x , given that $2x - 5y = 7$. Check whether the point $(-3, -2)$ is one the given line. [2]

Q24. Find the coordinates of the point : [2]

- (i) Which lies on x and y axes both.
- (ii) Whose abscissa is 2 and which lies on the x -axis.

Q25. AB and AC are two equal chords of a circle. Prove that the bisector of the $\angle BAC$ passes through the centre of the circle. [2]



Q26. The areas of three adjacent faces of a cuboid are x , y and z . If its volume is V , then find its volume. [2]

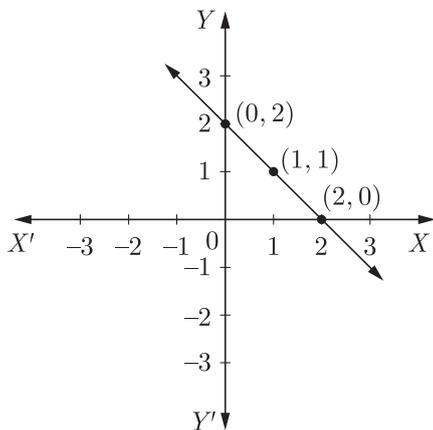
OR

The curved surface area of a right circular cylinder of height 14 cm is 88 cm^2 . Find the diameter of the base of the cylinder.

SECTION C

Q27. From the choices given below, choose the equation whose graph is shown in the figure. [3]

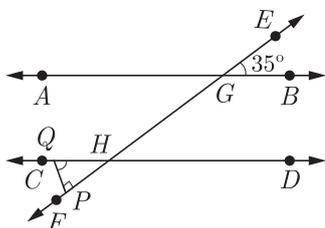
- (i) $x + y = 2$
- (ii) $x - y = 2$
- (iii) $2x + 2y = 6$



OR

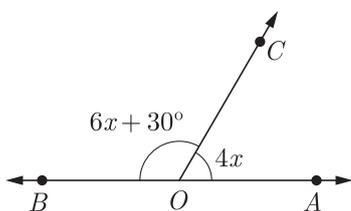
Draw the graph of $3x - 2y = 0$.

- Q28. In the given figure, $AB \parallel CD$ and EF is a transversal, which intersects them at G and H , respectively. If $\angle EGB = 35^\circ$ and $QP \perp EF$, then find $\angle PQH$. [3]

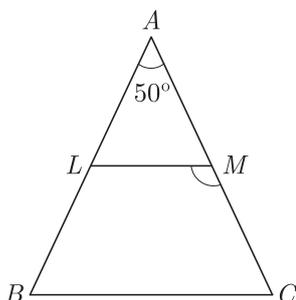


OR

What value of x would make AOB a line in figure, if $\angle AOC = 4x$ and $\angle BOC = 6x + 30^\circ$?

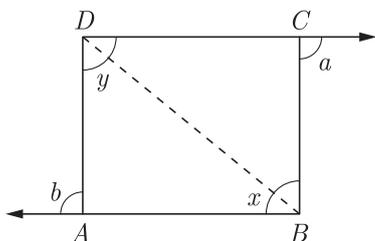


- Q29. In the given figure, $\triangle ABC$ is an isosceles triangle in which $AB = AC$ and LM is parallel to BC . If $\angle A = 50^\circ$, find $\angle LMC$. [3]



- Q30. Show that if two sides of a triangle are of lengths 5 cm and 1.5 cm, then the length of third side of the triangle cannot be 3.4 cm. [3]

- Q31. The sides BA and DC of a quadrilateral $ABCD$ are produced as shown in figure. [3]



Prove that $a + b = x + y$.

Q32. Show that a median of a triangle divides it into two triangles of equal areas. [3]

Q33. The sides of a triangle are $x, x + 1, 2x - 1$ and its area is $x\sqrt{10}$. Find the value of x . [3]

OR

The diameters of two cones are equal. If their slant heights are in the ratio 5 : 4, then find the ratio of their curved surface areas.

Q34. Here is an extract from a mortality table. [3]

Age (in years)	Number of persons surviving out of a sample of one million
60	16090
61	11490
62	8012
63	5448
64	3607
65	2320

- (i) Based on this information, what is the probability of a person 'aged 60' of dying within a year ?
- (ii) What is the probability that a person 'aged 61' will live for 4 years ?

SECTION D

Q35. Rationalise : $\frac{1}{\sqrt{7} + \sqrt{3} - \sqrt{2}}$. [4]

Q36. Factorise : $x^2 + \frac{1}{x^2} + 2 - 2x - \frac{2}{x}$. [4]

Q37. A part of monthly expenses of a family on milk is fixed which is ₹ 500 and the remaining varies with the quantity of milk taken extra at the rate of ₹ 20 per litre. Taking the quantity of milk required extra x litre and the total expenditure on milk is ₹ y , write a linear equation for this information and draw its graph. [4]

Q38. Construct $\triangle ABC$ in which $BC = 6.8$ cm, $\angle B = 45^\circ$ and $\angle C = 45^\circ$. Construct angle bisector of $\angle B$ and $\angle C$ and let them intersect at point O . Measure $\angle BOC$. [4]

Q39. The diameter of the Moon is approximately one-fourth of the diameter of the Earth. Find the ratio of their surface areas. [4]

OR

The total cost of making a spherical ball is ₹ 33,957 at the rate of ₹ 7 per cubic metre. What will be the radius of this ball ?

Q40. A study on cost of living index for a particular year in a city, the following weekly observations were made. [4]

Cost of living index (₹)	Number of weeks
140-150	5
150-160	10
160-170	20
170-180	9

180-190	6
190-200	2

Draw a histogram and a frequency polygon on the same scale.

OR

Following are the runs scored by two teams A and B in a 10 over match. Represent the data graphically on the same graph.

Over	Team A	Team B
1	2	5
2	1	6
3	8	2
4	9	10
5	4	5
6	5	6
7	6	3
8	10	4
9	6	8
10	2	10

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