

CARMEL CONVENT SCHOOL (CHANDIGARH)
FIRST TERM EXAM (2024-25)
SUBJECT- MATHEMATICS

Class- IX
Date: 21.09.24

Maximum Marks: 80
Time Allowed: 3Hrs.

General Instructions:

1. This Question Paper has 5 Sections A-E
2. Section A has 20 MCQs carrying 1 mark each
3. Section B has 5 questions carrying 02 marks each.
4. Section C has 6 questions carrying 03 marks each.
5. Section D has 4 question carrying 5 marks each
6. Section E has (Case Study based) 3 questions carrying 4 marks each
7. Question 31 and 33 to be done on the graph
8. All Questions are compulsory

Section A

1 Which of the following is irrational?

- a) $\sqrt{23}$ b) $\sqrt{25}$ c) 0.3796 d) 7.478478478.....

2 $\frac{1}{\sqrt{5}-\sqrt{4}}$ will be rationalised using which expression

- a) $\sqrt{5} + 2$ b) $\sqrt{2} + 5$ c) $\sqrt{5} - 3$ d) $-\sqrt{5} - \sqrt{4}$

3 Which of the following is rational?

- a) $1 + \sqrt{3}$ b) $(2 + \sqrt{5})$ c) $\sqrt{25} - 5$ d) 1.3576.....

4 Degree of which polynomial is zero?

- a) x^2 b) $9x$ c) $x^3 + 0$ d) 5

5 One of the factors of $(y^2 + 1) + (y - 1)$ is

- a) $y - 1$ b) $y + 1$ c) $y^2 - 1$ d) $y^2 (y - 1)$

6 If $x^2 + kx + 6 = (x + 3)(x + 2)$ then find value of k:

- a) 1 b) -1 c) 5 d) 6

7 Find value of k for which $x = 1, y = -1$ is solution of $kx - 2y = 0$

- a) 12 b) -2 c) 5 d) -8

8 $y - 4x = 4$ has how many solutions?

- a) unique solution b) No solution c) 2 solutions d) infinitely many solutions

9 Points (4, -5) lies in the

- a) first quadrant b) second quadrant c) third quadrant d) fourth quadrant

10 Find value of x if one angle of linear pair is $3x$ and other is $2x - 10$

a) 30°

b) 38°

c) 0°

d) 74°

11 In $\triangle ABC$ angle $\angle A = 90^\circ$ and $AB = AC$ then measure of $\angle B$ and $\angle C$ are
a) $\angle B = 60^\circ, \angle C = 30^\circ$ b) $\angle B = \angle C = 60^\circ$ c) $\angle B = 60^\circ, \angle C = 50^\circ$ d) $\angle B = 45^\circ, \angle C = 45^\circ$

12 Semi Perimeter of triangle with sides 20 cm, 15 cm and 9 cm is
a) 44 cm b) 21 cm c) 22 cm d) 10 cm

13. If $(-1, 1)$ is a solution of the equation $2x - y = p$, then value of p is
a) 4 b) -5 c) 0 d) -3

14 Coefficient of x in expansion of $(x+3)^3 =$
a) 18 b) 9 c) 1 d) 27

15 Ordinate of all points on x -axis is
a) 2 b) 0 c) -2 d) 1

16 In $\triangle ABC$ and $\triangle DEF$, $AB = DF$ and $\angle A = \angle D$ The two triangles will be congruent by SAS axiom if
a) $BC = EF$ b) $AC = DE$ c) $BC = DE$ d) $AC = EF$

17 If $x + \frac{1}{x} = 3$ then $x^2 + (1/x)^2$ is
a) 2 b) 5 c) 7 d) 9

18 $0.383838\dots$ in $\frac{p}{q}$ form is
a) $\frac{19}{50}$ b) $\frac{38}{99}$ c) $\frac{9}{45}$ d) $\frac{38}{77}$

A statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option:
(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

(b) Both assertion (A) and reason (R) are true and reason (R) is not the correct explanation of assertion (A).

(c) Assertion (A) is true but reason (R) is false.

(d) Assertion (A) is false but reason (R) is true.

19 Assertion (A): The graph of the linear equation $x + 3y = 5$ passes through the point $(0, 5)$.

Reason (R): The point $(3, 4)$ is the solution of linear equation $2x - y - 2 = 0$

20 Assertion(A): Third side of triangle whose two sides are 13cm and 11cm with given semi perimeter 16 cm is 8 cm

Reason(R): Semi perimeter is double the perimeter of triangle

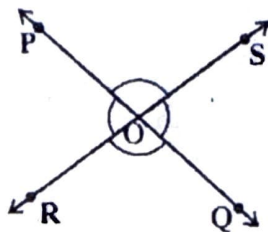
Section B

21.a) Give name of each part of plane formed by intersection of coordinate axis in the cartesian plane

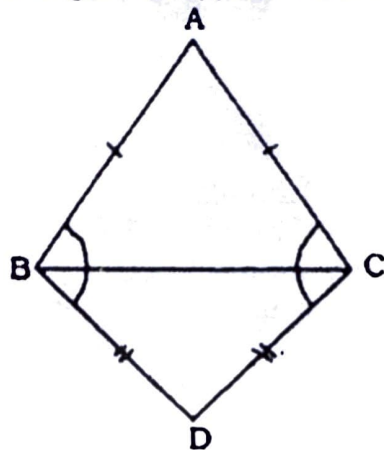
b) Name the point where the co-ordinate Axis meet in cartesian plane

22. Factorize: $6x^2 + 17x + 5$

23 PQ and RS intersect each other at point O $\angle POR : ROQ = 5 : 7$. find all angles



24 ABC and DBC are two isosceles triangles on opposite sides of BC. Show that $\angle ABD = \angle ACD$.



25 Sides of triangular plot are in the ratio 3:5:7 and its semi perimeter is 150 find sides of triangle.

Section C

26 Find x and y: $\frac{2+\sqrt{3}}{2-\sqrt{3}} = x + y\sqrt{3}$

27 Factorize:

a) $27 - 125a^3 - 135a + 225a^2$

b) $m^3 - 343n^3$

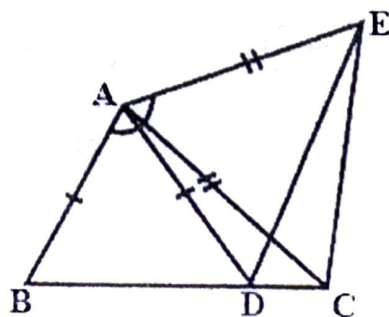
28 Do as directed:

a) Verify if $(-3, 2)$ is a solution of equation $x + 2y = 7$

b) Express $5.3474747\dots$ in $\frac{p}{q}$ form

c) Represent $\sqrt{9.3}$ on number line.

29 In this figure, $AC = AE$, $AB = AD$ and $\angle BAD = \angle EAC$. Show that $BC = DE$



30 If a transversal intersects two lines such that bisectors of pair of corresponding angles are parallel then prove that the two lines are parallel

31 Draw frequency polygon of following data: (on graph)

Class Interval	Marks
0-5	2
5-10	3
10-15	4
15-20	1
20-25	5
25-30	3

a) Is this data continuous?

Section D

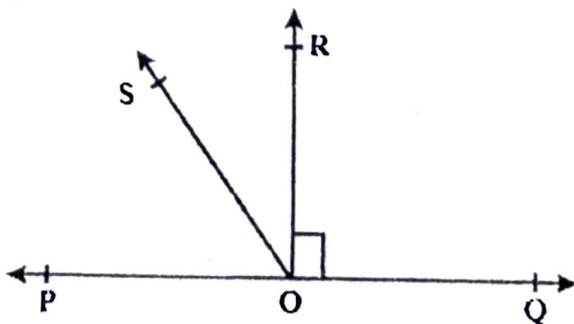
32 a) Find value of $(-11)^3 + (8)^3 + (3)^3$ using an identity. Mention the identity used and condition used to solve the above question

b) Expand: $(\frac{1}{4}a - \frac{2}{3}b + 2)^2$

33 Draw Histogram for given data: (on graph)

Marks	Number of students
100-150	60
150-200	100
200-300	100
300-500	80
500-800	180

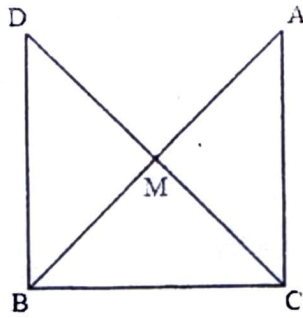
34 POQ is a line. Ray OR is perpendicular to line PQ. OS is another ray lying between rays OP and OR. Prove that $\angle ROS = \frac{1}{2} (\angle QOS - \angle POS)$



35 In right triangle ABC, right angled at C, M is the mid-point of hypotenuse AB. C is joined to M and produced to a point D such that $DM = CM$. Point D is joined to point B. Show that:

i) $\triangle AMC \cong \triangle BMD$

(ii) $\angle DBC$ is a right angle



Section E



36 In nature, the shell of the snail almost looks like a square root spiral.

In surroundings, the spiral ladder from bird view perspective looks like a square root spiral.



The square root spiral shape is the relationship between the square root spiral and objects in nature and our surroundings.



With reference to the above figure answer the following questions:

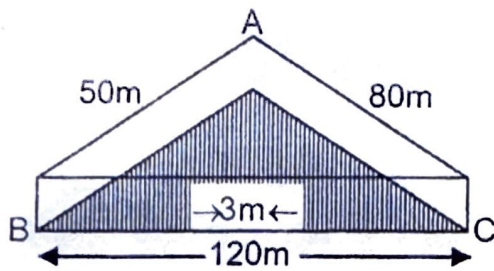
- Length of hypotenuse of which triangle is $\sqrt{3}$.
a) A b) B c) C d) D
- Length of hypotenuse of which two triangles is a whole number?
a) B & D b) D & H c) G & I d) C & H
- What is the length of hypotenuse of triangle G?
a) $\sqrt{5}$ b) $\sqrt{6}$ c) $\sqrt{7}$ d) $\sqrt{8}$

iv)

$\sqrt{10}$ belongs to which triangle

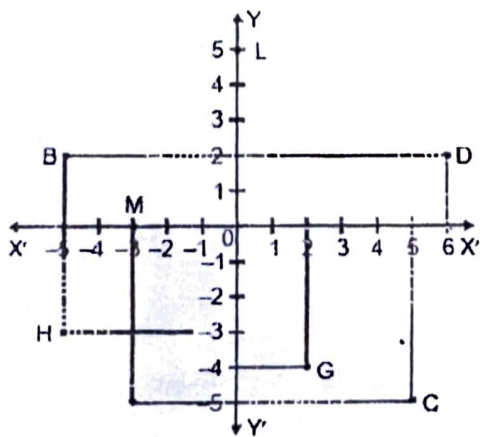
a) F b) G c) H d) I

37. A triangular park ABC has sides 120m, 80 m, and 50 m. A gardener wants to put a fence all around it and also plant grass inside.



- i) Find semi perimeter of the figure
 a) 250 m b) 500m c) 125 m d) 300m
- ii) Find the length of barbed wire used to fence the park leaving a space 3 m wide for a gate on one side
 a) 297m b) 247m c) 128m d) 305m
- iii) Find the cost of fencing it with barbed wire at the rate of Rs 20 per metre leaving the space for the gate.
 a) Rs 4940 b) Rs 5000 c) Rs 2340 d) Rs4500
- iv) How much area does he need to plant the grass?
 a) $445\sqrt{5}$ b) $565\sqrt{3}$ c) $375\sqrt{15}$ d) $345\sqrt{5}$

38. Following are the position of various people doing Yoga in a park. Answer the following questions based on the picture



- i) Coordinates of H are
 a) (-3, -5) b) (-5, -3) c) (-3, -3) d) (-5, 2)
- ii) Abscissa of D is
 a) 2 b) -1 c) 5 d) 6
- iii) Ordinate of G is
 a) -4 b) -2 c) 5 d) -5
- iv) M lies in /on
 a) Second quadrant b) x-axis
 c) y- axis d) Third quadrant

END