

Hoday homework for class IX B

SUBJECT - Mathematics

SAMPLE QUESTION PAPER - I

SUB: MATHEMATICS
CLASS-IX (SESSION 2023-24)

Time Allowed: 3 Hours
Maximum Marks: 80

General Instructions:

- This Question Paper has 5 Sections A-E.
- Section A has 20 MCQs carrying 1 mark each.
- Section B has 5 questions carrying 02 marks each.
- Section C has 6 questions carrying 03 marks each.
- Section D has 4 questions carrying 05 marks each.
- Section E has 3 case based integrated units of assessment carrying 04 marks each.
- All Questions are compulsory. However, an internal choice in 2 Qs of 5 marks, 2 Qs of 3 marks and 2 Questions of 2 marks has been provided. An internal choice has been provided in the 2 marks questions of Section E.
- Draw neat figures wherever required. Take $\pi = 22/7$ wherever required if not stated.

SECTION A

This section has 20 MCQ carrying 1 marks each

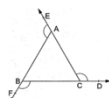
- Ordinate of all points on the Y-axis is
 - 0
 - any number
 - 1
 - 1
- If the area of an isosceles right triangle is 8 cm^2 , what is the perimeter of the triangle?
 - $8+4\sqrt{2} \text{ cm}$
 - $8+\sqrt{2} \text{ cm}$
 - $12\sqrt{2} \text{ cm}$
 - $4+8\sqrt{2} \text{ cm}$
- In the given, AB is side of regular five sided polygon and AC is a side of a regular six sided polygon inscribed in the circle with centre O. AO and CB intersect at P, then $\angle APB = ?$
 - 90°
 - 72°
 - 86°
 - 96°



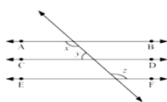
- In the fig. ABCD is a Parallelogram. The values of x and y are



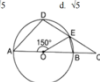
- $45^\circ, 20^\circ$
 - $30^\circ, 35^\circ$
 - $45^\circ, 45^\circ$
 - $55^\circ, 35^\circ$
- The value of $1.9999\dots$ in the form $\frac{p}{q}$, where 'p' and 'q' are integers and $q \neq 0$
 - $\frac{2000}{1000}$
 - $\frac{19}{10}$
 - 2
 - $\frac{1}{9}$
 - The sides BC, CA and AB of ABC have been produced to D, E and F respectively. $\angle BAE = \angle CBF = \angle ACD = ?$
 - 240°
 - 260°
 - 300°
 - 320°



- Cost of a notebook is twice the cost of a pen. The equation to represent this statement is
 - $2x = 3y$
 - $x = 3y$
 - $x + 2y = 0$
 - $x - 2y = 0$
- The zeros of the polynomial $p(x) = 3x^2 - 1$ are
 - $1/\sqrt{3}$ & 3
 - $1/\sqrt{3}$ & $-1/\sqrt{3}$
 - $-1/\sqrt{3}$ & $\sqrt{3}$
 - $1/\sqrt{3}$ & $\sqrt{3}$
- The value of $(a^2 \cdot b)^{a+b} \times (a^2 \cdot b)^{b+a} \times (a^2 \cdot b)^{a+b}$ is
 - 3
 - 2
 - 1
 - 0
- If a diagonal AC and BD of a quadrilateral ABCD bisect each other, then ABCD is a
 - Parallelogram
 - Rhombus
 - Rectangle
 - Triangle
- The value of $\sqrt{3} - 2\sqrt{2}$ is
 - $\sqrt{2} + \sqrt{1}$
 - $\sqrt{2} - \sqrt{1}$
 - $\sqrt{3} + \sqrt{2}$
 - $\sqrt{3} - \sqrt{2}$
- $x = 2, y = 5$ is a solution of the linear equation
 - $5x + y = 7$
 - $x + y = 7$
 - $5x + 2y = 7$
 - $x + 2y = 7$
- In the given figure, AB||CD, C||DE||F and $y : x = 3 : 7$, then $x = ?$
 - 63°
 - 126°
 - 108°
 - 162°



- If $x = \sqrt{5} + 2$, then $x - \frac{1}{x}$ equals
 - 2
 - 4
 - $2\sqrt{5}$
 - $\sqrt{5}$
- AOB is the diameter of the circle. If $\angle AOE = 150^\circ$, then the measure of $\angle CBE$ is
 - 115°
 - 125°
 - 120°
 - 105°



- A point of the form (0,b) lies on:
 - X-axis
 - quadrant I
 - quadrant III
 - Y-axis
- If a linear equation has solutions (-2, 2), (0, 0) and (2, -2), then it is of the form:
 - $x + y = 0$
 - $-2x + y = 0$
 - $x - y = 0$
 - $-x + 2y = 0$
- The maximum number of zeroes that a polynomial of degree 3 can have is
 - 0
 - 1
 - 2
 - 3
- Assertion (A):** In ABC, E and F are the midpoints of AC and AB respectively. The altitude AP at BC intersects FE at Q. Then, $AQ = QP$.
Reason (R): Q is the midpoint of AP.
 - Both A and R are true and R is the correct explanation of A.
 - Both A and R are true but R is not the correct explanation of A.
 - A is true but R is false. A is true but R is false.
 - A is false but R is true.
- Assertion (A):** $5 - \sqrt{2} = 5 - 1.414 = 3.586$ is an irrational number.
Reason (R): The difference of a rational number and an irrational number is an irrational number.
 - Both A and R are true and R is the correct explanation of A.
 - Both A and R are true but R is not the correct explanation of A.
 - A is true but R is false. A is true but R is false.
 - A is false but R is true.

SECTION B

21. Point C is called a mid-point of line segment AB, prove that every line segment has one and only one mid-point.
22. In the given figure, we have $BX = \frac{1}{2} AB$ and $BY = \frac{1}{2} BC$ and $AB = BC$. Show that $BX = BY$.



23. Name the quadrant in which the point lies. (i) A(1, 1) (ii) (-2, -4) (iii) C(1, -2).
24. Find two rational and two irrational numbers between 0.5 and 0.55.

OR

- Express the decimal 0.235 in the form $\frac{p}{q}$ where p, q are integers and $q \neq 0$.
25. Curved surface area of a cone is 308 cm² and its slant height is 14 cm. Find the radius of the base.
- OR
- If the radius and slant height of a cone are in the ratio 7 : 13 and its curved surface area is 286 cm², find its radius.

SECTION C

26. Find the value of $\frac{4}{21a^3} + \frac{1}{23a^3} + \frac{2}{24a^3}$

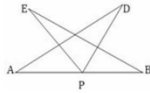
27. If $AE = AD$ and $BD = CE$. Prove that $\triangle AEB \cong \triangle ADC$.



28. ABCD is a quadrilateral in which P, Q, R and S are mid-points of the sides AB, BC, CD and DA. AC is a diagonal. Show that
- $SR \parallel AC$ and $SR = \frac{1}{2} AC$
 - $PQ = SR$
 - PQRS is a parallelogram.

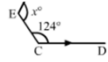


29. Find at least 3 solutions for the linear equation $2x - 3y + 7 = 0$.
30. AB is a line segment and P is the mid-point. D and E are points on the same side of AB such that $\angle BAD = \angle ABE$ and $\angle EPA = \angle DPB$. Show that:
- $\triangle DAP \cong \triangle EBP$
 - $AD = BE$



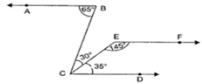
OR

- ABC is an isosceles triangle in which $AB = AC$. BE and CF are its two medians. Show that $BE = CF$.
31. If $x + y + z = 0$, show that $x^3 + y^3 + z^3 = 3xyz$.



In figure, $\angle ABC = 65^\circ$, $\angle BCE = 30^\circ$, $\angle DCE = 35^\circ$ and $\angle CFE = 145^\circ$.
 Prove that $AB \parallel EF$.

OR



33. Prove that the line joining the mid-points of the diagonals of a trapezium is parallel to each of the parallel sides and is equal to half of the difference of these sides.

34. The perimeter of a triangular field is 420 m and its sides are in the ratio 6 : 7 : 8. Find the area of the triangular field.

OR

The perimeter of a right triangle is 24 cm. If its hypotenuse is 10 cm, find the other two sides. Find its area by using the formula area of a right triangle. Verify your result by using Heron's formula.

35. Factorize $x^3 - 2x^2 + x - 2$.

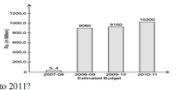
SECTION E

36. A bus stop is barricaded from the remaining part of the road, by using 50 hollow cones made of recycled cardboard. Each cone has a base diameter of 40 cm and a height of 1 m.



I. Find the curved surface area of the cone.
 II. If the outer side of each of the cones is to be painted and the cost of painting is ₹ 12 per m^2 , what will be the cost of painting all these cones? (Use $\pi = 3.14$ and take $\sqrt{1.02} = 1.02$)

37. Ladli Scheme was launched by the Delhi Government in the year 2008. This scheme helps to make women strong and will empower a girl child. This scheme was started in 2008. The expenses for the scheme are plotted in the following bar chart.



I. What are the total expenses from 2009 to 2011?
 II. What is the percentage of no of expenses in 2009-10 over the expenses in 2010-11?
 III. What is the percentage of minimum expenses over the maximum expenses in the period 2007-2011?

OR

What is the difference of expenses in 2010-11 and the expenses in 2006-09?

38. Sanjay and his mother visited in a mall. He observes that three shops are situated at P, Q, R as shown in the figure from where they have to purchase things according to their need. Distance between shop P and Q is 8 m and between shop P and R is 6 m.



Considering O as the center of the circles.

I. Find the Measure of $\angle QPR$. (1)
 II. Find the radius of the circle. (1)
 III. Find the Measure of $\angle QSR$. (2)

OR

Find the area of $\triangle PQR$. (2)

*** Solve chapter - 11 (Surface area and volume from study material**

provided to you. (All type of questions)

*** Make a, model on mid point theorem**