



St. Soldier's School

TERM I (2024-25)

MATHEMATICS (SET-A)

Class - IX

Time Allowed: 3 Hrs.

M.M : 80

SECTION-A

(Section-A consists of 20 questions of 1 mark each)

Q1. $2\sqrt{3} + \sqrt{3} =$

- (a) 6
- (b) $2\sqrt{6}$
- (c) $3\sqrt{3}$
- (d) $4\sqrt{6}$

Q2. The coefficient of x^2 in $5x^5 - 2x^2 + 13x^3 + 9$ is

- (a) 2
- (b) 5
- (c) -2
- (d) 13.

Q3. The linear equation $3x + 10y = 0$ will have :

- (a) Unique solution
- (b) two solution
- (c) Many solution
- (d) No solution

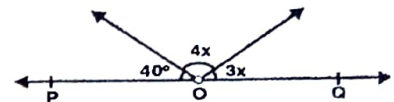
Q4. The solution of equation $x - 2y = 4$ is:

- (a) (0,2)
- (b) (2,0)
- (c) (4,0)
- (d) none of these

Q5. If the coordinate of two points are A (4, 5) and B (-3, 6), the value of (Abscissa of A) - (Abscissa of B) is

- (a) -7
- (b) 1
- (c) -1
- (d) 7

Q6. In the given figure, POQ is a line. The value of x is



- (a) 20°
- (b) 25°
- (c) 30°
- (d) 35°

Q7. Which of the following is irrational numbers

- (a) $\sqrt{16} - 4$
- (b) $(3 - \sqrt{3})(3 + \sqrt{3})$
- (c) $\sqrt{5} + 3$
- (d) $-\sqrt{25}$

Q8. What is the semi-perimeter of a triangle with sides 5 cm, 12 cm, and 13 cm?

- (a) 12 cm
- (b) 15cm
- (c) 16 cm
- (d) 20cm

Q9. Any point on line $x = y$ is of the form:

- (a) (a, -a)
- (b) (a, 0)
- (c) (0, -a)
- (d) (a, a)

Q10. Identify the polynomial

- (a) $x^{-2} + x^{-1} + 5$
- (b) $x^2 + 5\sqrt{x} + 7$
- (c) $x^{\frac{1}{3}} - 9$
- (d) $3x^2 + 7$

Q11. The number of points on x-axis are

- (a) 0
- (b) infinite
- (c) millions
- (d) 100

Q12. The mirror of a point (-3, -4) on y-axis is:

- (a) (-3, 4)
- (b) (3, -4)
- (c) (3, 4)
- (d) (-3, -4)

Q13. The volume of a hemisphere whose radius is r is:

- (a) $\frac{4}{3}\pi r^3$
- (b) $\frac{1}{3}\pi r^2 h$
- (c) $\frac{2}{3}\pi r^3$
- (d) $2\pi r^3$

Q14. The measure of an angle which is supplementary to itself:

- (a) 60°
- (b) 90°
- (c) 100°
- (d) 45°

Q15. Heron's formula is named after:

- (a) An ancient Greek mathematician
- (b) An Indian mathematician
- (c) A Roman mathematician
- (d) A Chinese mathematician

Q16. If $a + b + c = 0$, then find the value of $a^3 + b^3 + c^3 =$

- (a) abc
- (b) 3abc
- (c) -3abc
- (d) 0

Q17. The slant height of a cone with radius 15 cm and height 20 cm is

- (a) 21cm
- (b) 20 cm
- (c) 25 cm
- (d) 15 cm

$$\begin{array}{r} 215 \\ \times 15 \\ \hline 1075 \\ + 2150 \\ \hline 3225 \end{array}$$

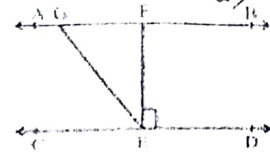
$$\begin{array}{r} 21 \\ 225 \\ + 25 \\ \hline 125 \\ + 50 \\ \hline 625 \end{array}$$

$$\begin{array}{r} 17 \\ + 13 \\ \hline 30 \end{array}$$

$$\begin{aligned} 40 + 4x + 3x &= 180 \\ 40 + 7x &= 180 \\ 7x &= 180 - 40 \\ 7x &= 140 \\ x &= \frac{140}{7} \\ x &= 20 \end{aligned}$$

$$\begin{aligned} l^2 &= r^2 + h^2 \\ l^2 &= 15^2 + 20^2 \\ l^2 &= 225 + 400 \\ l^2 &= 625 \\ l &= 25 \end{aligned}$$

Q29. In the given Figure, if $AB \parallel CD$, $EF \perp CD$ and $\angle GED = 126^\circ$, find $\angle AGE$, $\angle GEF$ and $\angle FGE$.



$$\frac{18}{118} = \frac{36}{36}$$

$$\angle POS = \frac{1}{2} (\angle QOS - \angle POS)$$

$$\begin{array}{r} +120 \\ +144 \\ \hline 264 \end{array}$$

$$\begin{array}{r} 132 \\ 132 \\ \hline 264 \\ \hline 132 \end{array}$$

Q30. Sides of a triangle are in the ratio of 12 : 17 : 25 and its perimeter is 540 cm. Find its area

Q31. (a) Find a rational and an irrational numbers between $\frac{1}{5}$ and $\frac{2}{5}$

(b) Evaluate : $(256)^{0.16} \times (256)^{0.09}$

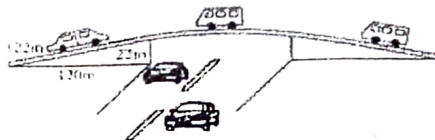
SECTION D

(Section D consists of 4 questions of 5 marks each)

Q32. (a) Simplify by rationalizing the denominator : $\frac{9 + \sqrt{5}}{9 - \sqrt{5}}$

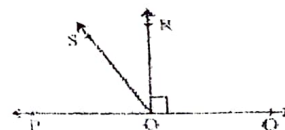
(b) Construct $\sqrt{2}$ on number line.

Q33. The triangular side walls of a flyover have been used for advertisements. The sides of the walls are 122 m, 22 m and 120 m. The advertisements yield an earning of ₹ 5000 per m^2 per year. A company hired one of its walls for 3 months. How much rent did it pay?



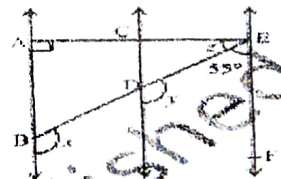
Q34. A hemispherical dome of a building needs to be painted. If the circumference of the base of the dome is 17.6 m, find the cost of painting it, given the cost of painting is ₹ 5 per 100 cm^2 .

Q35. In the given figure, POQ is a line. Ray OR is perpendicular to line PQ. OS is another ray lying between rays OP and OR. Prove that



OR

Q35. In Figure, $AB \parallel CD$ and $CD \parallel EF$. Also $EA \perp AB$. If $\angle BEF = 55^\circ$, find the values of x, y and z



SECTION E

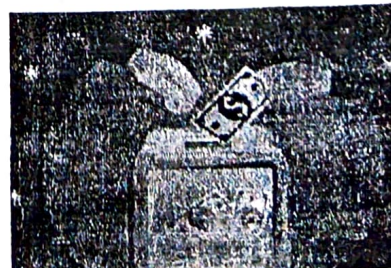
(Case study based questions are compulsory)

Q36. Nidhi was studying in the school and she wanted to collect some into Prime Minister care fund which was raised to provide relief to the affected people with any kind of emergency or distress situation like posed by Covid-19 pandemic. Now, she started to collect money from her classmates. The collection can be represented by zeroes of the polynomial $p(x) = 2x^2 - 5x + 3$

- (a) Write the degree of given polynomial.
- (b) Name the type of the given polynomial
- (c) Find the zeroes of the polynomial $= 2x^2 - 5x + 3$

OR

If $p(x)$ is divided by $x + 3$, find its remainder.



$$\frac{2220}{510} = 4.35$$

$$2752$$

$$\begin{array}{r} 0.12 \\ 126 \\ -90 \\ \hline 36 \end{array}$$

$$\begin{array}{r} 270 \\ -170 \\ \hline 100 \\ \hline 150 \end{array}$$

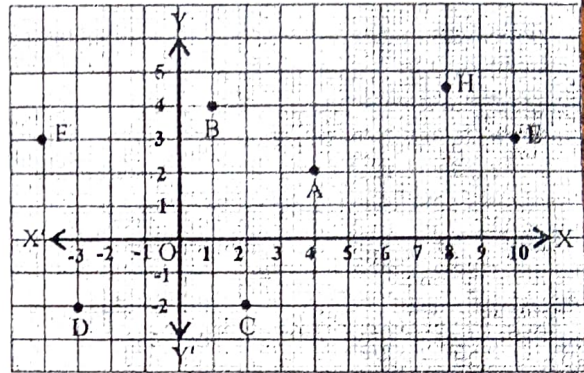
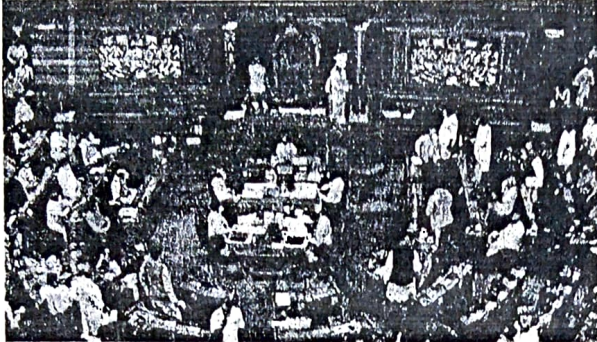
$$\begin{array}{r} 711 \\ \times 5 \\ \hline 3555 \\ \hline 76 \end{array}$$

$$\begin{array}{r} 1800 \\ -126 \\ \hline 1674 \end{array}$$

$$\begin{array}{r} 12 \\ *17 \\ \hline 29 \\ +29 \\ \hline 54 \end{array}$$

Q37. Student of class IX are on visit of Sansad Bhawan. Teacher assign them the activity of observe and take some pictures to analyses the seating arrangement between various MP and speaker based on coordinate geometry. The staff tour guide explained various facts related to Math's of Sansad Bhawan to the students, students were surprised when teacher ask them you need to apply coordinate geometry on the seating arrangement of MP's and speaker.

Calculate the following refer to the below image and graph.



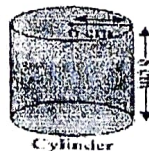
Answer the following questions:

- In which quadrant, the point 'C' lie?
- What are the coordinates of position 'H'?
- Find the perpendicular distance of the point E from the y-axis?

OR

Write the name and coordinate of the point of intersection of both axes?

Q38. Mr. Kumar, a Mathematics teacher brings some green coloured clay in the classroom to teach the topic 'mensuration'. First, he forms a cylinder of radius 6 cm and height 8 cm with the clay. Then, he moulds that cylinder into a sphere similarly, he moulds the sphere in other different shapes.



Cylinder



Sphere

Answer the following questions:

- When the shape of clay changes from one shape to other then which of the following will remains same?
 - Area
 - radius
 - volume
- What is the formula to find Total surface area of sphere?
- What is the volume of cylindrical shape

OR

What is the radius of sphere formed?