

CLASS: IX

WINTER BREAK HOLIDAY H.W.

- 1) Simplify $\sqrt[4]{81} - 8 \times \sqrt[3]{216}$ Ans: -45
- 2) Find the value of $64x^3 - 125y^3$, if $4x - 5y = 16$ and $xy = 12$. Ans: 15616
- 3) Represent $\sqrt{8.47}$ on the number line.
- 4) If 'a' and 'b' are rational numbers and $\frac{\sqrt{11} - \sqrt{7}}{\sqrt{11} + \sqrt{7}} = a - b\sqrt{77}$, then find the values of 'a' and 'b'. Ans: $a = \frac{9}{2}, b = \frac{1}{2}$
- 5) Find four rational numbers between $-\frac{2}{3}$ and $\frac{3}{2}$.
- 6) Find the value of k, if $(x+3)$ is a factor of $3x^2 + kx + 6$. Ans: 11
- 7) If $a^2 + b^2 + c^2 = 250$ and $ab + bc + ca = 3$, then find $a + b + c$. Ans: ± 16
- 8) If $(x+5)$ is a factor of $x^3 + 2x^2 - 13x + 10$, then find the other factors. Ans: $(x-2), (x-1)$
- 9) Simplify $(a+b)^3 - (a-b)^3 - 6b(a^2 - b^2)$. Ans: $8b^3$
- 10) The linear equation $C = \frac{5F - 160}{9}$, convert Celsius to Fahrenheit. If temperature is 104°F , then what is the temperature in Celsius? Ans: 40°C
- 11) Express y in terms of x in the equation $2x - 3y = 12$. Find the points where the line represented by the equation $2x - 3y = 12$ cuts the x-axis and y-axis.
- 12) Find the point which lies on y-axis at a distance of 5 units in the negative direction of y-axis. Ans: $(6, 0), (0, -4)$
Ans: $(0, -5)$

- 13) In which quadrant or on which axes the points $(-2, 4)$, $(3, -1)$ and $(-1, 0)$ lie? verify your answer by locating them in the cartesian plane.
- 14) Plot the points (x, y) given in the following table on the plane, choosing suitable units of distance on the axes.
- | | | | | | |
|---|----|----|-------|---|----|
| x | -2 | -1 | 0 | 1 | 3 |
| y | 8 | 7 | -1.25 | 3 | -1 |
- 15) Plot the points $A(1, 3)$, $B(1, -1)$, $C(7, -1)$, $D(7, 3)$ join them in order and identify figure, thus formed. write the coordinates of the point of intersection of the diagonals.
- 16) If a point 'C' lies between two points A and B such that $AC = BC$, then prove that $AC = \frac{1}{2} AB$. Explain by drawing figure. Ans: Rectangle, $(4, 1)$.
- 17) Prove that two distinct lines cannot have more than one point in common.
- 18) In $\triangle ABC$, $\angle A + \angle B = 122^\circ$ and $\angle B + \angle C = 111^\circ$, find the values of $\angle B$ and $\angle C$.
- 19) Construct a $\triangle XYZ$, in which $\angle Y = 30^\circ$, $\angle Z = 90^\circ$ and $XY + YZ + ZX = 12 \text{ cm}$.
- 20) Construct an angle of i, $22\frac{1}{2}^\circ$ ii, 105°
- 21) The lengths of the sides of a triangle are in the ratio $4:3:5$. If the perimeter of the triangle is 96 cm , then find its area.
- 22) A traffic signal board, indicating 'SCHOOL AHEAD' is an equilateral triangle with side a . Find the area of a signal board using Heron's formula, if its perimeter is 180 cm . Ans: 1558.8 cm^2 .