

1. Equation of line passing through origin and making $30^\circ, 60^\circ$ and 90° with x, y, z axes respectively is.
 - (a) $\frac{2x}{\sqrt{3}} = \frac{y}{2} = \frac{z}{0}$
 - (b) $\frac{2x}{\sqrt{3}} = \frac{2y}{1} = \frac{z}{0}$
 - (c) $2x = \frac{2y}{\sqrt{3}} = \frac{z}{1}$
 - (d) $\frac{2x}{\sqrt{3}} = \frac{2y}{1} = \frac{z}{1}$
2. If the equation of a line is $x = ay + b, z = cy + d$, then find the direction ratios of line and a point on the line.
3. (a) Find the equations of the diagonals of the parallelogram $PQRS$ whose vertices are $P(4, 2, -6), Q(5, -3, 1), R(12, 4, 5)$ and $S(11, 9, -2)$. Use these equations to find the point of intersection of diagonals.
- (b) A line l passes through point $(-1, 3, -2)$ and perpendicular to both the lines $\frac{x}{1} = \frac{y}{2} = \frac{z}{3}$ and $\frac{x+2}{-3} = \frac{y-1}{2} = \frac{z+1}{5}$. Find the vector equation of the line l . Hence, Obtain its distance from origin.