

Worksheet: Three Dimensional Geometry

IGCSE · Class 12 · Mathematics · 8 questions · 33 marks

Name: _____

Date: _____

Score: _____ / 33

Q1. If a line makes angles 90, 135 and 45 degrees with the x, y and z-axes, find its direction cosines. [2 marks]

Q2. If a line has direction ratios -18, 12, -4, what are its direction cosines? [3 marks]

Q3. Find the vector and Cartesian equations of the line through the point (2,-1,4) in the direction $\mathbf{i}+2\mathbf{j}-\mathbf{k}$. [4 marks]

Q4. Find the angle between the lines with direction ratios (2,2,1) and (4,1,8). [4 marks]

Q5. Show that the points (2,3,4), (-1,-2,1) and (5,8,7) are collinear. [3 marks]

Q6. Find the shortest distance between $\mathbf{r}=(\mathbf{i}+2\mathbf{j}+\mathbf{k})+\lambda(\mathbf{i}-\mathbf{j}+\mathbf{k})$ and $\mathbf{r}=(2\mathbf{i}-\mathbf{j}-\mathbf{k})+\mu(2\mathbf{i}+\mathbf{j}+2\mathbf{k})$. [5 marks]

Q7. Find p so that $(1-x)/3=(7y-14)/(2p)=(z-3)/2$ and $(7-7x)/(3p)=(y-5)/1=(6-z)/5$ are perpendicular. [6 marks]

Q8. Find the shortest distance between $(x+1)/7=(y+1)/(-6)=(z+1)/1$ and $(x-3)/1=(y-5)/(-2)=(z-7)/1$. [6 marks]
