12.5 Summary

Lines:

$x = x_0 + at,$
$y = y_0 + bt,$
$z = z_0 + ct$

$\boldsymbol{v} = \langle a, b, c \rangle$ = direction vector
$\boldsymbol{r_0} = \langle x_0, y_0, z_0 \rangle$ = a position vector

Planes:

$a(x - x_0) + b(y - y_0) + c(z - z_0) = 0$

$\boldsymbol{n} = \langle a, b, c \rangle$ = a **normal** vector.
$\boldsymbol{r_0} = \langle x_0, y_0, z_0 \rangle$ = a position vector

To find equations for a line

Info given?	Find two points	
Done.	$\vec{v} = \overrightarrow{AB}$ (subtract components)	$\overrightarrow{r_0} = \vec{A}$

To find the equation for a plane

Info given?	Find three points	
Done.	Two vectors parallel to the plane: $\overrightarrow{AB}$ and $\overrightarrow{AC}$	
	$\vec{n} = \overrightarrow{AB} \times \overrightarrow{AC}$	$\overrightarrow{r_0} = \vec{A}$