

26th October



Corbettm@ths

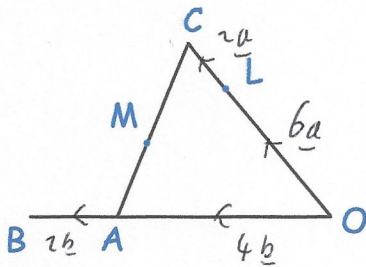
The line L has equation  $y = 2x + 8$   
 The line L crosses the x-axis at the point A.  
 The line M is perpendicular to Line L and passes through the point A

Find the coordinates of the point A.

$$(-4, 0)$$

Find equation of the Line M.

$$y = -\frac{1}{2}x - 2$$



$$\begin{aligned} \vec{OC} &= 8a & \vec{AC} &= -4b + 8a \\ \vec{OA} &= 4b & \vec{AM} &= -2b + 4a \\ \vec{AB} &= 2b & \vec{CM} &= 2b - 4a \\ \vec{OL} &= 6a \end{aligned}$$

M is the midpoint of AC

Work out the vector

$$\begin{aligned} \vec{LM} &= \vec{LC} + \vec{CM} \\ &= 2a + (2b - 4a) \\ &= -2a + 2b \\ \vec{MB} &= \vec{MA} + \vec{AB} \\ &= 2b - 4a + 2b = 4b - 4a \end{aligned}$$

Show that L, M and B lie on a straight line.

$$\begin{aligned} \vec{LM} &= 2b - 2a & \vec{MB} &= 4b - 4a \\ & & &= 2(2b - 2a) \\ \vec{MB} &= 2\vec{LM} \end{aligned}$$

Since MB & LM are parallel and pass through M; L, M, B are

in a straight line

Express as a single fraction

$$\frac{b}{a} - \frac{a-1}{b+1}$$

$$\frac{b(b+1)}{a(b+1)} - \frac{(a-1)a}{a(b+1)}$$

$$\frac{b^2 + b - a^2 + a}{a(b+1)}$$