

14th April



Corbettmaths

Find the equation of the line that is perpendicular to  $y = 3x - 7$  and passes through the point  $(9, 2)$

$$2y$$

$$y = -\frac{1}{3}x + c$$

$$2 = -3 + c \quad c = 5$$

~~$$y = -\frac{1}{3}x + 5$$~~

The first 5 terms of a quadratic sequence are

140 134 126 116 104

Find an expression for the nth term

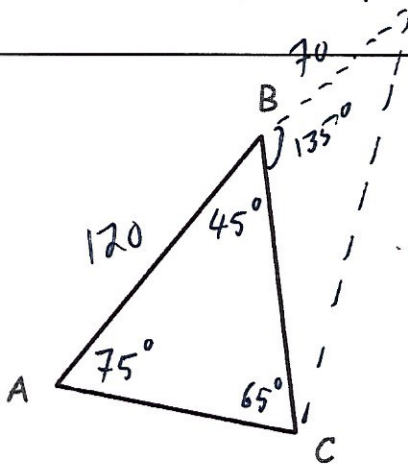
$$-n^2 - 3n + 144$$

$$\begin{array}{cccc} 140 & 134 & 126 & 116 & 104 \\ -6 & -8 & -10 & -12 & \\ -2 & -2 & -2 & & \end{array}$$

$$a = -1 \quad 3a + b = -6$$

$$b = -3$$

$$a + b + c = 140 \quad c = 144$$



James is at the point A.  
He then walks 120m to the point B.  
Angle ABC =  $40^\circ$  and Angle BAC =  $75^\circ$

Find the distance AC

$$\frac{AC}{\sin 45} = \frac{120}{\sin 65}$$

$$AC = 93.625m$$

$$AC = 93.6m$$

James carries on walking in the same direction for a further 70m to point D.

What is the distance DC?

$$\frac{BC}{\sin 75} = \frac{120}{\sin 65}$$

$$BC = 127.8937474\dots$$

$$DC^2 = 70^2 + BC^2 - 2 \times 70 \times BC \times \cos 135$$

$$DC^2 = 33917.64566$$

$$184.17m$$