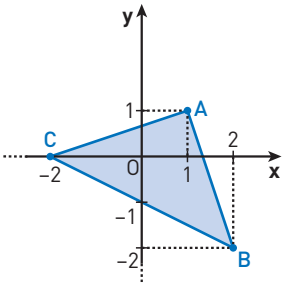
YOU & MATHS **Equation of a median** Let $A(1, 1)$, $B(2, -2)$, and $C(-2, 0)$ be the vertices of a triangle; find the equation of the median through the vertex A.

Let us draw the triangle.



To find the median through the vertex $A(1, 1)$ we must first find $M(x_M, y_M)$, the midpoint of the line segment BC.
The coordinates of the midpoint are:

$$x_M = \frac{x_B + x_C}{2} = 0;$$

$$y_M = \frac{y_B + y_C}{2} = -1.$$

The median through A is the line through A and M:

$$\frac{y - y_A}{y_M - y_A} = \frac{x - x_A}{x_M - x_A} \rightarrow \frac{y - 1}{-1 - 1} = \frac{x - 1}{-1} \rightarrow y - 1 = 2x - 2 \rightarrow 2x - y - 1 = 0.$$