

31st December

Corbettmaths

AB is a straight line

The coordinates of A are $(-1, -7)$ The midpoint of AB is $(6.2, 1.5)$

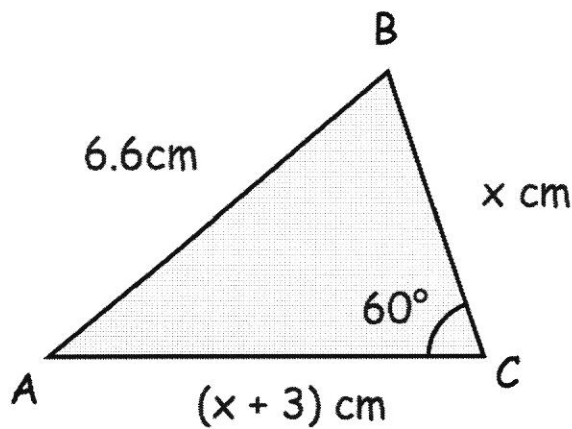
Work out the coordinates of B

$$B(p, q)$$

$$\frac{p-1}{2} = 6.2 \quad \frac{q-7}{2} = 1.5$$

$$p = 13.4 \quad q = 10$$

$$\underline{B(13.4, 10)}$$



Calculate the area of ABC.

Give your answer to 1 decimal place.

Cosine rule:

$$6.6^2 = x^2 + (x+3)^2 - 2x(x+3)\cos 60^\circ$$

$$43.56 = x^2 + x^2 + 6x + 9 - x^2 - 3x$$

$$0 = x^2 + 3x - 34.56$$

$$\Rightarrow x = \frac{-3 \pm \sqrt{9 + 138.24}}{2}$$

$$= 4.57, -2.57 \text{ (rejected)}$$

$$\text{Area} = \frac{1}{2} x(x+3) \sin 60^\circ$$

$$= \underline{15.0 \text{ cm}^2 \text{ (1 d.p.)}}$$

$$y = x^4 + 2x^3 - 4x^2 + x$$

Work out the value of $\frac{d^2y}{dx^2}$ when

$$x = 1$$

$$\frac{dy}{dx} = 4x^3 + 6x^2 - 8x + 1$$

$$\frac{d^2y}{dx^2} = 12x^2 + 12x - 8$$

$$x=1 \Rightarrow \underline{\frac{d^2y}{dx^2} = 16}$$

A pizza parlour sells 12 different pizza toppings.

Grace orders a pizza with 3 different pizza toppings.

How many different pizzas can Grace order?

$$\frac{12 \times 11 \times 10}{3!} = {}^{12}C_3$$

$$= \underline{220}$$