

M4 = 4.4 days to go!

9 Solve the equation $x^2 - x - 12 = 0$

↑
Find the x value

Answer _____ [3]

$$x^2 - x - 12 = 0$$

There are 2 possible methods.

① FACTORISE

$$x^2 - x - 12 = 0$$

$$(x-4)(x+3) = 0$$

so then each
() = 0

$$\begin{aligned} x-4 &= 0 & x+3 &= 0 \\ x &= 4 & x &= -3 \end{aligned}$$

Answers

$$x = 4 \text{ and } x = -3$$

② Use QUADRATIC FORMULA

$$ax^2 + bx + c = 0$$

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x^2 - x - 12 = 0$$

$$a=1 \quad b=-1 \quad c=-12$$

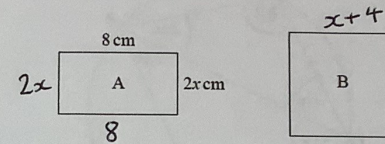
$$\frac{1 \pm \sqrt{(-1)^2 - 4(1)(-12)}}{2(1)}$$

$$\frac{1 \pm \sqrt{1 + 48}}{2}$$

$$\frac{1 \pm \sqrt{49}}{2}$$

$$\frac{1+7}{2} \text{ and } \frac{1-7}{2} \text{ Ans } 4 \text{ \& } -3$$

16 A is a rectangle of length 8 cm and width $2x$ cm, and B is a square.



The perimeters of the rectangle and the square are equal.

(a) Write down an expression in terms of x for the length of the side of the square B.

Perimeter of A is $2x + 8 + 2x + 8$
 $4x + 16$

Each side

Answer $x+4$ [2]

The area of the square is 4 cm^2 more than the area of the rectangle.

(b) (i) Write down an equation satisfied by x and show that it simplifies to

$$x^2 - 8x + 12 = 0$$

$$(x+4)^2 - 4 = 2x(8)$$

$$x^2 + 8x + 16 - 4 = 16x$$

$$x^2 + 8x - 16x + 16 - 4 = 0$$

$$x^2 - 8x + 12 = 0$$

[3]

(ii) Solve this equation, giving the two possible values of x .

$$x^2 - 8x + 12 = 0$$

$$(x-6)(x-2) = 0$$

$$x-6=0 \quad x-2=0$$

$$x=6 \quad x=2$$

Answer 2 & 6 [2]