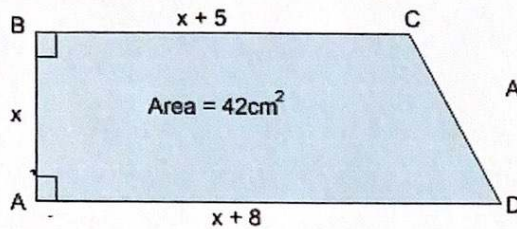




QT - Area of a trapezium finding x

The diagram shows trapezium ABCD with AD parallel to BC



All dimensions in cm

$$\text{Area} = \frac{1}{2} (a+b) h$$

$$42 = \frac{1}{2} (x+5+x+8) x$$

Show that x is a square number.

$$42 = \frac{1}{2} (2x+13) x$$

$$42 = (x+6.5) x$$

$$42 = x^2 + 6.5x$$

$$0 = x^2 + 6.5x - 42$$

$$0 = 2x^2 + 13x - 84$$

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

$$x = \frac{-13 \pm \sqrt{(13)^2 - 4(2)(-84)}}{2(2)}$$

$$x = \frac{-13 + 29}{4}$$

$$\text{or } x = \frac{-13 - 29}{4}$$

$$\underline{\underline{x = 4}}$$

$$x = -10.5$$