

A car accelerates uniformly at 6 m s^{-2} . Its initial speed is 15 m s^{-1} and it covers a distance of 200 m . Calculate its final velocity.

$$a = 6 \text{ m s}^{-2}$$

$$u = 15 \text{ m s}^{-1}$$

$$v = ?$$

$$s = 200 \text{ m}$$

$$t = ?$$

Write down what you know + don't know.

Pick a suitable equation from the list

$$v^x = u^x + a t^x \quad \text{--- no (v+t unknown)}$$

$$s^x = u t^x + \frac{1}{2} a t^x \quad \text{--- no (no v)}$$

$$v_x^2 = u^2 + 2 a s \quad \text{--- Yes!}$$

Use $v^2 = u^2 + 2as$ to find v .

$$v^2 = 15^2 + (2 \times 6 \times 200)$$

$$v^2 = 225 + (2400)$$

$$v^2 = 2625$$

$$v = \sqrt{2625}$$

$$\underline{v = 51 \text{ m s}^{-1}}$$

Beware of "calculator vomit" in your answer.