A car moving with a velocity pf 36 km/h is brought to rest in s5 seconds. Calculate its deceleration?

Solution.

$$v_i = 36\frac{km}{h}, t = 5s;$$

$$a-?$$

A velocity of the car:

$$v = v_i - at.$$

v_i – the initial velocity;
v – the final velocity;
a – the deceleration;
t – the time.

Converting the initial velocity to meters per hour:

$$v_i = 36\frac{km}{hour}\left(\frac{1000m}{1km}\right) = 36000\frac{m}{hour}.$$

Converting the initial velocity to meters per second:

$$v_i = 36000\frac{km}{hour}\left(\frac{1hour}{3600second}\right) = 10\frac{m}{second}.$$

$$v_i = 10\frac{m}{s}.$$

A car is brought to rest then:

$$v = 0.$$

$$0 = v_i - at;$$

$$v_i = at;$$

$$a = \frac{v_i}{t}.$$

A deceleration is:

$$a = \frac{10\frac{m}{s}}{5s} = 2\frac{m}{s^2}.$$

Answer: A deceleration is $a = 2\frac{m}{s^2}$.