

## Answer on Question 79577, Physics, Other

### Question:

If a car gets a speed of  $114 \text{ km/h}$  in  $20 \text{ s}$  by speeding with a steady acceleration in a steady state, then how much is the distance covered by the car?

### Solution:

Let's first find the acceleration of the car from the kinematic equation:

$$v = v_0 + at,$$

here,  $v_0 = 0$  is the initial speed of the car,  $v$  is the final speed of the car,  $a$  is the acceleration of the car and  $t$  is the time.

Then, we get:

$$a = \frac{v - v_0}{t} = \frac{114 \frac{\text{km}}{\text{h}} \cdot \frac{1000 \text{ m}}{1 \text{ km}} \cdot \frac{1 \text{ h}}{3600 \text{ s}}}{20 \text{ s}} = 1.58 \frac{\text{m}}{\text{s}^2}.$$

Finally, we can find the distance covered by the car from another kinematic equation:

$$s = v_0 t + \frac{1}{2} at^2 = \frac{1}{2} \cdot 1.58 \frac{\text{m}}{\text{s}^2} \cdot (20 \text{ s})^2 = 316 \text{ m}.$$

### Answer:

$$s = 316 \text{ m}.$$

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