

Question #56911, Physics / Other

a car is traveling on a straight road at 15.0 meters per second accelerates uniformly to a speed of 21.0 meters per second in 12.0 seconds. The total distance traveled by the car in this 12.0 second interval is

- a.36.0 m
- b.180 m
- c.216 m
- d.252 m

**Solution:**

The displacement during the uniformly accelerated motion is calculated:

$$x(t) = V_0 t + \frac{at^2}{2};$$

$$a = \frac{\Delta V}{\Delta t};$$

$$a = \frac{21 - 15}{12} = 0.5 \text{ m/s}^2;$$

$$x(12) = 15 \times 12 + \frac{0.5 \times 12^2}{2} = 216 \text{ m}$$

**Answer:** c.216 m