

Acceleration

2.2 b

$$\Delta x = \frac{1}{2}(v_i + v_f)t \quad v_f = v_i + at \quad \Delta x = v_i t + \frac{1}{2}at^2 \quad v_f^2 = v_i^2 + 2a\Delta x$$

Practice Problem

A man is running in a race. The gun sounds and he takes off with an acceleration of 2.5 m/s^2 . How far has he traveled to get to his top speed if he reaches his top speed in 5.6 seconds?

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Practice Problem

A woman is riding a bike down the street with a speed of 1.33 m/s. She starts going down a hill and accelerating. If the hill is 0.025 km long and she is accelerating at 0.3 m/s², what is her final speed?

$$\Delta x = \frac{1}{2}(v_i + v_f)t \quad v_f = v_i + at \quad \Delta x = v_i t + \frac{1}{2}at^2 \quad v_f^2 = v_i^2 + 2a\Delta x$$

Practice Problem

An object has a final speed of 7.8 m/s. If this object accelerated (uniformly) for 3 seconds from an initial speed of 2.6 m/s, how far has it traveled during the 3 second time interval?

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Practice Problem

An object is sitting still when all of a sudden a wind causes it to undergo an acceleration. What is the acceleration (in m/s) of an object that travels 500 m during a 1.2 minute time interval?