

# Worksheet: Kinematics Part 1 - a

$$x = v_{\text{initial}} t + \frac{1}{2} a t^2$$

NAME:

1. Read the following problem
2. Highlight your "proof" for assigning variables
3. List the givens
4. Solve
5. Write your answer with the proper units

A student is able to ride his unicycle a distance of 120 meters in 12.1 seconds. If the student started from rest what is his constant acceleration? - 3 pts -

- Displacement - m, how far
- Initial velocity - m/s, starting from rest, initially/beginning, how fast...
- Acceleration -  $\text{m/s}^2$
- Time - s, how long...

Givens

Work

Answer

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A car starts from rest and accelerates uniformly over a time of 5.21 seconds for a distance of 110 m. Determine the acceleration of the car. - 3 pts -

- Displacement - m, how far
- Initial velocity - m/s, starting from rest, initially/beginning, how fast...
- Acceleration -  $\text{m/s}^2$
- Time - s, how long...

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A dog at rest sees a squirrel a distance of 15 meters ahead. If the dog has only 2.2 seconds before being noticed by the squirrel, what must be the rate of her acceleration in order to catch the squirrel? - 3 pts -

- Displacement - m, how far
- Initial velocity - m/s, starting from rest, initially/beginning, how fast...
- Acceleration -  $\text{m/s}^2$
- Time - s, how long...

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A pedestrian is about to cross a street and sees that she has 3.0 seconds to travel 8.0 m across an intersection. What constant rate of acceleration must she have to make it across safely? - 3 pts -

- Displacement - m, how far
- Initial velocity - m/s, starting from rest, initially/beginning, how fast...
- Acceleration - m/s<sup>2</sup>
- Time - s, how long...

Givens

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A factory machine is required to push a box from the end of a chute to make room for the next box. If the machine must accomplish this in 0.50 s with only a distance of 0.45 m, what acceleration must be applied to the box? - 3 pts -

- Displacement - m, how far
- Initial velocity - m/s, starting from rest, initially/beginning, how fast...
- Acceleration - m/s<sup>2</sup>
- Time - s, how long...

Givens

Work

Answer