

Name: _____

Period: _____

Linear Motion Review

$mv = m \text{ ______ } \text{ times } v$ $F/a = F \text{ ______ } a$ $T_2 + T_1 = T_2 \text{ ______ } T_1$ $mv = m \text{ ______ } v$ $\Delta D/\Delta T = \Delta D \text{ ______ } \Delta T$	Match the variables with the quantities. 1. $a =$ _____ 2. S or $v =$ _____ 3. $D =$ _____ 4. $F =$ _____ 5. $T =$ _____	Equation: $S = \Delta D/\Delta T$; solve for ΔD . If $\Delta v = v_2 - v_1$, solve for v_2 :	If $p = mv$, solve for m . If $a = \Delta V/\Delta T$, solve for ΔT :
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What do you need to know in order to find an object's speed?

What does Δ mean (and give the formula)?

An object has a velocity of 5 m/s and starts 0 m away from you.

A) How far does it travel each second?
 B) Where is it after 1 second?
 C) Where is it after 2 seconds?
 D) Where is it after 5 seconds?
 E) How far does it travel between seconds 7 and 8?


A car travels 35 m in 5 secs. Calculate its speed.

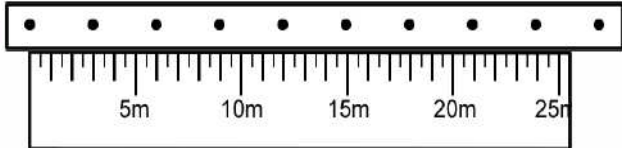
Which has the faster speed? Car A or Car B?
 Both go the same distance, but Car B gets there sooner.
 In the same amount of time, Car A goes farther.
 $T_A = T_B$, but $D_A < D_B$.


G-	R-
E-	C-


Car 1 is going 20 m/s. Car 2 is going 30 m/s.
 Which one travels 100 m first?
 Which one can travel a greater distance?
 Which one travels farther in more time?

A bike goes 12 m/s for 6 seconds.
 Calculate how far the bike traveled.


A 

B 

C 

D 

Variables:	Solution:
Formula:	

E 

Choose which of the above object's motion applies to the following (can be more than one):

<input type="checkbox"/> $V_i = 0$	<input type="checkbox"/> Accelerating
<input type="checkbox"/> Decelerating	<input type="checkbox"/> Acceleration = 0
<input type="checkbox"/> Constant speed	<input type="checkbox"/> Distance is increasing
<input type="checkbox"/> Is stopping	<input type="checkbox"/> Starts at rest
<input type="checkbox"/> Positive acceleration	<input type="checkbox"/> Constant direction
<input type="checkbox"/> At constant velocity	<input type="checkbox"/> Negative acceleration
<input type="checkbox"/> $V_f = 0$	<input type="checkbox"/> $V_i = V_f$

For the following problems, show all work and steps.

A plane stops from 300 mph in 15 seconds.
 Calculate the planes acceleration.

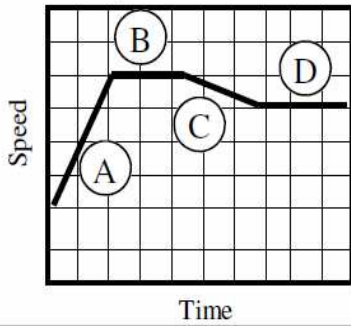
A bike going 3 m/s ends up going 9 m/s after 2 seconds.
 Calculate the bike's acceleration.

For object B above:

A) If there is 1 second between each dot, when did the object reach 12 m?
 B) Find the speed of object B.

Speed (S) or Velocity (V)	Scalar (S) or Vector (V)
<input type="checkbox"/> A car travels 10 m/s left.	<input type="checkbox"/> 10 m/s.
<input type="checkbox"/> A bird flies 20 m/s.	<input type="checkbox"/> 60 mph toward Austin.
<input type="checkbox"/> A bike goes 10 m/s toward town.	<input type="checkbox"/> Direction matters.

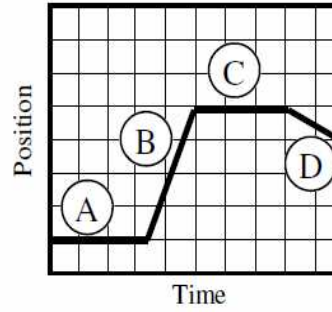
Speed vs. Time



Which graph segments fit the following:

- Constant speed:
- Negative acceleration:
- Positive Acceleration:
- Slowing down:
- Acceleration = 0:

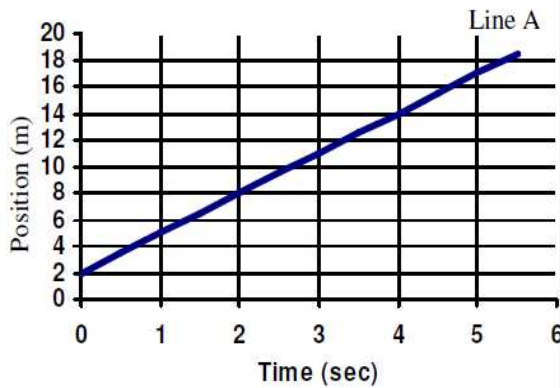
Position vs. Time



Which graph segments fit the following:

- At rest:
- Fast speed:
- Slow speed:
- Going backwards:
- Going forward:

Position vs. Time



Which is the independent variable? _____

Which is the dependent variable? _____

Where was the object at 4 seconds? _____

Where did the object start? _____

When did the object reach 8 meters? _____

Find the slope of the graph (*show work*)

What does the slope you just found stand for? _____

An object accelerates at 10 m/s^2 . Answer the following:

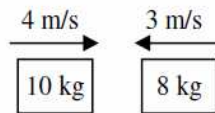
- A) If it starts at rest, how fast is it going after 1 second?
- B) After 2 seconds, how fast is it going?
- C) If it starts at 5 m/s, how fast would it be going after 1 second?

For the following problems, show all work and steps.

A 4 kg object is moving 6 m/s to the left. Calculate momentum.

A 10 kg object has 58 kgm/s of momentum. Find its velocity.

Find the net momentum of the two objects at the right.



If two objects have a net momentum of 45 kgm/s before they collide, how much momentum will they have after they collide?

An astronaut is by herself in space. All she has is a box of tools. How can she get to her ship that is to her left?

How is it possible that two moving objects can collide and stop moving?

A 200 kg cannon shoots a 2 kg cannonball. If the ball ends up going 300 m/s to the right:

- A) If they are both at rest beforehand, what is Σp_{before} ?
- B) What is Σp_{after} ?
- C) Is the ball's final p positive or negative ($p_{\text{ball A}}$)?
- D) Is the cannon's final p positive or negative ($p_{\text{cannon A}}$)?
- E) Find the velocity of the cannon afterwards ($v_{\text{cannon A}}$)?

Number these from most (1) to least (5) momentum.

Fast car	Fast truck	Fast plane	Fast hammer	A mountain
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