Name: _____ Date: _____

Science 7 Motion

Aim: I can describe changes in speed and velocity.

Do Now:

_____

_____

Notes:

Velocity

- The Speed and direction of a moving body.

Acceleration

- The rate of change of velocity.
- Speeding up, slowing down or changing direction.

Describing Acceleration

acceleration: Speeding up "positive acceleration"

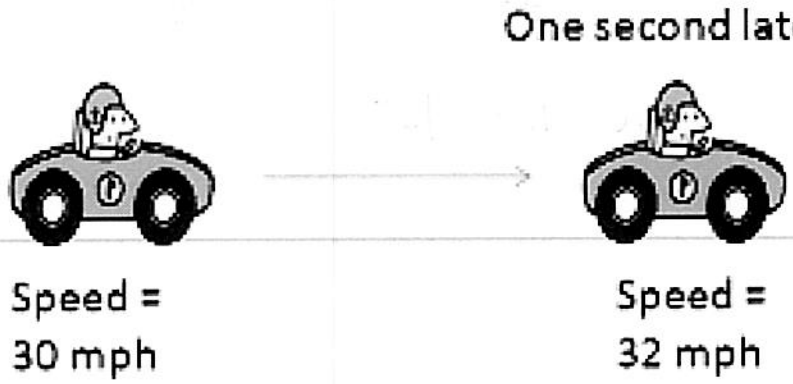
deceleration: Slowing down "negative acceleration"

$$a = \frac{(speed_{end}) - (speed_{start})}{time}$$

$a = \frac{\Delta v}{t}$

$a = \frac{\text{Final Velocity} - \text{Initial Velocity}}{\text{time}}$

$a = \frac{V_f - V_i}{t}$



Practice Problems

1. A car's velocity changes from 0 m/s to 30 m/s 10 seconds later. Calculate the car's average acceleration.

Known Values:	$V_f = 30 m/s$ $V_i = 0 m/s$ $t = 10 s$
Unknown Value:	$a = ?$
Formula and Work:	$a = \frac{V_f - V_i}{t}$ $a = \frac{30 m/s - 0 m/s}{10 s} = \frac{30 m/s}{10 s}$
Solution:	$a = 3.0 m/s^2$

2. As a roller coaster starts down a hill, its speed is 10 m/s. Three seconds later, its speed is 32 m/s at the bottom of the hill. What is the roller coaster's acceleration?

Known Values:	$V_f = 32 m/s$ $V_i = 10 m/s$ $t = 3 s$
Unknown Value:	$a = ?$
Formula and Work:	$a = \frac{V_f - V_i}{t}$ $a = \frac{32 m/s - 10 m/s}{3 s}$ $a = \frac{22 m/s}{3 s}$
Solution:	$a = 7.3 m/s^2$

Explanation of units:

$\frac{m}{s}$ / $\frac{s}{1}$ } Keep Change Flip

$\frac{m}{s} \times \frac{1}{s} = \frac{m}{s^2}$