

Name: _____

Science 7

Date: 10/11/18

Motion NOTES

Aim: I can describe changes in speed and velocity.

Do Now:

$$s = \frac{d}{t}$$

$$s = \frac{50.0 \text{ m}}{4.0 \text{ hr}}$$

$$s = 12.5 \text{ m/hr}$$

Notes:

* Velocity is speed and direction:
Ex 5 m/s East

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"

acceleration formula ↓

$$a = \frac{(\text{speed}_{\text{end}}) - (\text{speed}_{\text{start}})}{\text{time}}$$

One second later



Speed =
30 mph



Speed =
32 mph

Velocity is speed with DIRECTION!!

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.

Formula	$\text{Acceleration} = \frac{\text{final velocity} - \text{initial velocity}}{\text{time}}$
Substitution	$a = \frac{30 \text{ m/s} - 0 \text{ m/s}}{10 \text{ s}}$ $a = \frac{30 \text{ m/s}}{10 \text{ s}} = 3 \text{ m/s}^2$
Final Answer with Units	$a = 3 \text{ m/s}^2$

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

Formula	$\text{acceleration} = \frac{\text{final speed} - \text{initial speed}}{\text{time}}$
Substitution	$a = \frac{32 \text{ m/s} - 10 \text{ m/s}}{3 \text{ s}} = \frac{22 \text{ m/s}}{3 \text{ s}}$
Final Answer with Units	$a = 7.3 \text{ m/s}^2$

