

Name: _____

Physics 11

Lesson 1.3 – Acceleration

	Vector or Scalar?	Symbol and Units	Description/Formula
Distance	Scalar	d m	How far something traveled <i>along the path it took.</i>
Displacement	Vector	$d^{\rightarrow}$ m	• Change in position. • Straight arrow from start to finish.
Speed	Scalar	v m/s	$v_{av} = \frac{d}{\Delta t}$
Velocity	Vector	$v^{\rightarrow}$ m/s	$v_{av}^{\rightarrow} = \frac{d^{\rightarrow}}{\Delta t}$
Acceleration	Vector	$a^{\rightarrow}$ _____	

*The formulas above are for *average* speed/velocity/acceleration or for when speed/velocity/acceleration is _____.

We describe acceleration as the _____ of velocity.

We describe velocity as the _____.

Example:

A car starts from rest and accelerates at 15 m/s^2 for 3 s. What is its top speed?

The Direction of Acceleration:

The direction of acceleration is the direction of the _____ on the object.

All vectors have direction. If an object moves along a straight line (i.e. _____) then we say a vector's direction is

- Positive if it's _____, _____, _____, _____, or _____.
- Negative if it's _____, _____, _____, _____, or _____.

Example: Fill out the table below by putting + or – in each box.

	Velocity	Acceleration
A car sitting at a stop light hits the gas		
From rest, you back out of your driveway		
A car hits the brakes and comes to a stop		
You drop a rock off a cliff		
You throw a rock straight up (while the rock is in your hand)		
You throw a rock straight up (after the rock leaves your hand)		

Example: Sketch velocity-time graphs of the following situations:

A hockey player skating at full speed comes to a sudden stop.	A football is kicked straight up, then falls back down.
A swimmer swims the length of a pool at a constant speed, then quickly turns around and swims back.	A skydiver jumps from a stationary hot air balloon, speeds up to terminal velocity, falls for a while, then pulls the chute and slows down.