

AP Mechanics: Motion in One Dimension part 1, Review of Kinematics of Constant Acceleration

Name: _____

Notes

Vector vs. Scalar

Definition and Examples:

~~location of~~

Pos Vectr: location & how it changes

Vector quantity & magnitude

$$\vec{x} = (\text{mag}) \hat{i}^{\text{unit vector}}$$

Displacement vs. Distance Traveled:

~~change in position~~

Displacement from start to finish

Distance = overall

Speed and Average Speed:

Speed: scalar of spd & dist
instant spd = atm speed

Ave spd = scalar of ~~ave~~ overall speed

Velocity and Average Velocity:

vel = vector of change
is pos & dir

ave vel = total displacement over total time

$$\langle \vec{v} \rangle = \frac{\Delta \vec{x}}{\Delta t}$$

Practice Examples and Checks for Understanding

Check for Understanding 1:

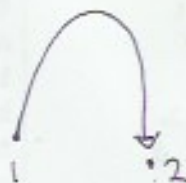
Sort the following quantities according to whether they are vectors or scalars

Speed, time, volume, force, momentum, energy, electric charge, energy, position, distance traveled, acceleration, temperature

Vector Quantities	Scalar Quantities
force	temperature
position	momentum
acceleration	time
volume	distance
charge	energy
	speed
	ve distance

Check for Understanding 2:

Draw a small sketch, to illustrate an example of an object whose distance traveled and displacement are different



Check for Understanding 3:

Under what circumstances are an object's *instantaneous* and *average* speed always equal?

if it is going at
a constant speed

Check for Understanding 4:

Is it possible for an object to have traveled a distance of 100 km in 3 hours, but have an average velocity of 0? Explain

Yes if you ~~back~~ travel in a circle, because its displacement, not distance traveled.