

## Handout

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### Matching

With your group and the video, place an “S” beside Scalar Quantities and a “V” beside Vector Quantities?

Speed: \_\_\_\_\_

Velocity: \_\_\_\_\_

Displacement: \_\_\_\_\_

Distance: \_\_\_\_\_

Acceleration: \_\_\_\_\_

Density: \_\_\_\_\_

Mass: \_\_\_\_\_

Weight: \_\_\_\_\_

Pressure: \_\_\_\_\_

Force: \_\_\_\_\_

Magnitude and Direction: \_\_\_\_\_

Only Magnitude: \_\_\_\_\_

### Vector Quantity: Velocity

A Vector Quantity: A quantity with \_\_\_\_\_ and \_\_\_\_\_.

### Vectors in One-Dimension

- The car drove 25 m/s \_\_\_\_\_, and has a \_\_\_\_\_ velocity of +25m/s.
- The car drove 25 m/s \_\_\_\_\_, and has a \_\_\_\_\_ velocity of -25m/s.

Draw an example of this below.

$$\vec{v}_{av} = \frac{\vec{\Delta d}}{\Delta t}$$

**Velocity:** \_\_\_\_\_

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**Instantaneous Velocity:** Velocity at a \_\_\_\_\_!

**Average Velocity:** Calculated with change of position, divided by the time interval for that change.

The most common units are \_\_\_\_\_ or kilometers/hour.

Free Video Note Space: <https://www.youtube.com/watch?v=apewLkLAR-U>

**Video Tasks:**

1. Pause video at 5:33, discuss, and 5:55 to discuss. You travelled 300 km around a racetrack in 1 hour and 40 minutes. The start line and finish line are the same. What is your average velocity?
  
  
  
  
  
  
  
  
  
  
2. Will all race-car drivers that finish the race have the same average velocity?



### Collaborative Problem-Solving

A cheetah runs right for 127 m from  $d_1$  to  $d_2$  in 29.3 s.

1. Calculate the cheetah's average velocity.
  
  
  
  
  
  
  
  
  
  
2. Provide a rough Position-Time graph for the cheetah's average velocity.

### Position-Time Graphs

With your group, draw position-time line graphs on how you would represent velocity for an object that is:

Moving right at a slow constant velocity      Moving right at a high constant velocity

Moving left at a slow constant velocity      Moving left at a high constant velocity

### Micro:Bit Brainstorming

Your task is to create a code using the Makecode.Microbit.org program to demonstrate an object that has no velocity and an object that has negative velocity. When finished, download the code and transfer it to your Micro:bit to test it out!

**\*\*Hint Code\*\*** <https://makecode.microbit.org/74901-03448-03219-78983>

### Additional Questions #3 and 4

A cheetah runs right for 127 m from  $d_1$  to  $d_2$  in 29.3 s.

1. Calculate the cheetah's average velocity.
2. Provide a rough Position-Time graph for the cheetah's average velocity.
3. If the cheetah maintains the same average velocity for 1.00 h, what is the total displacement?
4. If the cheetah turns around at  $d_2$  and travels 435 m left to position  $d_3$  in 63.7 s, what is the average velocity for the entire motion?