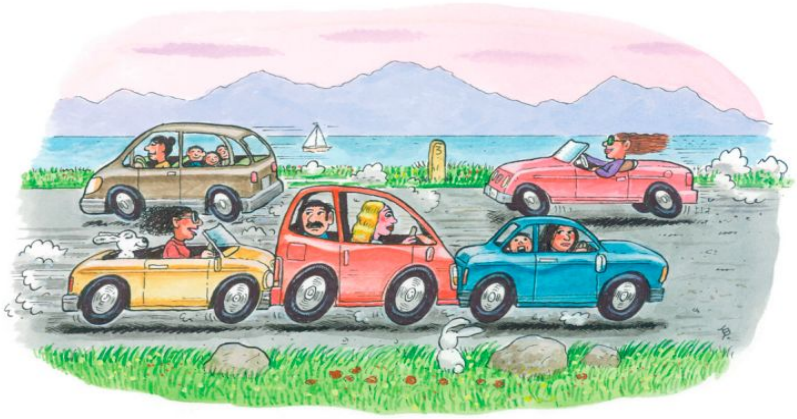
Average Speed Investigate Part 2



1. What do you see? What observations and inferences can you make about this cartoon?

Observations (evidence) What do you observe? (*There is/are… I see…)*	**Inferences** (claim) What claims can you make? (*I predict… If… then)*
Type answer here	*Type answer here*

In a rear-end collision, usually the driver who strikes a vehicle from behind is legally at fault.

2. What is a safe following distance between cars? Make your best estimate - **highlight your choice**

□ 2 feet □ 10 feet □ Other:_____
□ 5 feet □ 20 feet □ Depends on the situation

3. How do you decide what a safe distance is between you and the car in front of you? What factors (things) should you consider?

Type answer here

We're going to think about how the speed of a car affects how much distance it travels.

4. Watch the videos below of the red car and the blue car.

- What is different about the motion of the cars? What is similar?

Type answer here

5. Take some data about the cars. Pause the video after 2 seconds. Use the ruler in the video to measure the distance in centimeters each car travels in 2 seconds.

Red car distance (cm)	*Type data here*
Blue car distance (cm)	*Type data here*

More on next page!

6. Which car has traveled the farthest distance in 2 seconds? Highlight correct answer
    a. The red car traveled the farthest distance
    b. The blue car traveled the farthest distance
7. Watch the videos again. Which car took a longer time to reach 100 cm? Highlight correct answer
    a. The red car took longer to reach 100 cm
    b. The blue car took longer to reach 100 cm

We might want to know the *speed* each car traveled. In everyday life, we define speed as how fast or slow something is moving. In physics, the *total distance traveled* by an object in a given interval of *time* is called the *average speed*. We can use a formula to calculate speed.

$$speed = \frac{distance\ traveled}{time\ it\ took} \quad \text{or} \quad s = \frac{d}{t}$$

8. Calculate the speed of the red car (watch this video to see an example):
    a. How many seconds does it take the red car to move 100 cm? _____ s
    b. Now divide the distance the car traveled by how long it took:

$$speed = \frac{distance}{time} = \frac{(\ \ )\ cm}{(\ \ )\ seconds} = (\ \ )\ cm/s$$

9. Now, calculate the speed of the blue car:
    a. How many seconds does it take the blue car to move 100 cm? _____ s
    b. Now divide the distance the car traveled by how long it took:

$$speed = \frac{distance}{time} = \frac{(\ \ )\ cm}{(\ \ )\ seconds} = (\ \ )\ cm/s$$

10. Now, you will measure speed at home. Here is a video of Mr. Musante showing you how:
    a. Get something that rolls: _____
    b. Decide how far you want it to roll - mark it in your mind or with markers to make it a "track."
    c. Get something to measure distance with. *I used a* _____.
    d. Measure how far the "track" is. You can use centimeters, or "shoes."
        i. Distance _____cm
    e. Use a stopwatch to measure how long is takes, in time, for it to "run the track"
        i. Time _____s
    f. Calculate the speed:

$$speed = \frac{your\ distance}{your\ time} = \frac{(\ \ )}{(\ \ )} = (\ \ \ )\ cm/s$$

11. Summarize what you have learned:

When finding speed, you need to know...