RECORD SHEET

Activity 6: Describing the Motion of an Object with Constant Speed

Name   Date   Class

Key Question

Learning the Ideas

Measuring Position

1. If Amy starts from her house and rides her bike to Alex's house, what would be the distance she traveled?

Calculating the Speed of an Object

Table: Position of Car versus Time	
Time (s)	**Position of Car (m)**
0	0
2.0	40
4.0	80
6.0	120
8.0	160
10.0	200

2. What is the speed of the car between 4.0 s and 10.0 s? Show your work.

3. Ephraim walks to his job every day. His workplace is located 2 km (2000 m) from his home. He takes 20 min (or 1/3 h) to get to work. How fast is he walking? Give an answer in both meters per minute (m/min) and kilometers per hour (km/h). Show your work.

4. In the distant future, Rachel flies a single-person, high-speed spacecraft between Earth and the Moon. Once she gets out of Earth's atmosphere, Rachel makes the 384,000 km trip in exactly 1000 s. How fast is Rachel moving? Show your work.

Determing Speed from a Graph

5. Construct a graph below of distance versus time using the data from the *Position of Car versus Time* Table. Draw a line through the data points.

Graph 1: Distance versus Time
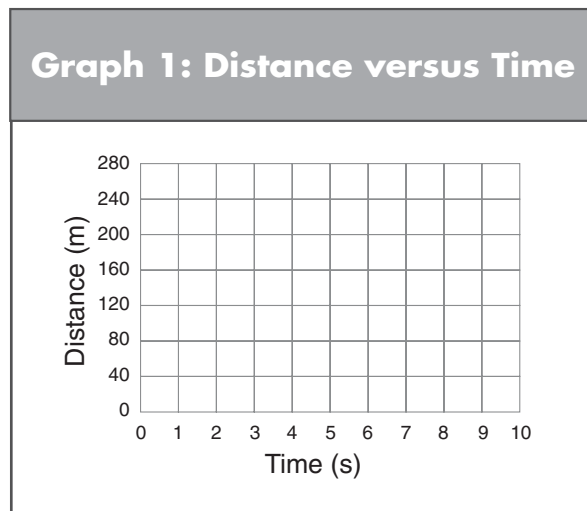
6. Look at Graph 1 that you sketched on the previous page, and complete the following statement:

The distance that the car travels _____ (*increases, decreases, remains the same*) as time increases.
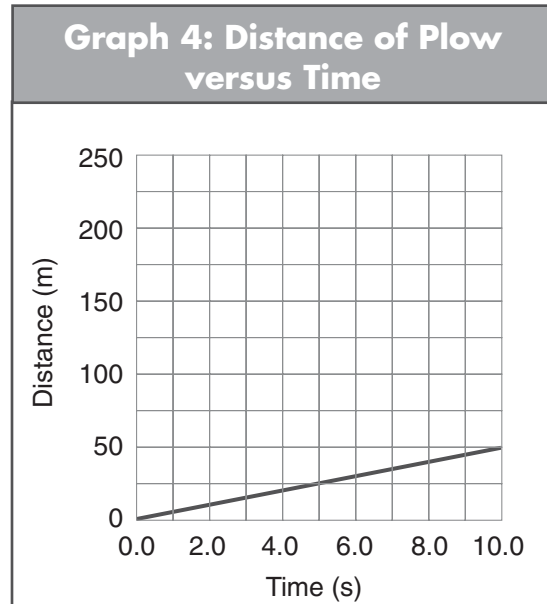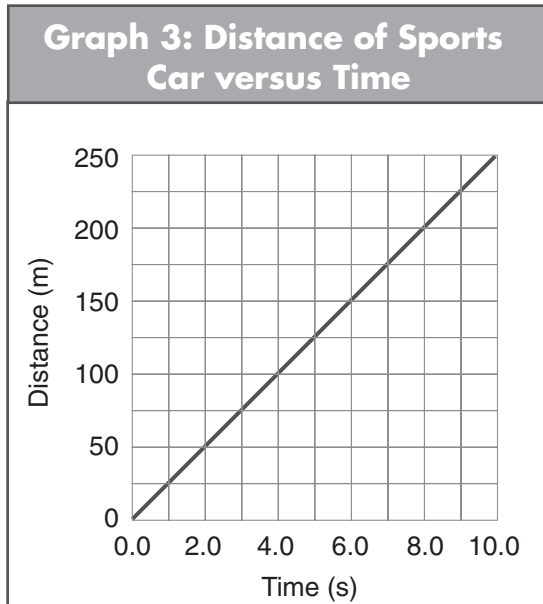
Your teacher will show you a graph of the speed of the car in the simulation versus time. Sketch the graph on Graph 2 below.
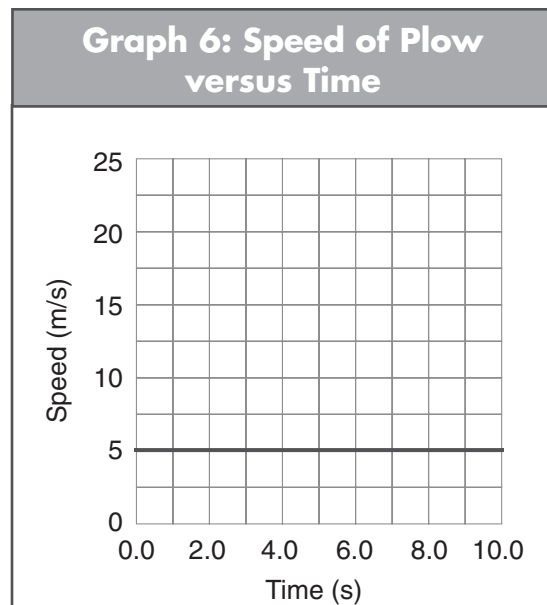
Graph 2: Speed of Car versus Time

Speed (m/s)

25
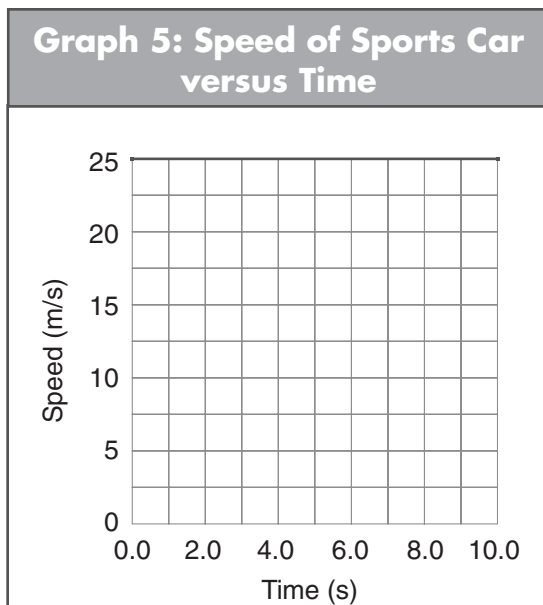20
15
10
5
0

0.0   2.0   4.0   6.0   8.0   10.0
Time (s)
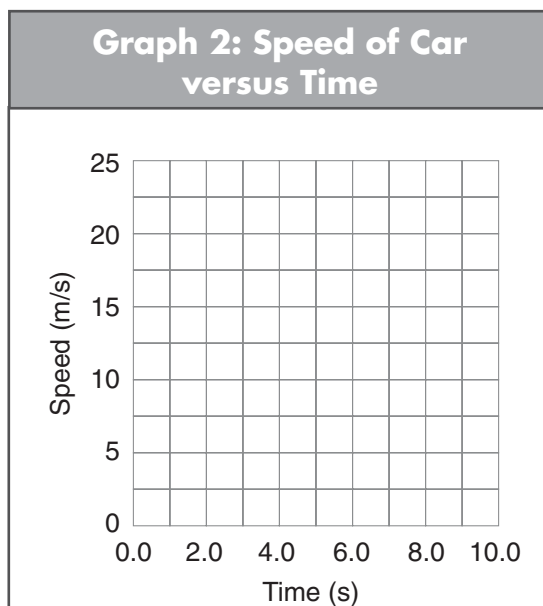
7. Look at Graph 2 that you sketched, and complete the following statement:

The speed of the car _____ (*increases, decreases, remains the same*) as time increases.

8. Compare the slopes of the two plotted lines on the *distance* versus time graphs below.

Graph 3: Distance of Sports Car versus Time

Distance (m) vs Time (s)

Graph 4: Distance of Plow versus Time

Distance (m) vs Time (s)

9. Compare the slopes of the two plotted lines on the *speed* versus time graphs below.

Graph 5: Speed of Sports Car versus Time

Speed (m/s) vs Time (s)

Graph 6: Speed of Plow versus Time

Speed (m/s) vs Time (s)

10. Find the speed of the object depicted in Graph 8 by calculating its slope. Draw the rise and the run on Graph 8, and show your calculations.

Graph 8: Determining the Slope of a Distance versus Time Graph
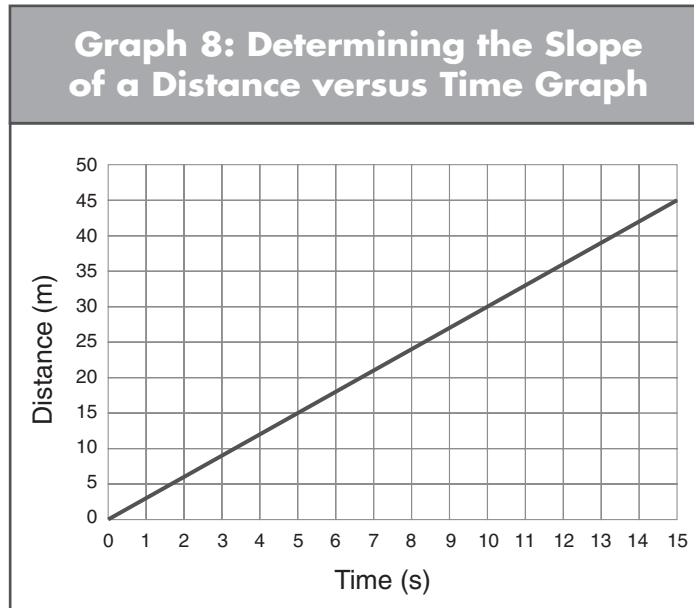
What We Have Learned

The key question for this activity is:

> **How can you determine the speed of an object that has constant motion?**

Write the answer to the key question.

_____

_____

_____

_____

_____

_____