Problem 1 – Conversions

In the U.S., the "customary" measurement system is used. It is sometimes difficult to compare units of measure in metric units when you are familiar with other types of units.

If using CAS technology, move to page 1.2. If not, move to page 1.3.

Two examples of converting *miles per hour* to *meters per second* are shown. Try converting other speeds of cars, following the direction on the page.

1. What do you notice about the number for miles per hour as compared to the number for meters per second?

Problem 2 – Stopping Distance and Speed

Move to page 2.1.

2. What is the value of *r* when *l* = 20? Show your work here:

With your classmates determine what a reasonable stopping distance, in meters, might be for a car traveling slowly. On page 2.2, double click on ***l*** to enter your stopping distance.

3. Record your distance here:

4. What was the speed of the car before it stopped? Is this speed what you expected? Explain.

(Return to page 1.2/1.3 to convert to miles per hour, if needed.)

On page 2.3, input a speed for a car that might be on a highway. Remember, your rate must be in meters per second.

5. Record your speed here:

6. What is the stopping distance of the car? Is this distance what you expected? Explain.

View the length and rate values on page 2.5.

7. What type of relationship is between the variables *length* and *rate*?

8. What does the ordered pair (0, 0) represent?

Move to page 2.6 and view the scatter plot of **rate vs. length**.

9. Describe the shape of the plot.

10. How does the shape compare to previous functions you have studied?

11. What is the domain and range of the relationship between rate and length?

Answer the self check questions on page 2.7.

Move to page 2.8 and enter $2\sqrt{5l}$ into **f1**.

12. If needed, revise your statements from above to clearly describe the shape of the graph or the relationship between the variables.

13. Why does this graph begin at (0, 0)? Why are all of the points in Quadrant I?

Return to pages 2.2 and 2.3 and look at the two formulas that are used to perform the calculations.

14. One formula has a square root. What is different about the other formula? Why?

Homework

The following formula calculates the length, x, of a room when the area, A, of the room is known: $x = \sqrt{3A}$. Show your work for each problem.

1. If the area of the room is 108 feet squared, what is the length of the room?

2. If the length of the room is 36 feet, what is the area of the room?

3. Which variable was easier to calculate? Explain your reasoning.