

**Definition**

The domain is the set of \_\_\_\_\_. The output of a function is called the \_\_\_\_\_.

**Problem 1 – Cell Phone Situation**

Your friend got a cell phone that charges 40 cents per minute. However, he is not allowed to use it for more than 4 minutes.

- If he talked for 0.5 seconds, how much was the fee?
- If the cost is a function of time, what is the domain of the cost function?

On the page 1.6, move the slider to change the amount of time that your friend talks on the costly cell phone. Observe the output.

- Describe the graph.
- What is the range of the cost function?

On page 1.9, use **MENU > Trace > Graph Trace** to explore the function. When using **Graph Trace**, you can type in a number to jump to that value.

- Why are some of the points open circles and other points closed or filled in?



**Problem 2 – Snail Mail “Pen Pal”**

From April 3, 1988, to February 3, 1991, the U.S. postage rate was \$0.25 for the first ounce and \$0.20 for each additional ounce. For this first class postage the letter must weigh less than 13 ounces.

- The cost is a function of the weight. What is the domain of this function? Let  $x$  be the variable for the input and  $y$  be the output.
- How much did it cost to mail a 7.25 ounce letter?
- This type of function is called a \_\_\_\_\_ function. What is the range?

**Extension/Homework #1 – Shipping**

Your friend calls you on your cell to tell you about a great sale at an online store for some supplies you need for a school function. You find out that the shipping cost to get it in 2 days is \$11.45 for the first pound and \$0.60 more for each additional pound. You decide you can only spend \$15 for shipping.

Press  to use the **Scratchpad** to make any calculations. Press  to return to the lesson.

- What is the domain of the cost function for shipping a package?
- What is the range for this cost of shipping function? Make a sketch of what the graph would look like.

**Extension/Homework #2 – Functions**

You can graph the functions to confirm and to deepen your understanding of the solution. What is the domain and range of the following functions?

- $y = x^2$
- $y = \sqrt{x}$
- $y = \frac{5}{x}$
- $y = \frac{3}{x+5}$
- $y = \sqrt{2x-6}$