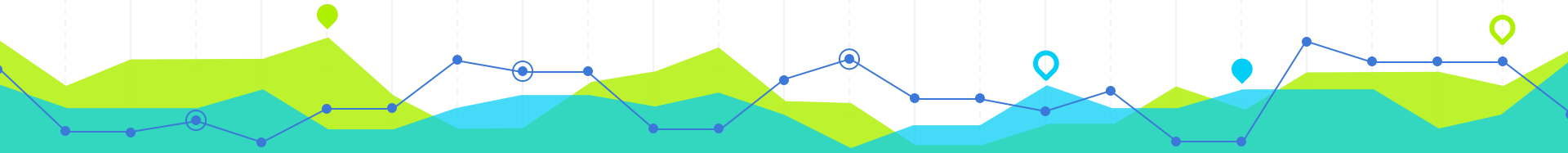
Today's Materials

- ❑ pencil
- ❑ a smile

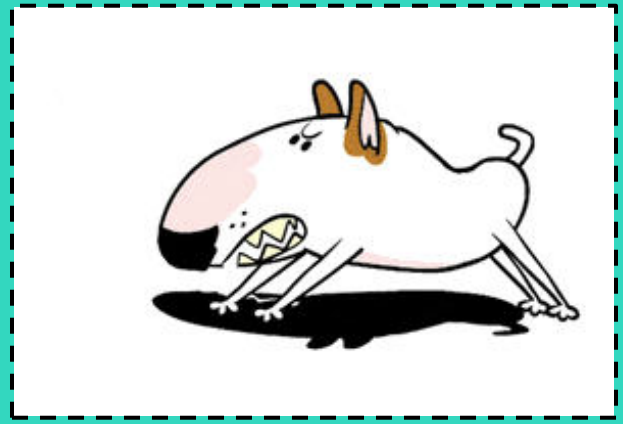


Domain & Range

(Part 1)

Lesson 10

Number of Barks



10.1 Warm-up: 5 minutes

Earlier you saw a situation where the total number of times a dog has barked was a function of time, in seconds after its owner tied its leash to a post and left.

Less than 3 minutes after her left, the owner returned, untied the leash, and walked away with the dog.

1. **Select ALL** values that **could be** an **input** of the function?

Earlier you saw a situation where the total number of times a dog has barked was a function of time, in seconds after its owner tied its leash to a post and left.

Less than 3 minutes after her left, the owner returned, untied the leash, and walked away with the dog.

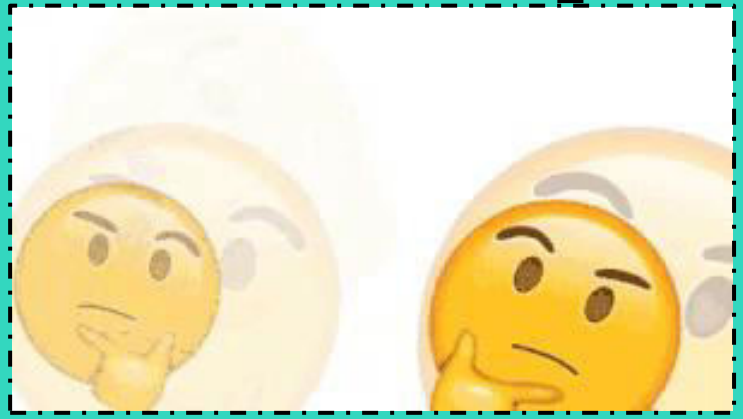
2. **Select ALL values that could be** an **output** of the function?

Let’s find all possible inputs & outputs for a function.

Today's Goals:

- **I know** what is meant by the "domain" and "range" of a function.
- When given a description of a function in a situation, **I can determine** reasonable domain and range for the function.

Possible or Impossible?



10.2 Card Sort: 20 minutes

Card Sort #1: Decide whether each number is a possible **input** for the functions described.

Sort cards into two groups:

possible inputs **vs.** ***impossible inputs***

1. The area of a square, in square centimeters, is a function of its side length, s, in centimeters. The equation $A(s) = s^2$ defines this function.

   a. Possible inputs:

   b. Impossible inputs:

Card Sort #2: Decide whether each number is a possible **input** for the functions described.

Sort cards into two groups:

possible inputs **vs.** ***impossible inputs***

2. A tennis camp charges $40 per student for a full-day camp. The camp runs only if at least 5 students sign up, and it limits the enrollment to 16 campers a day. The amount of revenue, in dollars, that the tennis camp collects is a function of the number of students that enroll.

   The equation $R(n) = 40n$ defines this function.

Card Sort #3: Decide whether each number is a possible **input** for the functions described.

Sort cards into two groups:

possible inputs **vs.** ***impossible inputs***

3. The relationship between temperature in Celsius and the temperature in Kelvin can be represented by a function k. The equation $k(c) = c + 273.15$ defines this function, where c is the temperature in Celsius and $k(c)$ is the temperature in Kelvin.

How did it go?

Can you describe all possible inputs for each function in words?

1. Function A:
   a. Possible inputs: 9, $\frac{3}{5}$, 15, 0, 0.8, 4, $\frac{25}{4}$, 0.001, 6.8, 72

   b. Impossible inputs: -3, -18

2. Function R:
   a. Possible inputs: 9, 15

   b. Impossible inputs: -3, -18, $\frac{3}{5}$, 0.8, 0, $\frac{25}{4}$, 0.001, 4, 6.8, 72

3. Function k:
   a. Possible inputs: All values

   b. Impossible inputs: No values

Synthesis...

We call the set of ALL possible *input* values of a function the DOMAIN of the function.

What about the Outputs?

10.3 Activity: 10 minutes

What about the Outputs?

Let's continue to work with the function **representing the area of a square** (*function A*) and the function **representing the revenue of a tennis camp** (*function R*).

Work with your teams to answer questions #1 & #2 on pages (2-3).

➔ Send a different representative up with ALL packets for Ms. Welch to review after each check-point

Check-points:

After #1

After #2 a)

After #2 b)

After #2 c)

Synthesis...

We call the set of ALL possible *outputs* values of a function the RANGE of the function.

➔ The range of a function DEPENDS on its domain (all possible input values)

What could be the trouble?

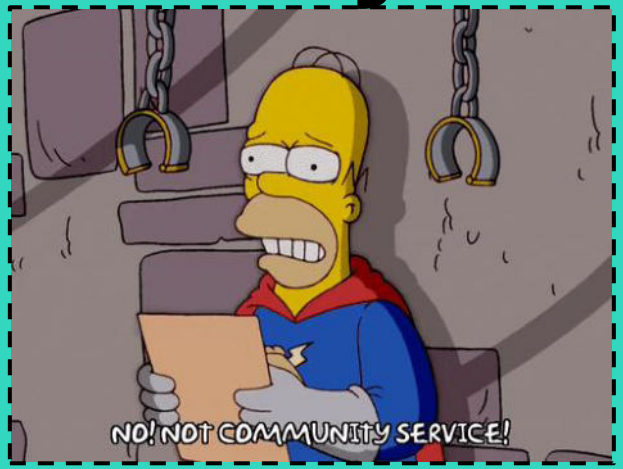
10.4 OPTIONAL: 10 minutes

Lesson Synthesis: Function q gives the number of minutes a person sleeps as a function of the number of hours they sleep in a 24-hour period.

	in the domain?	in the range?
negative values		
0		
values less than 1		
24		
25		
60		
fractions		
values greater than 480		
1,500		

Decide where the values go → **in the domain** or **in the range**?

Community Service



COOL DOWN