# Discussion 3: Domain and Range, Higher Order Functions

## Domain and Range

1. Determine the domain and range of the following Snap*!* blocks:

a. 


Domain: _____, _____

Range: _____

b. 


Domain of `foo`: _____

Range of `foo`: _____

Data type of `var`: _____

c. 


Domain of `foo`: _____, _____

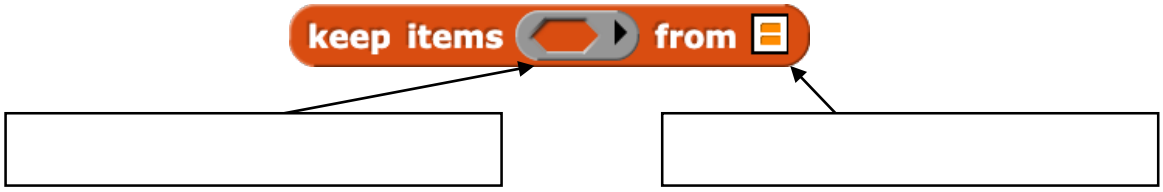
Range of `foo`: _____

2. Fill in the table below with the domain and range of the following higher-order functions:

| Higher Order Function | Domain | Range | Notes |
|---|---|---|---|
|   | | | |
|   | | | |
|   | | | |

# Higher Order Functions

1. Fill in the blanks so the keep block returns a list of the positive numbers from `MyList`. You may assume `MyList` only contains numbers.




2. Write an expression that returns the sum of the squares of the numbers in `YourList`. You may assume that `YourList` only contains numbers.

_____

_____

3. Describe in words what the following block outputs. You may assume `OurList` is a list of words.


_____

_____

4. Write an expression that takes in a list, `var`, and returns whether there is a word with over 5 letters in the list. You may not use 

or 

in your solution.

_____

_____

5. What is the output of the following block?


_____

## Challenge

1. For the questions below, determine if the two expressions are equivalent for all possible reporters F and lists DATA.

   a. 

   ○ yes ○ no

   b. 

   ○ yes ○ no

   c. 

   ○ yes ○ no

   d. 

   ○ yes ○ no

2. What is the output of the following block?


   _____

3. Which higher order function(s) could we use to solve the following problems? If there are multiple ways to solve the problem, indicate the most concise way to solve it (i.e. if there is a solution that uses 2 higher order functions and another that uses just 1, answer with the solution that uses just 1). You may assume you have access to any helper functions, as long as they don't use any loops in them.

   a. Given a list of numbers, find the smallest number above 10.

   _____

   b. Given a list of words, we want to find the word that comes first alphabetically.

   _____

   c. Given a list of lists, return the first item from each list.

   _____