



# Discussion 3: Domain, Range, Lists and HOFs

## 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: \_\_\_\_\_

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

Higher Order Function	Domain	Range	Notes
			
			
			



Domain of Bar: \_\_\_\_\_ Range of Bar: \_\_\_\_\_

2. If the output of Mystery is true, which of the following can you say for sure?

- A must be true   
  B must be true   
  A must be false   
  B must be false   
  None of these

```

+Mystery+ A + B +
if A
  report false
if B
  report false
report true
  
```





3. You realize you could replace the *entire* body of Mystery with a single report statement. What could we report instead so that Mystery would have the same exact behavior? (Select all that apply)

- A and B  
 A or B  
 not A and not B  
 not A or not B  
 not A or B  
 not A and B

4. Given the following expression, what does NAMES evaluate to?

```

set NUMBERS to list 2 1
set NAMES to list Dan Garcia
for i = 1 to 2
  replace item item i of NUMBERS of NAMES with i
  
```

- a.  length: 2  
 b.  length: 2  
 c.  length: 2  
 d.  length: 2

5. One of the most common data storage technologies is databases, think of them as Tables/Charts, with columns and rows. Let's say you're given a table that looks like the following:

ID	Name	Height(inches)	Year	2 Favorite Numbers
1	Dan	75	4	[10, 61]
2	Mansi	65	4	[161, 10]
3	Bob	70	3	[70, 170]
4	Alice	71	1	[10, 160]
5	Nick	68	3	[161, 162]
6	Eve	64	2	[270, 370]
:	:	:	:	:
:	:	:	:	:
...	...	...	...	...

Note: Each entry in "2 Favorite Numbers" is a list with exactly 2 numbers!

6	A	B
1	10	61
2	161	10
3	70	170
4	10	160
5	161	162
6	270	370

You're given a reporter block, **Column**, that takes in the name of a column in the database and reports a list of all of the elements in that column in order. An example call is shown to the left.

**Column** 2 Favorite Numbers

For this problem, you can assume that you are only given the 3 HOFs, **Column**, and any operators (green blocks) in Snap! For each of the subparts before, determine if the problem can be solved using only the given blocks.

- a Report the total sum of heights Yes No
- b Report a list of the names of people who are in year 4 Yes No
- c Report the number you get when you multiply the squares of all of the heights above 70 inches together. Yes No
- d Calculate the sum of all of the numbers in the "2 Favorite Numbers" column Yes No

6. Indicate whether each set of blocks below is equivalent:

a

b

c

d