Welcome to the Week 6 Discussion Worksheet! This week we will be discussing conditional statements and iteration, which are powerful computational tools that we will use throughout the course. Conditional statements allow data scientists to make more complex decisions with their code, while for loops allow us to repeat the same action many times.

1. Funky Function

What does the mystery function do? Write a sentence below describing what the function's inputs should be and what the function does.

Hint: Try out the function on a few different inputs and see what happens!

```
def mystery(n1, n2):
    if n2 - n1 > 0:
        return n2 - n1
    elif n2 - n1 < 0:
        return n1 - n2
    else:
        return 0
```

2. Getting Even

a. The % operator returns the remainder if you divide by a certain number (e.g. $11\%5 = 1$). If a number n is odd, what will $n\%2$ return?

b. The `count_evens` function takes in an array of integers and returns the number of even integers in the array. Use a combination of iteration and conditionals to complete the skeleton code below.

```
def count_evens(n_array):
    num_evens = 0
    for _____:
        if _____:
            _____
    return _____
```

c. Now let's see how we can write the same function using array operations instead of iteration.

```
def count_evens(n_array):
      remainder_array = _____________________________________
      return _____________________________________
```

3. Marble Madness

Ron has a bag with three marbles. Two of them are purple, and one is orange. Each round he draws from the bag 10 times with replacement. He wins the round by drawing at least one orange marble.

a. Write a function to simulate one round of Ron's game. The function should return `True` if he wins and `False` if he loses.

```
def one_round():
      balls = _____________________________________
      one_sim = _____________________________________
      num_orange = _____________________________________
      return _____________________________________
```

b. Finish the following code to help Ron simulate 100 rounds of the game and assign the variable `win_proportion` to the proportion of rounds he wins.

```
count = 0
for _____________________________________:
      if _____________________________________:
            _____________________________________
win_proportion = _____________________________________
```

c. For any one draw, what is the probability that Ron draws a purple marble?

d. For any individual round, what is the probability that Ron loses?

e. For any individual round, what is the probability that Ron wins?