Methods Revisited (these exercises are taken from the chapter 4 of the book)

1. Write a function that simulates rolling a pair of dice until the total on the dice comes up to be a given number. The number that you are rolling for is a parameter to the function. The number of times you have to roll the dice is the return value of the function. The parameter should be one of the possible totals: 2, 3, . . . , 12. The function should throw an IllegalArgumentException if this is not the case. Use your function in a program that computes and prints the number of rolls it takes to get snake eyes. (You will recall from lab 7 that snake eyes means that the total showing on the dice is 2.)

   We have covered how to catch an exception in the lectures, but not how to throw one. Here is some sample code to do this:

```
if (total < 2 || total > 12) {
      throw new IllegalArgumentException("Out of range: " + total);
}
```

   In your main() method, include a try-catch block to catch this exception:

```
try {

      // Code in here that calls your function to roll the dice.
      // The call to the function might throw an exception and if
      // does control with transfer to the catch statement.

} catch (IllegalArgumentException iae) {
      TextIO.putln(iae.getMessage);
}
```

   The call to the getMessage() method of the exception in the catch statement displays the String that was passed to the exception's constructor (in this case: "Out of range " and then the value). The message you include when throwing the exception can be anything you like, you do not have to use the example given here.

2. This exercise builds on the previous one. Every time you roll the dice repeatedly, trying to get a given total, the number of rolls it takes can be different. The question naturally arises, what's the average number of rolls to get a given total? Write a function that performs the experiment of rolling to get a given total 10000 times. The desired total is a parameter to the subroutine. The average number of rolls is the return value.

   Each individual experiment should be done by calling the function you wrote for Exercise 1. Now, write a main program that will call your function once for each of the possible totals (2, 3, ..., 12). It should make a table of the results, something like:

```
Total On Dice          Average Number of Rolls
-------------          -----------------------
      2                      35.8382
      3                      18.0607
      .                        .
      .                        .
```