Lesson Seven

Math 6080 (for the Masters Teaching Program), Summer 2020

Breaking out of a While Loop. The break command busts out of while loops. As a dumb example:

```
x = 1
while x = 1:
    print(x)
    break
```

will just print 1 once and then break out of the while loop.

(Recall that without the break, this would go into an infinite loop of printing 1's.)

As a slightly more interesting example:

```
x = 100
while x <= 100:
    print(x)
    x = x - 1
    if x == 75:
        break
```

embeds an if inside the while loop which, when satisfied, breaks out of the loop. This prints the numbers counting down from 100 to 76 (why 76?).

Extended Exercise. Checking for Primeness Write Python code to:

- Ask the user to enter a natural number. Call it n.
- Run through the numbers x satisfying $x**2 <= n$, starting with 2.

  If x is a factor of n, print "Your number is divisible by", x and stop.

  If you don't find such a factor, print "Your number is a prime number"

Hint: This involves a while with one or more embedded ifs and breaks.