

For Loops Exploration/Review

Directions: Click each link and run the code. Then answer the questions.

1. [Demo 1](#) What does this print? Explain.

```
2
6
10
14
18
```

This is due to printing double every item in the list `odd_numbers`

2. [Demo 2](#)

- a) What does this print?

Plurals:

books

computers

phones

Done!

- b) Which variable is the **loop variable**?

noun

- c) Which variable is the **list**?

["book", "computer", "phone"]

- d) How many times does the for loop iterate?

3

- e) Add some more nouns to the list. Does it print what you expect?

Yes it does, it adds an 's' to each string.

3. [Demo 3](#) What does this print? Explain.

First loop

A

E

I

O

U

Second loop

0

1

2

3

4

5

6

7

8

9

It takes each vowel from the vowels string and prints it. Then it takes each number of the numbers list.

4. [Demo 4](#)

- a) What does this print? Explain.

0

1

2

3

4

The range function, rather than starting at one, it starts at 0.

- b) Change the number 5 to something else (another positive integer). What is printed now?

0

1

2

3

- c) What number should you plug into range() if you want to print 0 through 19?
20

5. [Demo 5](#) What does this print? Explain.

```
0
1
4
9
16
```

It takes 0 through 4 and prints the square of each using range.

6. [Demo 6](#)

- a) What does this print? Explain.

```
5
6
7
8
9
```

This prints the numbers 5-9

- b) Change the numbers 5 and 10. (Keep the first number smaller than the second one and keep them both ints). What numbers did you change to? What is printed?

Changed to range(-1, 3)

```
-1
0
1
2
```

- c) What numbers should you plug in if you want to loop from 20 to 30 exactly?
range(20, 31)

- d) If we do `range(a, b)`, where $a < b$, can you come up with a formula for the number of times it loops, in terms of a and b ? For example, if $a = 45$ and $b = 60$, how many loops are there? Explain.

$$y = |a - b|$$

7. [Demo 7](#)

- a) What is printed on this one?

10
13
16
19
22

- b) What does the 3 do? Explain.

It makes the range add by 3 rather than 1 for each output of the range.

- c) Change the 3 to a different number. How does that change the output?

Change the 3 to a 2

10
12
14
16
18
20
22
24

8. [Demo 8](#)

- a) What is printed here?

30
29
28
27
26
25
24
23
22

b) What does the -1 do? Explain.

It makes the range subtract by 1 rather than add 1 for each output of the range.

9. There are two ways to define a list to loop over. One is to use the range() function, and the other way does not use range(). Compare and contrast these two methods.

When is each one used in programming?

The first method loops over a set amount of items until it reaches its end. This is known as the for loop. On the other hand there is the while loop, which will repeat until its boolean is False. The for loop changes a temporary variable for every variation of the loop allowing for different outcomes for each iteration. The while loop can repeat the same lines over and over again without changing anything if wanted.