Name: _____

Use this quiz to help make sure you understand the videos/reading. ***Answer all questions.*** Make additional notes as desired. ***Not sure of an answer?*** Ask your instructor to explain in class and revise as needed then.

Throughout, where you are asked to "circle your choice", you can circle or underline it (whichever you prefer)

Video: ***Section 4.7—Loops within Loops – How They Work***

1. What does the code snippet below display? (Note: the `end=" "` in the **`print`** statement causes a space instead of the default newline to appear after the items of the **`print`** statement are printed. Combined with the no-argument **`print`** statement, the effect is to print all the items on each iteration of the ***`j`*** loop on the same line. So there will be 3 lines printed by this problem, each with 5 numbers on it.

```
for j in range(3):
    for k in range(1, 6):
        print(j + k, end="")
    print()
```

2. What does the code snippet below display?

```
for j in range(5):
    for k in range(1, j + 2):
        print(j + k, end="")
    print()
```

Textbook Reading: ***Section 4.7— Nested Loops*** (pages 184 - 189)

For the next several problems (which are taken from your textbook), consider the code snippet shown below and to the right. It is taken from page 186 of your textbook (but with the code modified to use a ***format*** statement instead of the older notation that the textbook uses, as we have done in previous examples):

```
NMAX = 4
XMAX = 10
for x in range(1, XMAX + 1):
    for n in range(1, NMAX + 1):
        print("{:10.0f}".format(x ** n), end="")
    print()
```

3. Why is the newline suppressed (using **end=""**) in the inner loop but not in the outer loop? (Note: the **format** method prints its argument (which is **x** ** **n**) per the formatting string – here, using 10 spaces with no decimal places.)

4. How would you change the program to display all powers from x^0 to x^5 ?

5. If you make the change in the previous problem, how many values are displayed?

6. Write nested loops that make the following pattern of exclamation marks. (There are 8 exclamation marks on each row, and each row starts on the left edge of the line.)

```
!!!!!!!!
!!!!!!!!
!!!!!!!!
```

```
Write your code here:
```

7. Write nested loops that make the following pattern of exclamation marks.

```
!!!!!
!!!!
!!!
```

```
Write your code here:
```

8. Write nested loops that make the following pattern of alternating brackets.

```
[][][][]
[][][][
[][][]
[][][
[][]
[][
```

```
Write your code here:
```

9. Write nested loops that make the following pattern of alternating brackets, WITHOUT using any IF statements. (Hint: this uses a simple pattern that is *not* explicit in Table 3 on page 187.)

```
[][][][]
[][][][]
[][][][]
[][][][]
```

```
Write your code here:
```