

Name: \_\_\_\_\_ Partner: \_\_\_\_\_  
**Python Activity 32: Random**

|  |
|--|
| <p><b>Learning Objectives</b><br/>Students will be able to:</p> <p><i>Content:</i></p> <ul style="list-style-type: none"><li>• Describe what the <b>random module</b> does</li></ul> <p><i>Process:</i></p> <ul style="list-style-type: none"><li>• Write code that uses the random module: <b>randint, shuffle, choice, random</b></li></ul> <p><b>Prior Knowledge</b></p> <ul style="list-style-type: none"><li>• Python concepts from Activities 1-22.</li></ul> <p><i>Folks, this is a brand new activity. If you encounter any issues/typos, please let Iris know</i></p> |
|--|

**Critical Thinking Questions:**

1. Examine the sample code below.

```
Sample Code  
0 >>> from random import randint  
1 >>> weather = ['sunny', 'snowy', 'rainy', 'cloudy']  
2 >>> rchoice = randint(0,3)  
3 >>> rchoice  
4 2  
5 >>> today = weather[rchoice]  
6 >>> print('Today it is', today)  
7 'rainy'  
8 >>> print('Tomorrow it is', weather[randint(0,3)])  
9 'sunny'
```

- a. How many elements are in the weather list? \_\_\_\_\_
- b. What index within the weather list does 'rainy' appear on line 1? \_\_\_\_\_
- c. What is stored in rchoice on line 2? \_\_\_\_\_
- d. What is stored in today?: \_\_\_\_\_
- e. What index within the weather list does 'sunny' appear on line 1? \_\_\_\_\_
- f. What is the second argument passed to the, print statement on line 8?: \_\_\_\_\_
- g. If we were to write an 10<sup>th</sup> line, print('Saturday it is', weather[randint(0,3)])  
what might be some possible outputs?: \_\_\_\_\_
- h. What does the randint function do?: \_\_\_\_\_

**FYI:** The *random.randint* function generates a random integer between two given values, inclusive.

2. Examine the sample code below.

**Sample Code**

```
0 >>> from random import choice
1 >>> weather = ['sunny', 'snowy', 'rainy', 'cloudy']
2 >>> yesterday = choice(weather)
3 >>> yesterday
4 'snowy'
5 >>> choice(weather)
6 'cloudy'
7 >>> choice(weather)
8 'cloudy'
```

- How many elements are in the `weather` list? \_\_\_\_\_
- What index within the `weather` list does 'snowy' appear on line 1? \_\_\_\_\_
- What is stored in `yesterday` on line 2? \_\_\_\_\_
- What differs about the line 0 above and the line 0 on the previous question?:  
\_\_\_\_\_
- If we were to make a third call to `choice(weather)` on line 9, what might be some possible outputs?: \_\_\_\_\_
- What does the `random.choice` function do?:  
\_\_\_\_\_

**FYI:** The *random.choice* function selects a random element from a sequence (lists, tuples, strings, etc.)

3. Examine the sample code below.

**Sample Code**

```
0 >>> from random import shuffle
1 >>> ranks = list(range(1,14))
2 >>> ranks
3 [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13]
4 >>> shuffle(ranks)
5 >>> ranks
6 [7, 6, 2, 5, 12, 10, 8, 4, 11, 9, 13, 3, 1]
7 >>> shuffle(ranks)
8 [5, 10, 8, 13, 3, 12, 1, 9, 6, 7, 2, 4, 11]
```

- What index within the `ranks` list does 7 appear on in line 3? \_\_\_\_\_
- What index within the `ranks` list does 7 appear on line 6? \_\_\_\_\_
- What index within the `ranks` list does 7 appear on line 8? \_\_\_\_\_
- What differs about the line 0 above and the line 0 on the previous questions?:  
\_\_\_\_\_

e. What does the `random.shuffle` function do?:

\_\_\_\_\_

f. Write a few lines of code to shuffle the following list `suits =`

`['heart', 'spade', 'club', 'diamond']` and then combine with the shuffled ranks list above, create a shuffled deck of cards:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**FYI:** The `random.shuffle` function randomly reassigns elements in a mutable sequence.

4. 4. Examine the sample interactive python code below.

```
Sample Code
0 >>> from random import random
1 >>> random()
2 0.2535287898652099
3 >>> random()
4 0.6961106219037502
5 >>> random()
6 0.4566550234538197
7 >>> random()
8 0.7593131980640184
```

a. What differs about the line 0 above and the line 0 on the previous questions?:

\_\_\_\_\_

b. What arguments does the `random` function require? \_\_\_\_\_

c. How does this differ from the other random module functions we just explored?:

\_\_\_\_\_

d. If you had to guess, what might the minimum and maximum values the `random` function generates? \_\_\_\_\_

e. What might the `random.random` function do?:

\_\_\_\_\_

**FYI:** The `random.random` function randomly generates a floating point number between 0.0 (inclusive) and 1.0 (exclusive).

**Application Questions: Use the Python Interpreter to check your work**

1. A lottery number consists of five two-digit numbers. Write some lines of code to generate a random lottery number:

a. Using `random.choice(..)`:

---

---

---

---

---

---

---

b. Using `random.randint(..)`:

---

---

---

---

---

---

---

c. Using `random.random(..)`:

---

---

---

---

---

---

---

2. A card-deck consists of 52 cards in a list. Each card has one of 4 suits (hearts, clubs, diamonds, spades) and one of 12 ranks (2-10, jack, queen, king, ace). A card is represented by a tuple of suit and rank, and there are no duplicate cards in a deck (i.e., there is only one ('hearts', 'queen') and only one ('spades', 'ace') and only one ('diamonds', 5) in each deck). Write some python to randomly generate a deck of cards meeting these constraints:

---

---

---

---

---

---

---

---

---

---

---

---

---