Learning Objectives
Students will be able to:

Content:
- Describe what the **random module** does

Process:
- Write code that uses the random module: `randint`, `shuffle`, `choice`, `random`

Prior Knowledge
- Python concepts from Activities 1-22.

Folks, this is a brand new activity. If you encounter any issues/typos, please let Iris know.

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 10th line, `print('Saturday it is', weather[randint(0,3)])` what might be some possible outputs?: ____________________________

h. What does the `randint` function do?: ____________________________
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 'sunny'
5 >>> choice(weather)
6 'cloudy'
7 >>> choice(weather)
8 'cloudy'
```

a. How many elements are in the `weather` list? ______
b. What index within the `weather` list does 'snowy' appear on line 1? ______
c. What is stored in `yesterday` on line 2? ______
d. What differs about the line 0 above and the line 0 on the previous question?:

_______________________________
_____________________
_____________________

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

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]
```

a. What index within the `ranks` list does 7 appear on in line 3? ______
b. What index within the `ranks` list does 7 appear on line 6? ______
c. What index within the `ranks` list does 7 appear on line 8? ______
d. What differs about the line 0 above and the line 0 on the previous question?:

_______________________________
_____________________
_____________________

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

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

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:

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

<table>
<thead>
<tr>
<th>Sample Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 &gt;&gt;&gt; from random import random</td>
</tr>
<tr>
<td>1 &gt;&gt;&gt; random()</td>
</tr>
<tr>
<td>2 0.2535287898652099</td>
</tr>
<tr>
<td>3 &gt;&gt;&gt; random()</td>
</tr>
<tr>
<td>4 0.6961106219037502</td>
</tr>
<tr>
<td>5 &gt;&gt;&gt; random()</td>
</tr>
<tr>
<td>6 0.4566550234538197</td>
</tr>
<tr>
<td>7 &gt;&gt;&gt; random()</td>
</tr>
<tr>
<td>8 0.7593131980640184</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sample Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. <strong>What differs about the line 0 above and the line 0 on the previous questions?</strong></td>
</tr>
<tr>
<td>b. <strong>What arguments does the <code>random</code> function require?</strong> ________</td>
</tr>
<tr>
<td>c. <strong>How does this differ from the other random module functions we just explored?</strong></td>
</tr>
<tr>
<td>d. <strong>If you had to guess, what might the minimum and maximum values the <code>random</code> function generates?</strong> ___________________________________________</td>
</tr>
<tr>
<td>e. <strong>What might the <code>random.random</code> function do?</strong></td>
</tr>
</tbody>
</table>

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