Roll the Dice

Worksheet

K-W-L Chart

What I Know	What I Wonder	What I Learnt

New Commands: make a list of all the new Python commands you learn throughout the lesson

Activity 1:

Read the program.

```
1.  import random
2.
3.  dice_a = [1, 2, 3, 4, 5, 6]
4.  dice_b = [1, 2, 3, 4, 5, 6]
5.  n = int(input("The number of times to roll 2 dice: "))
6.  t = 0
7.  sum_list = [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12]
8.  count_list = [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
9.
10. while t < n:
11.     dice_x = random.choice(dice_a)
12.     dice_y = random.choice(dice_b)
13.     print("(", dice_x, ",", dice_y, ")")
14.     sum = dice_x + dice_y
15.     t += 1
16.     sum_index = sum_list.index(sum)
17.     count_list[sum_index] += 1
18.
19. j = 2
20. for i in count_list:
21.     print("Sum is", j, round(i/n * 100, 2), "%")
22.     j += 1
```

Answer:

- What is special about the four variables below?
- ‘dice_a’, ‘dice_b’, ‘result_list’, ‘count_list’
- How to record an event for getting a sum if two dice are rolled?
- When will the while loop be stopped?
- How to calculate the probability of getting a specific sum if two dice are rolled?

Draw a Flowchart for the example program:

Activity 2:

Task 1: Use 'random.randint()' to replace the lists of two dice.

Task 2: Rewrite the program that can calculate the probability of getting a sum greater than 7.

Task 3: Rewrite the program that can calculate the probabilities of the sum being odd and the sum being even.

Task 4: Based on the example program, Task 2, and Task 3, create the program that does the calculation as follows:

- The program is to simulate situation where two coins are tossed together. Calculate the probabilities of three events: getting two heads; getting two tails; and getting one head and one tail
- Use lists in your program. Consider the control flow structures needed in this computational model.

Extension:

- Lists are a very powerful tool in Python
- Python has prebuilt functions just for lists like index
- Explore more functions and see how you can use them in your code
- Examples: **.clear(), .count(), .reverse()**