



Lesson 7 Toss a Coin

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

Warm-Up: Manually calculate the probability of landing heads or tails in each scenario

Total Flips	Heads	% Heads	Tails	% Tails
2				
4				
6				
8				
10				
12				

Activity 1:

```
1 import random
2
3 countHeads = 0
4 countTails = 0
5 n = int(input("The number of times to throw up a coin: "))
6 # Repeated Trails
7
8 for i in range(0, n):
9     result = random.randint(0, 1)
10    # Generate a list of random binary digits (0 or 1)
11
12    if result == 0:
13        # Heads up
14        countHeads += 1
15        print(result)
16    else:
17        # Tails up
18        countTails += 1
19        print(result)
20
21 print("Results")
22 # Calculate the total numbers
23 print("Heads:", countHeads)
24 print("Tails:", countTails)
25
26 print("Chance")
27 # Calculate the probability
28 print("Heads : Tails", round(countHeads/n, 2), ":", round(countTails/n, 2))
```

**Questions:**

- How does the program represent the results of heads and tails?
- How does the program count the number of heads or tails?
- Explain the use of the **if...else** statement and the for loop.

Fill out the table below using your code:

Total Flips	Heads	% Heads	Tails	% Tails
100				
500				
999				
4,040				
6,140				
10,000				
36,000				
80,640				



Create a Flowchart of the code above:

Activity 2:

Task 1: Add a line of code to calculate the probabilities of getting heads and tails.

Task 2: Change the number of the toss into a random number generated from the range between 4040 and 80640.

Task 3: Guess on the toss of the coin. Modify the example program to ask the user to input their guess before the coin-tossing experiment. Report the probability result and the guessing result.

Task 4: Suppose the program is to model the dice-rolling process, how should you edit the code?

Extension:

1. Compare and sum up the numbers of probabilities in the coin-tossing experiment and dice rolling experiment. Summarize the findings through these two probability experiments.
2. Create a guessing game. At the start of the game the user gets 5 turns. Every turn the user will either use a dice or a coin. For every correct coin toss they get one point and for every correct dice role they get 5 points.