

Name(s) \_\_\_\_\_ Period \_\_\_\_\_ Date \_\_\_\_\_

# Worksheet - Flipping Coins



**Flip a coin until you get 5 total heads.** How many flips did it take? \_\_\_\_\_

Record your flips in the space below by writing “H” or “T” for each flip.

**Flip a coin until you get 3 heads in a row.** How many flips did it take? \_\_\_\_\_

Record your flips in the space below by writing “H” or “T” for each flip.

## Predict

The **most flips** it took someone (including you) to get **5 total heads** \_\_\_\_\_

The **fewest flips** it took someone (including you) to get **5 total heads** \_\_\_\_\_

The **most flips** it took someone (including you) to get **3 heads in a row** \_\_\_\_\_

The **fewest flips** it took someone (including you) to get **3 heads in a row** \_\_\_\_\_

## Make a Hypothesis

We'll be developing a **simulation** that flips coins for us. As a result we can test how many flips it takes to get many more total heads and longer strings of heads. Before we make our simulation, predict the following.

What is the **most flips** you expect to see in order to get **10,000 total heads**? \_\_\_\_\_

What is the **fewest flips** you expect to see in order to get **10,000 total heads**? \_\_\_\_\_

**Explain your reasoning:**

What is the **most flips** you expect to see in order to get **12 heads in a row**? \_\_\_\_\_

What is the **fewest flips** you expect to see in order to get **12 heads in a row**? \_\_\_\_\_

**Explain your reasoning:**

## Extend Your Hypothesis

You may have observed that flipping tens of thousands of coins takes some time on a computer. If we want to simulate

even larger problems, it may be difficult for even a computer to complete the full simulation in a time frame that makes sense. Luckily, you should have developed some intuitions about how these problems develop, based on your earlier simulation. **Try to make a reasonable prediction** for the questions below, based on the results from the simulation that you ran today.

What is the **most flips** you expect to see in order to get **10,000,000 total heads**? \_\_\_\_\_

What is the **fewest flips** you expect to see in order to get **10,000,000 total heads**? \_\_\_\_\_

**Explain your reasoning, making reference to the results of your simulation.**

What is the **most flips** you expect to see in order to get **20 heads in a row**? \_\_\_\_\_

What is the **fewest flips** you expect to see in order to get **20 heads in a row**? \_\_\_\_\_

**Explain your reasoning, making reference to the results of your simulation.**