

## Data Analysis & Probability Investigation: Experimental Probability

You are going to conduct two experiments using on-line simulations for tossing a coin and spinning a spinner. The more trials we include, the closer the experimental probability will be to the theoretical probability.

### Tossing a coin:

Before you start your simulation, you're going to calculate your theoretical probabilities. (That's easy for tossing a coin.)

Then use the link below:

<http://www.shodor.org/interactivate/activities/Coin/>

You're going to conduct the experiment with 100, 500, and 1,000 tosses.

After you've completed your experiment record the data in the table. (Click on "Table" under Display results to see the information.) Then calculate the Experimental Probability as a reduced fraction, decimal, and percent.

Trials	Theoretical Probability		Experimental Outcomes		Experimental P(Head)			Experimental P(Tail)		
	H	T	H	T	Fraction	Decimal	Percent	Fraction	Decimal	Percent
100										
500										
1,000										

### Spinning a Spinner:

Now you're going to spin a spinner. It will be similar to the coin tossing experiment, but the spinner has several outcomes.

Use the link below to access the spinner:

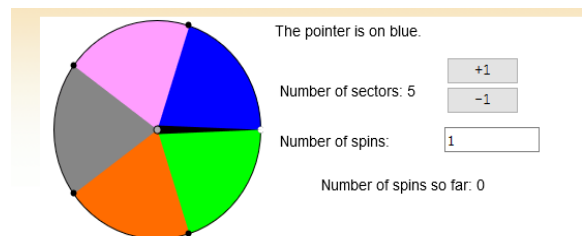
<http://www.shodor.org/interactivate/activities/AdjustableSpinner/>

### Set-up:

Click "+1" next to Number of sectors to change the number of possibilities to 5.

It will also allow you to enter the number of spins.

You will spin the spinner 50, 100, 500 and 999 times.



Calculate the Theoretical probability and then get spinning. Record your results. For this on, you will write all your answers in terms of Percents (rounded to the nearest TENTH).

Theoretical Probabilities	
	Write as a PERCENT Round to the nearest TENTH.
P(Blue)	
P(Pink)	
P(Gray)	
P(Orange)	
P(Green)	

50 SPINS		
Color	Result	Probability (Percent) Round to the nearest TENTH.
Blue		
Pink		
Gray		
Orange		
Green		

Click "New Experiment" before you click spin again.

100 SPINS		
Color	Result	Probability (Percent) Round to the nearest TENTH.
Blue		
Pink		
Gray		
Orange		
Green		

Click "New Experiment" before you click spin again.

500 SPINS		
Color	Result	Probability (Percent) Round to the nearest TENTH.
Blue		
Pink		
Gray		
Orange		
Green		

Click "New Experiment" before you click spin again.

999 SPINS		
Color	Result	Probability (Percent) Round to the nearest TENTH.
Blue		
Pink		
Gray		
Orange		
Green		

Now that you've conducted two experiments to test our statement that the more trials we include, the closer the experimental probability will be to the theoretical probability. Based on your results discuss whether you believe this statement or not. Use specific numbers from your experiments.