Spinner Simulation

1) Spin the simulation 5 times. Based on evidence from these 5 spins, conclude what the experimental (empirical) and theoretical probabilities definitions are:

   a) Experimental (Empirical) Probability -

   b) Theoretical Probability -

2) Pick one color and try to make it more likely that you will spin that color. Test the spinner 20 times. Did you really spin that color more often? Provide details as to why the color did spin more often or not.

3) Set as many sectors as you wish. Look at the measurement (in degrees) of the sectors and try to predict the chances for any sector to be selected. Simulate many games to see if you predicted the chances correctly. Change the number of sectors, how does this change the measurement (in degrees) of the sectors and the chance for any sector to be selected?

4) Create a game that is fair for 5 different colors. What fraction is each color?

5) Create a game that is fair for 4 different colors. What fraction is each color? Do you notice a pattern? Explain.

6) How can you ensure that a spinner is fair no matter how many colors or sections it has?

7) Create a fair game with 6 different sections. Now, run the simulation a total 20 spins and record your results.

	Count	Experimental	Theoretical
Blue			
Pink			
Gray			
Orange			
Green			
Red			

8) Now, run the simulation again, but this time, simulate a total of 1,000 spins. Then, again with 50,000 spins. Record your results below in the same table together.

	Count		Experimental		Theoretical	
	1,000	100,000	1,000	100,000	1,000	100,000
Blue						
Pink						
Gray						
Orange						
Green						
Red						

9) Compare your results from the previous 3 experiments using 20, 1,000, and 100,000 simulations. Do your results differ from each other? Why or why not?

10) From your evidence, can you state a natural law found in the world? Explain it's meaning and give support to justify your claim.