Name: _____

Experimental Probability

Experimental Probability is the chance of something happening based on experimental results. It can be calculated using the formula:

$$P = \frac{\text{\# of favourable outcomes observed}}{\text{total \# of observations}}$$

Example 1

A new cereal is giving away a prize with each box of cereal. There are 6 different prizes and you want to win all of them. How many boxes of cereal do you have to eat to win them all?

Complete an experiment using 1 die to determine if the prizes in the cereal box are worth it. Each roll signifies one cereal box and you must get each prize, numbered 1 through 6. Keep track of how many rolls it takes you to get all of the prizes 1 through 6. Repeat this simulation 10 times.

Trial	Tally of Prizes Received						Total # of Cereal Boxes (frequency)
	1	**2**	**3**	**4**	**5**	**6**	
1	|	(|	||	||||	|	卌 ||	17
2	|	(	|||	|	|	||	9
3	(	||||	||	卌 ||	|	|||	18
4	|	|||	|	||	|||	|	11
5	||||	卌 ||	(	|||	(||	|	19
6	||	卌|	|	||||	||	|	14
7	(|	|	|	||||	|	|	10
8	|||	|	|||	|	|||	卌 |	17
9	(||	||	|	|||	|	|	11
10	(	|	|	|	)	||	7

1. Graph the data using a bar graph. Put the trial number on the *x*-axis and the frequency on the *y*-axis.

Getting 6 different prizes
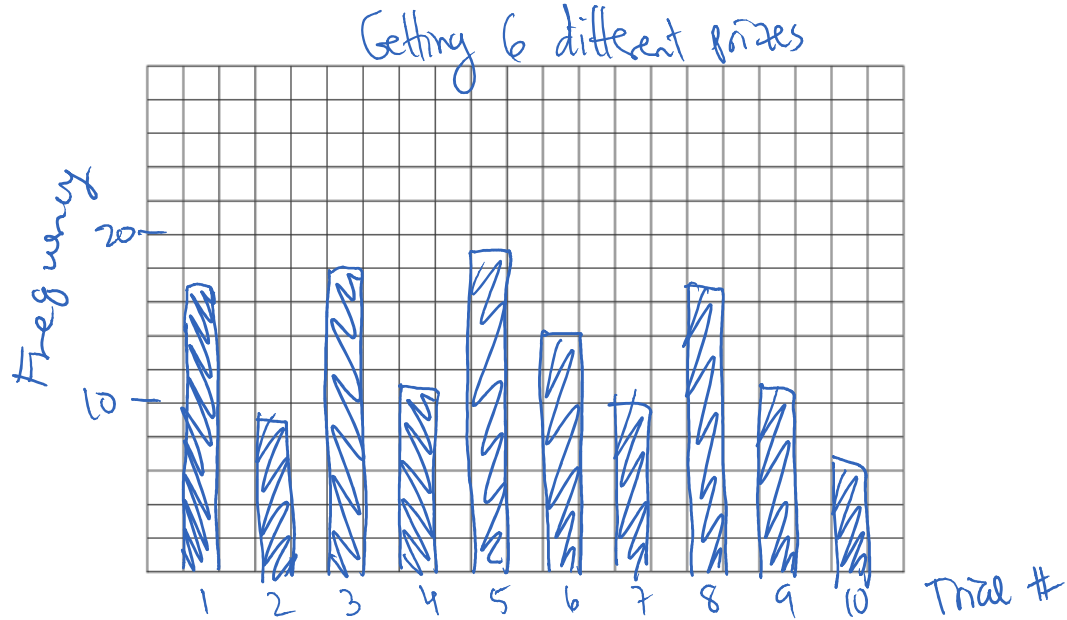
2. What does this experiment tell you about the number of boxes you would have to eat to get all the prizes?

You have to buy between 7 – 20 boxes to get all 6 prizes.

3. On average, how many boxes of cereal must you eat to get all six prizes?

$$\text{Mean} = \frac{123}{10} = 12.3 \quad \text{about 12 boxes}$$

4. How do your results compare with the rest of the class?

Everyone has different results