## READY

Topic: Reviewing histograms

1. Take a coin and flip it 5 times. Record the number of times the coin lands with heads up. Repeat this process 20 times, either by hand or by simulation using technology, each time recording your results in the table below. *(Every time you perform the simulation, count the number of heads you have and record the result in the Tally column below. For example, if you flip the coin 5 times and get 3 heads, put a tally mark by the 3 heads or 60% row.)*
   http://www.rossmanchance.com/applets/CoinTossing/CoinToss.html

# Heads	% Heads	Tally
0	0%	
1	20%	
2	40%	
3	60%	
4	80%	
5	100%	

2. Create a histogram of your results. Describe the shape of the histogram (Shape, Center, Spread)

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mathematics
vision project
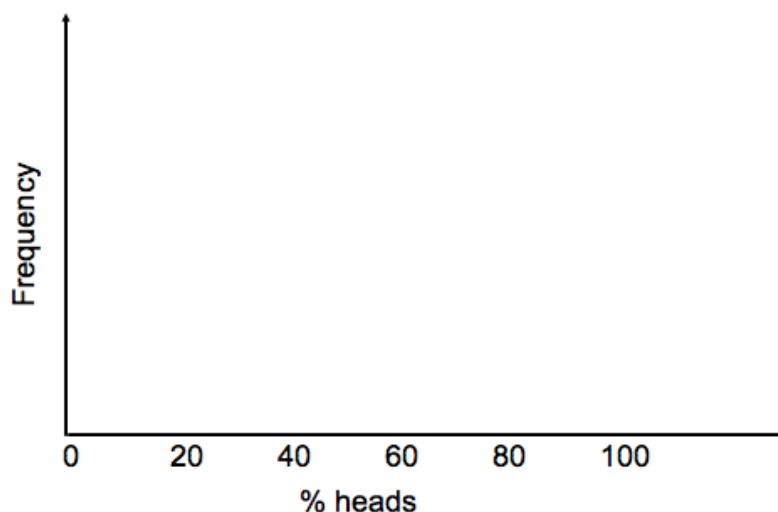
3. Flip a coin 20 times. Record the number of times heads lands side up. Repeat this process 20 times either by hand or by simulation using technology.
http://www.rossmanchance.com/applets/CoinTossing/CoinToss.html

Record your results in the table below.

# Heads	% Heads	Frequency	# Heads	% Heads	Frequency
0	0%		11	55%	
1	5%		12	60%	
2	10%		13	65%	
3	15%		14	70%	
4	20%		15	75%	
5	25%		16	80%	
6	30%		17	85%	
7	35%		18	90%	
8	40%		19	95%	
9	45%		20	100%	
10	50%				

4. Create a histogram of your results below. Describe the shape of the histogram (Shape, Center, Spread)
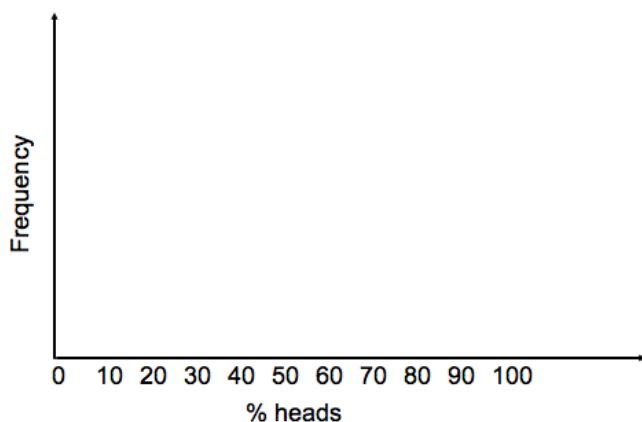
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5. Compare the shape center and spread of each distribution. What do you notice?

6. If you repeated this process with 500 flips instead of 5 or 20, predict what would happen to the shape, spread, and center of the new histogram.

SET
Topic: Using a simulation

In 1963, NBC started to host a game called *Let's Make a Deal!* Contestants were given three doors to choose from. Behind one door was a prize. After selecting one door, the contestant was shown what was behind one of the doors they did not select. The contestant is then asked if they would like to stick with the door they first selected, or switch to the remaining one.

7. Which strategy do you think would result in the best chance of selecting the winning door? Should the contestant switch doors, or stick with the first one they chose?

Go to the following website: http://nlvm.usu.edu/en/nav/category_g_3_t_2.html

Select the applet stick or switch.

8. Play the game 20 times using the stick method and 20 times using the switch method. Record your wins and losses in the table below:

	Stick	Switch	Total
Win			
Lose			
Total			

9. Based on the simulation, what is $P(winning|stick) =$

10. Based on the simulation, what is $P(winning|switch) =$
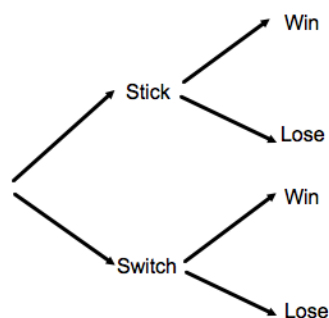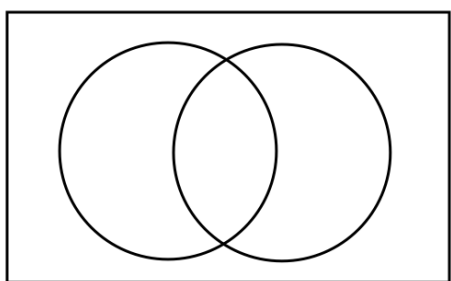
Need help? Visit **www.rsgsupport.org**

11. Click on the multiple games tab. Simulate 100 games for each strategy. What is the probability of winning using each method?

GO
Topic: Reviewing probability

12. For your two-way table in problem 8, create a Venn diagram and a tree diagram below.

13. $P(winning) =$

14. $P(winning \cap sticking) =$

15. $P(winning \cup sticking) =$

16. $P(loosing|sticking) =$

17. $P(winning \; or \; loosing) =$

18. Are the events winning and sticking independent of each other? Justify your answer using probabilities.