

# TRANSPARENCY MASTERS

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# EXPERIMENT 1

## Rolling One Die

Name of Team \_\_\_\_\_

**Directions:** One team member rolls a single die 50 times. The other person records the outcomes using tally marks on the table below. For Trial 2, switch places and repeat the experiment.

OUTCOME	TRIAL 1 Frequency	TRIAL 2 Frequency	TOTAL	PERCENT
1				
2				
3				
4				
5				
6				



Total the tally marks for Trials 1 and 2.

Next, calculate the percentage of occurrence (divide the total number of times for Outcome 1 by 100 to find the percentage of occurrence for Outcome 1).

## EXPERIMENT 2      Rolling Two Dice

**Directions:** One team member rolls a pair of dice 50 times. The other person records the outcomes using tally marks on the table below. For Trial 2, switch places and repeat the experiment.

OUTCOME	TRIAL 1 Frequency	TRIAL 2 Frequency	TOTAL	PERCENT
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				



Total the tally marks for Trials 1 and 2.  
Next, calculate the percentage of occurrence.

## EXPERIMENT 3      A Coin and A Die

**Directions:** One team member simultaneously tosses a coin and rolls a die 50 times. The other person records the outcomes using tally marks on the table below. For Trial 2, switch places and repeat the experiment.

OUTCOME	TRIAL 1 Frequency	TRIAL 2 Frequency	TOTAL	PERCENT
1H				
1T				
2H				
2T				
3H				
3T				
4H				
4T				
5H				
5T				
6H				
6T				

Total the tally marks for Trials 1 and 2.

Next, calculate the percentage of occurrence.

How does  $P(3H)$  compare with  $P(3)$  and  $P(H)$ ?

How does  $P(\text{even number or } 3)$  compare with  $P(\text{even})$  and  $P(3)$ ?

How does  $P(\text{even number or head})$  compare with  $P(\text{even})$  and  $P(\text{head})$ ?

Make a conjecture about  $P(E \text{ or } F)$

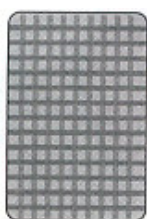


## EXPERIMENT 4 Three Card Problem

**Directions:** You need to prepare three  $3 \times 5$  cards so that they are indistinguishable except for the color.



Black on both sides



Black on one side, white on the other



White on both sides



One team member “shuffles” the three cards under a table so that the cards cannot be seen. Be sure to flip some cards over and back and forth so you don't know which side is “up” or which card is on top. Now, select one card at random and place it flat on a table — be careful not to look at the bottom of this card. You will see either a black or white card. Record the color in Column A. This is not the probability with which we are concerned. Rather, we are interested in predicting the probability of the *other* side being black or white. Record the color of the second side in Column B. Repeat the experiment 100 times.

Top	COLUMN A	OUTCOME Bottom	COLUMN B	COLUMN C
WHITE		WHITE		
		BLACK		
BLACK		WHITE		
		BLACK		

The total number of tally marks in Column A should be 100. Find the percentage of occurrence in Column C. To find the percentage of white/white, divide your entry in Column B (white) by the entry in Column A (white). To find the percentage of white/black, divide your entry in Column B (black) by the entry in Column A (white). These two percentages should add up to 100%. Now, do the same to find the percentage of black/white and black/black. Are these the results you expected? Why or why not?

