Math 2   Name:___Key_____
Unit 6 Day 6 Notes – Experimental Probability   Date:_____

Experimental Probability: A **theoretical probability** is the ratio of the number of feasible outcomes to the total number of outcomes. For example, the theoretical probability of rolling a 4 with a number cube is $\frac{1}{6}$, or $P(4) = \frac{1}{6}$. **Experimental probability** is the ratio of the number of times an outcome occurs in an experiment to the total number of events or trials, known as the **relative frequency**.

Experimental Probability	$P = \dfrac{\text{frequency of an outcome}}{\text{total number of trials}}$

Example 1: Matt recorded that it rained 8 times in November and snowed 3 times. The other days, it was sunny. There are 30 days in November. Find the experimental probability that a day in November is sunny.

$$\frac{19}{30}$$

Example 2: A football team noticed that 9 of the last 20 coin tosses to choose which team would receive the ball first resulted in tails. What is the experimental probability of the coin landing on tails? What is the theoretical probability?

$$\frac{9}{20} \qquad\qquad\qquad \frac{1}{2}$$

Exercise

DIE ROLL A math class decided to test whether a die is fair, that is, whether the experimental probability equals the theoretical probability. The results for 100 rolls are shown at the right.

1: 6	2: 15
3: 4	4: 13
5: 15	6: 47

a. What is the theoretical probability of rolling a 6? $\frac{1}{6}$

b. What is the experimental probability of rolling a 6? $\frac{47}{100}$

c. Is the die fair? Explain your reasoning.

$$\text{No; } \frac{1}{6} \neq \frac{47}{100}$$

Probability Cheat Sheet

1 Die

1, 2, 3, 4, 5, 6

2 Dice

1,1	2,1	3,1	4,1	5,1	6,1
1,2	2,2	3,2	4,2	5,2	6,2
1,3	2,3	3,3	4,3	5,3	6,3
1,4	2,4	3,4	4,4	5,4	6,4
1,5	2,5	3,5	4,5	5,5	6,5
1,6	2,6	3,6	4,6	5,6	6,6

1 Coin	2 Coins	3 Coins
H	H,H	H,H,H
T	H,T	H,H,T
	T,H	H,T,H
	T,T	H,T,T
		T,H,H
		T,H,T
		T,T,H
		T,T,T

Deck of Cards

Hearts (Red):   Ace, 2, 3, 4, 5, 6, 7, 8, 9, 10, Jack, Queen, King
Diamonds (Red):   Ace, 2, 3, 4, 5, 6, 7, 8, 9, 10, Jack, Queen, King
Spades (Black):Ace, 2, 3, 4, 5, 6, 7, 8, 9, 10, Jack, Queen, King
Clubs (Black): Ace, 2, 3, 4, 5, 6, 7, 8, 9, 10, Jack, Queen, King

*Jack, Queen, and Kings are called face cards.

Alphabet

Vowels: A, E, I, O, U
Consonant: NOT VOWELS