

Day 4

### Simple Probability EXAMPLES

1. A new restaurant has opened and they offer lunch combos for \$5.00. With the combo meal you get one sandwich, one side, and one drink. The choices are below:

Sandwiches	Sides	Drinks
Chicken Salad	Chips	Lemonade
Turkey	Sweet Potato Fries	Water
Grilled Cheese	Fruit Cup	
	Carrot Sticks	

How many possible meal combos are there?

Sandwiches  $\cdot$  sides  $\cdot$  drinks

$$3 \cdot 4 \cdot 2 = 24 \text{ combos}$$

2. Suppose you use six different letters to make a computer password. Find the number of possible six-letter passwords.

$$\begin{array}{cccccc} \underline{26} & \cdot & \underline{26} & \cdot & \underline{26} & \cdot & \underline{26} & \cdot & \underline{26} & \cdot & \underline{26} & = & 308,915,776 \\ \uparrow & & \uparrow & & & & & & & & & & \\ \text{1st} & & \text{2nd} & & & & & & & & & & \\ \text{letter} & & \text{letter} & & & & & & & & & & \\ \text{choices} & & \text{choices} & & & & & & & & & & \end{array}$$

3. In Pennsylvania, a regular license plate has three letters followed by 4 numbers. How many different combinations of license plates does Pennsylvania have?

$$\begin{array}{cccccc} \underline{26} & \cdot & \underline{26} & \cdot & \underline{26} & \cdot & \underline{10} & \cdot & \underline{10} & \cdot & \underline{10} & \cdot & \underline{10} & = & 175,760,000 \\ \uparrow & & \uparrow & & & & \uparrow & & \uparrow & & & & & & \\ \text{1st} & & \text{2nd} & & & & \text{1st} & & \text{2nd} & & & & & & \\ \text{letter} & & \text{letter} & & & & \# & & \# & & & & & & \\ \text{choice} & & \text{choice} & & & & \text{choice} & & \text{choice} & & & & & & \end{array}$$

4. A survey at a hospital showed the most popular names for baby girls are:  
Emily, Haley, Kayla, and Samantha

The most popular middle names for baby girls are:  
Anne, Elizabeth, and Marie.

- a. How many possible names can be generated using the first and middle names from the list of popular names?

$$\begin{array}{l} \text{1st} \cdot \text{2nd} \\ 4 \cdot 3 = 12 \text{ possible names} \end{array}$$

- b. What is the probability that a baby girl will be named Emily Elizabeth if her parents choose from the most popular names?

$$P(\text{Emily Elizabeth}) = \frac{1}{12}$$

5. One hundred twenty randomly selected students at Rustin High School were asked to name their favorite sport. The results are shown in the table. Find the experimental probability that a student selected at random makes the given response.

1. P(basketball)

$$\frac{30}{120} = \frac{1}{4}$$

2. P(soccer)

$$\frac{20}{120} = \frac{1}{6}$$

3. P(baseball)

$$\frac{22}{120} = \frac{11}{60}$$

4. P(football)

$$\frac{34}{120} = \frac{17}{60}$$

5. P(not basketball or baseball)

$$\frac{68}{120} = \frac{17}{30}$$

**Favorite Sport Survey**

Sport	Number of Responses
Basketball	30
Baseball	22
Football	34
Soccer	20
Other	14

6. A meteorologist says that the probability of rain today is 35%. What is the probability that it will not rain?

$$100\% - 35\% = 65\% \text{ chance it will not rain}$$

7. Hank usually makes 11 out of every 20 of his free throws. What is the probability that he will miss his next free throw?

$$1 - \frac{11}{20} = \frac{9}{20}$$