



Lesson: Probability

Sixth Grade Objective: 4.02 Use a sample space to determine the probability of an event.

Lesson

The **probability** of an event is the measure of how likely it is that the event will occur.

Probability (P) = $\frac{\text{number of favorable outcomes}}{\text{number of possible outcomes}}$

For example, if a bag contains 13 marbles total, 10 blue and 3 red.

If a marble is chosen at random, the probability that it will be blue is:

$$\text{Probability (P)} = \frac{10}{13} - \text{the number of blue marbles} \\ 13 - \text{the total number of marbles}$$

What is the probability of choosing a green marble?

$$\text{P}(\text{green}) = \frac{0}{13} - \text{the number of green marbles} \\ 13 - \text{the total number of marbles}$$

If the probability is zero then there is no possibility. It is impossible.

Another example:

Mrs. Jones brought a cooler of drinks for her son's baseball game. In the cooler there are 6 bottles of water, 5 bottles of orange Gatorade and 6 bottles of cherry Gatorade. One bottle is pulled at random by one of the players. Find the probability of the following:

P (of getting bottled water): $\frac{6}{17}$ - the number of bottled waters
17 - the number of total bottles

$$P = 6/17$$

P (of getting an orange Gatorade): $\frac{5}{17}$ - the number of orange Gatorades
17 - the number of total bottles

$$P = 5/17$$

P (of getting a cherry Gatorade): $\frac{6}{17}$ - the number of cherry Gatorades
17 - the number of total bottles

$$P = 6/17$$

P (bottled water, orange or cherry) $\frac{17}{17}$ - the number of water, orange and cherry
17 - the number of total bottles

$$17/17 = 1$$

If the probability is one then it is a certainty

Try these on your own!

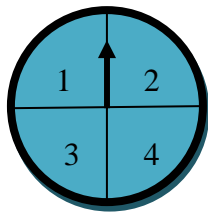
1. A bag contains 6 blue marbles, 4 red marbles, and 3 clear marbles.

a. What is the probability (P) a selected marble will be red? _____

b. What is the P that a selected marble will NOT be clear? _____

c. What is the P that a selected marble will be either blue or clear? _____

2. The spinner shown is spun. Find the probability.



a. $P(2) =$ _____

b. $P(\text{even number}) =$ _____

c. $P(\text{NOT } 1) =$ _____

3. A dice has numbers 1-6 on it. Find the probability of the following:

a. $P(2) =$ _____

b. $P(\text{even}) =$ _____

c. $P(\text{NOT } 3) =$ _____

Check your answers

1. a. $P = 4/13$

b. $P = \frac{6+4}{13}$ blue + red
total number of marbles
 $P = 10/13$

c. $P = \frac{6+3}{13}$ blue + clear
total number of marbles

$$P = 9/13$$

2. a. $P = 1/4$

b. $P = 2/4$ or $1/2$

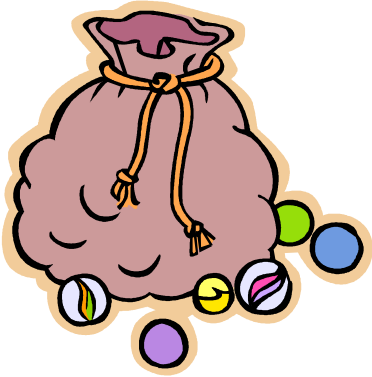
c. $P = 3/4$

3. a. $P = 1/6$

b. $3/6$ or $1/2$

c. $5/6$

Quiz Yourself



There are 12 red, 2 blue swirl, 6 clear, 8 green and 4 yellow swirl marbles in the bag. Fill on the chart to show the probability of randomly pulling the marbles out of the bag. Show your answers as fractions in the simplest form.

Color	Probability
Red	
Blue Swirl	
Clear	
Green	
Yellow Swirl	
Swirl Marbles	
Clear or Green	

Check Your Answers

Make sure you have reduced your answers!

Color	Probability
Red	$3/6$
Blue Swirl	$1/16$
Clear	$3/16$
Green	$1/4$
Yellow Swirl	$1/8$
Swirl Marbles	$3/16$
Clear or Green	$7/16$