

# 10.1 Introduction to Probability

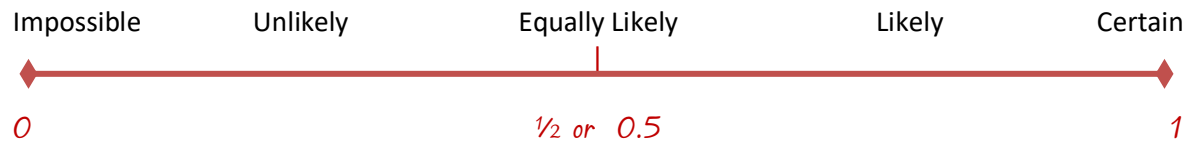
## NOTES

MATH 7

Write your questions here!

Probability is a measure of how likely an event will happen.

### Probability Scale



The smallest value a probability can be is \_\_\_\_\_. This happens when the event will never happen.

The largest value a probability can be is \_\_\_\_\_. This happens when the event will always happen.

Describe the likelihood of an event as impossible, unlikely, equally likely, likely or certain.

- 1) Our school closes today because of snow. P(No School) \_\_\_\_\_
- 2) You get a "head" when flipping a coin. P(Heads) \_\_\_\_\_
- 3) Roll # less than 10 on 6-sided number cube P( $\# < 10$ ) \_\_\_\_\_
- 4) Your car will start tomorrow morning. P(start) \_\_\_\_\_

Important definitions:

Event: \_\_\_\_\_

Outcome: \_\_\_\_\_

Likelihood: \_\_\_\_\_

Sample Space: \_\_\_\_\_

# Theoretical vs Experimental Probability



**Theoretical probability** describes how likely it is that an event will happen based on all the possible outcomes. It is what SHOULD happen and uses the ratio:

$$P(\text{event}) = \frac{\# \text{ ways event could occur}}{\text{Number of possible outcomes}}$$

**Experimental probability** is the probability based on experimental data that are found by repeating the experiment several times. It is what ACTUALLY happened and uses the ratio:

$$P(\text{event}) = \frac{\# \text{ times event actually occurred}}{\text{Number of possible outcomes}}$$

Roll a 6-sided number cube 140 times.  
How many times should you get a 4?

Roll a number cube 140 times.  
28 landed on a 4.

Suppose Mr. Brust was nice enough to give you a pack of M&Ms and you count and record how many of each color was in the bag.

**M&M Distribution**

Red	Orange	Yellow	Blue	Green	Brown	Purple
8	10	5	7	12	6	0


What is the experimental probability that you select a red M&M? \_\_\_\_\_

P(Yellow) \_\_\_\_\_ P(Green or Brown) \_\_\_\_\_ P(Purple) \_\_\_\_\_

P(Not Orange) \_\_\_\_\_ P(Blue or Red or Green) \_\_\_\_\_

## SUMMARY:

Now,  
summarize  
your notes  
here!



Describe the likelihood of an event as impossible, unlikely, equally likely, likely or certain.

Your Fortnite team wins  $\frac{3}{4}$  of the time. \_\_\_\_\_

There is a 0% chance that you will grow 10 more feet. \_\_\_\_\_

The probability that the sun rises tomorrow is 1. \_\_\_\_\_

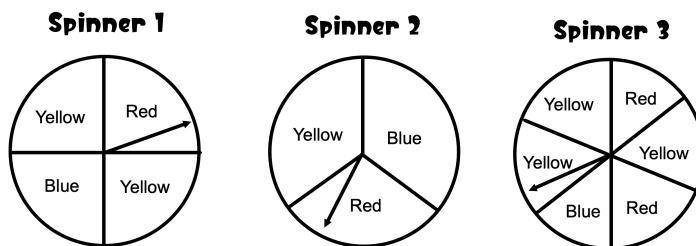
It rains on  $\frac{1}{5}$  of the days in July. \_\_\_\_\_

There is a 5% chance of winning a contest. \_\_\_\_\_

Picking a number less than 15 from a jar with papers labeled from 1 to 12. \_\_\_\_\_

Picking an odd number from a jar with papers labeled from 1 to 12. \_\_\_\_\_

Use the spinners to fill in the table below. Express each probability as a fraction in simplest form.



<b>Probability</b>	<b>Spinner 1</b>	<b>Spinner 2</b>	<b>Spinner 3</b>
P(Yellow)			
P(Blue)			
P(Red)			

The letters of the word GOOSE are put into a bag. You randomly draw a letter from the bag. Find the probabilities as FRACTIONS.

P (letter S) = \_\_\_\_\_

P (letter G) = \_\_\_\_\_

P (Letter K) = \_\_\_\_\_

P (vowel) = \_\_\_\_\_

P (not a vowel) = \_\_\_\_\_

P (letter O) = \_\_\_\_\_

Find each theoretical probability as a FRACTION in SIMPLEST FORM, if you roll a standard number cube.

$P(1) = \underline{\hspace{2cm}}$

$P(2) = \underline{\hspace{2cm}}$

$P(1 \text{ or } 2) = \underline{\hspace{2cm}}$

$P(\text{not a } 4) = \underline{\hspace{2cm}}$

$P(\text{even number}) = \underline{\hspace{2cm}}$

$P(7) = \underline{\hspace{2cm}}$



Suppose a number cube is rolled 120 times. About how many times should each event occur?

You roll a 5.

You roll an even number.

You roll a number less than 6.

Find the experimental probability of each event based off of the rolls of a number cube recorded in the table.

# on number cube	1	2	3	4	5	6
# of rolls	16	20	13	17	19	15

$P(1) = \underline{\hspace{2cm}}$

$P(\text{Not } 2) = \underline{\hspace{2cm}}$

$P(\text{Even}) = \underline{\hspace{2cm}}$

$P(6) = \underline{\hspace{2cm}}$

A bag of marbles contains: 1 green, 2 blue, 1 yellow, 3 purple and 3 red. Write each answer as a DECIMAL.

$P(\text{blue}) = \underline{\hspace{2cm}}$

$P(\text{not red}) = \underline{\hspace{2cm}}$

$P(\text{green}) = \underline{\hspace{2cm}}$

$P(\text{not blue}) = \underline{\hspace{2cm}}$

$P(\text{purple}) = \underline{\hspace{2cm}}$

$P(\text{blue or red}) = \underline{\hspace{2cm}}$

## 10.1 Intro to Prob

## WRAP UP

1. Sully draws a pen at random from a bag of pens. He records its color and replaces it. His results are shown in the table below.

Pens	Blue	Red	Black
Frequency	29	19	27

Find:

$P(\text{Blue}) = \underline{\hspace{2cm}}$   
(as a fraction)

$P(\text{Not red}) = \underline{\hspace{2cm}}$   
(as a decimal)

$P(\text{Black or Blue}) = \underline{\hspace{2cm}}$   
(as a fraction)

$P(\text{Green}) = \underline{\hspace{2cm}}$   
(as a decimal)

