Warm Up

Record your homework for the week in your agenda

Mon: Practice Worksheet Mod 14

Tues: Practice Worksheet Mod 15

Fri: None

14-1 Probability Basics

A Foldable Graphic Organizer

Introduction

MCC7.SP.5

1 EXPLORE Likelihood of an Event

When a number cube is rolled once, the possible numbers that could show face up are _____.

Each time you roll the cube, a number lands face up. This is called an *event*. Below is a list of 9 different events.

Work with a partner to order the events from those least likely to happen to the ones that are most likely to happen when you roll the number cube one time.

Use the space next to each event to write any notes that might help you order them.

Rolling a number less than 7 _____

Rolling an 8 _____

Rolling a 1, 2, or 3 _____

Rolling a 5 _____

Rolling a number other than 6 _____

Rolling an even number _____

Rolling a number greater than 5 _____

Rolling an odd number _____

Rolling a prime number _____

The order I wrote the events in is:

_____

Probability

MCC7.SP.5 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.

Probability

Learn to use informal measures of probability.

Vocabulary

experiment

trial

outcome

event

probability

simple event

compound event

complement

Probability

An activity involving chance, such as rolling a cube, is called an **experiment**. Each repetition or observation of an experiment is a **trial**, and each result is an **outcome**. A set of one or more outcomes is an **event**. For example, rolling a 5 (one outcome) can be an event, or rolling an even number (more than one outcome) can be an event.

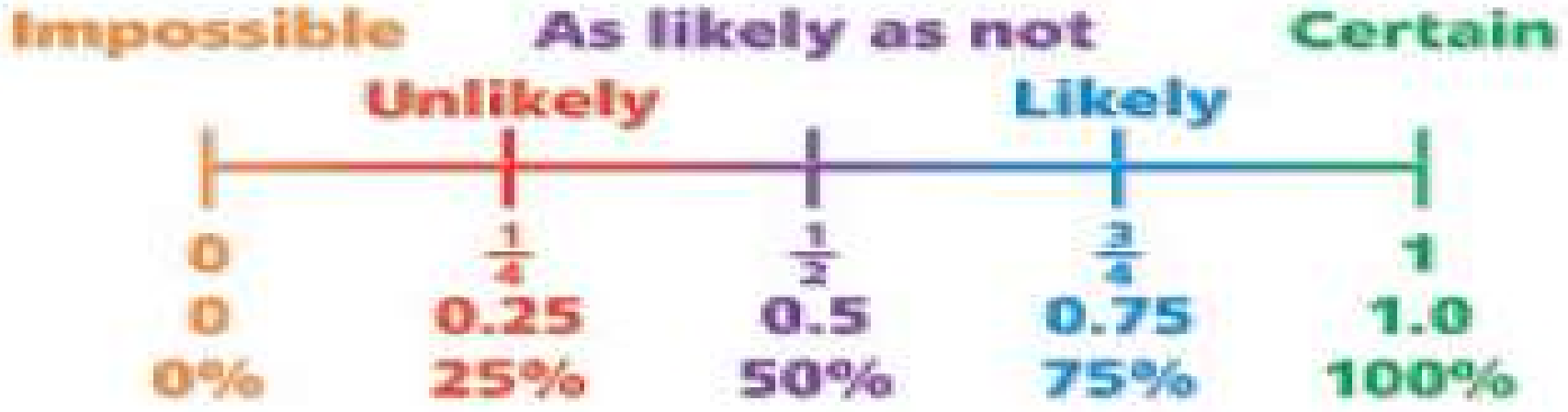
Probability

The **probability** of an event, written *P*(event), is the measure of how likely an event is to occur. A **simple event** has a single outcome. A **compound event** is two or more simple events. Probability is a measure between 0 and 1, as shown on the number line. You can write probability as a fraction, a decimal, or a percent.

Back of Foldable

Probability is a measure between 0 and 1

Can write probability as a fraction, a decimal, or a percent.



Practice

Board Review

Additional Example 1A: Determining the Likelihood of an Event

Determine whether each event is impossible, unlikely, as likely as not, likely, or certain.

rolling an odd number on a number cube

There are 6 possible outcomes:

Odd	*Not* Odd
1, 3, 5	2, 4, 6

Half of the outcomes are odd.

Rolling an odd number is as likely as not.

Additional Example 1B: Determining the Likelihood of an Event

Determine whether each event is impossible, unlikely, as likely as not, likely, or certain.

rolling a number less than 2 on a number cube

There are 6 possible outcomes:

Less than 2	*2 or more*
1	2, 3, 4, 5, 6

Only one outcome is less than 2.

Rolling a number less than 2 is unlikely.

Record

Determine whether each event is impossible, unlikely, as likely as not, likely, or certain. Then, tell whether the probability is 0, close to 0, $\frac{1}{2}$, close to 1, or 1.

A You flip a coin. The coin lands heads up.

B You roll two number cubes and the sum of the numbers is 10.

C A bowl contains 14 red marbles and 3 green marbles. You pick a red marble.

D A spinner has 10 equal sections marked 1 through 10. You spin and land on a number greater than 0.

Probability

2 EXAMPLE Describing Events

Determine whether each event is impossible, unlikely, as likely as not, likely, or certain. Then, tell whether the probability is 0, close to 0, $\frac{1}{2}$, close to 1, or

A You flip a coin. The coin lands heads up.

B You roll two number cubes and the sum of the numbers is 10.

C A bowl contains 14 red marbles and 3 green marbles. You pick a red marble.

D A spinner has 10 equal sections marked 1 through 10. You spin and land on a n
greater than 0.

Probability

When a number cube is rolled, either a 5 will be rolled or it will not. Rolling a 5 and not rolling a 5 are examples of *complementary events*. The **complement** of an event is the set of all outcomes that are *not* the event.

Because it is certain that either an event or its complement will occur when an activity is performed, the sum of the probabilities is 1.

$$P(\text{event}) + P(\text{complement}) = 1$$

Board

A bag contains circular chips that are the same size and weight. There are 8 purple, 4 pink, 8 white, and 2 blue chips in the bag. The probability of drawing a pink chip is $\frac{2}{11}$. What is the probability of not drawing a pink chip?

$P(\text{event}) + P(\text{complement}) = 1$

The probability of not drawing a pink chip is $\frac{9}{11}$.

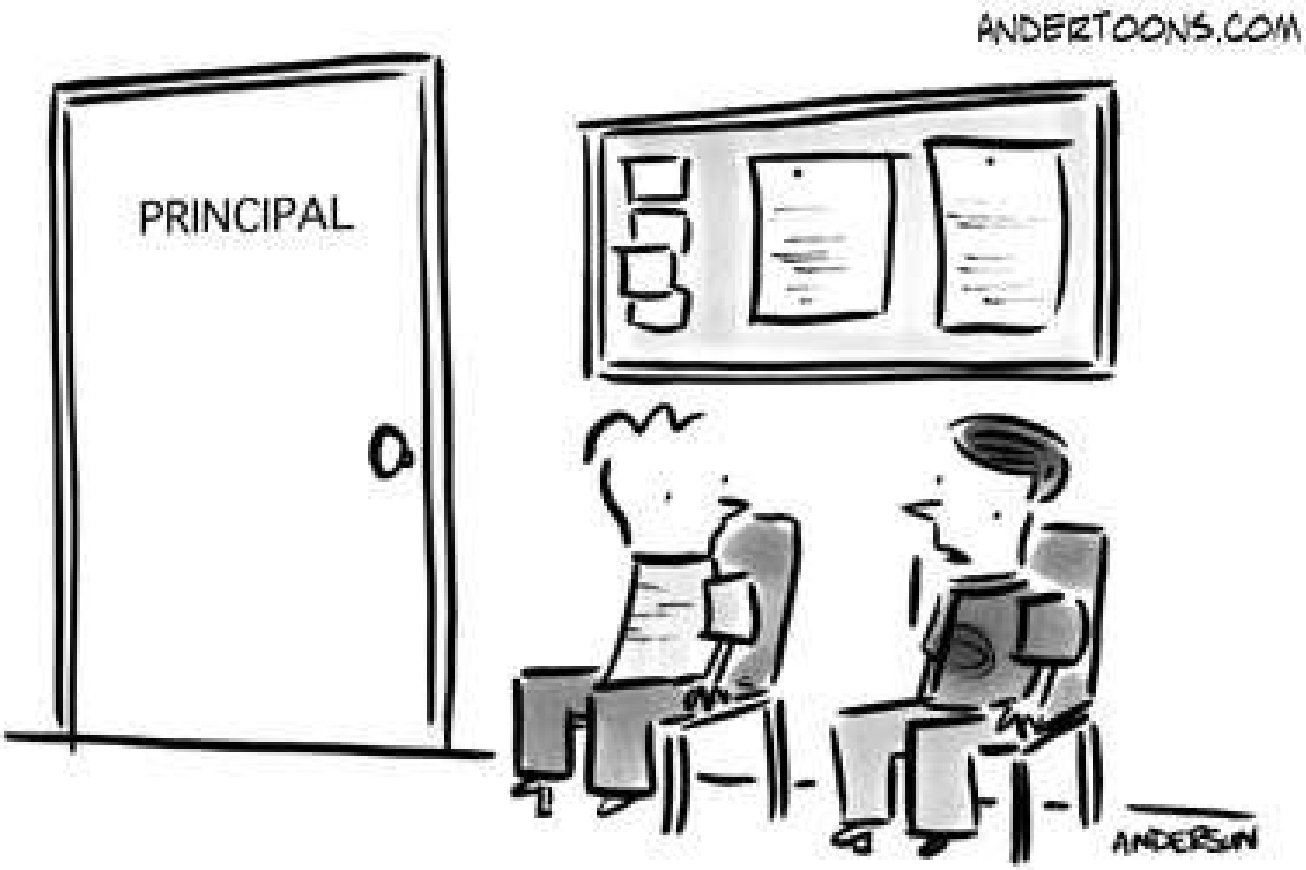
Probability

A bag contains circular buttons that are the same size and weight. There are 7 maroon buttons, 3 sky buttons, 5 white buttons, and 5 lavender buttons in the bag. The probability of drawing a sky button is $\frac{3}{20}$. What is the probability of not drawing a sky button?

$P(\text{event}) + P(\text{complement}) = 1$

The probability of not drawing a sky button is $\frac{17}{20}$.

Probability



"I wish we hadn't learned probability 'cause I don't think our odds are good."

Discuss and Board

Mandy's science teacher almost always introduces a new chapter by conducting an experiment. Mandy's class finished a chapter on Friday. Should Mandy expect the teacher to conduct an experiment next week? Explain.

Since the class just finished a chapter, they will be starting a new chapter. It is likely the teacher will conduct an experiment.

After completing a unit chapter, Alice's keyboarding class usually begins the next class day with a time trial exercise, practicing the previously learned skills. It is Wednesday and a unit chapter was completed the previous day. Will the class start with a time trial exercise?

If the teacher keeps to her planned schedule, it is likely the class will start with a time trial.

Board

Determine whether each event is impossible, unlikely, as likely as not, likely, or certain.

1. Bonnie's Spanish club meets on Tuesday afternoons. How likely is it that Bonnie is at the mall on Tuesday afternoon?

unlikely

2. There are 12 SUVs and 12 vans in a parking lot. How likely is it that the next vehicle to move is a van?

as likely as not

Probability

Determine whether each event is impossible, unlikely, as likely as not, likely, or certain.

3. A bag holds 4 red marbles, 3 green marbles, 3 yellow marbles, and 2 blue marbles. You pull one without looking. The probability of pulling a green marble is $\frac{1}{4}$. What is the probability of pulling a marble that is not green?

$\frac{3}{4}$

4. Tim never listens to his MP3 player during classes. If Tim is in math class, how likely is it that he is listening to his MP3 player?

impossible

Board

1. Determine whether the event is impossible, unlikely, likely, or certain.

rolling a 7 on a number cube

A. impossible

B. unlikely

C. likely

D. certain

2. Determine whether the event is unlikely, as likely as not, likely, or certain.

randomly drawing a black or white marble from a bag of black and white marbles

A. impossible

B. unlikely

C. likely

D. certain

3. Erika almost always goes out with an umbrella if it is a rainy day. Today is a rainy day. How likely is it that Erika will go out with umbrella today?

A. impossible

B. unlikely

C. likely

D. certain

Probability

Learn to use informal measures of probability.

Probability Song

Complete HW