# Today's Materials


- calculator
- pencil
- notebook
- glue
- highlighter

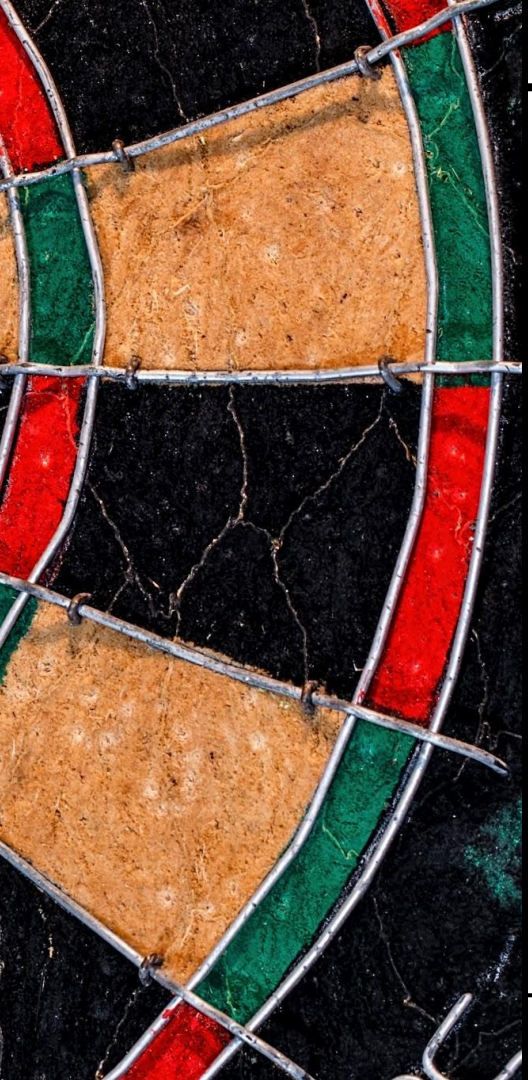
# Chance Experiments

Lesson 2

| CCSS Standards: Addressing | • 7.SP.C.5 |
| --- | --- |

2019 Open Up Resources | Download for free at openupresources.org.

# Let's investigate chance!



# Today's Goals

- ❏ I can describe the likelihood of events using the words **impossible**, **unlikely**, **equally likely as not**, **likely**, or **certain**.
- ❏ I can tell which event is more likely when the chances of different events are expressed as fractions, decimals, or percentages.

# Which is More Likely?

Warm Up

Begin by thinking on your own. (2 min.)

. . . . .

Share your thinking with your team.

# Which is more likely to happen?

When reaching into a dark closet and pulling out one shoe from a pile of 20 pairs of shoes, you pull out a left shoe.

When listening to a playlist - which has 5 songs on it - in shuffle mode, the first song on the playlist plays first.

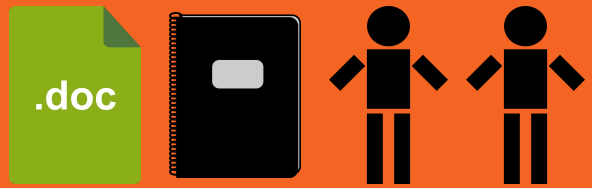
**Remember:** The outcomes for the shoes/songs scenarios are not certain.

It is possible to do both scenarios, but it isn't very likely.

# How Likely Is It?

Activity 1

- Think Pair Share
- Discussion Supports



# standard number cube

an object that has the numbers 1 through 6 printed on a cube so that each face shows a different number (dice)

# Categories of Likelihood

Let's consider examples about opening a 100 page book...

**Impossible**

opening the book to page -300

**Unlikely**

opening the book to exactly page 45

**Equally likely as not**

opening the book to a page numbered  less than 51

**Likely**

opening the book to a page numbered greater than 10

**Certain**

opening the book to a page numbered less than 1,000

# Begin working on your own. (5-7 min.)

➔ **Complete the last part of the task in your notebook.**

Label each event with one of these options:

| impossible | unlikely | equally likely as not | likely | certain |
|---|---|---|---|---|

a. You will win the grand prize in a raffle if you purchased 2 out of 100 tickets.

b. You will wait less than 10 minutes before ordering at a fast food restaurant.

c. You will get an even number when you roll a standard number cube (dice).

d. A four-year-old child is over 6 feet tall.

e. No one in your class will be late to class next week.

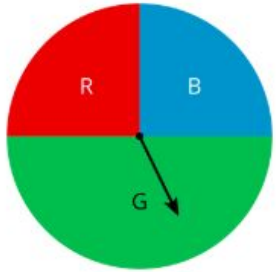
f. The next baby born at a hospital will be a boy.

g. It will snow at our school on July 1.

h. The sun will set today before 11:00 PM.

i. Spinning the spinner (to the right) will result in green.

j. Spinning the spinner will result in yellow.




Discuss your answers for a-j with your team. If you disagree, work to reach an agreement.

➔ Invent a solution for each label (from the box above), for a total of 5 more events.

# Were any of the scenarios listed difficult to categorize?

Which categories are the most strict about what can go in them?

What does it mean for an event to be **certain**?

What does it mean for an event to be **likely**?

Label each event with one of these options:

| impossible | unlikely | equally likely as not | likely | certain |
|---|---|---|---|---|

a. You will win the grand prize in a raffle if you purchased 2 out of 100 tickets.

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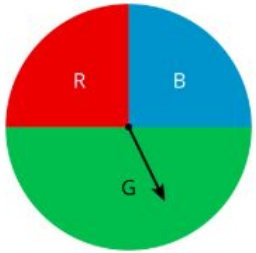



Discuss your answers for a-j with your team. If you disagree, work to reach an agreement.

➔ Invent a solution for each label (from the box above), for a total of 5 more events.

**Let's share your scenarios!**

Impossible

Unlikely

Equally likely as not

Likely

Certain

# Take a Chance

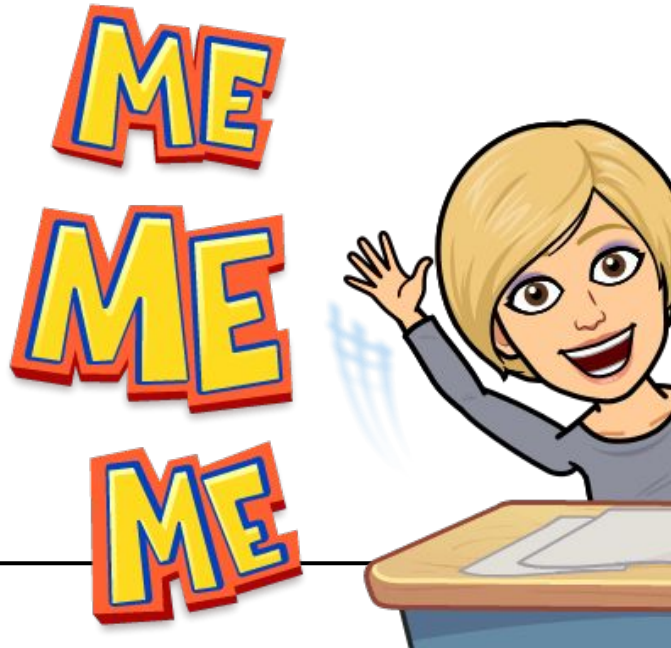
Activity 2

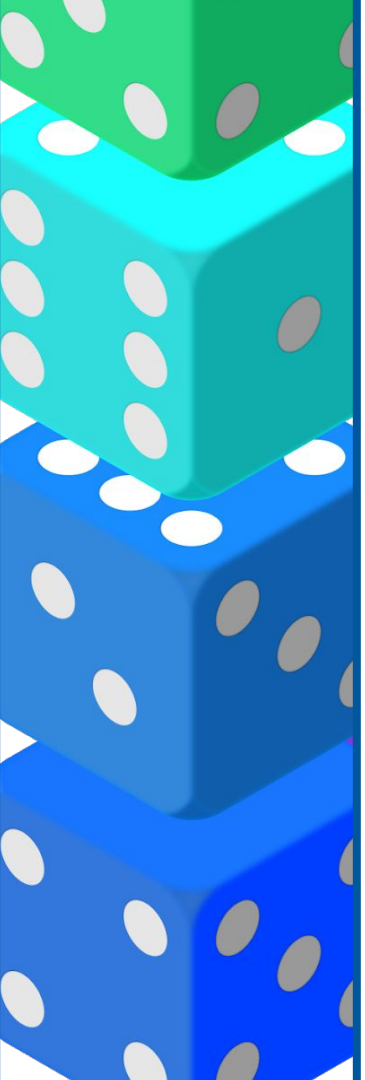
- Collect and Display

# Let's play a game of chance!

To play, we'll need some class volunteers:

- **Player 1**
- **Player 2**
- **Recorder**





# Let's play a game of chance!

**Round 1:**

Player 1 chooses 3 numbers that will count as a win for them. Player 2 win if any of the other numbers come up. Roll the number cube.

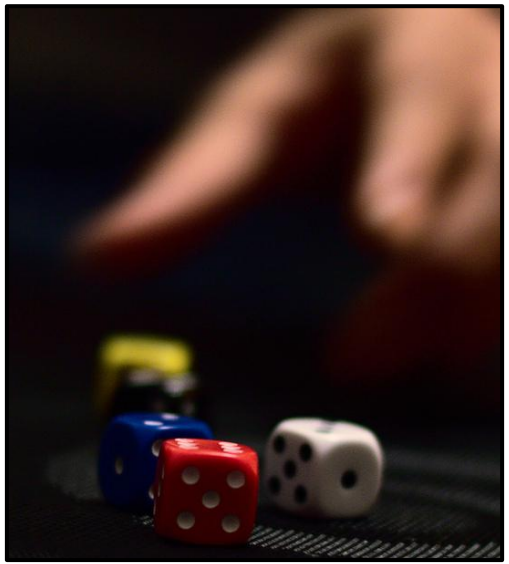
**Round 2:**

Whoever lost the first round gets to choose 4 numbers that will count for a win for them while their partner gets the other 2 numbers. Roll the number cube.

## Consider these questions:

1. When the first person chose 3 numbers, did they usually win?
2. When the person chose 4 numbers, did you expect them to win? Why?

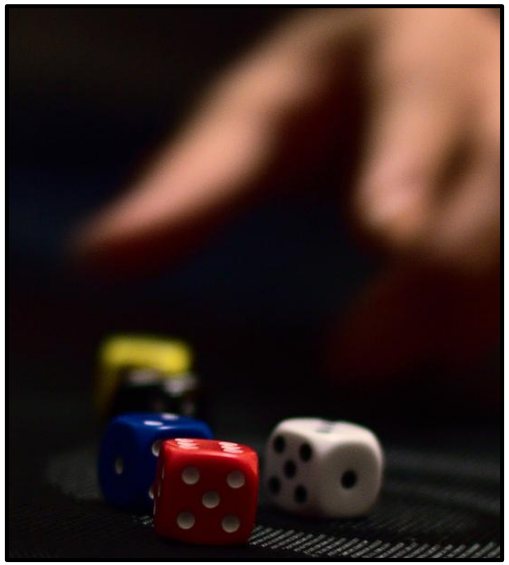
# chance experiment



something you can do over-and-over and you don’t know what is going to happen each time

# outcome

What are the outcomes for these chance experiments?



An outcome of a chance experiment is one of the things that can happen when you do the experiement.

# Who did you expect to win each time:

- the person choosing numbers
- the other player

In one round of the game it was more likely that the person choosing the numbers would win.

We'll be talking a lot in this unit about how likely or probable an event is to happen and even assigning numbers to the likelihood.

For each part of the game, what percentage or fraction would you assign to the **likelihood** of the person who chose the numbers winning?

What percentage or fraction would you assign to waiting for less than 10 minutes before your order is taken as the fast food restaurant from the previous activity?

# How could we get more evidence to support these answers?

# “Are you ready for more?”

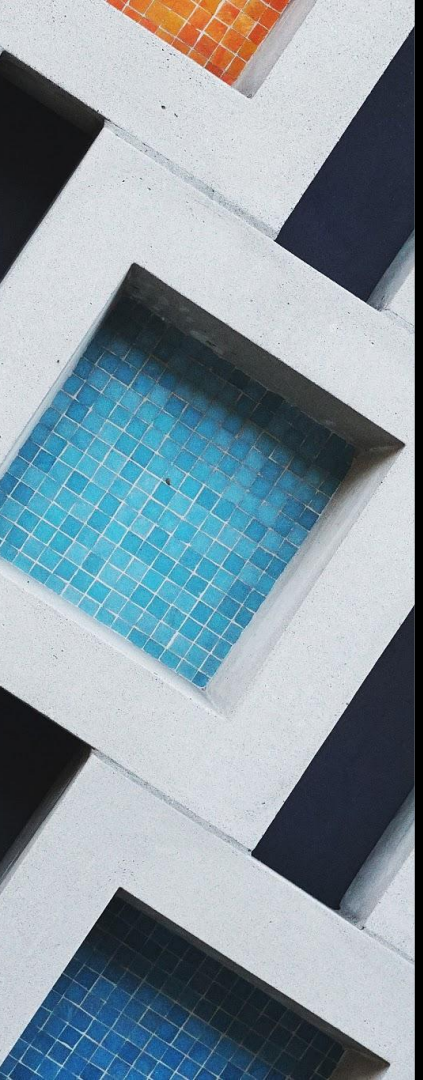
On a game show, there are 3 closed doors. One door has a prize behind it. The contestant chooses one of the doors. The host of the game show, who knows where the prize is located, opens one of the *other* doors which does not have the prize. The contestant can choose to stay with their first choice or switch to the remaining closed door.

1. Do you think it matters if the contestant switches doors or stays?
2. Practice playing the game with your partner and record your results. Whoever is the host starts each round by secretly decided which door has the prize.
    a. Play 20 rounds where the contestant always stays with the 1st choice.
    b. Play 20 rounds where the contestant always switches doors.
3. Did the results from playing the game change your answer to the first question? Explain.

# Card Sort: **Likelihood**

Activity 3

- Compare and Connect
- Take Turns



# Card Sort: **Likelihood**

1. You will get some cards that describe events. Order the events from least likely to most likely.
2. Raise your hand to show your teacher you work. Then, you'll get a second set of cards.
3. Add the new set of cards to the first set so that all the cards are ordered from least likely to most likely.

# How were the numerical value of likelihoods written?

# How did you compare them when there was a mix of percentages, fractions, and decimals?

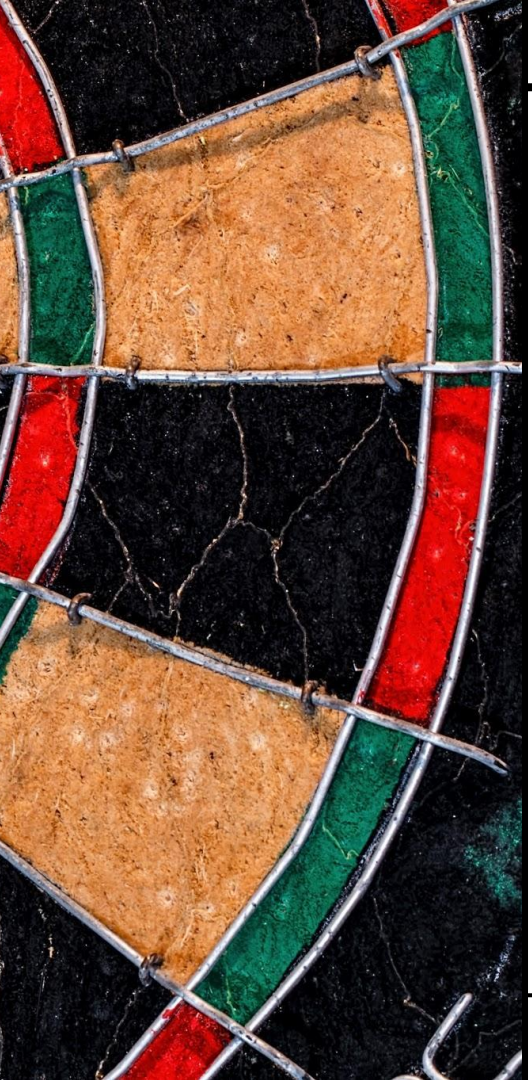
Some of the cards did not have a percentage, fraction, or decimal. How did you determine where those cards would go in the order?

# What is a chance experiment?

something you can do repeatedly without knowing what is going to happen each time

**In partners, come up with examples of each of these types of events:**

- impossible
- unlikely
- equally likely as not
- likely
- certain



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# According To...

Cool Down