

We Are Spinning in Second Grade!

Reporting Category Probability and Statistics

Topic Predicting experiment outcomes

Primary SOL 2.18 The student will use data from experiments to predict outcomes when the experiment is repeated.

Materials

- Recess Game Spinner (attached)
- T-chart poster with the headings “Tag” and “Kickball”
- Paperclips
- Pencils
- Dessert Spinner (attached)
- Dessert Data (attached)

Vocabulary

outcomes, probability impossible, unlikely, as likely as, equally likely, likely, certain

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

1. Tell students that they are going to spin a spinner to decide whether they will play tag or kickball at recess today. The game that gets the most spins will be the one they play. Allow each student to come up, spin the Recess Game Spinner, and record his/her result on the T-chart. After all students have spun and recorded, ask them to write the answer to the following question on a small slip of paper: “Which game do you think we will play today?” Ask students to share their prediction with a person sitting next to them and tell *why* they made that prediction. Then, have student volunteers share their predictions and reasoning.
2. Use guiding questions (see next page) in a class discussion that will lead students to understand that the *probability* of playing each game is the *same* because the spinner is divided *equally*.
3. Write the word *probability* on the board. Ask students whether this word is similar to other words they use (e.g., *probably, probable, problem*). Explain that probability is the chance of an event happening. We have two events that can happen at recess—kickball or tag. The probability that they will play kickball is one out of two chances, or $1/2$. The probability that they will play tag is the same because the spinner is divided equally. Ask students to rephrase what probability means. Have the class come to a consensus, and write the agreed meaning of *probability* on the board.
4. Explain to students that they will be doing a probability experiment and collecting data. They will make a spinner to decide what dessert to have for dinner. Hand out the copies of the Dessert Spinner and Dessert Data sheets, and ask students to write/draw a different dessert in the five spaces on their spinners, choosing from among the listed choices. Have students answer the questions, based on their spinners.
5. Have students do the experiment by spinning 15 times and recording their results on the Dessert Data sheets. Model how to spin the spinner by placing a paper clip on the tip of a

pencil, holding the tip in the center of the spinner, and spinning the paper clip around. Have students repeat the experiment.

6. As students are doing the experiment and collecting data, circulate and ask assessment questions.

Assessment

- **Questions**
 - Do you think your spinner is divided equally? What statement can you make that uses the words *equally* and *likely*?
 - I see that you put cake on your spinner two times. Is your spinner divided equally now? How many possible outcomes do you have now?
 - Is it certain that you will spin a dessert? Why?
 - How were the results of Experiment 1 and Experiment 2 on the Dessert Data sheet similar? Why do you think that is?
 - How might we change the spinner in order to spin cupcakes more often?
 - How might we change the spinner in order to make it impossible to spin ice cream?
- **Journal/Writing Prompts**
 - Think about a spinner that had four sections labeled “Popsicle” and one section labeled “Ice Cream.” Is it likely or unlikely you will spin ice cream? Is it certain or impossible that you will spin a dessert? Why?
 - You and your best friend decide to make a spinner to help decide which sport to play. The choices are soccer, volleyball, baseball, and football. You really want baseball to win. Draw a spinner that would very likely spin baseball. Explain why you drew it this way.
- **Guiding Questions**
 - Why did you make that prediction?
 - Does the size of the spinner affect your prediction?
 - If I added hopscotch to the spinner, would your prediction change?
 - Can there be equal chances of spinning?

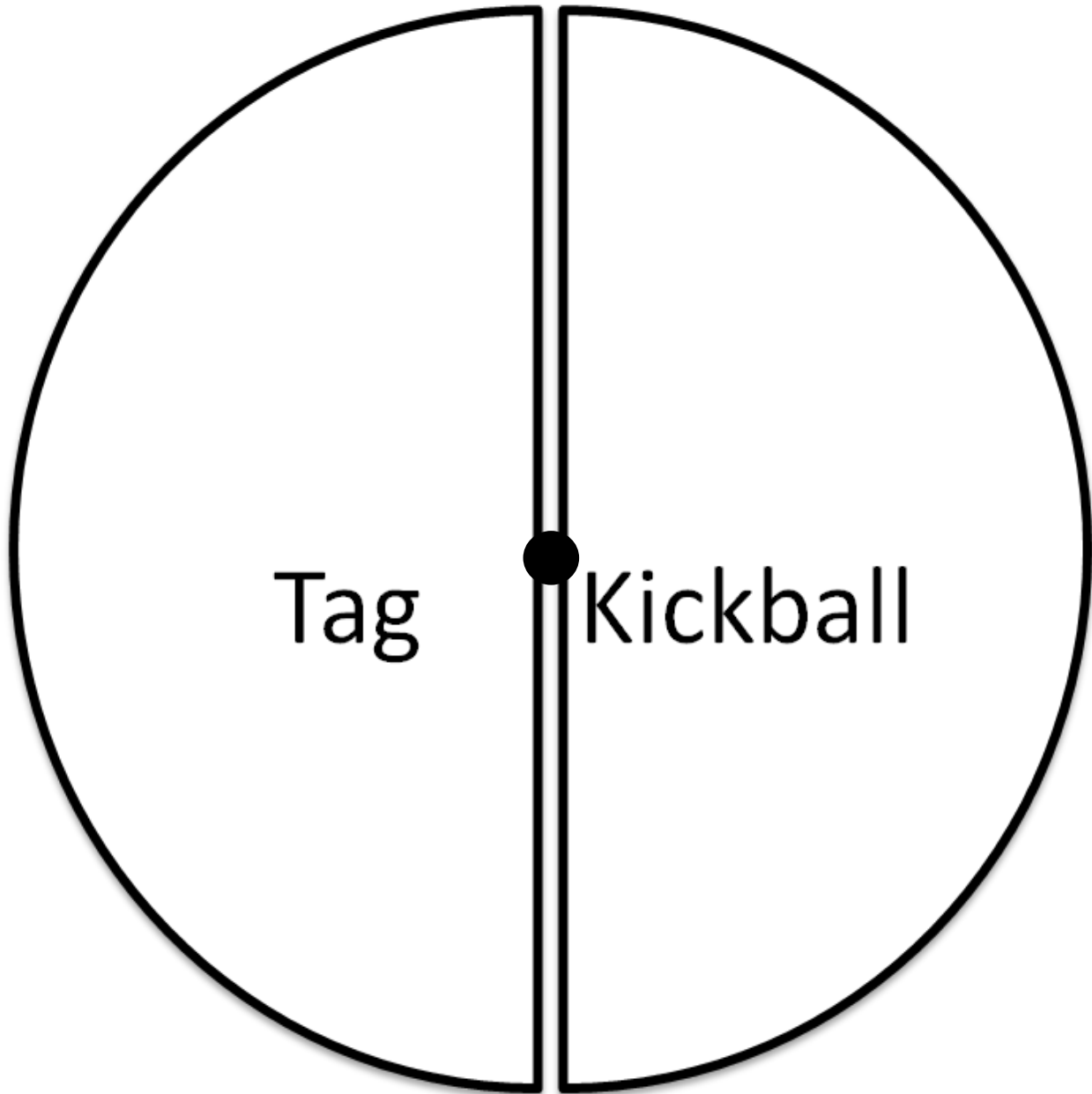
Extensions and Connections (for all students)

- Have students exchange Dessert Spinners with a friend. Ask them to repeat the experiments and data collection with the new spinners.
- Have students use graphing skills to create bar graphs, pictographs, or picture graphs of their data.
- Ask students to make a fair spinner and an unfair spinner with two dessert selections on each. Have them make generalizations about these spinners, using today’s vocabulary.

Strategies for Differentiation

- Assist students who have difficulty holding the pencil and spinning the paper clip by allowing them to use real spinners, writing on them with overhead projector markers.
- Have the whole class do the lesson together. Rather than spinning 15 times, let each student spin once and record the spin.
- Challenge students by asking them to make their Dessert Spinner unfair. Allow them to investigate how this could be possible.

Recess Game Spinner

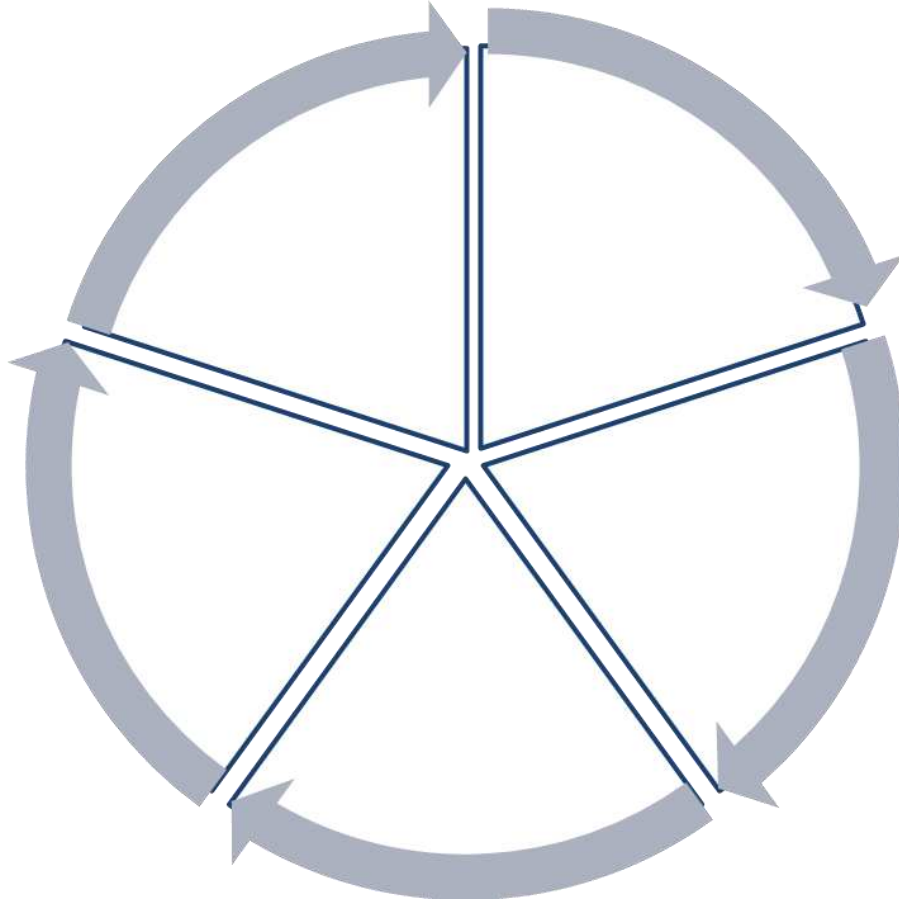


Dessert Spinner

Name _____



Choices: Pie, Cake, Cookies, Ice Cream, Popsicle, Cupcake, Nothing



What are the five *possible outcomes* for this spinner? _____

What is the *probability* that you will spin cookies? _____

What is the *probability* that you will spin cake? _____

Dessert Data

Name _____

EXPERIMENT 1

Record each spin in one box. Fill all of the boxes. Then, answer the questions.

Which dessert did you spin the most? _____

Which dessert did you spin the least? _____

Were any of the desserts spun an equal number of times? _____

Which dessert do you predict you will spin the most in Experiment 2? _____



EXPERIMENT 2

Record each spin in one box. Fill all of the boxes. Then, answer the questions.

Which dessert did you spin the most? _____

Which dessert did you spin the least? _____

Were any of the desserts spun an equal number of times? _____

Did Experiment 1 and Experiment 2 have the same results? _____

How were they similar or different? _____
