

Grade 2 Clarifying Lessons: Spinning Sums

OLD Resources. These resources have NOT yet been updated to align with the revised elementary mathematics TEKS. These revised TEKS were adopted by the Texas State Board of Education in 2005, with full implementation scheduled for 2006–07. These resources align with the original TEKS that were adopted in 1998 and should be used as a starting point only.

What is a Clarifying Lesson?

A model lesson teachers can implement in their classroom. Clarifying Lessons combine multiple TEKS statements and may use several Clarifying Activities in one lesson. Clarifying Lessons help to answer the question "What does a complete lesson look like that addresses a set of related TEKS statements, and how can these TEKS statements be connected to other parts of the TEKS?"

TEKS Addressed in This Lesson

Number, operation, and quantitative reasoning: 2.2A, 2.3A

Probability and statistics: 2.11A, B, C

Underlying processes and mathematical tools: 2.13A, B; 2.14

Materials

- copies of spinners
- large paper clips
- markers
- one inch or two centimeter grid paper

Lesson Resources

A Collection of Math Lessons from Grades 1 through 3 by Marilyn Burns and Bonnie Tank

Lesson Overview

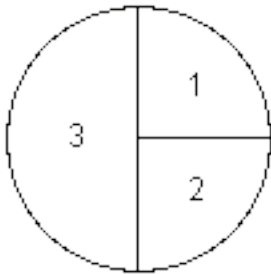
Students collect data by spinning two spinners and creating sums, organize the data, and make conclusions from the data.

Mathematics Overview

Students use ideas of sampling, possible outcomes, probability, and fractions to make conclusions about the expected results of spinning two spinners and making sums.

Set-up (to set the stage and motivate the students to participate)

1. Have each student mark a spinner like this:



2. Ask students what results they think they would get after spinning the spinner many times, and why. (2.2A, 2.11C, 2.14)
3. Have each student spin the spinner and record the results until one of the numbers has occurred 10 times. (2.13A)
4. Have students work with partners to translate their results onto a bar graph on the grid paper (one square colored per number spun), cut the bars apart, and glue them onto a class bar graph to show the class's results. (2.11A)
5. Discuss the results represented on the class bar graph. (2.11B, 2.13B)
6. Discuss the following situation: Suppose you and your partner each spin your spinner at the same time, and you record the sum of the two numbers that are spun. What results would you expect to get after doing that several times? Why? (2.3A)
7. Have students work in pairs to perform the experiment (spinning two spinners and recording the sum of the two numbers spun), record their results on a bar graph, cut apart the bars, and glue them onto a class bar graph. (2.11A, 2.13A)
8. Discuss the class's results. (2.11B, 2.13B)

Teacher Notes (to personalize the lesson for your classroom)**Guiding Questions (to engage students in mathematical thinking during the lesson)**

For spinning a single spinner:

- What number do you think will occur most often? Why? (2.2A, 2.11C, 2.14)
- How do you think the arrangement of the space on the spinner might affect the outcomes? (2.2A)

- How can we record our data? What other ways can we think of? Which of these ways do you think would work the best? What does each method of recording show us that the others do not? (2.11A, 2.13A, 2.14)
- Do you see a pattern in the data? Do your data match your predictions? (2.11B, 2.13B)
- Why do you think the data turned out the way it did? (2.14)
- Do the class's data look the same as your data? Why or why not? (2.11B, 2.14)

For spinning two spinners to make a sum:

- How are you going to record your data? (2.13B)
- How many different sums are possible? (2.3A)
- Do you expect any sum to occur more often than any other? Why or why not? (2.2A, 2.3A, 2.14)
- How do you think the arrangement of the space on the spinner might affect these outcomes? Why? (2.2A, 2.14)
- Do you see a pattern in the data? Do your data match your predictions? (2.11B, 2.13B)
- Why do you think the data turned out the way it did? (2.14)
- Do the class's data look the same as your data? Why or why not? (2.11B, 2.14)
- If you spun the spinners several times for another set of sums, would you get the same results? Why or why not? (2.11B, 2.14)

Teacher Notes (to personalize the lesson for your classroom)

Summary Questions (to direct students' attention to the key mathematics in the lesson)

To determine students' understanding of the display of class data, ask questions such as:

- What conclusions can you make from the combined data of the whole class? (2.11A, B)
- Did the class data support your prediction? If not, how was it different? (2.11B, 2.14)

To have students explore the relationship of the sizes of the spaces on the spinners to the experimental results, ask questions such as:

- When you were spinning just one spinner, why do you think some numbers occurred so many more times than others? (2.2A, 2.3A, 2.14)
- Did any numbers occur about the same number of times? Would you expect any of them to? Why or why not? (2.2A, 2.3A, 2.14)
- When you and your partner were spinning two spinners, why do you think the sum _____ occurred so often? (2.2A, 2.3A, 2.14)

To determine what big ideas about probability that students are taking away from the activity, ask questions such as:

- If you repeated the experiment about the sums, what would you expect to be the same? (The same sums would probably happen more often.) What different? (You wouldn't get exactly the same number of each sum.) (2.11C)
- What did you learn from this activity? (2.11B)
- What questions can't be answered from your data? (2.11B)

Teacher Notes (to personalize the lesson for your classroom)

Assessment Task(s) (to identify the mathematics students have learned in the lesson)

- Give students a spinner and have them predict the possible outcomes and a reasonable pattern to expect in the results.
- Give students a set of results (perhaps some graphed data) and have them choose or design a spinner that would be likely to produce those results.

Teacher Notes (to personalize the lesson for your classroom)

Extension(s) (to lead students to connect the mathematics learned to other situations, both within and outside the classroom)

- Students can compare your results with another group's.
- Students can try the experiments with a different kind of spinner (e.g. putting the numbers in different places, making different-sized sections, putting different numbers on the spinners).

- Students can repeat their trials to see if they get the same results.
- Students can design a spinner that would give whole number sums from 4 through 8 when spun twice and determine by experimenting which sum happens most often.

Teacher Notes (to personalize the lesson for your classroom)