

Probability with Tiles

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GLE/EALR: EALR 1: The student understands and applies concepts and procedures from number sense.

GLE 1.1.1. Understand the concept of rational numbers.

GLE 1.1.2. Understand the relative values of rational numbers.

GLE 1.1.4. Understand the concept of direct proportion.

GLE 1.4.2. Understand and apply the procedures for determining the probabilities of multiple trials.

GLE 1.4.3. Apply data collection processes to inform, persuade, or answer questions.

Grade Level: 7

Class Time to Complete: 45-60 minutes

Materials: 10 tiles in the colors of red, blue, and yellow, a small can, student worksheets for all students in the class, overhead of the worksheet. Optional: calculators.

Procedure:

- Preparation: Place 10 colored tiles in a can. Some should be red, some should be blue, some should be yellow. Hand out to students the accompanying data sheet. (Calculators may be used.)
- Inform students there are 10 tiles in the can, and there is at least one tile of each of three colors (red, blue, yellow) in the can. Tell them they are going to try to figure out how many of each color tile the can holds.
- Review with students the probability that when a tile is pulled out it will be of a particular color. For instance, what is the probability that a tile will be blue? that it will be red? that it will be yellow?
- Review with students appropriate ways to write probabilities- using colons, fractions, decimals, and percents. In this activity we will be focusing on writing equivalent fractions, decimals, and percents.
- Introduce/ review how to tally. Students will tally how many of each colored tile are pulled out in three separate trials.

- A student will pull out a tile and tell the class what color was pulled out. All students will mark the color in the tally column for the appropriate color. The student must replace the tile into the can. Repeat the process nine more times, for a total of ten pulls of tiles from the can. Students will convert their tallies to fractions, decimals, and percents of the total number of colors pulled. Check student work. When students are finished, record answers on the overhead for students' self-correction. They will then make written predictions about how many tiles of each color they think are in the can. Ask students to share predictions, as well as their reasoning for their predictions. Record on the overhead.

- Follow the same procedure through two more complete trials. (During the second trial, fractions should be made based on 20 pulls. During the third trial, fractions should be made based on 30 pulls.) Encourage students to explain changes they have made in predictions as the trials progress.

- For the last trial, students will pull out each tile, but they will not be replaced in the can. Students will record exactly how many of each colored tile there were in the can. Have students discuss the difference between actual and predicted results.

- For written reflection and then discussion by students:

Did your predictions of how many tiles were of each color stay the same throughout the trials, or did they change? Why is that?

How did your predictions match the actual number of colored tiles in the can? Why is that?

Did the number of each colored tile pulled in each trial match the number of actual tiles there were? How do you explain that?

What other observations did you make about the probability of pulling a particular colored tile?



Names :

Trial 1:

red

blue

yellow

Tally

Fraction

Decimal

Percent

Prediction:

Trial 2:

red

blue

yellow

Tally

Fraction

Decimal

Percent

Prediction:

Trial 3:

red

blue

yellow

Tally

Fraction

Decimal

Percent

Prediction:

Actual:

red

blue

yellow

Tally
