

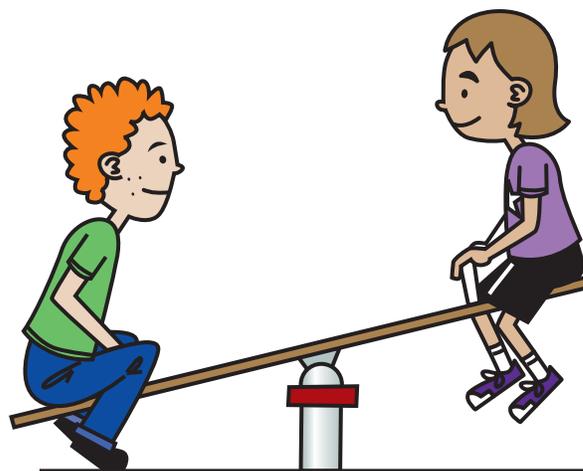
Bridges in Mathematics

Grade 4 Unit 8

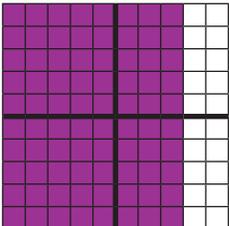
Playground Design

In this unit your child will:

- Learn about simple machines such as pendulums, levers, inclined planes, and wheels
- Research and evaluate considerations for playground features and safety through reading, online research, and student surveys
- Design and build model playgrounds to meet specific criteria and constraints
- Work with scaled drawings and dimensions
- Research project costs to determine an appropriate budget proposal
- Practice math skills developed earlier this year, especially those involving measurement, money, and geometry



In the work for this unit, your child will gather data for the playground project and practice math skills by solving problems like those shown below.

PROBLEM	COMMENTS
<p>The rectangle below represents the surface of a seesaw at 1:50 scale. What is the length, width, and area of the seesaw at full scale?</p> <div style="text-align: center;"> $6 \text{ cm} \times 50 = 300 \text{ cm}$  $1 \text{ cm} \times 50 = 50 \text{ cm}$ </div> <div style="text-align: center; margin-top: 20px;"> $1 \text{ cm} \times 6 \text{ cm} = 6 \text{ cm}^2$ $50 \text{ cm} \times 300 \text{ cm} = 15,000 \text{ cm}^2$ </div>	<p>The length and width of the full-scale space can be determined by applying the scale directly. The area, however, must be calculated either from the full-scale dimensions (as shown at left) or by multiplying the scaled area by the square of 50:</p> $6 \text{ cm}^2 \times 50^2 =$ $6 \text{ cm}^2 \times (50 \times 50) =$ $6 \text{ cm}^2 \times 2,500 = 15,000 \text{ cm}^2$
<p>Shade in the grid to show a decimal number greater than $\frac{3}{4}$ that has a 0 in the hundredths place.</p> <div style="text-align: center;">  0.80 </div>	<p>In many problems during this unit, students are given a set of constraints and asked to provide a solution within those constraints. In these cases, there are often multiple solutions. In this case, three numbers meet the criteria suggested: 0.80, 0.90, and 1.00. All of these numbers will fit on the grid, are greater than $\frac{3}{4}$ (0.75), and have a 0 in the hundredths place.</p>

FREQUENTLY ASKED QUESTIONS ABOUT UNIT 8

Q: Why is so much of the work for this unit review?

A: At this point in the school year, fourth graders have studied all of the mathematical skills they'll need to progress into fifth grade successfully. Most of the skills introduced in this unit involve data collection and analysis, research and planning, and model design. This unit also gives students the opportunity to apply many of the skills they developed over the course of the year. Applying mathematical skills to novel problems and new contexts is a sophisticated process that challenges students to take their mathematical skills and understandings to a higher level.

Q: My child talks about the “new playground” being developed in school. Is a new playground being built?

A: This project is hypothetical. While students' work in this unit would make a good foundation for an actual construction project, the scope of the work does not include building a real playground.