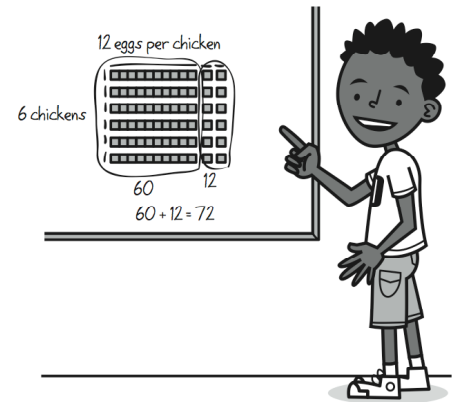


Grade 3, Unit Seven: Three-Dimensional Geometry, Multiplication & Data Analysis

In this unit your child will:

- recognize, describe, and compare 3-dimensional shapes
- find the surface area and volume of rectangular prisms (blocks)
- multiply 2-digit numbers by 1-digit numbers
- find the mode, range, and mean (average) of a set of a data



Your child will learn and practice these skills by solving problems like those shown below. Keep this sheet for reference when you're helping with homework.

Problem	Comments
<p>Which block has both faces shown below? Use pictures and/or words to show how you can tell.</p> <div style="text-align: center;"> <p>Face 1 Face 2</p> </div> <div style="text-align: center;"> </div> <p>All of the blocks have Face 1, but the block I circled is the only one with a large square face like Face 2.</p>	<p>Students identify, describe, and classify different 3-dimensional shapes in terms of their faces, edges, and vertices (corners). As they work with blocks, they are better able to visualize the shapes and analyze them mentally. Later in the unit, students calculate the surface area and volume of rectangular prisms. (The first three shapes at left are rectangular prisms.)</p>
<p>Solve 26×8 in two ways.</p> $ \begin{aligned} 26 \times 8 &= 25 \times 8 + 1 \times 8 \\ &= 200 + 8 \\ &= 208 \end{aligned} $ <p style="text-align: center;">or</p> $ \begin{aligned} 26 \times 8 &= 20 \times 8 + 6 \times 8 \\ &= 160 + 48 \\ &= 160 + 40 + 8 \\ &= 208 \end{aligned} $	<p>Both strategies shown here involve breaking the number 26 into more manageable parts to multiply by 8. In the first example, the student relied on a familiarity with multiplying by 25, probably based on experiences with money. In the second example, the student broke 26 into component parts based on place value. The pictures students use in this unit help them understand why strategies like these work.</p> <div style="text-align: center;"> </div>

At the grocery store, the oranges are sold in 5-pound bags. The table below shows how many oranges were in five different bags.

bag	bag a	bag b	bag c	bag d	bag e
number of oranges	8	7	7	6	7

What is the range in the number of oranges per bag? Show your work.

$$8 - 6 = 2$$

What is the mode for the number of oranges per bag? Explain how you know.

7, because it is the most common number of oranges in a bag.

What is the mean (average) number of oranges per bag?

$$7 + 7 + 7 + 6 + 8 = 21 + 14 = 35$$

$$35 \div 5 = 7$$

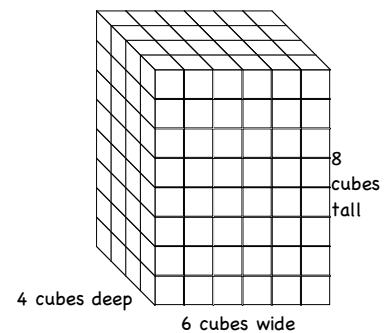
7 is also the mean number of oranges per bag.

The numbers in this example are simple, but the student demonstrates a good understanding of range, mode, and mean (average). Students review these data analysis concepts and skills in this unit to prepare for Unit Eight when they will build their own model bridges, collect extensive data on those bridges, and then analyze that data.

Frequently Asked Questions about Unit Seven

Q: Why does this unit cover three such different topics: geometry, multiplication, and data analysis?

A: The work students do finding the volume of rectangular prisms leads naturally to multiplying larger numbers, because they need to calculate, for example, how many cubic centimeters are in 8 layers of 24 cubic centimeters altogether. (See the diagram at right.) The last two lessons in the unit review data analysis skills and concepts to prepare students for the exciting work they will do building their own model bridges and collecting and analyzing extensive data on those bridges in Unit Eight.



Q: When will students learn the algorithm for multiplying larger numbers?

A: The lessons on multiplying larger numbers in this unit are a preview of what's to come in Grades 4 and 5. In Grade 4 *Bridges*, students will continue to use pictures and a variety of strategies to multiply larger numbers. Fourth grade teachers also have the option to use supplemental materials provided with the curriculum to teach the standard algorithm if your state or district expects fourth graders to master it. The standard algorithm is explicitly taught and practiced in Grade 5 *Bridges*.