Unit 1 Family Support Materials

Introducing Multiplication

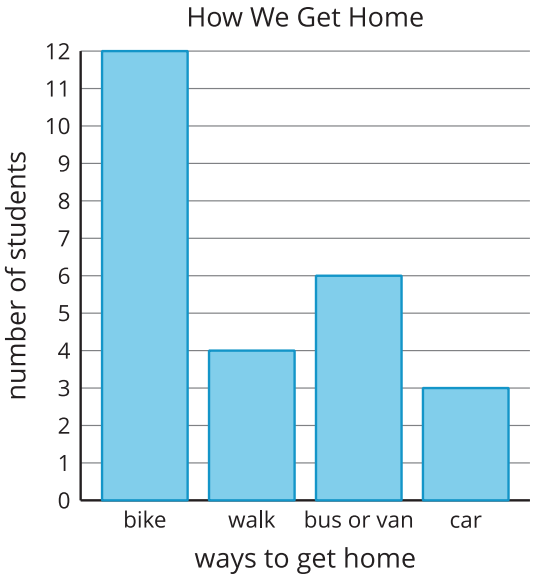
In this unit, students represent and interpret data on scaled bar graphs and picture graphs. Then they are introduced to the concept of multiplication.

Section A: Interpret and Represent Data on Scaled Graphs

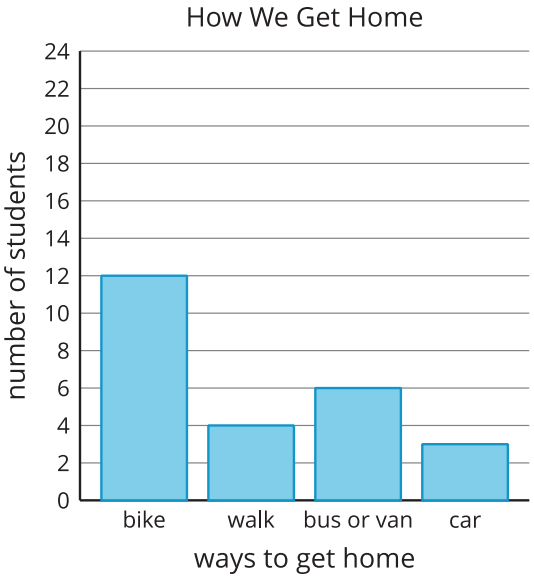
In this section, students make sense of and draw picture graphs and bar graphs. They see that each picture in a picture graph, or each step on a bar graph, can represent more than one object. They work with scales of 2, 5, and 10 (where each picture or step represents 2 objects, 5 objects, or 10 objects).

Students use the scaled bar graphs to solve "how many more" and "how many fewer" problems in which the numbers are within 100.

bar graph



scaled bar graph

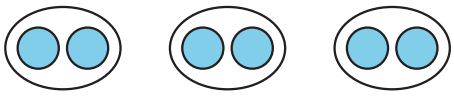


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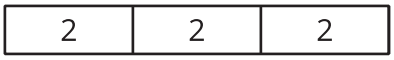
Section B: From Graphs to Multiplication

In this section, students use the idea of "each picture represent multiple objects" to think about equal-size groups and learn about multiplication. They create drawings and tape diagrams to represent situations that involve equal-size groups.

drawing of equal groups



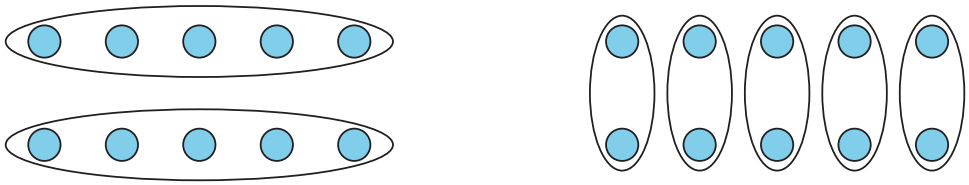
tape diagram



Students learn that we can write 3×2 to represent these drawings and interpret the expression to mean “3 groups of 2.” Later, they write equations to represent multiplication situations. They also find unknown factors and products in equations (for example, $4 \times ? = 12$ and $5 \times 4 = ?$).

Section C: Represent Multiplication with Arrays and the Commutative Property

In this section, students connect the equal-group representations to arrays. An *array* is a set of objects organized in rows and columns. Students look for equal-size groups in arrays:



Students write expressions to represent arrays. For example, to represent the arrays shown here, we can write 2×5 (or "2 groups of 5") and 5×2 (or "5 groups of 2").

Try it at home!

Near the end of the unit, ask your third grader to find examples of equal-size groups or arrays at home, or use household objects to make such groups or arrays.

Questions that may be helpful as they work:

- How many groups are there?
- How many are in each group?
- Represent the objects, with a drawing, a diagram, and an expression. How does the drawing and the diagram match the expression?

Solution:
Answers may vary.

Sample response:

- There are 2 groups.
- There are 6 eggs in each group.
- The drawing and the diagram match the expression 2×6 because each representation shows that there are 2 groups, with 6 objects in each group.

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