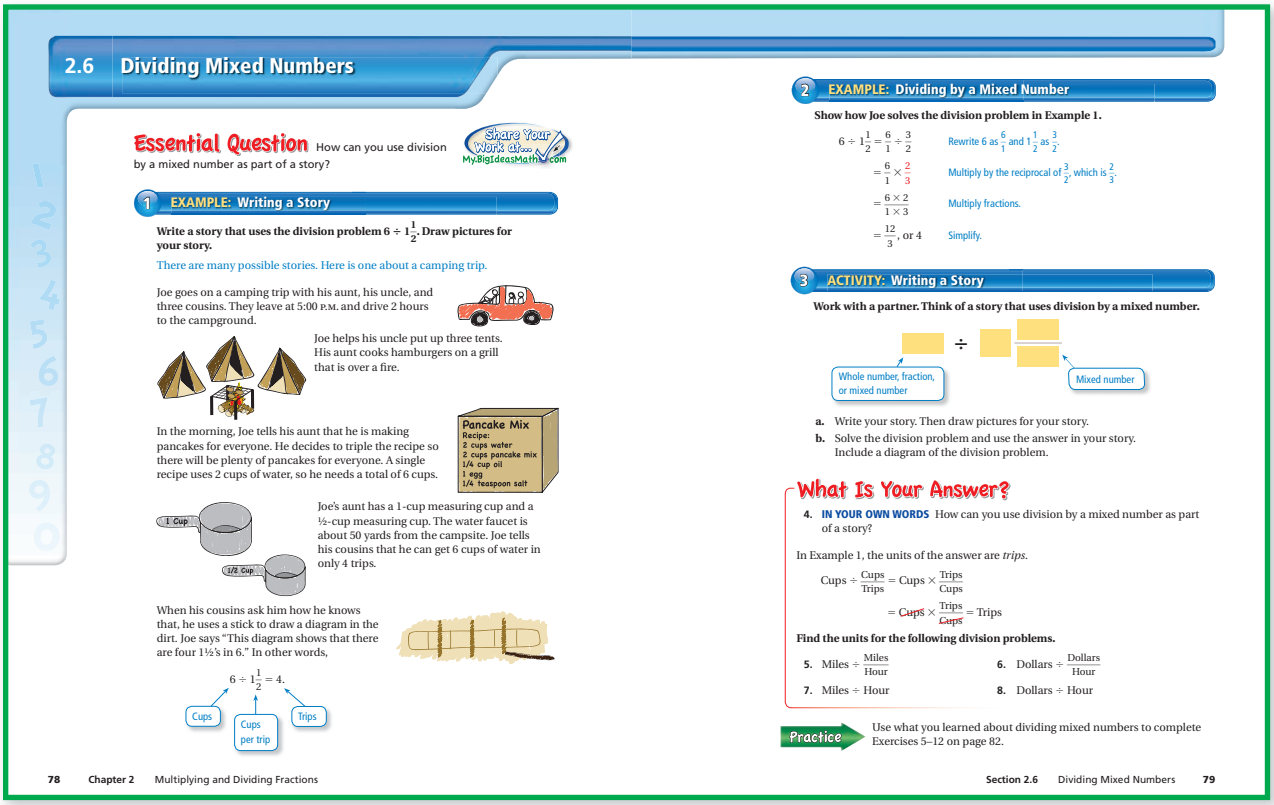
Math, Writing, and Literacy

More and more, educators are realizing that a critical part of learning mathematics is *writing* about the use of mathematics in everyday life. We built writing into every section of the program. Sometimes, the instruction is as simple as "explain your reasoning." At other times, we have devoted an entire day's activity to "writing a story." Here's an example from Grade 6, Section 2.6.

- Begin by giving students an example.

> **Write a story that uses the division problem $6 \div 1\frac{1}{2}$. Draw pictures for your story.**

- Then ask students to work with a partner to write and illustrate their own story.



2.6 Dividing Mixed Numbers

Essential Question How can you use division by a mixed number as part of a story?

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1 EXAMPLE: Writing a Story

Write a story that uses the division problem $6 \div 1\frac{1}{2}$. Draw pictures for your story.

There are many possible stories. Here is one about a camping trip.

Joe goes on a camping trip with his aunt, his uncle, and three cousins. They leave at 5:00 P.M. and drive 2 hours to the campground.

Joe helps his uncle put up three tents. His aunt cooks hamburgers on a grill that is over a fire.

In the morning, Joe tells his aunt that he is making pancakes for everyone. He decides to triple the recipe so there will be plenty of pancakes for everyone. A single recipe uses 2 cups of water, so he needs a total of 6 cups.

Pancake Mix
Recipe:
2 cups water
2 cups pancake mix
1/4 cup oil
1 egg
1/4 teaspoon salt

1 Cup
1/2 Cup

Joe's aunt has a 1-cup measuring cup and a ½-cup measuring cup. The water faucet is about 50 yards from the campsite. Joe tells his cousins that he can get 6 cups of water in only 4 trips.

When his cousins ask him how he knows that, he uses a stick to draw a diagram in the dirt. Joe says "This diagram shows that there are four 1½'s in 6." In other words,

$6 \div 1\frac{1}{2} = 4.$

Cups · Cups per trip · Trips

2 EXAMPLE: Dividing by a Mixed Number

Show how Joe solves the division problem in Example 1.

$6 \div 1\frac{1}{2} = \frac{6}{1} \div \frac{3}{2}$ Rewrite 6 as $\frac{6}{1}$ and $1\frac{1}{2}$ as $\frac{3}{2}$.

$= \frac{6}{1} \times \frac{2}{3}$ Multiply by the reciprocal of $\frac{3}{2}$, which is $\frac{2}{3}$.

$= \frac{6 \times 2}{1 \times 3}$ Multiply fractions.

$= \frac{12}{3}$, or 4 Simplify.

3 ACTIVITY: Writing a Story

Work with a partner. Think of a story that uses division by a mixed number.

Whole number, fraction, or mixed number ÷ Mixed number

a. Write your story. Then draw pictures for your story.
b. Solve the division problem and use the answer in your story. Include a diagram of the division problem.

What Is Your Answer?

4. **IN YOUR OWN WORDS** How can you use division by a mixed number as part of a story?

In Example 1, the units of the answer are *trips*.

$\text{Cups} \div \frac{\text{Cups}}{\text{Trips}} = \text{Cups} \times \frac{\text{Trips}}{\text{Cups}}$

$= \cancel{\text{Cups}} \times \frac{\text{Trips}}{\cancel{\text{Cups}}} = \text{Trips}$

Find the units for the following division problems.

5. Miles $\div \frac{\text{Miles}}{\text{Hour}}$
6. Dollars $\div \frac{\text{Dollars}}{\text{Hour}}$
7. Miles ÷ Hour
8. Dollars ÷ Hour

Practice Use what you learned about dividing mixed numbers to complete Exercises 5–12 on page 82.

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Grade 6, Section 2.6