4-12: Learning Goals

- Let's solve problems about fractional lengths.

4-12-1: Multiplication Strategies

Find the product mentally.

$19 \cdot 14$

4-12-2: How Many Would It Take? (Part 1)

1. Jada was using square stickers with a side length of $\frac{3}{4}$ inch to decorate the spine of a photo album. The spine is $10\frac{1}{2}$ inches long. If she laid the stickers side by side without gaps or overlaps, how many stickers did she use to cover the length of the spine?

2. How many $\frac{5}{8}$-inch binder clips, laid side by side, make a length of $11\frac{1}{4}$ inches?

3. It takes exactly 26 paper clips laid end to end to make a length of $17\frac{7}{8}$ inches.

   a. Estimate the length of each paper clip.

   b. Calculate the length of each paper clip. Show your reasoning.
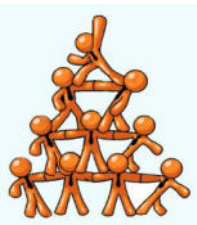
4-12-3: How Many Times As Tall or Fast?

1. A second-grade student is 4 feet tall. Her teacher is $5\frac{2}{3}$ feet tall.

   a. How many times as tall as the student is the teacher?

   b. What fraction of the teacher's height is the student's height?

2. Find each quotient. Show your reasoning and check your answer.

   a. $9 \div \frac{3}{5}$

   b. $1\frac{7}{8} \div \frac{3}{4}$

3. Write a division expression that can help answer each of the following questions. Then answer the question. If you get stuck, draw a diagram.

   a. A runner ran $1\frac{4}{5}$ miles on Monday and $6\frac{3}{10}$ miles on Tuesday. How many times her Monday's distance was her Tuesday's distance?

   b. A cyclist planned to ride $9\frac{1}{2}$ miles but only managed to travel $3\frac{7}{8}$ miles. What fraction of his planned trip did he travel?
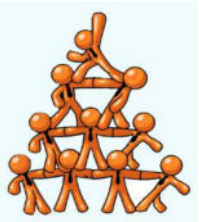
4-12-4: Comparing Paper Rolls
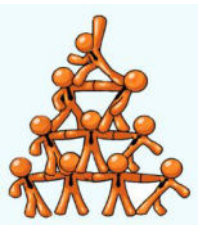
4-12-4: Comparing Paper Rolls

The photo shows a situation that involves fractions.

1. Use the photo to help you complete the following statements. Explain or show your reasoning for the second statement.

   a. The length of the long paper roll is about _____ times the length of the short paper roll.

   b. The length of the short paper roll is about _____ times the length of the long paper roll.

2. If the length of the long paper roll is $11\frac{1}{4}$ inches, what is the length of each short paper roll?

   Use the information you have about the paper rolls to write a multiplication equation or a division equation for the question. Note that $11\frac{1}{4} = \frac{45}{4}$.

3. Answer the question. If you get stuck, draw a diagram.

4-12: Lesson Synthesis

In this lesson, we used division to solve problems that involve fractional lengths. For example: How many $\frac{5}{8}$-inch paper clips, laid end to end, are in a length of $12\frac{1}{2}$ inches? Review how we can interpret such problems.

"Here is another question: 'What is the length of one stick if 9 sticks, laid end to end, make $12\frac{3}{8}$-inch?' How does division help us answer it?"

We also saw that division can help us compare two lengths and find out how many times one is as long as the other. For example, suppose one hiking trail, Trail A, is $1\frac{1}{8}$ miles and another, Trail B, is $\frac{3}{4}$ miles.

4-12: Learning Targets

- I can use division and multiplication to solve problems involving fractional lengths.

4-12-5: Building a Fence

A builder was building a fence. In the morning, he worked for $\frac{2}{5}$ of an hour. In the afternoon, he worked for $\frac{9}{10}$ of an hour. How many times as long as in the morning did he work in the afternoon?

Write a division equation to represent this situation, then answer the question. Show your reasoning. If you get stuck, you can draw a diagram.