Model Division of Decimals

S 5.3(F) Represent quotients of decimals to the hundredths, up to four-digit dividends and two-digit whole number divisors, using objects and pictorial models, including area models.

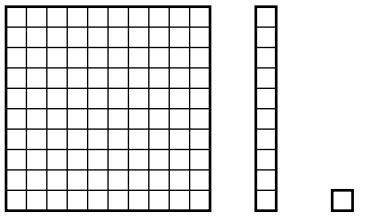
Understand the TEKS

Did You Know?

NUMBER SENSE The equation $0.36 \div 6 = 0.06$ means there is six-hundredths of a group of 6 in 0.36. $0.36 \div 0.06 = 6$ means there are 6 groups of six-hundredths in 0.36.

You can use models to help you find the **quotient** of decimals. The quotient is the answer to a division problem. Recall that when you divide a number, called the **dividend**, by another number, called the **divisor**, you are finding how many groups of the divisor are in the dividend. Therefore, $12 \div 6 = 2$ means there are 2 groups of 6 in 12.

You can use base-10 models to represent division problems. Sometimes the models of 1 and 0.1 show the hundredths, and sometimes the models are solid squares or rods.

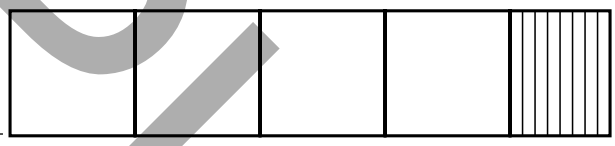


Betsy has 4.8 quarts of soup. She is going to distribute the soup equally into 12 containers. How many quarts of soup will each container have?

Use base-10 models to represent the division problem.

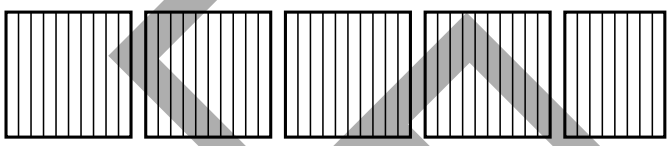
Step 1 Use base-10 models to show the dividend, 4.8.

There are 4 ones and 8 tenths.



Step 2 How many 12s are in 4.8? _____

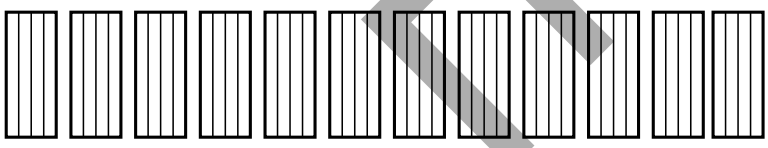
Step 3 Change the ones to tenths.
There are 48 tenths.



Step 4 Divide 48 tenths by the divisor, 12.

What is 48 divided by 12?

_____



Step 5 Determine the quotient.

4 ones and 8 tenths divided by 12 is equal to _____.

How many quarts of soup will each container have? _____

★ Practice

DIRECTIONS Read each question. Then circle the letter for the correct answer.

1 Which step could be part of modeling the division problem 55.12 ÷ 26?

A Use base-10 models to model the divisor.

B Find how many groups of 55 are in 26 and represent with ones squares.

C Split the remaining 2 ones squares into tenth bars.

D Find how many groups of 26 tenths bars are in 31 tenths bars and 2 hundredths squares.

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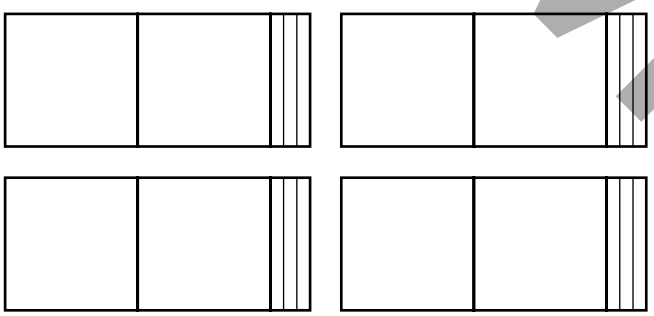
2 Use the model to answer the question.



Which statement is **NOT** true?

F 2.3 ÷ 4 = 9.2

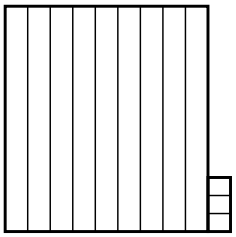
G There are 2 groups of four in the dividend.

H The model was divided into 12 tenths.

J There are 3 groups of four tenths in 12 tenths.

3 A 7.44-mile-long trail is divided into 8 equal parts. Which model represents the division problem?

A



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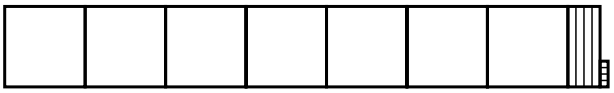

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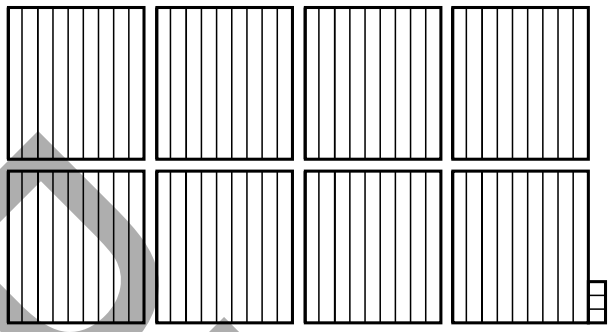

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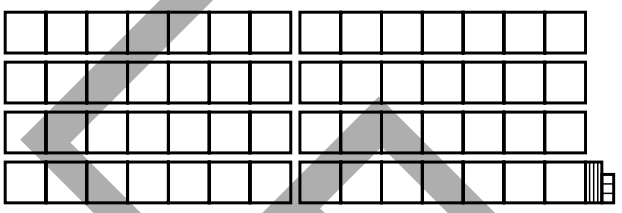


CRITICAL THINKING

Solve each problem.

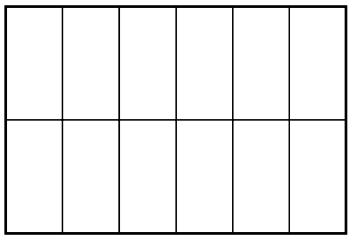
1. Fred wishes to determine how many 45-pound bags of fertilizer he has if there are 4,485 pounds of fertilizer in his barn. He divides 45 by 4,485 to get his answer. Explain why Fred's answer is incorrect and give an estimate for the actual solution.

2. Samantha sells each painting she draws for $25.50. Every order, no matter how many paintings it includes, is also charged a fee of $25 for handling costs. A customer has a $100 bill and wishes to purchase 3 paintings. Does the customer have enough money? Explain your answer.

3. Shawn drives into town at a steady speed to get some groceries. He notices that it is 11:55 A.M. when he leaves his house and 12:45 P.M. when he arrives in town. What is his speed in miles per hour if he drives 40 miles? Explain.

REAL-WORLD CONNECTION

4. Rosa is getting help painting a wall from her friends. Barbra paints $\frac{1}{6}$ of the wall, Sasha paints $\frac{1}{12}$ of the wall, and Tamara paints $\frac{1}{3}$ of the wall. How much of the wall is left for Rosa to paint and why? Fill in the model with each friend's initial to show their contributions.



5. A bird is flying in the sky at a height of $50\frac{1}{2}$ feet and then goes up $4\frac{3}{4}$ feet. Finally, the bird drops down 6 inches. At what height in the sky does the bird end up? Show your work.

6. Roberta adds $\frac{1}{4}$ teaspoon of sugar to each of several containers of juice. She uses a total of 8 teaspoons of sugar. She uses the given model to illustrate this situation. Explain why this is or is not a valid model. How many containers of juice was she be able to fill?