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# Unit 4, Lesson 11: Using an Algorithm to Divide Fractions

1. Select **all** statements that show correct reasoning for finding $\frac{14}{15} \div \frac{7}{5}$.

   A. Multiplying $\frac{14}{15}$ by 5 and then by $\frac{1}{7}$.

   B. Dividing $\frac{14}{15}$ by 5, and then multiplying by $\frac{1}{7}$.

   C. Multiplying $\frac{14}{15}$ by 7, and then multiplying by $\frac{1}{5}$.

   D. Multiplying $\frac{14}{15}$ by 5 and then dividing by 7.

2. Clare said that $\frac{4}{3} \div \frac{5}{2}$ is $\frac{10}{3}$. She reasoned: $\frac{4}{3} \cdot 5 = \frac{20}{3}$ and $\frac{20}{3} \div 2 = \frac{10}{3}$.

   Explain why Clare's answer and reasoning are incorrect. Find the correct quotient.

3. Find the value of $\frac{15}{4} \div \frac{5}{8}$. Show your reasoning.

4. Kiran has $2\frac{3}{4}$ pounds of flour. When he divides the flour into equal-sized bags, he fills $4\frac{1}{8}$ bags. How many pounds fit in each bag?

   Write a multiplication equation and a division equation to represent the question and then answer the question. Show your reasoning.

5. Divide $4\frac{1}{2}$ by the following unit fractions.

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a. $\frac{1}{8}$                    b. $\frac{1}{4}$                    c. $\frac{1}{6}$

(from Unit 4, Lesson 10)

6. After charging for $\frac{1}{3}$ of an hour, a phone is at $\frac{2}{5}$ of its full power. How long will it take the phone to charge completely?

   Decide whether each equation can represent the situation.

   a. $\frac{1}{3} \cdot ? = \frac{2}{5}$                    c. $\frac{2}{5} \div \frac{1}{3} = ?$

   b. $\frac{1}{3} \div \frac{2}{5} = ?$                    d. $\frac{2}{5} \cdot ? = \frac{1}{3}$

(from Unit 4, Lesson 9)

7. Elena and Noah are each filling a bucket with water. Noah's bucket is $\frac{2}{5}$ full and the water weighs $2\frac{1}{2}$ pounds. How much does Elena's bucket weigh if her bucket is full and her bucket is identical to Noah's?

   a. Write multiplication and division equations to represent the question.

   b. Draw a diagram to show the relationship between the quantities and to answer the question.
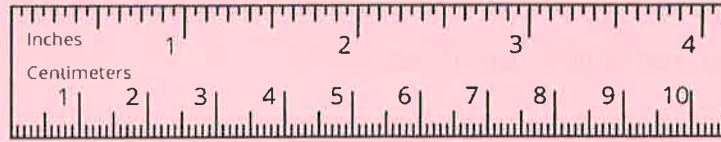
(from Unit 4, Lesson 8)

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# Unit 4, Lesson 12: Fractional Lengths

1. One inch is around $2\frac{11}{20}$ centimeters.



a. How many centimeters long is 3 inches? Show your reasoning.

b. What fraction of an inch is 1 centimeter? Show your reasoning.

c. What question can be answered by finding $10 \div 2\frac{11}{20}$?

2. A zookeeper is $6\frac{1}{4}$ feet tall. A young giraffe in his care is $9\frac{3}{8}$ feet tall.

a. How many times as tall as the zookeeper is the giraffe?

b. What fraction of the giraffe's height is the zookeeper's height?

3. A rectangular bathroom floor is covered with square tiles that are $1\frac{1}{2}$ feet by $1\frac{1}{2}$ feet. The length of the bathroom floor is $10\frac{1}{2}$ feet and the width is $6\frac{1}{2}$ feet.

a. How many tiles does it take to cover the length of the floor?

b. How many tiles does it take to cover the width of the floor?

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4. The Food and Drug Administration (FDA) recommends a certain amount of nutrient intake per day, called the "daily value." Food labels usually show percentages of the daily values for several different nutrients—calcium, iron, vitamins, etc.

In $\frac{3}{4}$ cup of oatmeal, there is $\frac{1}{10}$ of the recommended daily value of iron. What fraction of the daily recommended value of iron is in 1 cup of oatmeal?

Write a multiplication equation and a division equation to represent the question, and then answer the question. Show your reasoning.

(from Unit 4, Lesson 11)

5. What fraction of $\frac{1}{2}$ is $\frac{1}{3}$? Draw a tape diagram to represent and answer the question. Use graph paper if needed.

(from Unit 4, Lesson 7)

6. Noah says, "There are $2\frac{1}{2}$ groups of $\frac{4}{5}$ in 2." Do you agree with his statement? Draw a tape diagram to show your reasoning. Use graph paper, if needed.
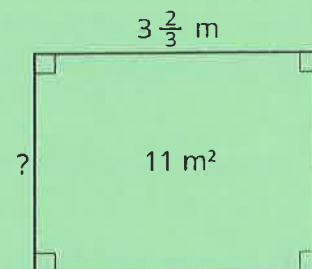
(from Unit 4, Lesson 6)

# Unit 4, Lesson 13: Rectangles with Fractional Side Lengths

1.  a. Find the unknown side length of the rectangle if its area is 11 m². Show your reasoning.



$3\frac{2}{3}$ m

? | 11 m²

b. Check your answer by multiplying it by the given side length ($3\frac{2}{3}$). Is the resulting product 11? If not, revisit your work for the first question.

2. A worker is tiling the floor of a rectangular room that is 12 feet by 15 feet. The tiles are square with side lengths $1\frac{1}{3}$ feet. How many tiles are needed to cover the entire floor? Show your reasoning.

3. A television screen has length $16\frac{1}{2}$ inches, width $w$ inches, and area 462 square inches. Select **all** equations that represent the relationship of the side lengths and area of the television.

A. $w \cdot 462 = 16\frac{1}{2}$

B. $16\frac{1}{2} \cdot w = 462$

C. $462 \div 16\frac{1}{2} = w$

D. $462 \div w = 16\frac{1}{2}$

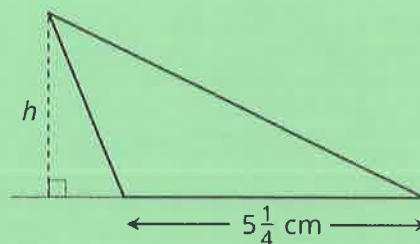E. $16\frac{1}{2} \cdot 462 = w$

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# Unit 4, Lesson 14: Fractional Lengths in Triangles and Prisms

1. Clare is using little wooden cubes with edge length $\frac{1}{2}$ inch to build a larger cube that has edge length 4 inches. How many little cubes does she need? Explain your reasoning.

2. The triangle has an area of $7\frac{7}{8}$ cm² and a base of $5\frac{1}{4}$ cm.

   What is the length of $h$? Explain your reasoning.



3.   a. Which of the following expressions can be used to find how many cubes with edge length of $\frac{1}{3}$ unit fit in a prism that is 5 units by 5 units by 8 units? Explain or show your reasoning.

   i. $(5 \cdot \frac{1}{3}) \cdot (5 \cdot \frac{1}{3}) \cdot (8 \cdot \frac{1}{3})$

   ii. $5 \cdot 5 \cdot 8$

   iii. $(5 \cdot 3) \cdot (5 \cdot 3) \cdot (8 \cdot 3)$

   iv. $(5 \cdot 5 \cdot 8) \cdot (\frac{1}{3})$

   b. Mai says that we can also find the answer by multiplying the edge lengths of the prism and then multiplying the result by 27. Do you agree with her statement? Explain your reasoning.

4. A builder is building a fence with $6\frac{1}{4}$-inch-wide wooden boards, arranged side-by-side with no gaps. How many boards are needed to build a fence that is 150 inches long? Show your reasoning.