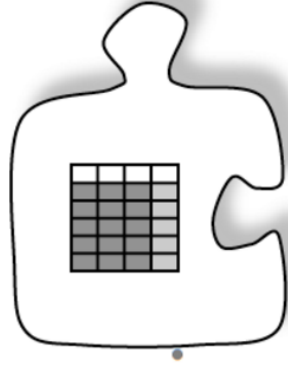


## 5.1.2 How big is it?

### Describing Parts of Parts



You have used percents, fractions, and decimals to represent portions of wholes. In this lesson, you will find portions of other portions. Specifically, you will find portions of fractions. As a team, you will create a complete description of how to show and name a portion of a portion. As you work with your team, ask these questions to aid your conversation:

How can we show a part of a fraction?

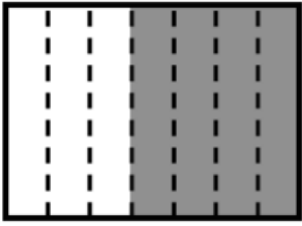
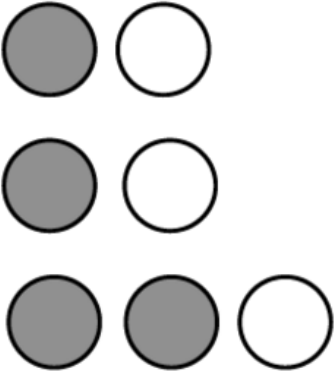
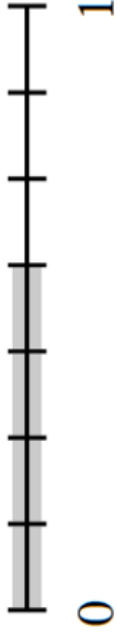
Is there another way to show it?

How does this new portion relate to the whole?

**5-9.** Grant, Oliver, and Sonya were working on the problem below.

Jenny's house is  $\frac{4}{7}$  of a mile from the bus stop. If Jenny had to run  $\frac{2}{3}$  of the way from her house to the bus stop, what portion of a mile did Jenny run?

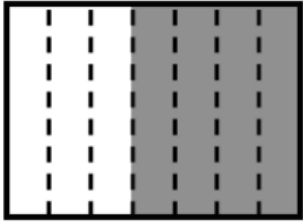
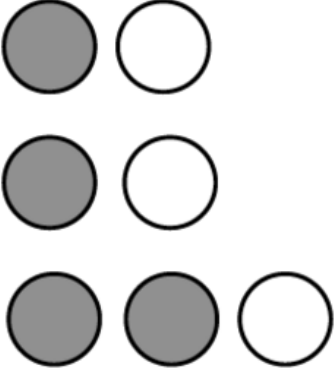
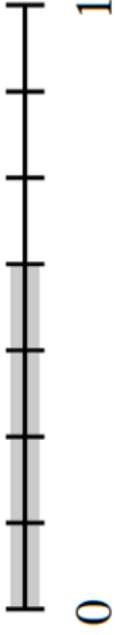
They each started by visualizing  $\frac{4}{7}$  in their own way. Each of their diagrams is shown below.

| Grant's Drawing  | Oliver's Drawing:  | Sonya's Drawing:  |
|--|--|---|
|  |  |  |

- a. Did Jenny run more or less than half a mile? Discuss this question with your team and record your answer. Be ready to explain your reasoning.



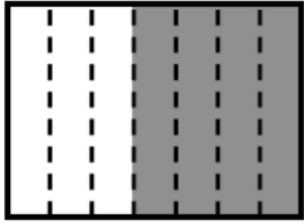
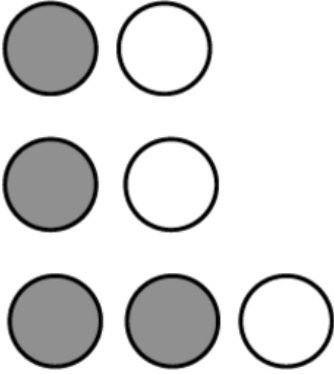
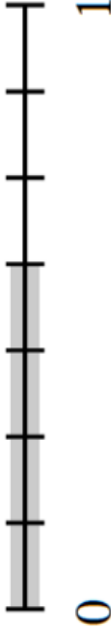
**5-9.** Grant, Oliver, and Sonya were working on the problem below.

| Grant's Drawing   | Oliver's Drawing:   | Sonya's Drawing:  |
|---|---|---|
|  |  |  |

b. Copy all three diagrams and work with your team to figure out how to use each diagram to show  $\frac{2}{3}$  of  $\frac{4}{7}$ .



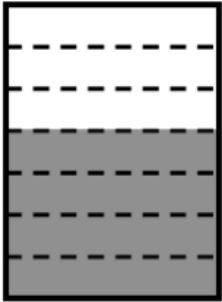
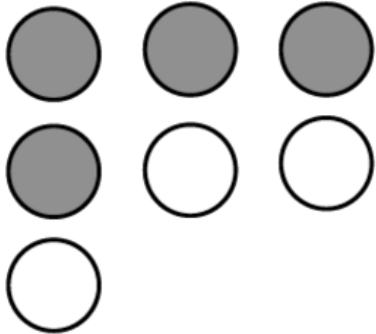
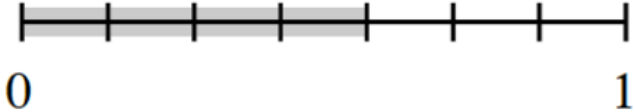
**5-9.** Grant, Oliver, and Sonya were working on the problem below.

| Grant's Drawing   | Oliver's Drawing:   | Sonya's Drawing:  |
|---|---|---|
|  |  |  |

c. Which of the drawings does your team prefer? Using the diagram your team prefers, explain how it can be used and why you chose the drawing that you did.



5-9. Grant, Oliver, and Sonya were working on the problem below.

| Grant's Drawing   | Oliver's Drawing:  | Sonya's Drawing:  |
|---|--|---|
|  |  |  |

d. What fraction of a whole is  $\frac{2}{3} \cdot \frac{4}{7}$  ?

Choose one of the drawings from above to model it. Draw it below:

Multiply the two fractions:

$$\frac{2}{3} \cdot \frac{4}{7} =$$



How does your model support your answer above?

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## 5-10. PARTS OF PARTS: Part One

Representing a portion of another portion can be thought of as finding a “part of a part.” For each of the parts of parts described below, work with your team to figure out what part of the whole is described. For each problem, show at least one picture or diagram that helps you make sense of the problem.

a.  $\frac{3}{5}$  of  $\frac{2}{7}$

b.  $\frac{1}{2} \cdot \frac{1}{10}$

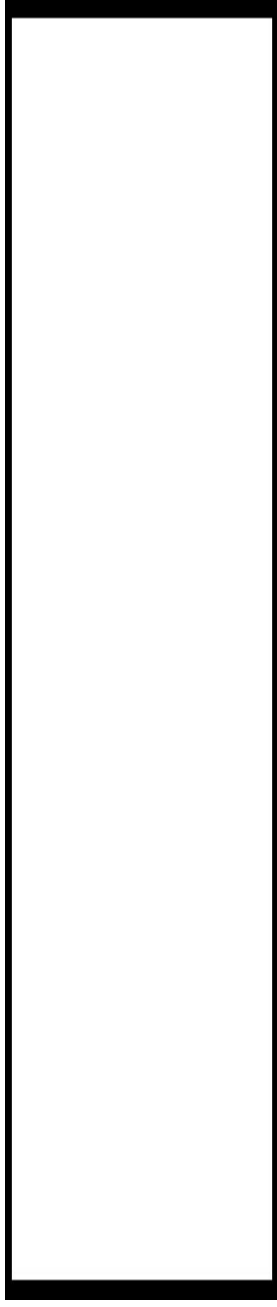
**5-11.** Grace and William were wondering if *one half of a quarter* would be the same as *one quarter of a half*. “*But half of something is 50% and a quarter is the same as 25%, so if that’s true, then 25% of 50% should be the same as 50% of 25%. Something seems wrong with that to me,*” Grace said.

Investigate Grace and William’s question by completing parts (a) through (c) below.

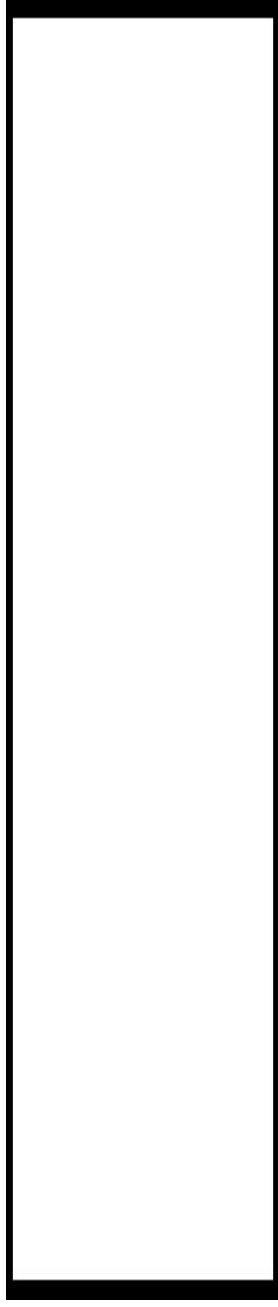
- a. Draw a picture that shows one half of one fourth.
- b. Draw a picture that shows one fourth of one half.
- c. Write a note to Grace and William explaining how these two values compare and why the result makes sense.

**5-14.** Find each of the parts of parts described below. For each one, create a diagram that demonstrates your thinking.

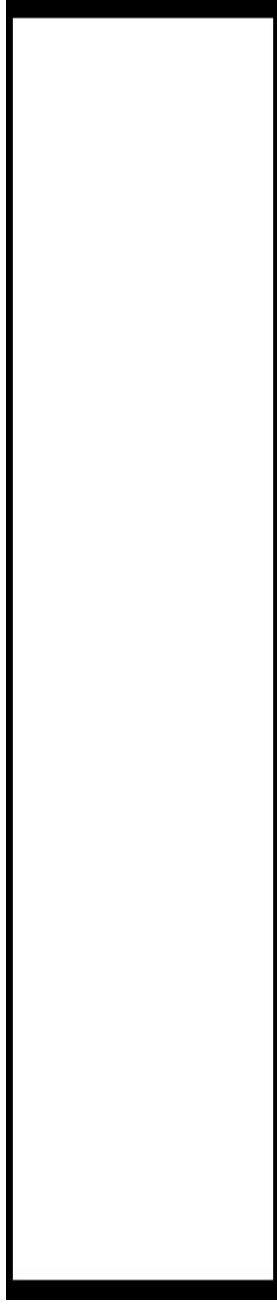
a.  $\frac{3}{4}$  of  $\frac{5}{8}$



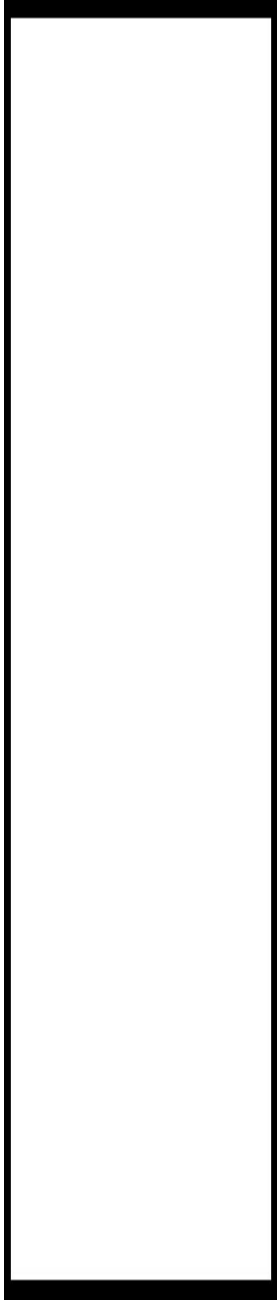
b.  $\frac{3}{8} \cdot \frac{2}{3}$



c.  $\frac{2}{3}$  of  $\frac{7}{8}$



d.  $\frac{4}{5} \cdot \frac{3}{7}$



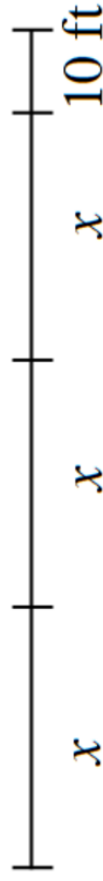


**5-16.** Kelani wants to cut a piece of rope into several equally-sized pieces and then have a 10-foot piece remaining. Write an algebraic expression to represent the length of each rope shown in the diagrams below. Then use the equation you create to help Kelani figure out how long to make each of the equally-sized pieces.

a. A 25-foot piece of rope (find  $n$ ).



b. A 310-foot piece of rope (find  $x$ ).



c. A 13-foot piece of rope (find  $j$ ).

