6.1.2 What does it mean to divide?

Fractions as Division Problems

By now, you are probably very good at working with basic division problems. For example, you can easily find how many teams of 3 students could be formed from a class of 36 students. You can probably calculate quickly how many eggs would be in each carton if 24 eggs were divided evenly into 2 cartons. Most likely, you have also learned how to do more complicated division calculations such as $208 \div 16$ or $346.76 \div 10.25$ using methods like long division.

6-1. FAIR SHARES (Revisited)

Your group is the number of people at your tables currently. (Ex. If your table has 4 people, that is the number of people you base this problem on.)

How would your team share **4** pieces of licorice?

What about **10** pieces of licorice?

How would you answer each question above if you had one person leave your group?

How are division problems like these related to dividing pieces of licorice evenly among several people? Can your methods and thinking in one situation be used to find solutions in the other situations? Think about the focus questions below as you work with your team on the problems in this lesson.

What does this represent?

How does this connect to what we already know how to do?

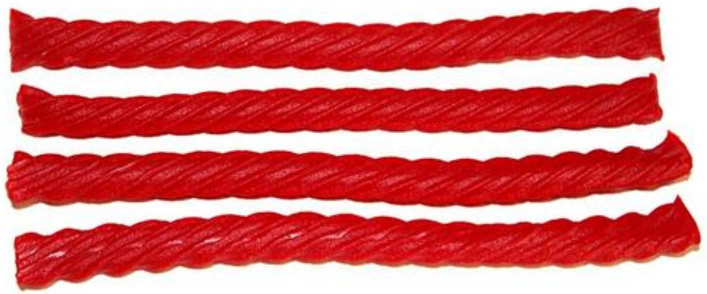
How can we apply this strategy?

6-15. When dividing licorice among her teammates, one of the students in Ms. Yu's class exclaimed, *"Whoa! We divided 7 pieces of licorice among 5 people and each person got 1 whole piece and* $\frac{2}{5}$ *of another. That's* $\frac{7}{5}$ *of a whole. Is this just a coincidence?"*

What do you think? Does it make sense that the answer to 7 divided by 5 is $\frac{7}{5}$?

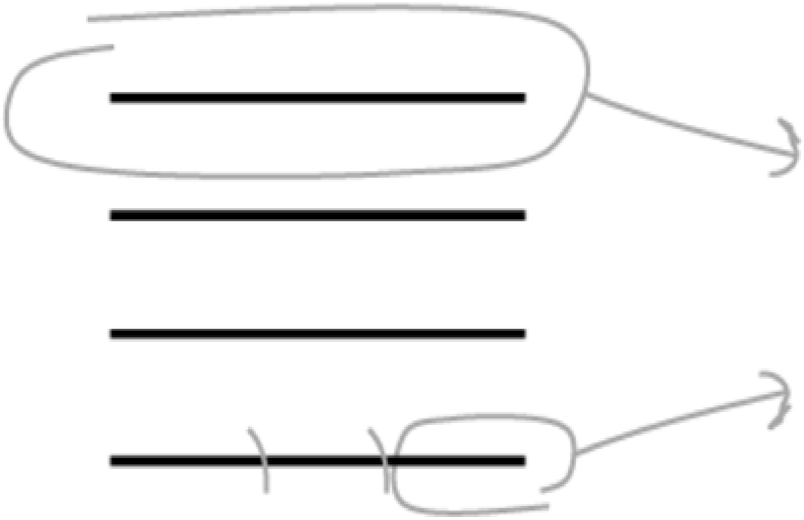
Ms. Yu's students decided to explore this question using smaller numbers and asked, *"What if 4 pieces of licorice were shared among 3 people?"*

"What if 4 pieces of licorice were shared among 3 people?"

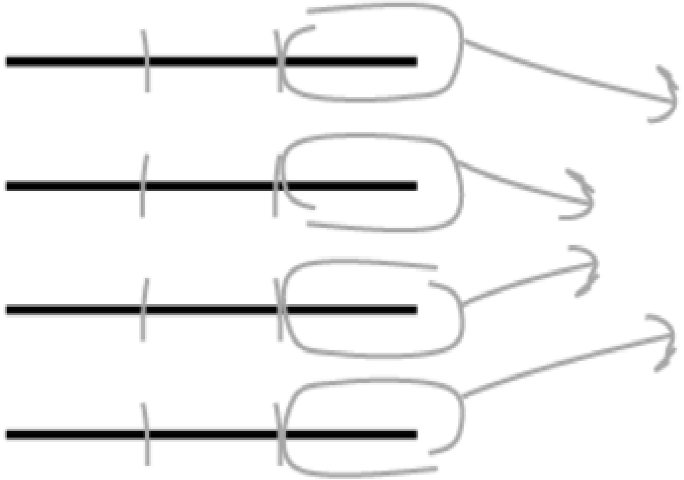


Three different teams drew the diagrams shown below.

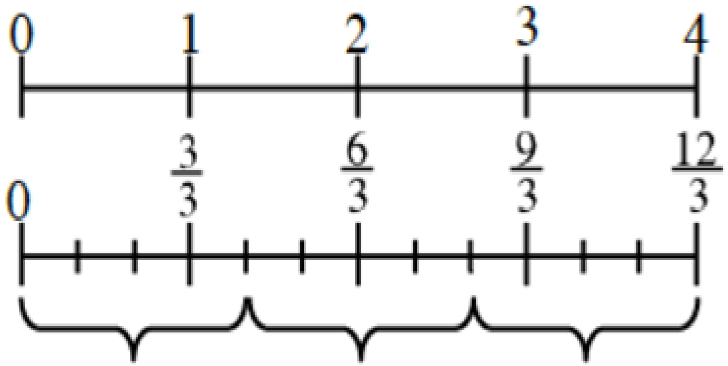
Team A's diagram



Team B's diagram



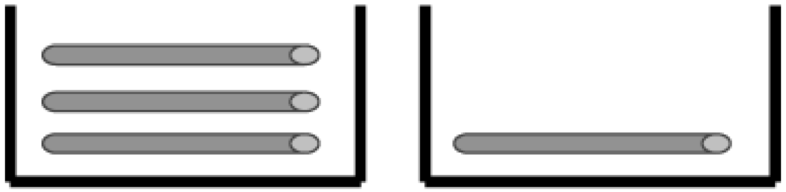
Team C's diagram



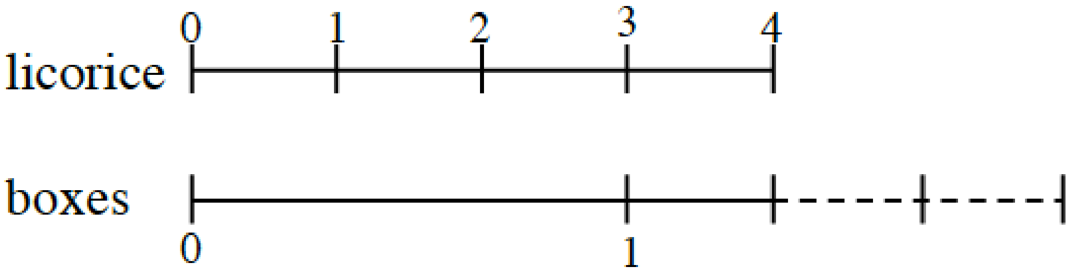
Work with your team to make sense of these diagrams. Did each team get the same answer? How was each team thinking about dividing the licorice? Be prepared to share your ideas with the whole class.

6-16. Teams D and E were thinking about the "4 pieces of licorice divided by 3" problem, but they drew the diagrams shown below.

"*Our diagram looks very different!*" Team D said. "*Our question was, 'If each package holds 3 pieces, how many packages will we need?'*"



Team D



Team E

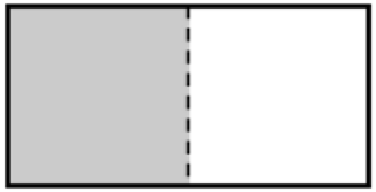
Work with your team to make sense of these new diagrams. What problem were the teams working on? What is the answer to Team D's question? Where can you see the answer in the diagrams? Explain.

6-22. Ashley painted $\frac{1}{2}$ of her bathroom ceiling. Alex painted $\frac{1}{4}$ of the ceiling in the school library.

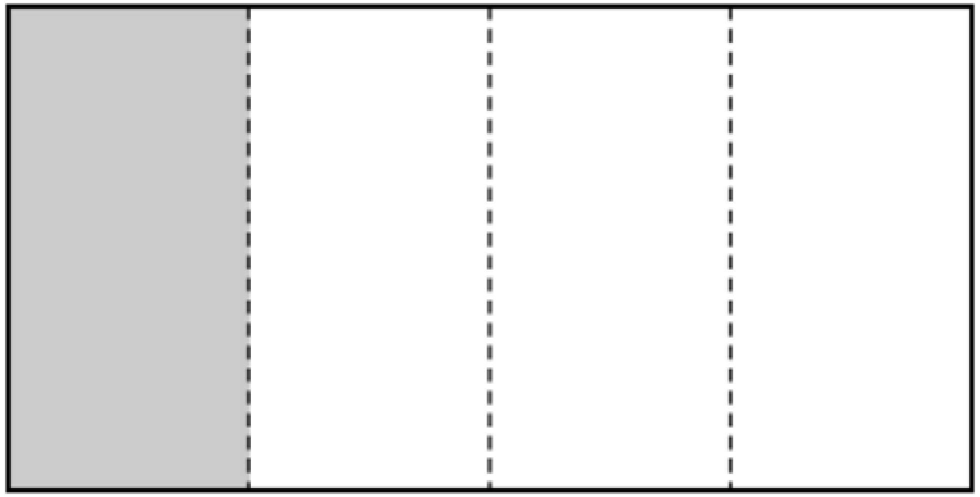
a. Who painted the larger fraction of their ceiling?

b. If the drawings at right accurately represent the relationship between the ceiling sizes, who painted more ceiling area?

c. Explain why the answers for parts (a) and (b) should be different.



$\frac{1}{2}$ of bathroom ceiling



$\frac{1}{4}$ of library ceiling

6-23. Together, Lucia and Ben have saved $150. Lucia saved $2 for every $1 that Ben saved. How much money did each person save?

6-24. Find each of the products in parts (a) through (d) below.

a. $\frac{2}{3} \cdot \frac{2}{7}$

b. $\frac{4}{7} \cdot \frac{3}{4}$

c. $\frac{10}{13} \cdot \frac{3}{5}$

d. $1\frac{2}{3} \cdot \frac{1}{5}$

6-25. Write the points on the graph below as ordered pairs. (x , y)

→ Note: Some numbers ***will not*** be integers.

A (,   )

B (,   )

C (,   )

D (,   )

E (,   )