Relate Situations to Fractional Quotients

What You Need

• Recording Sheet

Check Understanding Write two different expressions that represent 5 cans of cat food shared equally among 4 cats.

What You Do

- 1. Take turns. Choose a situation on the **Recording Sheet.**
- 2. Look at the expressions beside the situation. Decide if each expression represents the situation (*Yes*) or does not represent the situation (*No*).
- **3.** Explain your reasoning. If your partner agrees, circle *Yes* or *No* on the **Recording Sheet.** Score 1 point for each correct answer.
- **4.** If your partner does not agree and is correct, your partner scores 1 point.
- **5.** The partner with the most points at the end of the game wins.

I know when I divide a whole number by a larger whole number, the quotient will be a fraction less than 1.

When I divide a whole number by a smaller whole number, the quotient may be a smaller whole number or a fraction greater than 1.

Go Further!

Choose an expression from the **Recording Sheet** that is a *No*. Rewrite the expression to change it to a *Yes*. Exchange papers with your partner to check.



Partner B _____

Relate Situations to Fractional Quotients

Situation	Expression		
	10 ÷ 4	Yes	No
10 friends share 4 pizzas	<u>4</u> 10	Yes	No
6 pounds of bird seed in 8 bags	6 ÷ 8	Yes	No
	$\frac{1}{8} \times 6$	Yes	No
5 students share 9 pieces of poster board	<u>9</u> 5	Yes	No
	$1\frac{4}{5}$	Yes	No
15 sheets of stickers shared by 12 students	15 ÷ 12	Yes	No
	$\frac{1}{12} \times 15$	Yes	No
20 hikers share 3 bags of chips	$\frac{20}{3}$	Yes	No
	$\frac{1}{20} \times 3$	Yes	No
7 art students share 3 yards of ribbon	<u>7</u> 3	Yes	No
	7 ÷ 3	Yes	No

Write a Word Problem

What You Need

• Recording Sheet

Check Understanding Solve. Use an equation and a model. A recipe calls for $\frac{2}{3}$ cup chopped pecans. If Donna makes $2\frac{1}{2}$ times the recipe, how many cups of chopped pecans does she

need?

What You Do

- Choose a model on the **Recording Sheet.** (Both partners work on the same problem at the same time.)
- 2. On a separate sheet of paper, write a word problem using the model and the numbers. Use any measure for the unit.
- **3.** Partners change papers and solve each other's problem.
- **4.** Compare your answers. The word problems are different, but the numbers and the answers should be the same.
- 5. Repeat until all the models are used.

When you use an area model to multiply fractions, does it matter which factor goes on the left or on top?

O

Go Further!

Choose two problems from the **Recording Sheet.** Use estimation or number sense to check the answer. Talk about the reasonableness of the answers.



Partner A	
-----------	--

Partner B _____

Write a Word Problem



Real-World Multiplication Situations

What You Need

• Recording Sheet

Check Understanding Lilly has $1\frac{2}{3}$ pounds of apples. She uses $\frac{3}{4}$ of the apples in a dessert. How many pounds of apples did she use? Show your work.

What You Do

- Take turns. Choose a problem on the Recording Sheet to solve. Partners read the problem together.
- **2.** Work on a separate sheet of paper. Multiply to find the answer.
- **3.** Your partner sketches a model for the problem.
- **4.** Compare, agree on the equation, and write the equation on the **Recording Sheet.**
- Repeat until all of the problems are solved. Partners should alternate between writing the multiplication expression and sketching a model.

Erin drew a model of her cell phone. The <u>actual</u> cell phone is $5\frac{3}{4}$ <u>inches</u> long. The <u>model</u> is $\frac{1}{3}$ <u>of the length</u> of the actual phone. What is the length of the model? Think: I need to find a fraction of a fraction. What is $\frac{1}{3}$ of $\frac{23}{4}$?

Go Further!

Write a simple multiplication word problem for your partner to solve. Your partner writes a multiplication expression and the solution. Check your partner's work.



Partne	er A

Partner B_____

Real-World Multiplication Situations

Jasmine walked 15 blocks. She stopped at the store $\frac{3}{5}$ of the way into her walk. How many blocks did she walk to the store?	There is $\frac{2}{3}$ of a pizza left. Wakami eats $\frac{1}{4}$ of it. How much of the pizza did he eat
X =	×=
Daria has $2\frac{1}{3}$ yards of fabric for pillows. She uses $\frac{1}{2}$ of the fabric for one pillow. How much of the fabric did she use?	The Wilsons have two dogs. One dog weighs $6\frac{1}{2}$ pounds. The other dog weighs $1\frac{1}{4}$ times more. How much does the other dog weigh?
X =	×=
A paving stone measures $3\frac{5}{6}$ inches by 6 inches. What is the area of the paving stone?	A fruit punch recipe calls for $1\frac{1}{2}$ cups of orange juice. Julian wants to make $2\frac{1}{2}$ times the recipe. How many cups of orange juice will he need?
×=	×=



Find the Division Expression

What You Need

- number cube
- 10 game markers in one color
- 10 game markers in a different color
- Game Board

What You Do

- **1.** Take turns. Roll the number cube. Read the quotient next to that toss in the table.
- 2. Identify a division expression on the **Game Board** that has that quotient.
- **3.** Your partner uses multiplication to check your answer.
- **4.** If you are correct, place your game marker on the expression. If you are incorrect or if there are no spaces that have the quotient you roll, your turn ends.
- **5.** Play until all of the expressions are covered. The winner is the partner with more game markers on the **Game Board** at the end of the game.

Check Understanding Write two division equations: one with the quotient 8 and one with the quotient $\frac{1}{9}$. Each equation should include one unit fraction and one whole number.

Toss	Quotient	
1	6	
2	<u>1</u> 16	
3	12	
4	<u>1</u> 10	
5	18	
6	$\frac{1}{6}$	

Go Further!

Work with your partner. You each write as many division expressions as possible that have a quotient 24. Then you each write as many division expressions as possible that have a quotient $\frac{1}{8}$. Exchange papers with your partner to check.



Partner B _____

Partner A

Find the Division Expression

NY K * * * W		* * * * * * * * *
$2 \div \frac{1}{3}$	$3 \div \frac{1}{6}$	$\frac{1}{8} \div 2$
$4 \div \frac{1}{3}$	$\frac{1}{5} \div 2$	$\frac{1}{4} \div 4$
$\frac{1}{2} \div 3$	$6 \div \frac{1}{2}$	$\frac{1}{2} \div 5$
A 9 ÷ 1/2 ∞	$\frac{1}{3} \div 2$	$3 \div \frac{1}{2}$
⁶ ₩0⋛ [÷] \$} [×] **	₩ ¥ Y 0 ₹ ₹ ζ	* * * W ///// Wod

Suppose the quotient is 15.

First I can think about division: whole number \div fraction or fraction \div whole number. Then I can think about a related multiplication problem: fraction \times whole number or whole number \times fraction. I can use factors of 15—1, 3, 5, and 15 to help me decide which numbers might be in the problem.



0