

LETTER HOME

Exploring Fractions

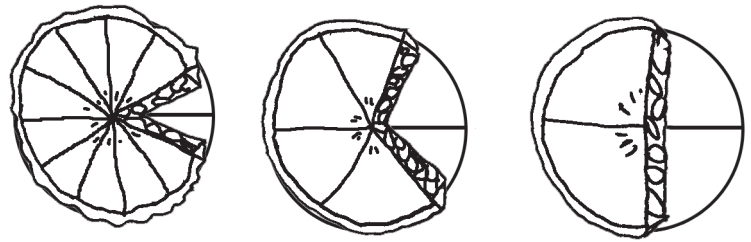
Dear Family Member:

The activities in this unit will help your child better understand fractions. Your child will explore the concept of a whole. Understanding the size of the whole is important to understanding the fractional parts of that whole. For example, a half gallon of milk is larger than a half cup of milk because a whole gallon is larger than a whole cup. On the other hand, it is also necessary to understand that the parts of one whole must be equal—one half must be the same size as the other half.

A third important idea is shown in the picture. The fewer pieces the pie is divided into, the larger each piece will be. Your child will use concrete models to name fractions, compare the size of fractions, and find equivalent fractions.

You can help your child learn about fractions with the following activities:

Look for Fractions. Point out places where fractions are used outside of school. Examples include preparing a recipe, measuring wood for a project, purchasing fabric, or in sales advertisements.



Pies divided into twelfths, sixths, and fourths.

Play Fraction Fill 1 or 2. The object of each game is to be the first team to earn 6 points by filling 6 unit wholes with fraction pieces. Directions, game boards, and spinners are in the *Student Activity Book* in Lesson 7.

Play Fraction Order. In this game, each player has a game board with six boxes. Players take turns drawing fractions from a deck of fraction cards and then placing the fraction in a box on the game board. Once a fraction is placed it cannot be moved. The goal is to be the first player to fill the game with fraction cards in order from smallest to largest. Directions, game boards, and fraction cards are in the *Student Activity Book* in Lesson 9.

$$\frac{5}{12}$$

$\frac{1}{8}$		$\frac{5}{10}$		$\frac{9}{12}$	
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Smallest

Largest

Math Facts and Mental Math

This unit continues the systematic review and assessment of the division facts.

Division Facts. Students review the division facts for the 9s to maintain and increase fluency and to learn to apply division strategies to larger numbers.

You can help your child review these facts using the flash cards that are sent home or by making a set of flash cards from index cards or scrap paper. Study facts in small groups each night. As your child goes through the flash cards, put the cards in three stacks: Facts I Know Quickly, Facts I Can Figure Out, and Facts I Need to Learn.

For Facts I Need to Learn, work on strategies for figuring them out. Good strategies include:

Start with the multiplication fact. If your child does not know the multiplication fact related to the division fact, start by developing strategies to solve that multiplication fact.

Reasoning from known facts. To solve $36 \div 9$, think $9 \times ? = 36$. $9 \times 4 = 36$ so $36 \div 9 = 4$.

Turn-around facts. To solve $45 \div 9$: I know $9 \times 5 = 45$. So $45 \div 9 = 5$.

For Facts I Can Figure Out, use the flash cards to practice the facts for fluency.

For Facts I Know Quickly, help your child use mental math strategies to divide 10s and 100s:
 $3200 \div 40 = 8$; $56,000 \div 8 = 7000$; $420 \div 6 = 70$.

Thank you for taking the time to talk with your child about what he or she is doing in math.

Sincerely,

Unit 8: Home Practice

Part 1 Triangle Flash Cards: 9s

Study for the quiz on the division facts for the nines. Take home your Triangle Flash Cards: 9s and your list of facts you need to study.

Ask a family member to choose one flash card at a time. He or she should cover one of the smaller numbers. (One of the smaller numbers is circled. The other has a square around it.) Solve a division fact using the two uncovered numbers. Ask your family member to sometimes cover the circled number and sometimes cover the number in the square.

Your teacher will tell you when the quiz on the nines will be.

Part 2 Multiplication

- Solve the following problems in your head. Remember to follow the proper order of operations.
 - $87 \times 0 =$ _____
 - $211 \times 1 =$ _____
 - $0 \times 1800 =$ _____
 - $1 \times 7898 =$ _____
 - $8 \times 0 + 8 =$ _____
 - $7 + 1 \times 10 =$ _____
 - $16 \times 1 - 7 =$ _____
 - $6 \times 1 - 2 \times 0 =$ _____
 - $20 - 0 \times 7 =$ _____
 - $20 \times 7 - 0 =$ _____
- Write all the multiples of 6 in order from 6 to 60. Explain why all the multiples of 6 are even numbers.

Part 3 Arithmetic Review

1. Solve the following problems using mental math or paper and pencil. Estimate to make sure your answers are reasonable. Use the *Multiplication Strategies Menu for Larger Numbers* in the *Student Guide Reference* section to help you.

A. $231 \times 4 =$

B. $409 \times 5 =$

C. $6283 \times 4 =$

D. $570 \times 5 =$

E. $70 \times 40 =$

F. $83 \times 50 =$

G. $8367 - 538 =$

H. $3807 - 797 =$

I. $3450 + 4750 =$

2. Explain your estimation strategy for Question 1C.

3. Choose two problems in Question 1 and explain how you can solve them using mental math.

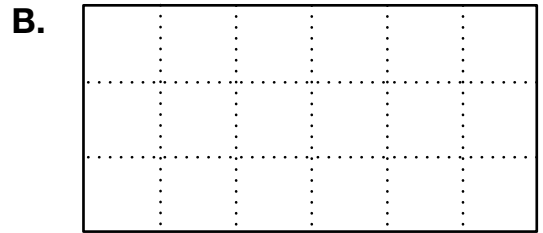
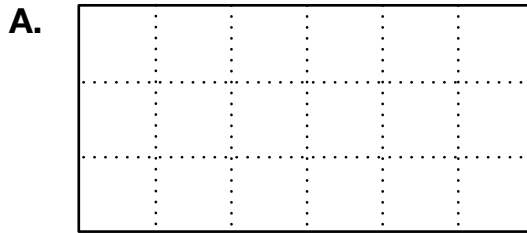
Part 4 Problem Solving

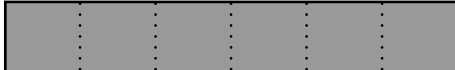
Solve the following problems. You may use mental math, paper and pencil, or a calculator.

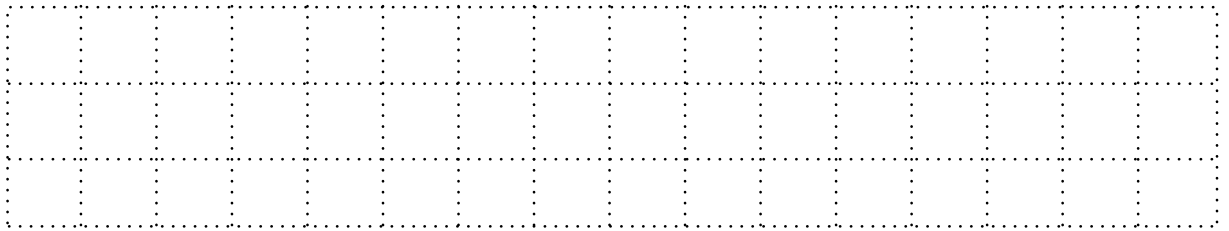
1. John's uncle is taking a test to be a cashier at a grocery store. He must show different ways to give 59¢ in change using exactly 10 coins. Show one way to do this. As a challenge, show a second way.
2. Each of 20 students in a 4th-grade class needs to sell 12 boxes of cookies for a school fund-raiser. The 3rd-grade class also has 20 students and they need to sell only 6 boxes each. How many boxes do the 4th- and 3rd-graders need to sell in all?
3. Jerome has been given \$35.00 to buy items for his trip to a water park. He wants to buy a snorkeling mask for \$17.50, a new bathing suit for \$12.25, and an extra large beach towel for \$7.99. Estimate to see if he has enough money. If there is no sales tax, about how much change will he get? If he does not have enough money, about how much more money will he need?
4. Nila thinks that if she reads 30 pages of a 250-page book every night for eight nights she will finish the book. Is Nila right or wrong? Explain.

Part 5 Fraction Rectangles

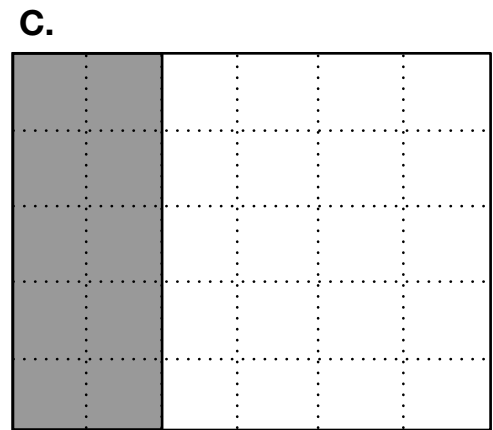
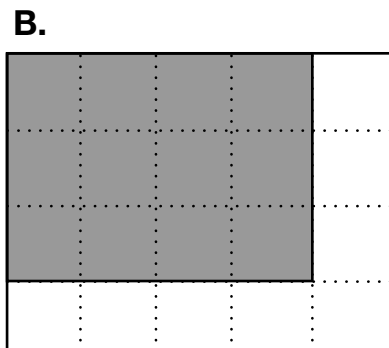
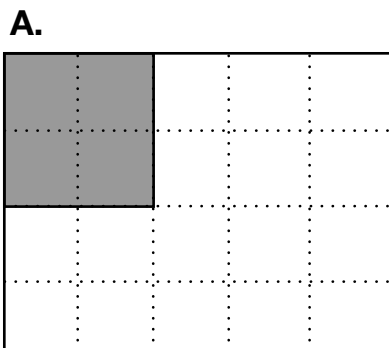
1. Divide the large rectangle into sixths in two different ways.



2. If  is two-fifths, show one whole.



3. Write a fraction for the shaded part of each rectangle. Use numbers and words. Use *Writing Numbers in Words* in the *Student Guide* Reference section to help you.



Number _____

Words _____

Number _____

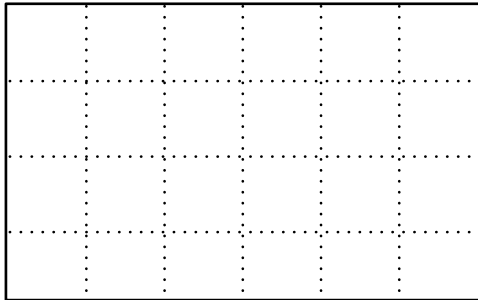
Words _____

Number _____

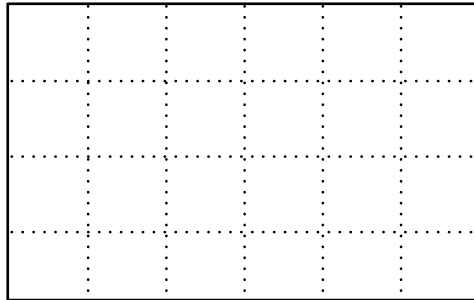
Words _____

Part 6 Fraction Rectangles and Strips

1. Shade $\frac{2}{3}$ of the large rectangle.



2. Shade $\frac{5}{8}$ of the large rectangle.

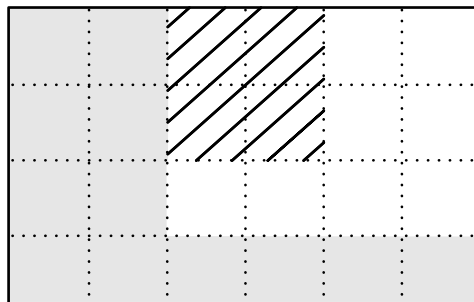


3. Use the large rectangle for Questions 3A, 3B, and 3C.

A. Name a fraction for the part with stripes.

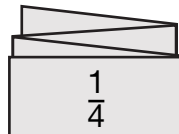
B. Name a fraction for the part that is gray.

C. Name a fraction for the part that is white.

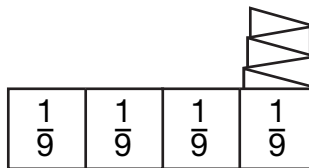
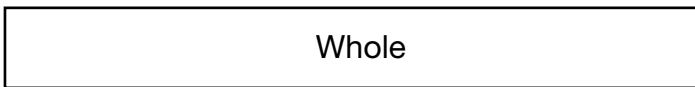


4. Write two names for the numbers shown with fraction strips below.

A.

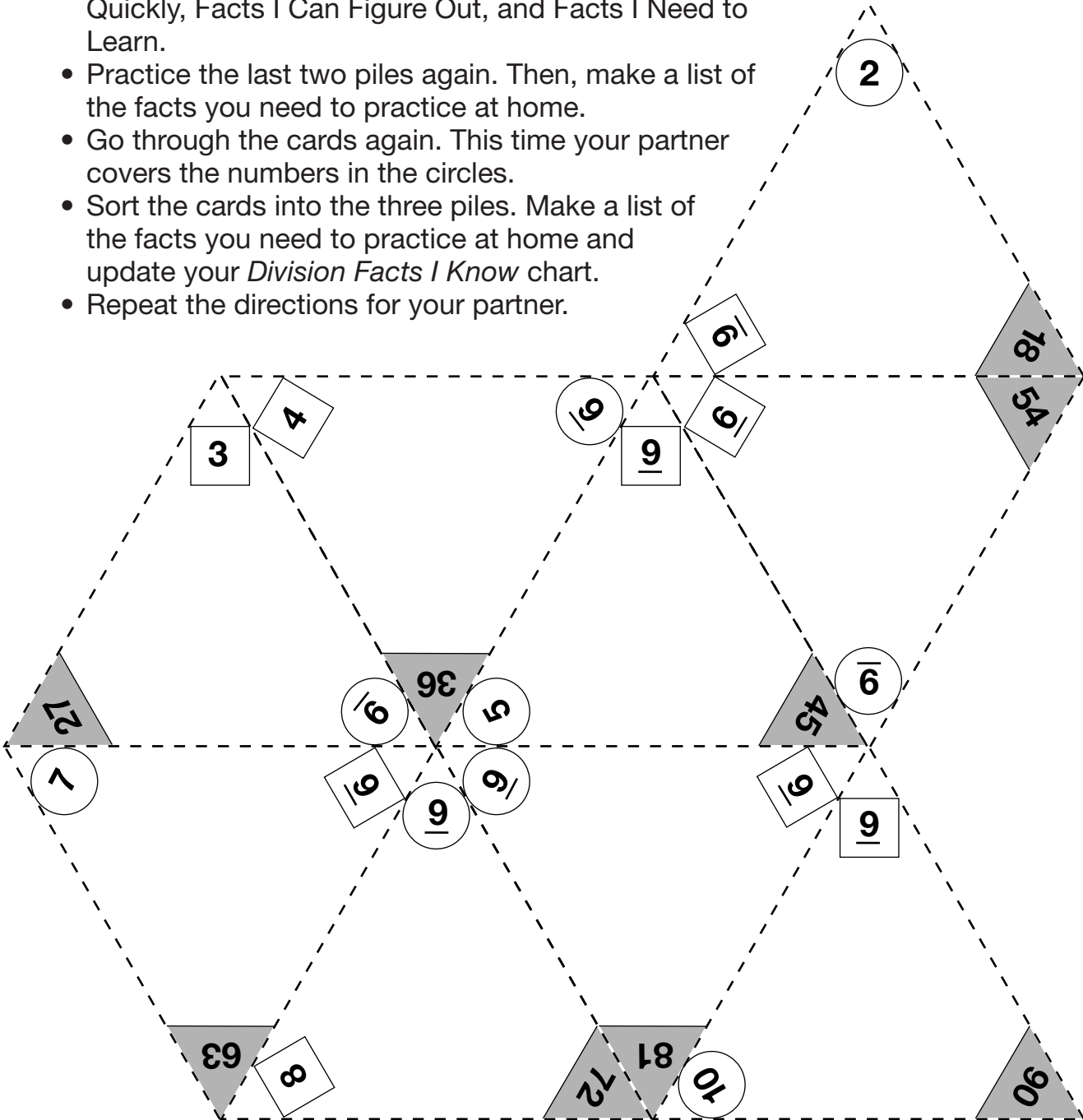


B.



Triangle Flash Cards: 9s

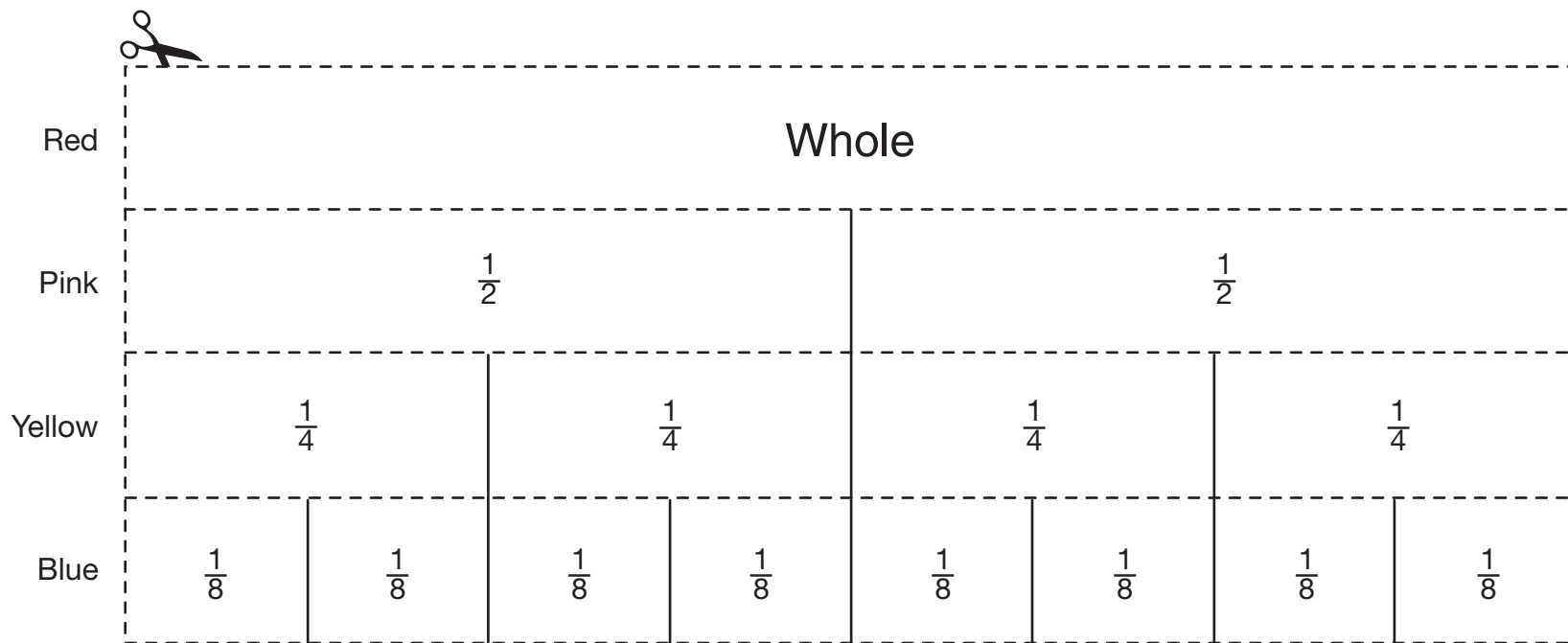
- Work with a partner. Each partner cuts out the flash cards.
- To quiz you on a division fact, your partner covers the number in the square. Solve a division fact with the two uncovered numbers.
- Divide the used cards into three piles: Facts I Know Quickly, Facts I Can Figure Out, and Facts I Need to Learn.
- Practice the last two piles again. Then, make a list of the facts you need to practice at home.
- Go through the cards again. This time your partner covers the numbers in the circles.
- Sort the cards into the three piles. Make a list of the facts you need to practice at home and update your *Division Facts I Know* chart.
- Repeat the directions for your partner.



Fraction Strips for the Teacher

Cut on dotted lines.

Fold on solid lines.



Division Facts I Know

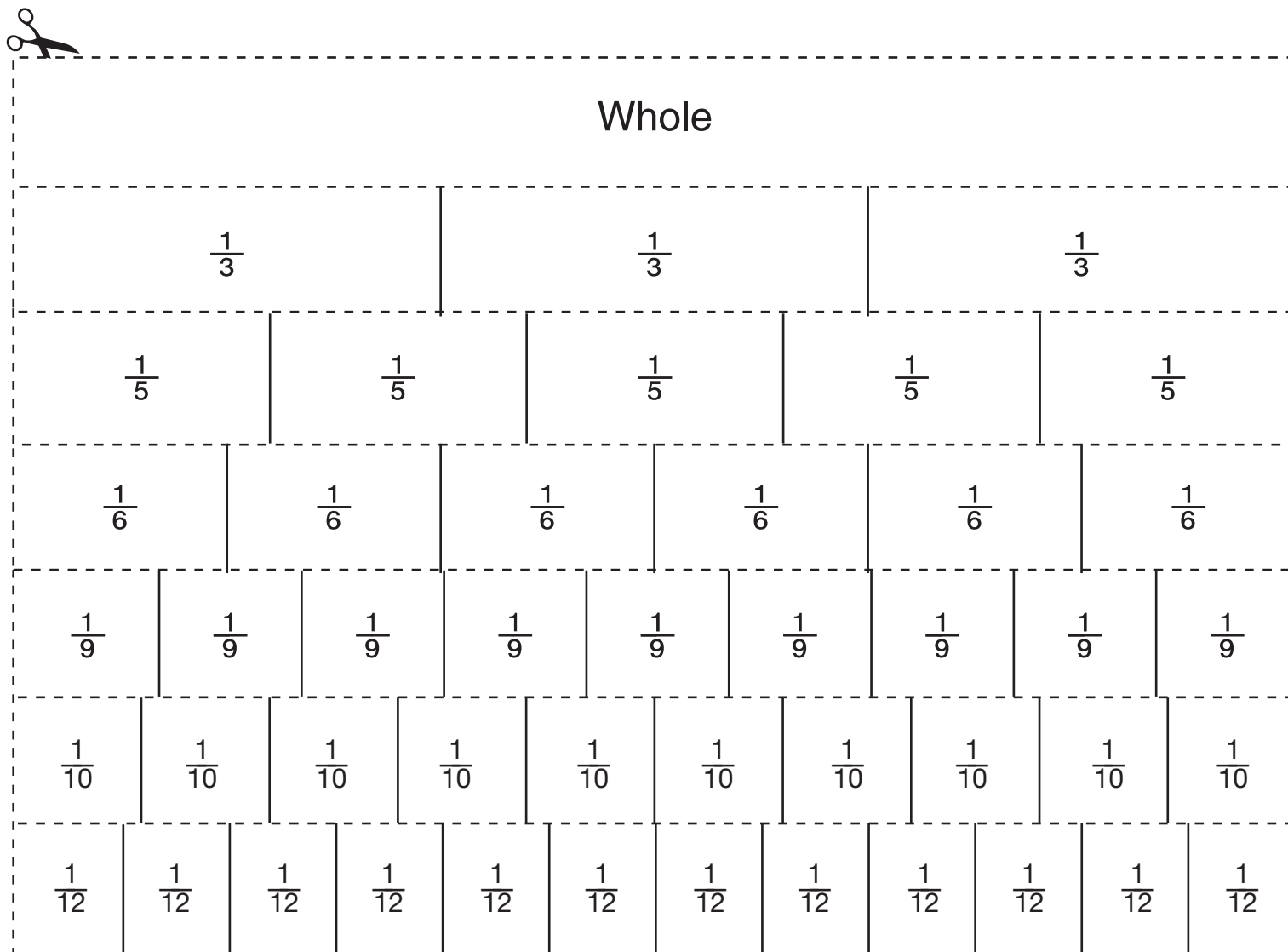
- Circle the facts you know well.
- Keep this table and use it to help you divide.
- As you learn more facts, you may circle them too.

DIVISOR

×	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

More Fraction Strips for the Teacher

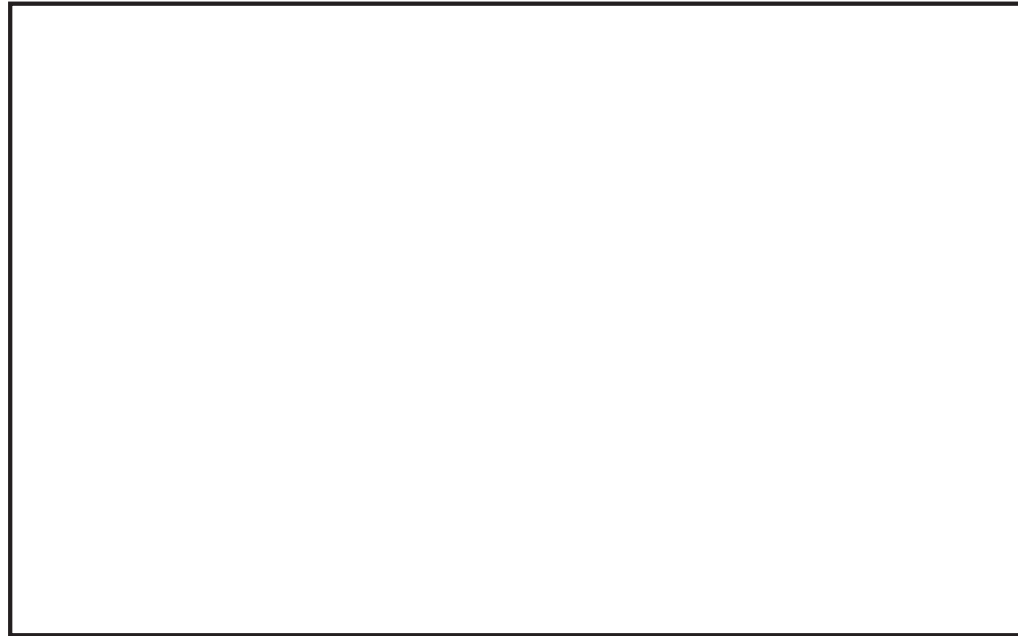
Cut on dotted lines. Fold on solid lines.



Show That Fraction

number

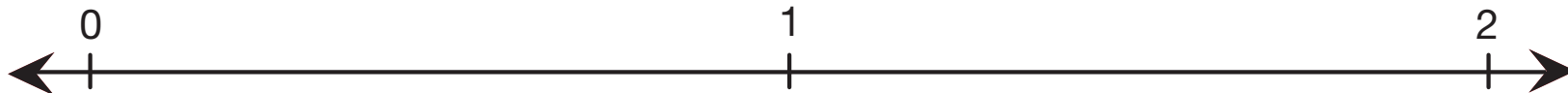
words



drawing

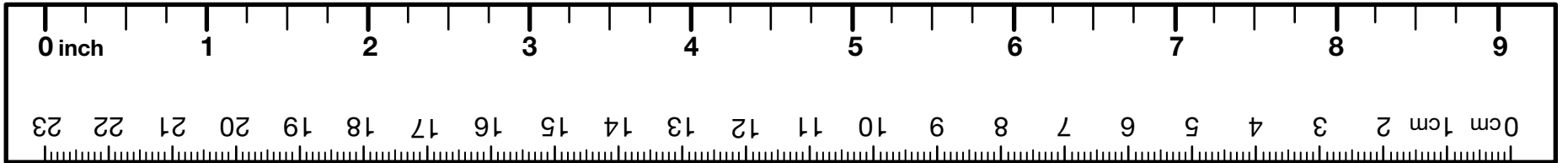
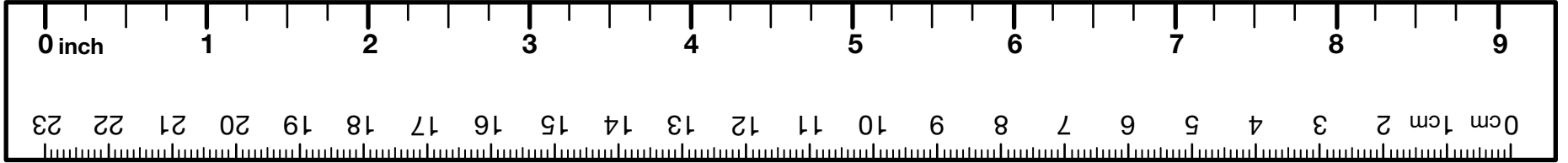
one whole fraction strip

one whole fraction strip

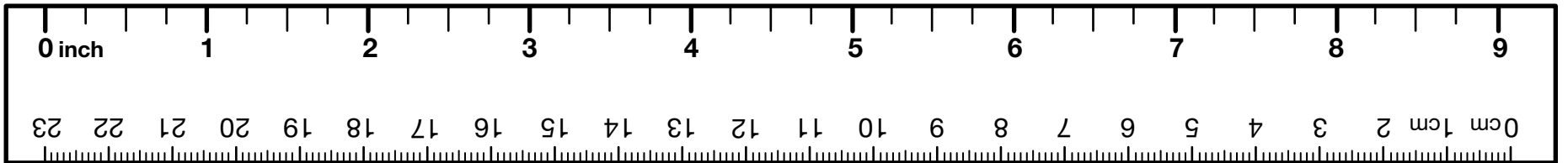


Centimeter and Inch Ruler

Master

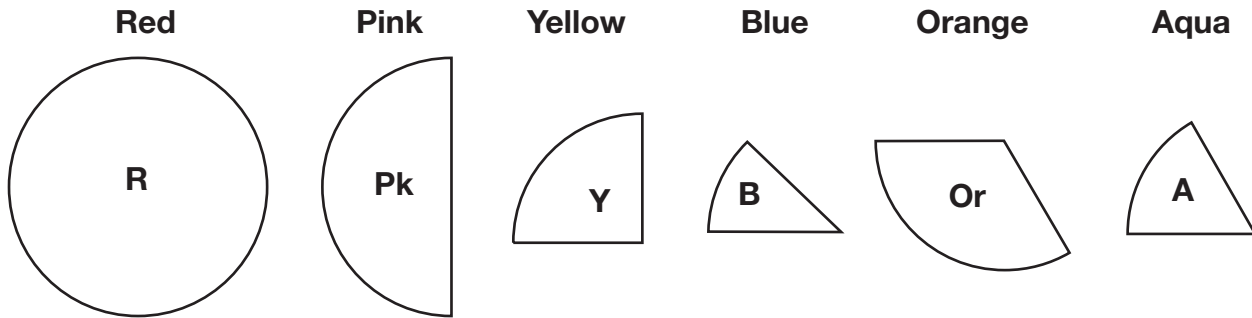


TC • Grade 4 •

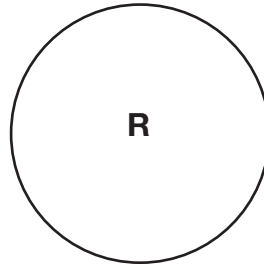


Circle Pieces Review

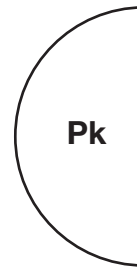
You will use circles and pieces of circles to study fractions. Find all the pieces with these colors in your fraction circle set to use in Questions 1–6.



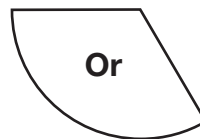
1. Cover the red circle with all one color.
 - A. How many pink pieces cover the red circle?
 - B. How many yellow?
 - C. How many blue pieces?
 - D. How many orange?
 - E. How many aqua?

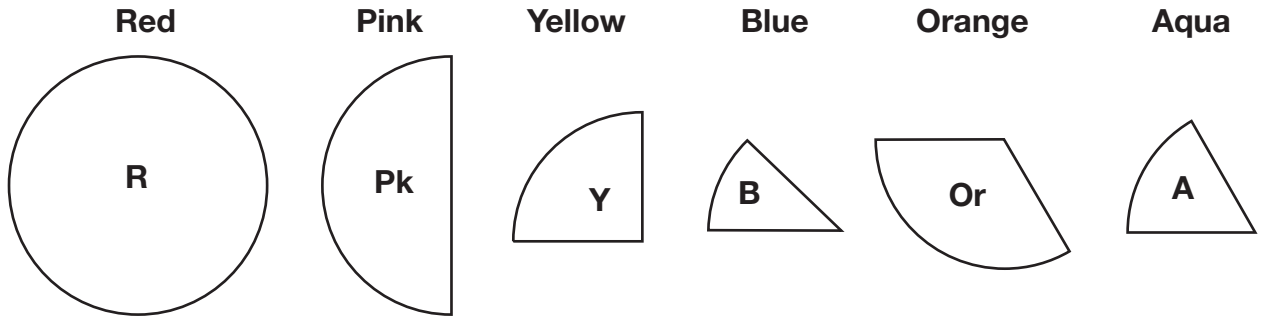


2. Cover the pink piece with all one color.
 - A. How many yellow pieces cover the pink piece?
 - B. How many blue pieces?
 - C. How many orange pieces?
 - D. How many aqua pieces?



3. Cover the orange piece with all one color.
 - A. What color did you use?
 - B. How many pieces does it take?



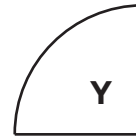


4. Cover the yellow piece with all one color.

A. What color did you use?

B. How many pieces does it take?

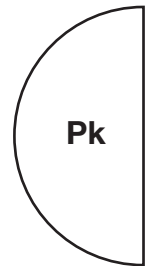
C. Make a drawing of what you did.



5. Cover half the pink piece with all one color.

A. What color did you use? How many pieces?

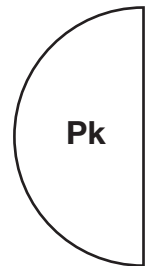
B. Use a different color. What color did you use this time?
Make a drawing of what you did.



6. Cover a whole pink piece using two colors.

A. What colors did you use and how many of each color?

B. Solve the problem a different way. What colors did you use
this time? How many pieces of each color?



Equivalent Fractions Quiz

Use your Fraction Chart and the fraction circle pieces to solve the problems.
The red circle is one whole.

1. Circle the number sentences that are true.

A. $\frac{3}{5} = \frac{5}{10}$

B. $\frac{3}{4} = \frac{6}{8}$

C. $\frac{8}{10} = \frac{4}{5}$

D. $\frac{1}{3} = \frac{5}{12}$

E. $\frac{2}{4} = \frac{20}{40}$

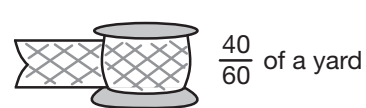
F. $\frac{7}{8} = \frac{14}{16}$

2. A. Show or tell how you solved Question 1F.

B. Show or tell how you can use the Fraction Chart to solve Question 1B.

3. Tina found four labeled rolls of ribbon.

Is the same length of ribbon on each roll? Show or tell how you decided.



4. Complete the number sentences below.

A. $\frac{1}{2} = \frac{\boxed{}}{6}$

B. $\frac{3}{5} = \frac{\boxed{}}{20}$

C. $\frac{2}{3} = \frac{8}{\boxed{}}$

D. $\frac{4}{10} = \frac{2}{\boxed{}}$

E. Show how to use circle pieces to solve Question 4D.

F. Show how you solved Question 4B.

5. One-fourth of an inch is the same as how many eighths of an inch? Show or tell how you know.

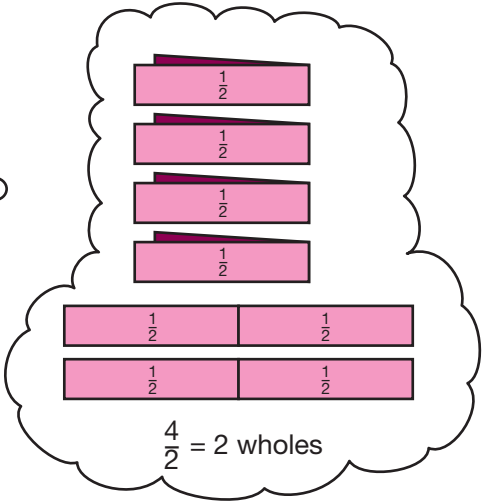
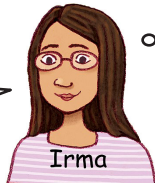
**Equivalent Fractions Quiz
Feedback Box**

	Expect- ation	Check In	Comments
Find equivalent fractions using circle pieces. [many questions and Q# 4E]	E8		
Find equivalent fractions using a Fraction Chart. [many questions and Q# 2B]	E8		
Find equivalent fractions using multiplication and division methods. [many questions and Q# 4F]	E8		
Write number sentences to show equivalent fractions from area models. [Q# 4A, B, D]	E6		

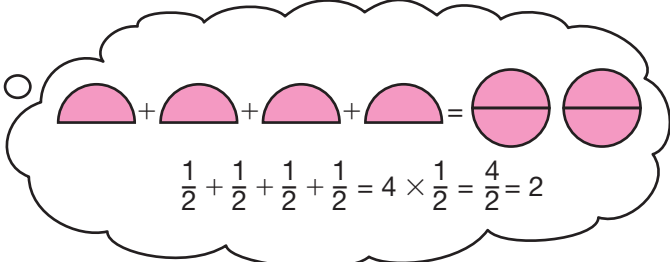
Strategies for $4 \times \frac{1}{2}$

I used fraction strips.

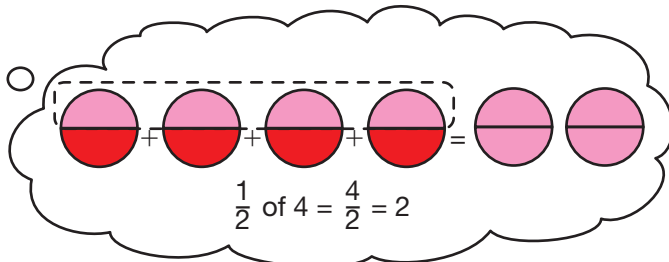
$$4 \times \frac{1}{2} = 2$$

$$\frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} = \frac{4}{2} = 2$$


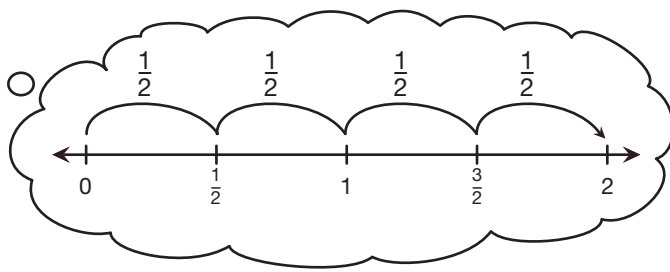
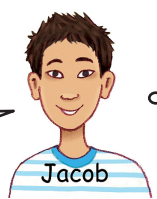
I used circle pieces. A red circle is one whole.



I thought of this problem as $\frac{1}{2}$ of 4.



I thought of a number line.



Multiply Fractions

Use fraction strips, circle pieces, drawings, or number lines to solve each problem.

1. Jerome is making punch for a party. His recipe serves 6 people. He needs enough punch to serve 18 people. Help Jerome change the amounts of the ingredients in his recipe. Show how you solved each problem.

FRUIT PARTY PUNCH
SERVES 6

$\frac{3}{4}$ cup fruit punch

$\frac{1}{4}$ cup frozen strawberries

$1\frac{1}{2}$ cups lemon-lime soda

$\frac{1}{2}$ cups ice

- A. How much fruit punch will he need?

- B. How many strawberries will he need?

- C. How much lemon-lime soda?

- D. If 14 people have punch, can each person have a $\frac{1}{2}$ cup of punch?

Use fraction strips, circle pieces, drawings, or number lines to solve each problem.

2. A. $\frac{3}{4} \times 2 =$

B. $2 \times 1\frac{3}{4} =$

C. $3 \times \frac{1}{5} =$

D. $\frac{3}{5} \times 3 =$

E. Show or tell how you solved one problem from Questions 2A–D.

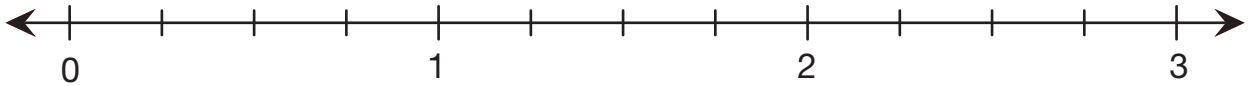
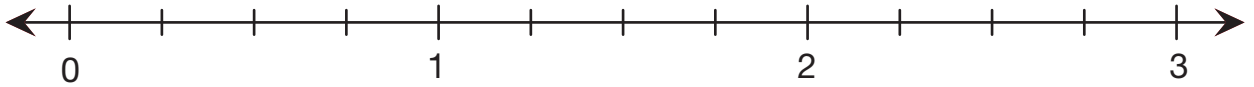
3. Grace expects 8 people at her party.

A. If each person at the party drinks $\frac{1}{2}$ -cup of punch, how much punch will she need?

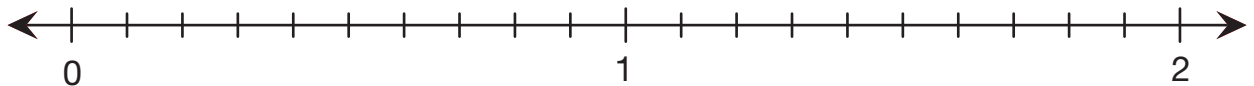
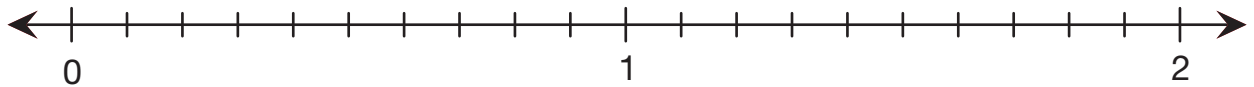
B. If each person at the party eats $\frac{1}{6}$ of a pie, how many pies will she need?

4. Use number lines to decide if each number sentence is true. Circle the true number sentences.

A. $3 \times \frac{3}{4} = 6 \times \frac{1}{4}$



B. $2 \times \frac{7}{10} = 2 \times \frac{1}{10} \times 7$



C. Use a different tool to show how you decided whether one number sentence above is true.

**Multiply Fractions
Feedback Box**

	Expect- ation	Check In	Comments
Represent fractions using area models (circle pieces, fraction strips, drawings) and number lines.	E1		
Multiply fractions by a whole number (e.g., $\frac{1}{3} \times 3 = 1$, $\frac{2}{3} \times 6 = \frac{1}{3} \times 6 \times 2 = 4$).	E11		

Name _____ Date _____

Workshop: More Than, Less Than, or Equal To

Check-In: Q# 15 Feedback Box

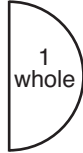
	Expectation	Check-In	Comments
Find equivalent fractions • Using models	E8		
• Using multiplication and division strategies	E8		
Compare and order fractions using area models	E9		

	Yes ...	Yes, but ...	No, but ...	No ...
MPE2. Find a strategy. I choose good tools and an efficient strategy for solving the problem.				
MPE5. Show my work. I show or tell how I arrived at my answer so someone else can understand my thinking.				


Fraction Puzzle Clues

Each group will need one set of puzzle clues for each puzzle. Cut out puzzle clues for Puzzles A–D before class begins. Puzzle D is an assessment and should be used after the other three puzzles have been successfully completed.



<p>PUZZLE A</p> <p>Use no more than 3 pieces.</p>	<p>PUZZLE A</p> <p>The pink piece equals 1 whole.</p> 
<p>PUZZLE A</p> <p>Use at least two colors.</p>	<p>PUZZLE A</p> <p>Make a shape with the value of 1 whole.</p>



<p>PUZZLE B</p> <p>The red circle equals 1 whole.</p> 	<p>PUZZLE B</p> <p>Use 3 or more pieces to make your shape.</p>
<p>PUZZLE B</p> <p>Use at least two different colors of pieces.</p>	<p>PUZZLE B</p> <p>Make a shape with the value of $\frac{3}{4}$.</p>



PUZZLE C

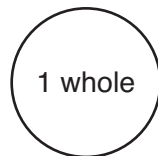
Make a shape with the value of $\frac{7}{8}$.

PUZZLE C

Use no more than 1 blue piece.

PUZZLE C

The red circle equals 1 whole.



PUZZLE C

Use at least three colors.



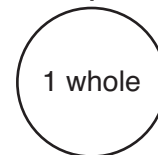
Assessment Puzzle Clues

PUZZLE D

Make a shape with the value of $\frac{5}{6}$.

PUZZLE D

The red circle equals 1 whole.



PUZZLE D

Use 3 or 4 pieces.

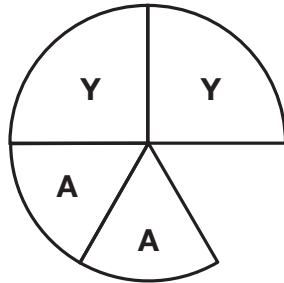
PUZZLE D

Use at least 1 aqua piece, but not all aquas.

Use no blue pieces.

Name _____ Date _____

Jerome's Work



We placed $\frac{1}{6}$ on the red circle (1 whole) because that was the leftover. Then we built around it with other fractions to make the red circle or 1. Then we checked to be sure that it fit the clues.

$$\frac{1}{6} + \frac{1}{6} + \frac{1}{4} + \frac{1}{4} = \frac{5}{6}$$

Puzzle Problem

Student-to-Student Feedback Box

Yes...

Yes, but...

No, but...

No...

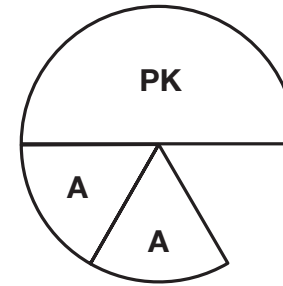
<p>MPE3. Check for reasonableness. I look back at my solution to see if my answer makes sense. If it does not, I try again.</p>				
<p>MPE5. Show my work. I show or tell how I arrived at my answer so someone else can understand my thinking.</p>				

Name _____

Date _____

Grace's Work

First we read our clues to each other. Then we decided what we were going to do next. After that we decided we were ready to do the problem. Then we got our answer one pink and two aqua pieces.



$$\frac{1}{2} + \frac{1}{6} + \frac{1}{6} = \frac{5}{6}$$

Puzzle Problem

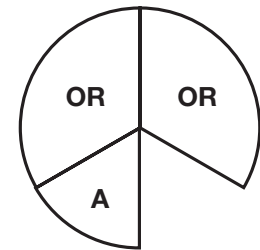
Student-to-Student Feedback Box

	Yes...	Yes, but...	No, but...	No...
<p>MPE3. Check for reasonableness. I look back at my solution to see if my answer makes sense. If it does not, I try again.</p>				
<p>MPE5. Show my work. I show or tell how I arrived at my answer so someone else can understand my thinking.</p>				

Name _____ Date _____

Ana's Work

First we read all our clues so we could build the shape right. One of the clues said that the red circle was one whole, so we laid down one red circle. Another clue said to make the shape $\frac{5}{6}$. Our team knew that an aqua piece is $\frac{1}{6}$. We also knew that 6 aquas make one red. The clue said $\frac{5}{6}$ so we got out 5 aquas so we could lay them onto the circle to know how much space the aquas took up. One of the other clues said to use at least one aqua, but not all aquas. Our team also knew that one orange piece makes two aquas. We traded in four aquas for two oranges and put them in the spot where the four aquas used to be. There was one aqua left, and we couldn't trade it for anything. But one of the clues said to use at least one aqua piece, so we left the aqua piece alone. And we came up with the solution



$$\frac{1}{3} + \frac{1}{3} + \frac{1}{6} = \frac{5}{6}$$

$$\frac{2}{3} \text{ (the two oranges)} + \frac{1}{6} \text{ (the aqua)} = \frac{5}{6}$$

Puzzle Problem

Student-to-Student Feedback Box

	Yes...	Yes, but...	No, but...	No...
MPE3. Check for reasonableness. I look back at my solution to see if my answer makes sense. If it does not, I try again.				
MPE5. Show my work. I show or tell how I arrived at my answer so someone else can understand my thinking.				