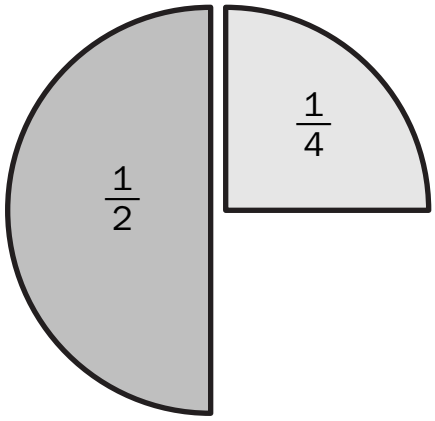
LETTER HOME

Fractions

Dear Family Member:

The activities in this unit will help your child better understand and use fractions. Your child will identify, name, and represent fractions including improper fractions and mixed numbers using concrete models, number lines, and symbols. He or she will use these representations to compare and order fractions and to find equivalent fractions. Your child will extend his or her understanding by using multiplication and division strategies to find common denominators.

Your child will also begin to solve problems that involve adding and subtracting fractions. To do this, he or she uses circle pieces to show what the problem looks like. Working with these pieces helps build mental pictures of fractions so that your child can add and subtract them more easily.



A circle model shows $\frac{1}{2} + \frac{1}{4} = \frac{3}{4}$

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

Look for Fractions. Point out places where fractions are used outside of school. Examples include preparing a recipe, dividing a pan of brownies into equal shares, or in sales advertisements.

Play Fraction Fill Games. The *Fraction Fill Games* 1–3 are played in Lesson 4. Directions, game boards, and spinners are in the *Student Activity Book*. In these games, teams try to earn 6 points by filling 6 unit wholes with fraction pieces. Players practice finding equivalent fractions and breaking fractions into the sums of smaller fractions to strategically fill each unit whole.

Play Fraction Trails Games. Ask your child to play the *Fraction Trails Games* 1–3 with you. These games use number lines to provide practice breaking fractions into the sums of smaller fractions and finding equivalent fractions. Players earn a point each time they move their marker to 1 on a number line. Directions, game boards, and spinners are in the *Student Activity Book* in Lesson 6.

Math Facts and Mental Math

This unit begins a systematic review and assessment of the multiplication and division facts.

Multiplication Facts. Students review all the multiplication facts to maintain and increase fluency and to learn to apply multiplication 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 and focus on only those facts your child needs to learn. 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 the Facts I Need to Learn, work on strategies for figuring them out. If there are many multiplication facts that your child still needs to learn, divide them into smaller groups of facts. Choose groups of facts that lend themselves to the use of the same strategy and focus on one group at a time.

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 multiply 10s and 100s. You can also help your child extend and deepen their understanding by asking him or her to choose a multiplication fact that was difficult to learn and describe the strategies used for learning the fact.

Division Facts. Students review the division facts for 5s and 10s to maintain and increase fluency and to learn to apply multiplication and 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 the Facts I Need to Learn, work on strategies for figuring them out. Good strategies include:

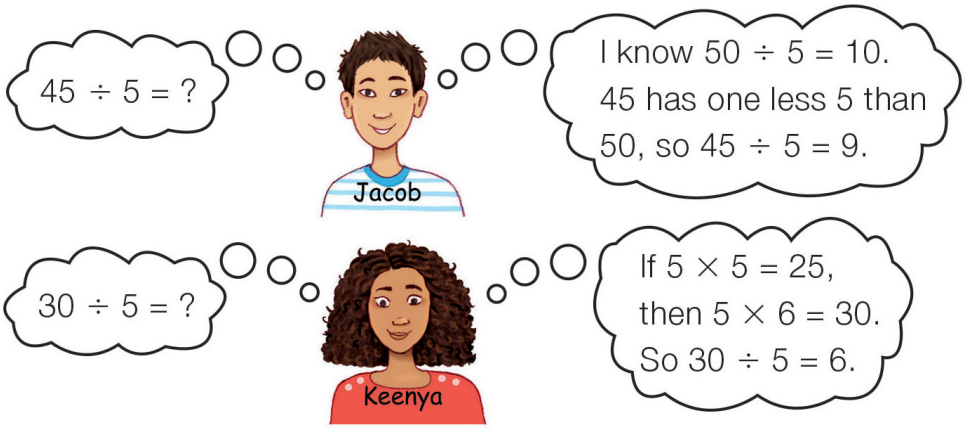
Skip counting. To solve 40 ÷ 5, skip count: 5, 10, 15, 20, 25, 30, 35, 40 and count the skips. It took 8 skips to land on 40. 40 ÷ 5 = 8.

Reasoning from known facts. To solve 40 ÷ 5: 20 ÷ 5 is 4, so 40 ÷ 5 is double 4. 40 ÷ 5 = 8.

Turn-around facts. 80 ÷ 10 = 8 because I know 10 × 8 = 80.

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 multiply 10s and 100s:
600 ÷ 10 = 60; 350 ÷ 5 = 70; 10,000 ÷ 5000 = 2

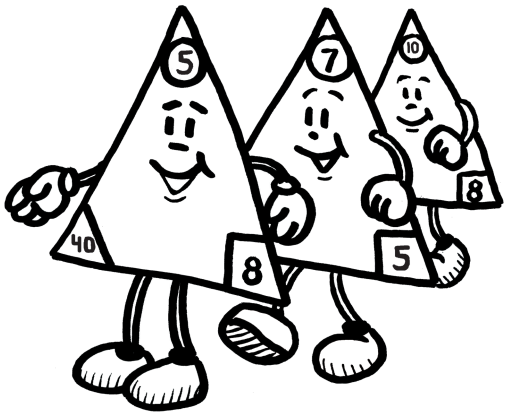


Grade 5 Math Facts Overview

The goal of the math facts development in *Math Trailblazers* is for students to learn the basic facts efficiently, gain fluency with their use, and retain that fluency over time. A large body of research supports an approach in which students develop strategies for figuring out the facts rather than relying on rote memorization. This not only leads to more effective learning and better retention, but also to the development of mental math skills. In fact, too much drill before conceptual understanding may interfere with a child's ability to understand concepts at a later date. Therefore, the teaching of the basic facts in *Math Trailblazers* is characterized by the following elements:

Use of Strategies. Students first approach the basic facts as problems to be solved rather than as facts to be memorized. In all grades, students are encouraged to use strategies to find facts, so they become confident that they can find answers to fact problems that they do not immediately recall. In this way, students learn that math is more than memorizing facts and rules which "you either get or you don't."

Distributed Facts Practice. Students study small groups of facts that can be found using similar strategies. In fifth grade, they review division facts (fact families) to maintain or gain fluency starting in Unit 2. See Figure 1.



Unit	Multiplication and Division Facts Group
2	5s and 10s
3	2s and 3s
4	9s
5	Square Numbers
6	Last Six Facts
7	Last Six Facts
8	Review all facts

Figure 1: *Development of division facts in Grade 5*

Practice in Context. Students continue to practice the facts as they use them to solve problems, investigate math concepts, and play math games.

Appropriate Assessment. Students are regularly assessed to see if they can find answers to facts problems quickly and accurately and retain this skill over time. They take a short quiz on each group of facts. Students record their progress on *Facts I Know* charts and determine which facts they need to study.

A Multiyear Approach. In Grades 1 and 2, the curriculum emphasizes the use of strategies that enable students to develop proficient strategies for the addition and subtraction facts by the end of second grade. In Grade 3, students review the subtraction facts and develop proficiency with the multiplication facts. In Grade 4, the addition and subtraction facts are checked, the multiplication facts are reviewed, and students develop fluency with the division facts. In Grade 5, students review the multiplication and division facts.

Facts Will Not Act as Gatekeepers. Use of strategies and calculators allows students to continue to work on interesting problems and experiments while learning the facts. They are not prevented from learning more complex mathematics because they do not have quick recall of the facts.

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

Sincerely,

Name _____ Date _____

Unit 2: Home Practice

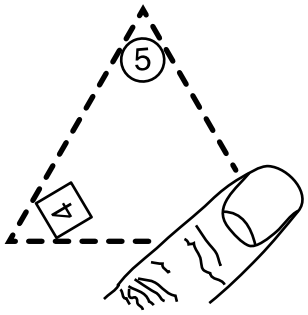
Part 1 Triangle Flash Cards: 5s and 10s

Study for the quiz on the multiplication and division facts for the 5s and 10s. Take home your Triangle Flash Cards: 5s and 10s and your list of facts you need to study.

To use the flash cards, ask a family member to choose one flash card at a time. To quiz you on a multiplication fact, he or she should cover the corner containing the highest number, the shaded number. This number will be the answer to a multiplication fact. Multiply the two uncovered numbers.

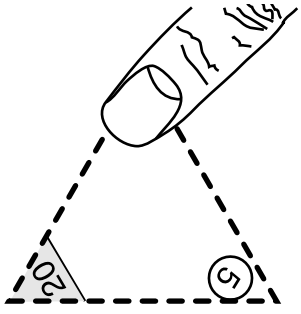
$5 \times 4 = ?$

$4 \times 5 = ?$

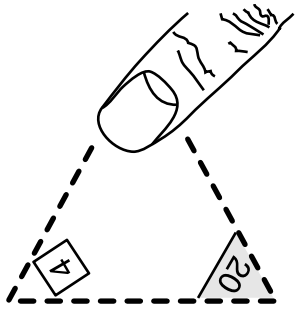


To quiz you on a division fact, your family member can cover the number in the square. Solve a division fact with the two uncovered numbers. Ask your family member to go through the cards again, this time covering the number in the circle.

$20 \div 5 = ?$



$20 \div 4 = ?$



Ask your family member to mix up the multiplication and division facts. He or she should sometimes cover the highest number, sometimes cover the circled number, and sometimes cover the number in the square.

Remember to study only those facts you cannot answer correctly and quickly. Your teacher will tell you when the quiz on the 5s and 10s will be given.

Name _____ Date _____

Part 2 Solving Problems

Show or tell how to solve each problem. Choose an appropriate method for each: mental math, paper-and-pencil, or a calculator.

1. A mouse can have a litter of as many as 16 pups. A mouse can have up to 6 litters each year. About how many mice can one mouse produce in 6 years?

2. The U.S. government recommends that girls between the ages of 9 and 13 take in about 1900 calories of food a day. Boys of the same age should take in about 2200 calories.

A. A boy follows these guidelines. Will he consume more or less than 25,000 calories in one week?

B. In one week, how many more calories should a boy eat than a girl?

Name _____ Date _____

Part 3 Improper Fractions and Mixed Numbers

Use the *Fraction Chart* or *Fractions on Number Lines Chart* in the *Student Guide* Reference section.

1. Complete each number sentence.

A. $1\frac{2}{3} = \frac{n}{3}$ n = _____

B. $2\frac{3}{4} = \frac{n}{4}$ n = _____

C. $1\frac{1}{6} = \frac{n}{6}$ n = _____

D. $3\frac{1}{6} = \frac{n}{6}$ n = _____

E. Draw a picture that represents your answer for Question 1C.

2. Write each mixed number as an improper fraction.

A. $2\frac{3}{5} =$ _____

B. $3\frac{1}{4} =$ _____

C. $3\frac{3}{10} =$ _____

D. $3\frac{5}{8} =$ _____

E. Draw a picture that represents your answer for Question 2A.

3. Write each improper fraction as a mixed number.

A. $\frac{13}{6} =$ _____

B. $\frac{7}{2} =$ _____

C. $\frac{10}{3} =$ _____

D. $\frac{14}{5} =$ _____

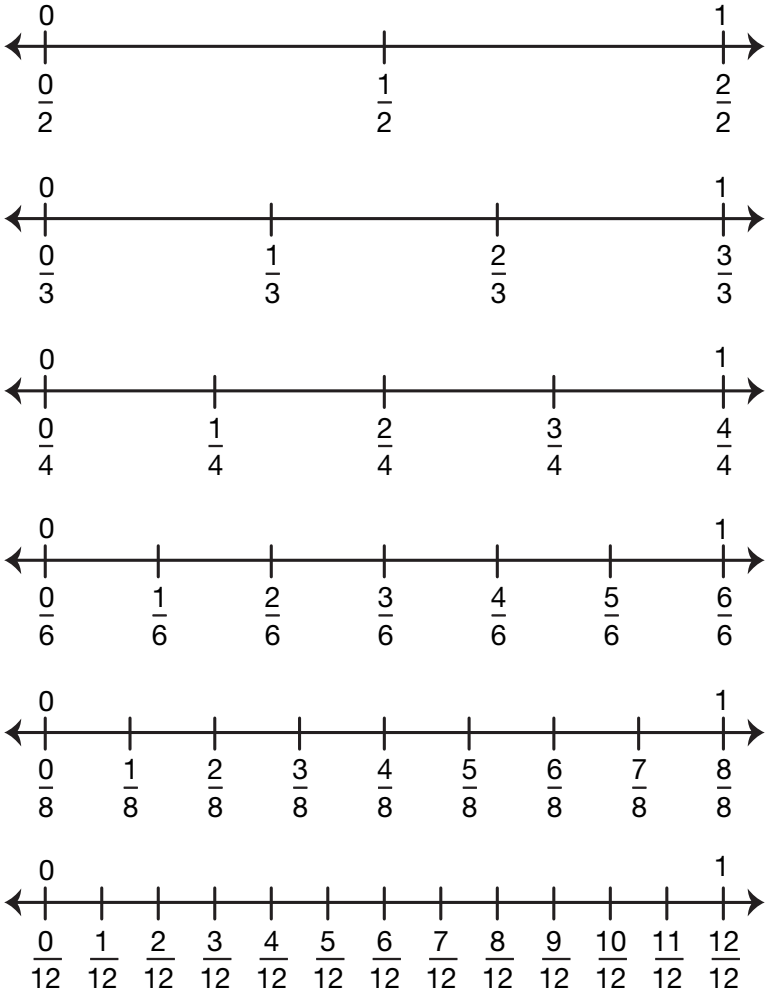
E. Draw a picture that represents your answer for Question 3B.

Name _____ Date _____

Part 4 Fractions

Use the number lines below.

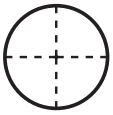
1. Name a fraction between $\frac{1}{6}$ and 1. _____
2. Name a fraction between $\frac{1}{3}$ and 1. _____
3. Name a fraction with a denominator of 4 that is between 0 and 1. _____
4. Name a fraction greater than $\frac{1}{2}$ with a denominator of 8. _____
5. Name a fraction between $\frac{6}{8}$ and 1. _____
6. Show or tell how you know $\frac{11}{12}$ is between $\frac{6}{8}$ and 1. _____

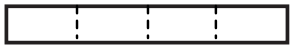


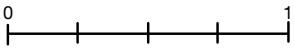
Name _____ Date _____

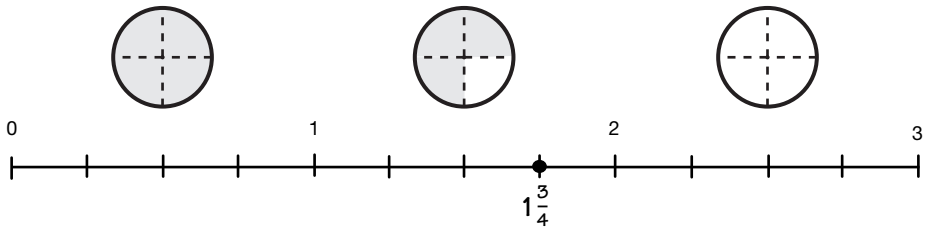
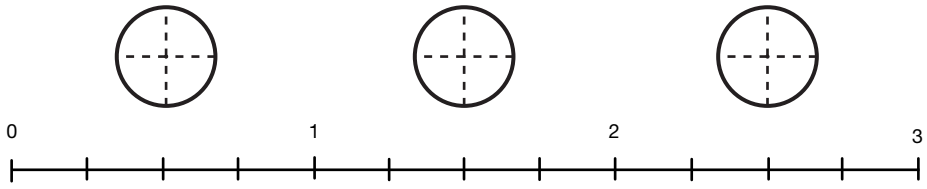
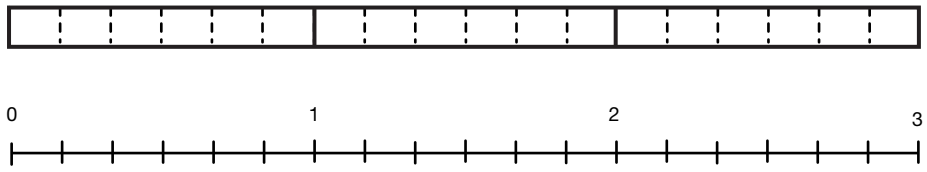
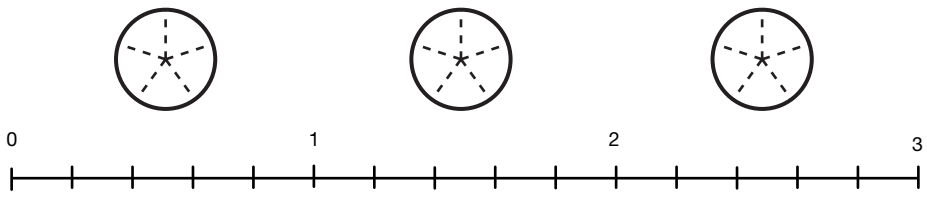
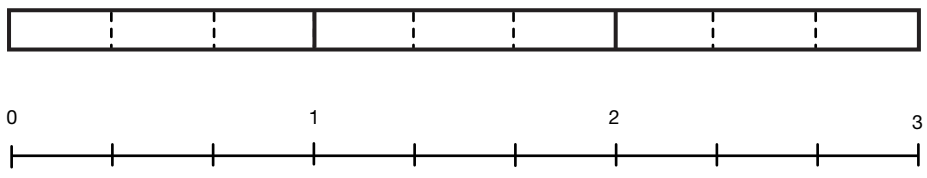
Part 5 Representing Fractions

Show the given numbers with circles or rectangles and number lines.

For circles, one circle is the unit whole: 

For rectangles, this size rectangle is the unit whole: 

For number lines, the segment from 0 to 1 is the unit whole: 

Number	Representation
Example $1\frac{3}{4}$	
A. $\frac{7}{4}$	
B. $1\frac{4}{6}$	
C. $2\frac{3}{5}$	
D. $\frac{4}{3}$	

Name _____ Date _____

Part 6 A Fraction More

Use the *Fraction Chart* or *Fractions on Number Lines Chart* in the *Student Guide* Reference section.

1. Complete the following number sentences.

A. $\frac{1}{3} = \frac{2}{n}$ $n =$ _____

B. $\frac{9}{12} = \frac{n}{4}$ $n =$ _____

C. $\frac{2}{6} = \frac{n}{12}$ $n =$ _____

D. $\frac{5}{8} = \frac{15}{n}$ $n =$ _____

E. $\frac{20}{70} = \frac{n}{7}$ $n =$ _____

F. $\frac{7}{9} = \frac{n}{36}$ $n =$ _____

G. $\frac{3}{5} = \frac{n}{25}$ $n =$ _____

H. $\frac{4}{40} = \frac{1}{n}$ $n =$ _____

I. $\frac{2}{3} = \frac{8}{n}$ $n =$ _____

2. Write each mixed number as an improper fraction.

A. $1\frac{1}{4} =$ _____ **B.** $5\frac{2}{3} =$ _____ **C.** $2\frac{7}{8} =$ _____ **D.** $3\frac{3}{5} =$ _____

3. Write each improper fraction as a mixed number.

A. $\frac{9}{4} =$ _____ **B.** $\frac{20}{6} =$ _____ **C.** $\frac{21}{2} =$ _____ **D.** $\frac{23}{12} =$ _____

4. Put each of the following sets of fractions in order from smallest to largest.

A. $\frac{9}{5}$ $\frac{9}{10}$ $\frac{9}{2}$ $\frac{9}{12}$

_____

B. $\frac{5}{6}$ $\frac{8}{7}$ $\frac{7}{12}$ $\frac{1}{8}$

_____

C. $\frac{6}{6}$ $\frac{3}{6}$ $\frac{10}{6}$ $\frac{2}{6}$

_____

D. $\frac{3}{20}$ $\frac{3}{2}$ $\frac{9}{11}$ $\frac{9}{16}$

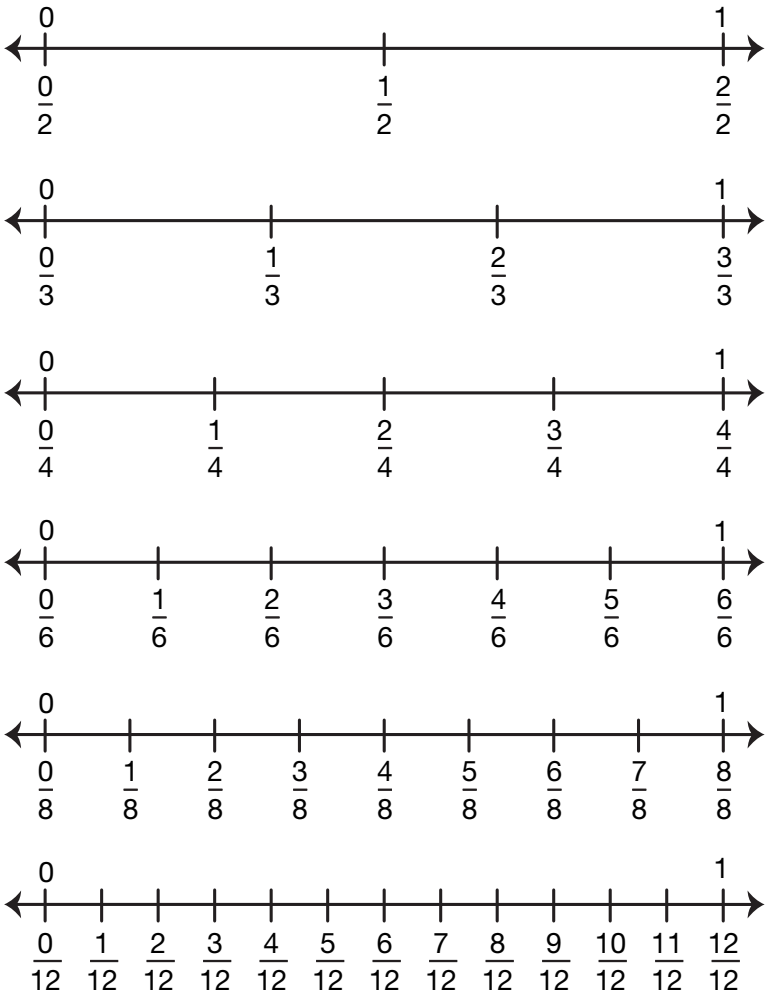
_____

Name _____ Date _____

Part 7 Fraction Number Lines

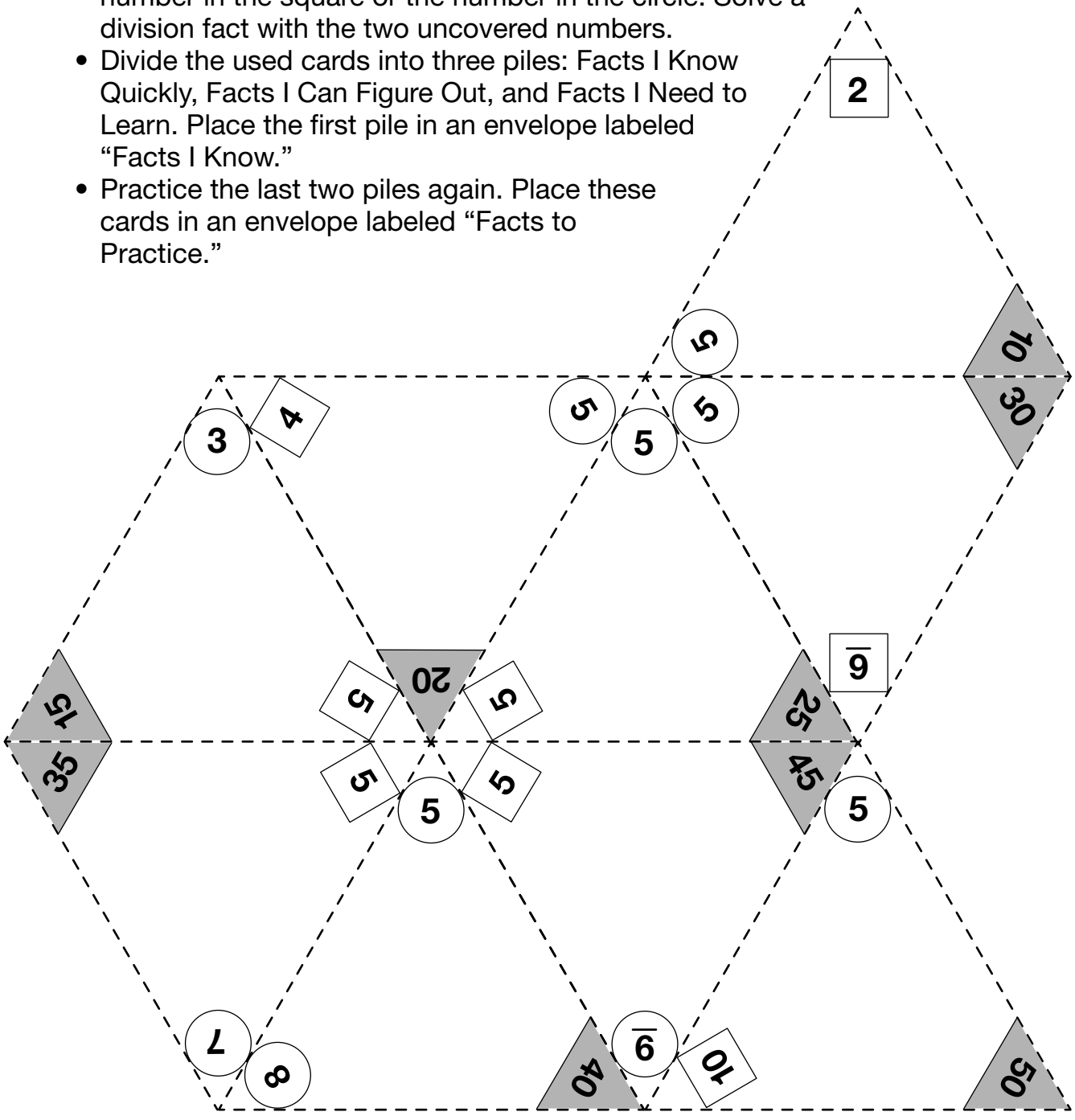
Use the fraction number lines.

1. Write three fractions that are between $\frac{1}{4}$ and $\frac{1}{2}$. _____, _____, _____
2. Write four fractions that are less than $\frac{1}{4}$. _____, _____, _____, _____
3. Name a fraction equivalent to $\frac{1}{4}$. _____
4. Name two fractions that are equivalent to $\frac{2}{3}$. _____, _____
5. Name three fractions between $\frac{1}{6}$ and $\frac{3}{8}$. _____, _____, _____
6. Name two fractions between $\frac{3}{4}$ and $\frac{11}{12}$. _____, _____
7. Name three fractions that are equivalent to $\frac{1}{2}$. _____, _____, _____



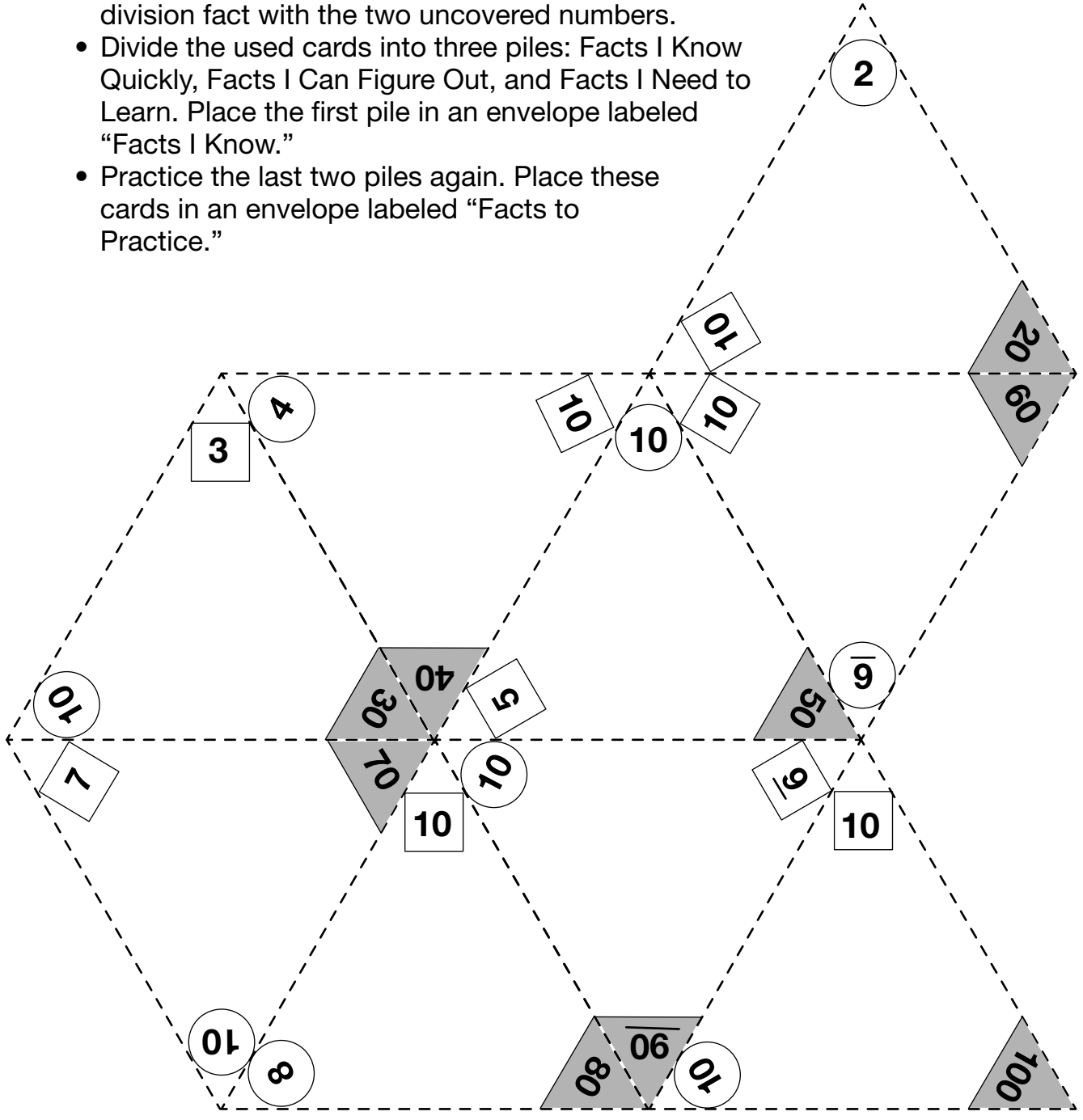
Triangle Flash Cards: 5s

- Work with a partner. Each partner cuts out the flash cards.
- To quiz you on a multiplication fact, your partner covers the shaded number. Multiply the two uncovered numbers.
- To quiz you on a division fact, your partner covers the number in the square or the number in the circle. 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. Place the first pile in an envelope labeled "Facts I Know."
- Practice the last two piles again. Place these cards in an envelope labeled "Facts to Practice."



Triangle Flash Cards: 10s

- Work with a partner. Each partner cuts out the flash cards.
- To quiz you on a multiplication fact, your partner covers the shaded number. Multiply the two uncovered numbers.
- To quiz you on a division fact, your partner covers the number in the square or the number in the circle. 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. Place the first pile in an envelope labeled "Facts I Know."
- Practice the last two piles again. Place these cards in an envelope labeled "Facts to Practice."



Small Multiplication Tables

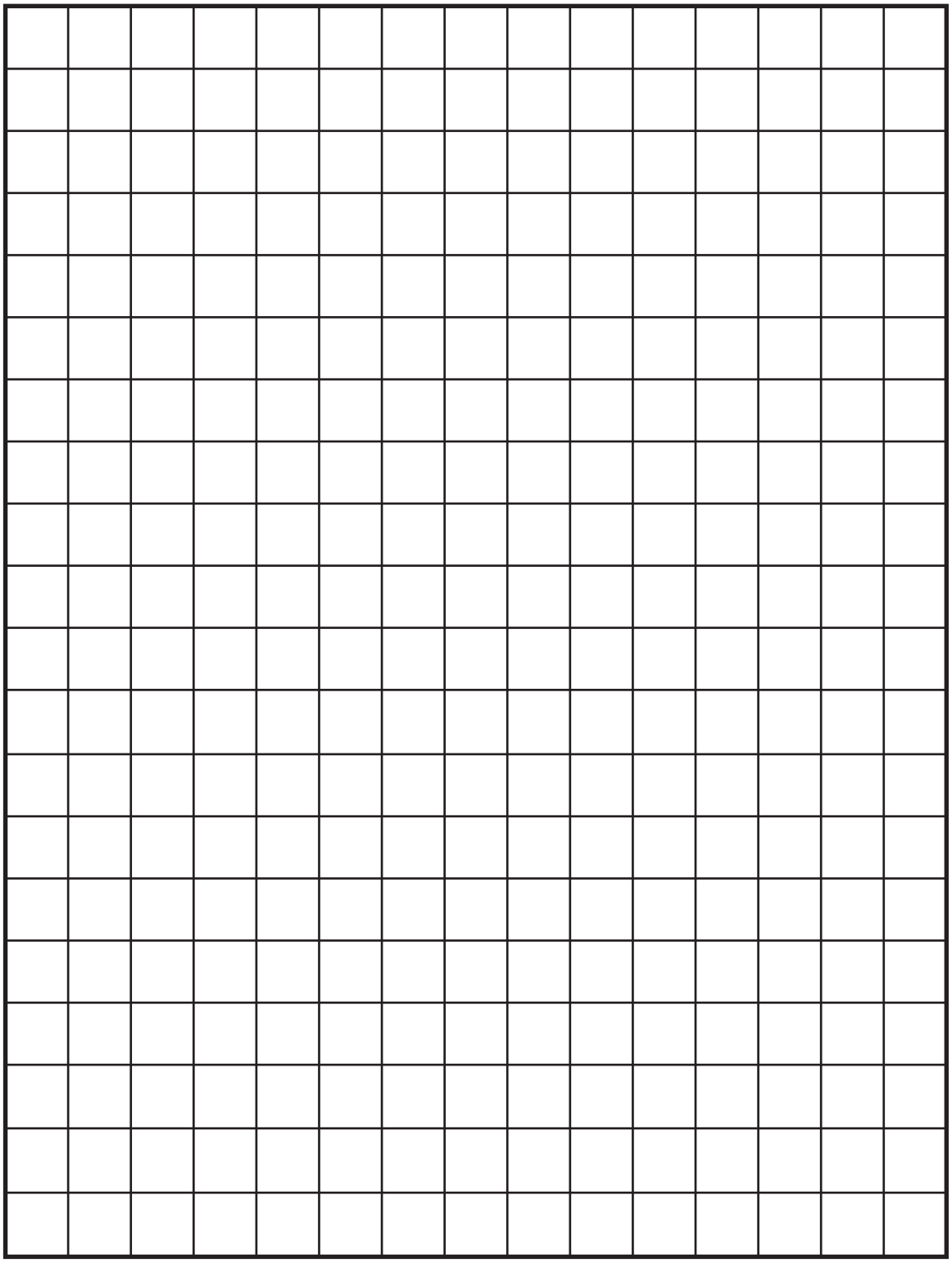
×	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100

×	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100

×	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100

×	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100

Centimeter Grid Paper



Floor Tiler

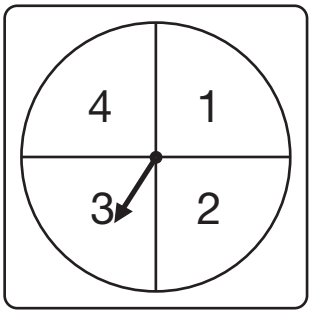
This game can be played by two or more players. The object of the game is to be the first player to fill his or her grid paper with rectangles.

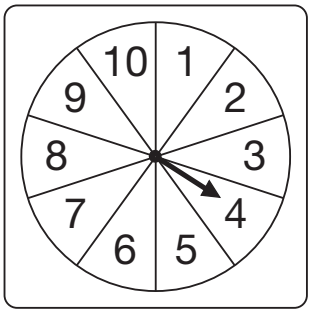
Materials

- Spinners 1–4 and 1–10
- A clear plastic spinner or a paper clip and pencil
- $\frac{1}{2}$ sheet of Floor Tiler Grid Paper
- Crayon or marker
- Scissors

Directions

1. The first player makes two spins so that he or she has two numbers. The player may either spin one spinner twice or spin each spinner once.



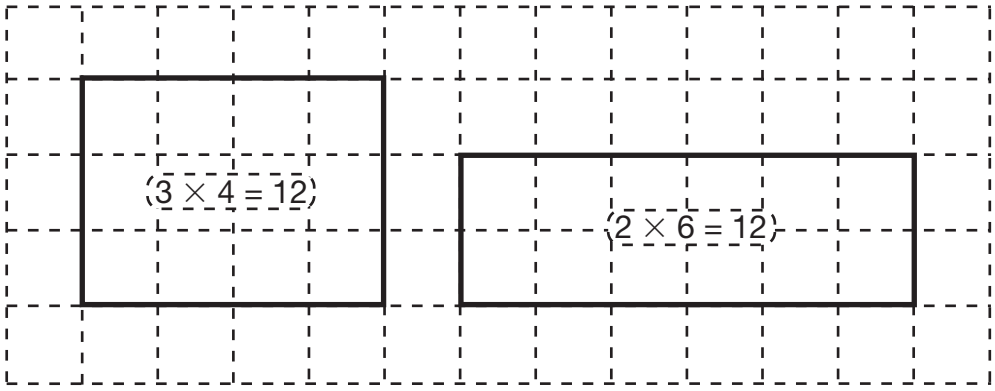


2. The player must then find the **product** of the two numbers he or she spun. The product is the answer to a multiplication problem. For example, $3 \times 4 = \mathbf{12}$. 12 is the product.

3. After finding the product, the player colors in a rectangle with that number of grid squares on the grid paper. He or she can use any two factors of the product to make a rectangle, not just the facts on the spinner.

   For example, the player might use the factors on the spinner and color in 3 rows of 4 squares for a total of 12 squares. But the player can also think of other factors of 12, such as 2 rows of 6 squares or 1 row of 12 squares. (Remember, the squares colored in must connect so that they form a rectangle.)

4. Once the player has made his or her rectangle, the player draws an outline around it and writes its number sentence inside. For example, a player who colored in 3 rows of 4 squares would write "$3 \times 4 = 12$." A player who used the factors 2 and 6 would write "$2 \times 6 = 12$."



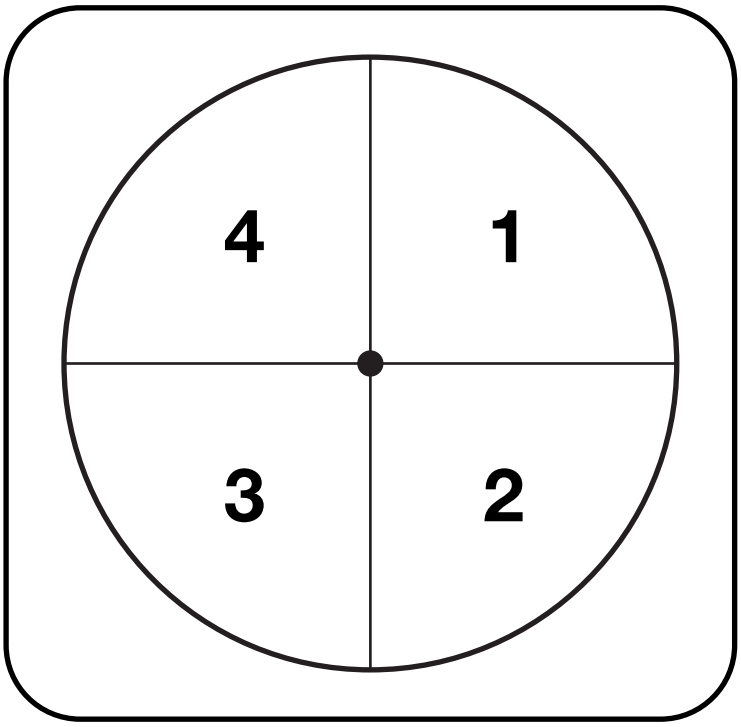
5. Players take turns spinning and filling in their grids.

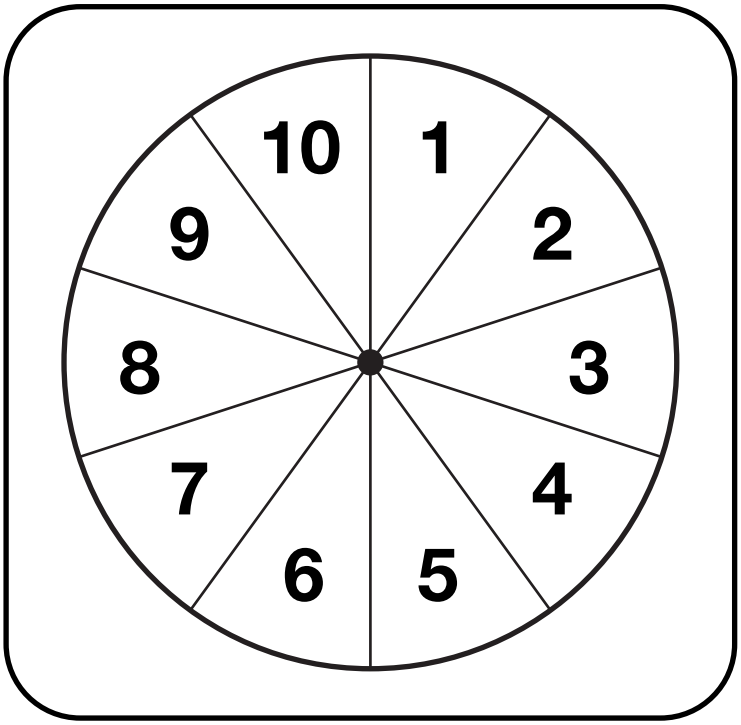
6. If a player is unable to fill in a rectangle for his or her spin, that player loses the turn, and the next player takes a turn.

7. The first player to fill in his or her grid paper completely wins the game.

Name _____ Date _____

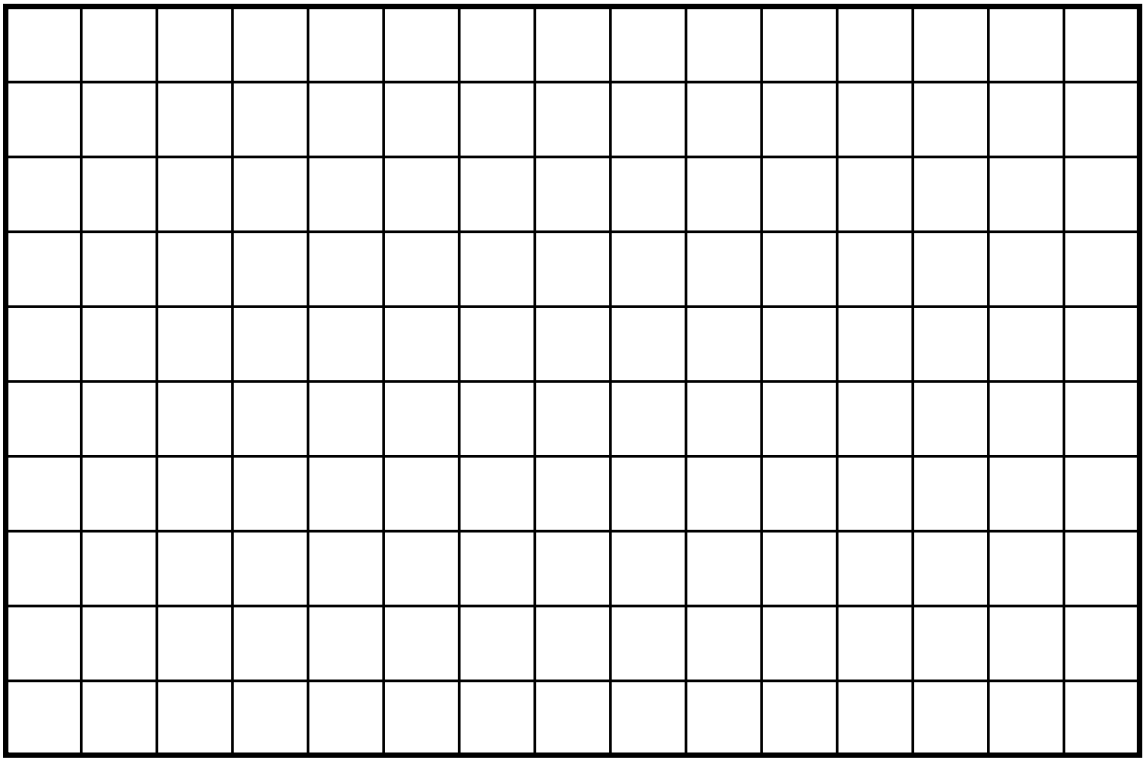
Spinners 1–4 and 1–10

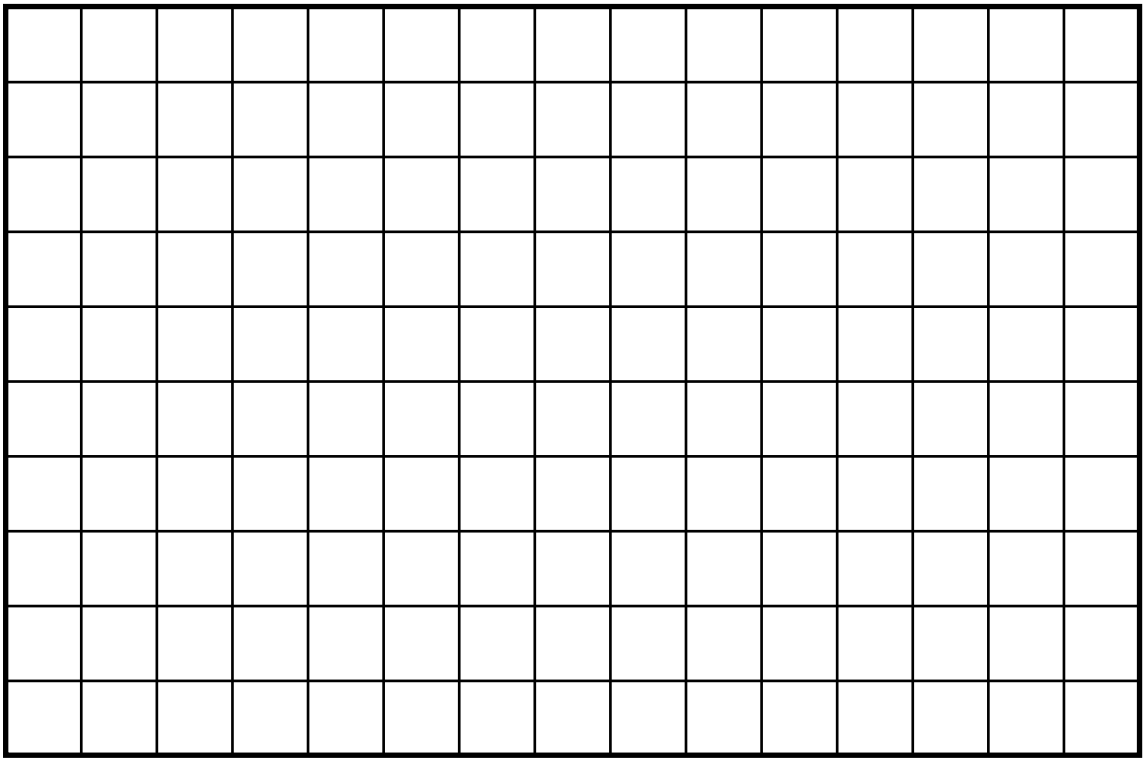




Name _____ Date _____

Floor Tiler Grid Paper



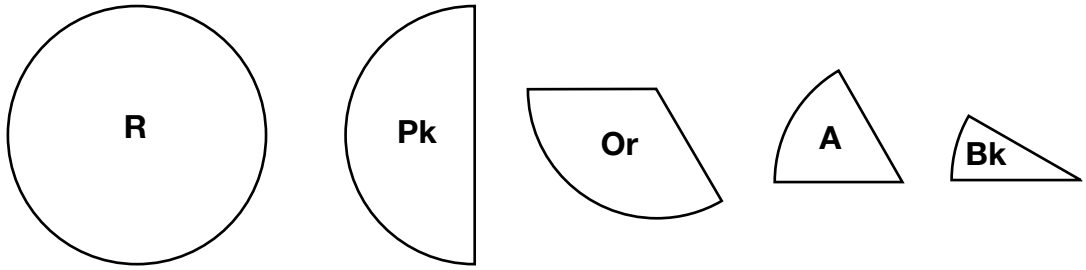


Name _____ Date _____

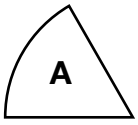
Use Fraction Circle Pieces

Explore

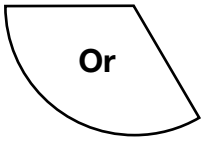
Use only red, pink, orange, aqua, and black pieces to answer Questions 1–12.



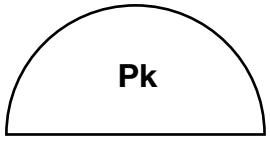
1. Cover half of an aqua piece.
   - **A.** What color did you use?
   - **B.** Make a drawing of what you did.



2. Cover a whole orange piece with all one color.
   - **A.** How many aqua pieces does it take?
   - **B.** How many black pieces?

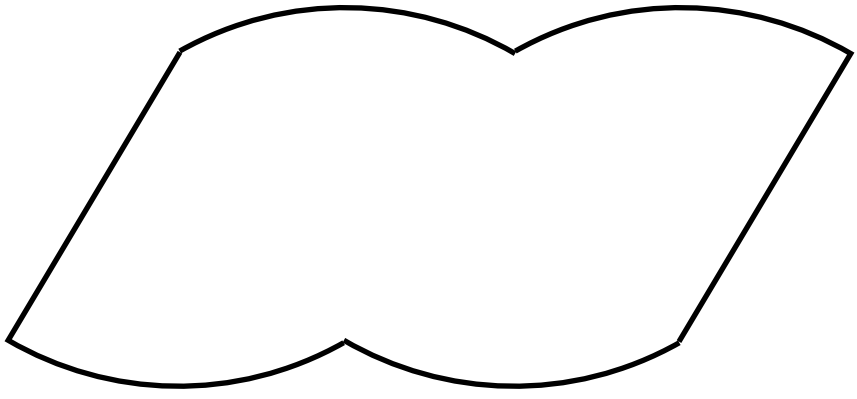


3. Cover a whole orange piece with two colors.
   - **A.** How many of each piece did you use?
   - **B.** Make a drawing of what you did. Label the pieces to show the colors.
4. Cover one half of an orange piece with one color.
   - **A.** Make a drawing of what you did. What color and how many pieces did you use?
   - **B.** Solve the problem a different way. What color did you use this time? How many pieces?
5. Cover a whole pink piece with one color.
   - **A.** What color did you use? How many pieces?
   - **B.** Use a different color. Describe what you did or show it in a drawing.



Name _____ Date _____

6. **A.** Use two pieces to cover one half of a pink piece. Tell what pieces you used or show what you did.
   B. Use three pieces to cover one half of a pink piece. What pieces did you use? Describe what you did or show it in a drawing.
7. Cover one third of a pink piece. Show or tell how you did it.
8. **A.** Cover a whole red circle with two colors. How many of each piece does it take?
   B. Solve the problem a second way. Show or tell what you did.
9. **A.** How many black pieces will cover the whole red piece?
   B. How many oranges?
   C. How many aquas?
   D. How many pinks?
10. Write the color of each piece in order from smallest to largest.
11. Which is larger?
   A. One pink or three blacks?
   B. One pink or seven blacks?
   C. One pink or four aquas?
12. **A.** Make the shape below with the least number of pieces possible.
   B. Make the shape with the most number of pieces possible. Show or tell what you did.



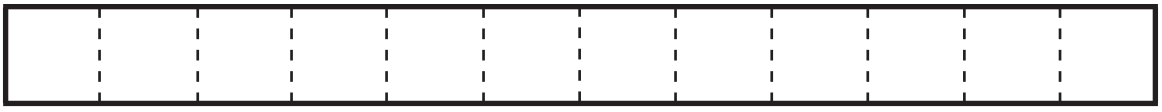
Name _____ Date _____

Candy Fractions

The TIMS Candy Company makes a chocolate bar called the Dodecabar.
It is divided into 12 sections.

1. Divide the bar into fourths.

2. Jerome ate $\frac{3}{4}$ of a bar. Shade the part that Jerome ate.



3. The shaded part shows how much of the bar Jessie ate.

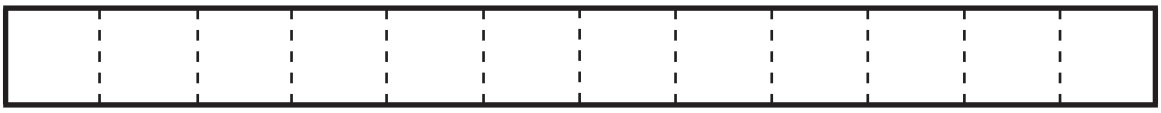
A. Write a fraction to tell how much Jessie ate.

B. Write the number in words.

4. Did Jessie eat more, less, or the same amount as Jerome? Show or tell how you know.

Name _____ Date _____

5. Nila ate $\frac{5}{12}$ of a candy bar. Shade the part that Nila ate.



6. Ming ate $\frac{5}{6}$ of a bar. Shade the part that Ming ate.

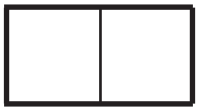
7. Did Ming eat more, less, or the same amount as Nila? Show or tell how you know.

8. Ana ate $\frac{1}{3}$ of a Dodecabar. Did she eat more or less than $\frac{1}{2}$ of a bar? Show or tell how you know.

Name _____ Date _____

The TIMS Candy Company is developing other candy bars in different shapes and sizes.

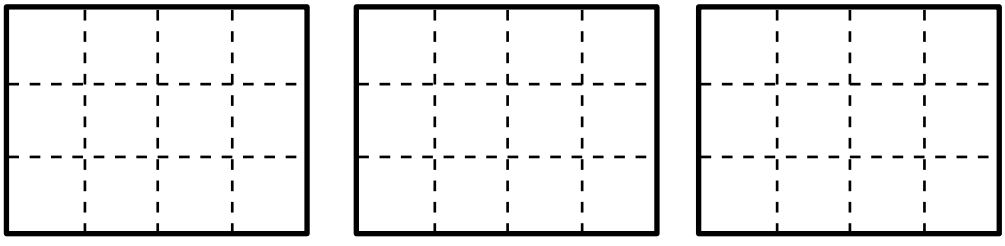
9. If the shape below is one-third of another kind of candy bar, draw the whole candy bar.



10. If the shape below is two-fifths of a bar, draw the whole bar.

11. If the shape below is one-fifth of a bar, draw the whole bar. Give the candy bar a name.

12. Shannon plans to divide a pan of brownies into fourths. Show how to divide the pan into fourths in three different ways using these rectangles.



Candy Fractions Feedback Box	Expec-tation	Check In	Comments
Represent and identify fractions (e.g., proper, improper, mixed number) using area models, words and symbols. [Q# 1–3, 5–6]	E1		
Recognize that equal fractional parts of a unit whole are the same size (e.g., all fourths of a rectangle are the same size). [Q# 9–12]	E2		
Identify the unit whole when given a fractional part of a whole. [Q# 9–11]	E3		
Compare fractions using tools (e.g., area models, number lines), benchmarks, and multiplication and division strategies to find common denominators. [Q# 4, 7, 8]	E6		

	Yes . . .	Yes, but . . .	No, but . . .	No. . .
MPE5. Show my work. I show or tell how I arrived at my answer so someone else can understand my thinking. [Q#4, 7, 8, 12]				

Name _____ Date _____

Find Equivalent Fractions Check-In: Question 9 Feedback Box	Expect-ation	Check In	Comments
Find equivalent fractions using area models and multiplication and division strategies.	E4		

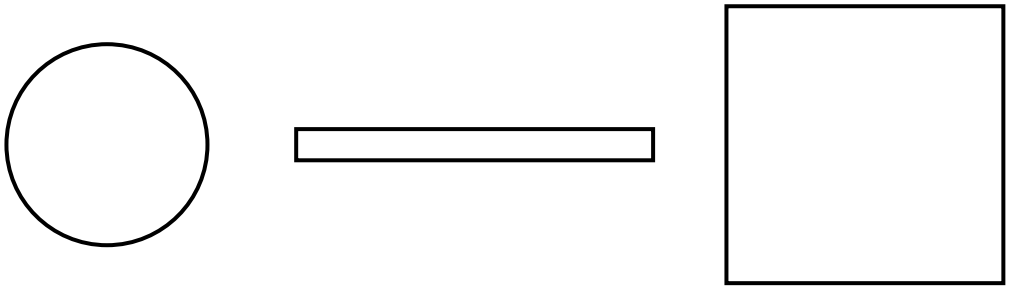
	Yes . . .	Yes, but . . .	No, but . . .	No . . .
MPE2. Find a strategy. I choose good tools and an efficient strategy for solving the problem. [Q# 9A–C]				
MPE5. Show my work. I show or tell how I arrived at my answer so someone else can understand my thinking. [Q# 9D]				

Name _____ Date _____

Fraction Quiz

You will need fraction circle pieces to complete this quiz.

1. A. Shade $\frac{1}{4}$ of each shape.



B. Are all of the shaded areas the same size? Explain how you know.

2. If the pink is the unit whole, write a fraction for each of the following, both as a number and in words.

A. one aqua

B. three blues

C. one red

3. A. If a blue circle piece is $\frac{1}{2}$, what is the unit whole? _____

B. If a blue circle piece is $\frac{1}{4}$, what is the unit whole? _____

C. An aqua piece is $\frac{1}{2}$ of what circle piece? _____

Name _____ Date _____

4. A. Three blacks cover what part of an orange piece? _____

B. How do you know what numerator to use?

C. How do you know what denominator to use?

5. A. Write $\frac{17}{3}$ as a mixed number. Show or tell how you know your answer is correct.

B. Write $2\frac{5}{6}$ as an improper fraction. Show or tell how you know your answer is correct.

Name _____ Date _____

6. A. Find 4 fractions that are equivalent to $\frac{3}{5}$.

B. Complete this number sentence to make it true:

$$\frac{\square}{\square} = \frac{6}{9} = \frac{10}{15}$$

C. Show or tell how you know that $\frac{9}{12} = \frac{15}{20}$.

7. A. Show $\frac{3}{4}$ of the red circle using circle pieces of only one color. Make a sketch and write a number sentence for your solution.

B. Show $\frac{3}{4}$ of the red circle using circle pieces of two different colors. Make a sketch and write a number sentence for your solution.

C. Show $\frac{3}{4}$ of the red circle using circle pieces of three different colors. Make a sketch and write a number sentence for your solution.

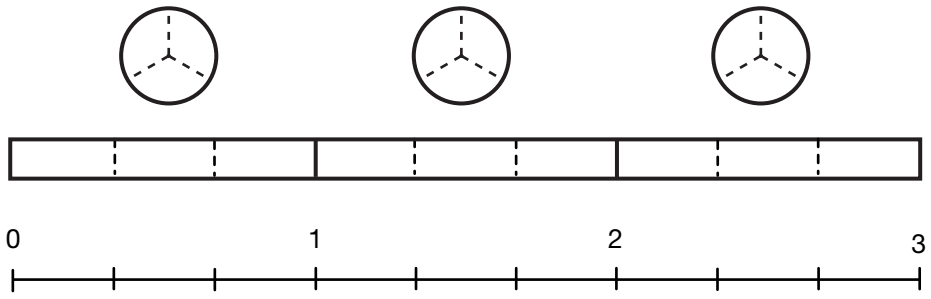
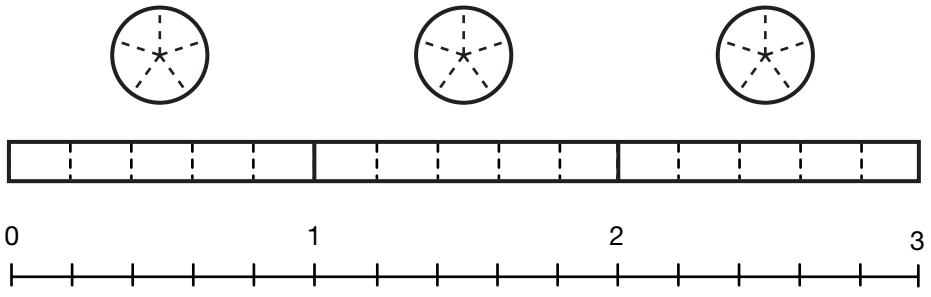
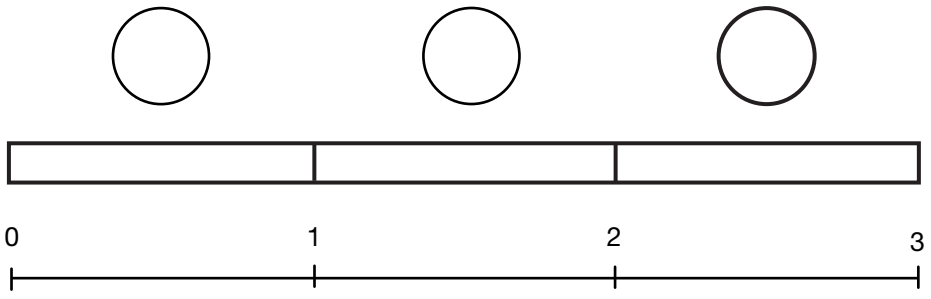
Name _____ Date _____

Fraction Quiz Feedback Box	Expec-tation	Check In	Comments
Represent and identify fractions (e.g., proper, improper, mixed number) using area models, drawings, symbols, and number sentences. [Q# 1A, 2A–C, 4A, 5A–B]	E1		
Recognize that equal fractional parts of a unit whole are the same size (e.g., all fourths of a rectangle are the same size). [Q# 1B]	E2		
Identify the unit whole when given a fractional part of a whole. [Q# 3A–C]	E3		
Find equivalent fractions using tools (e.g., area models) and multiplication and division strategies. [Q# 6A–C]	E4		
Decompose fractions into the sums of smaller fractions (e.g., $\frac{3}{4} = \frac{1}{2} + \frac{1}{4}$). [Q# 7A–C]	E5		

	Yes . . .	Yes, but . . .	No, but . . .	No. . .
MPE2. Find a strategy. I choose good tools and an efficient strategy for solving the problem. [Q# 1B, 4B–C, 5A–B, 6C]				
MPE5. Show my work. I show or tell how I arrived at my answer so someone else can understand my thinking. [Q# 1B, 4B–C, 5A–B, 6C]				

Name _____ Date _____

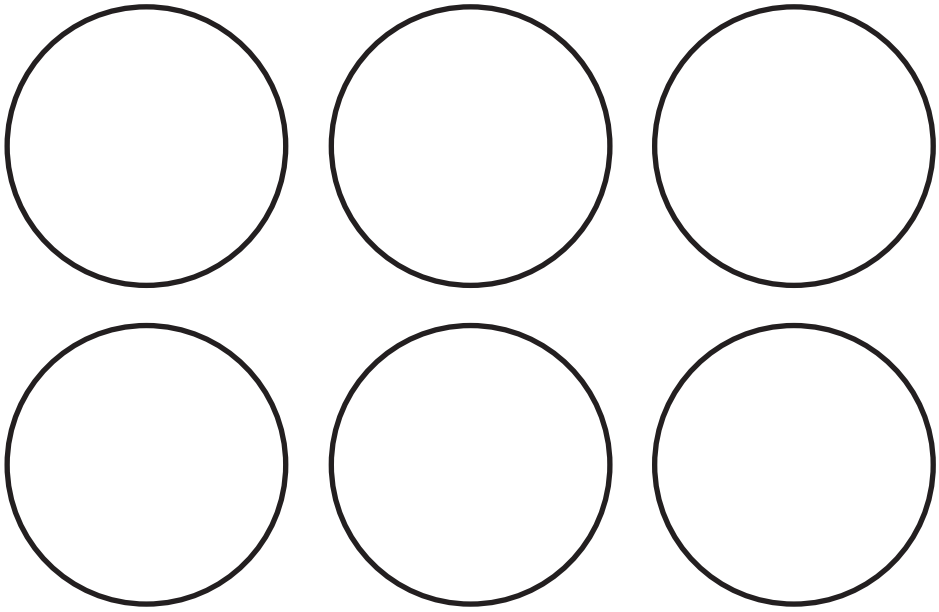
Representing Fractions in Many Ways

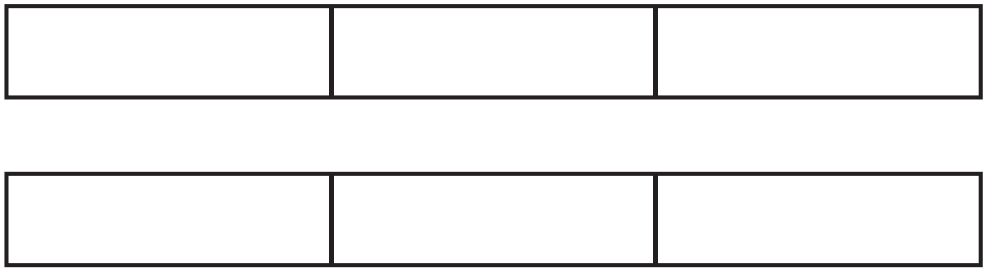
Number	Representation
	
	
	

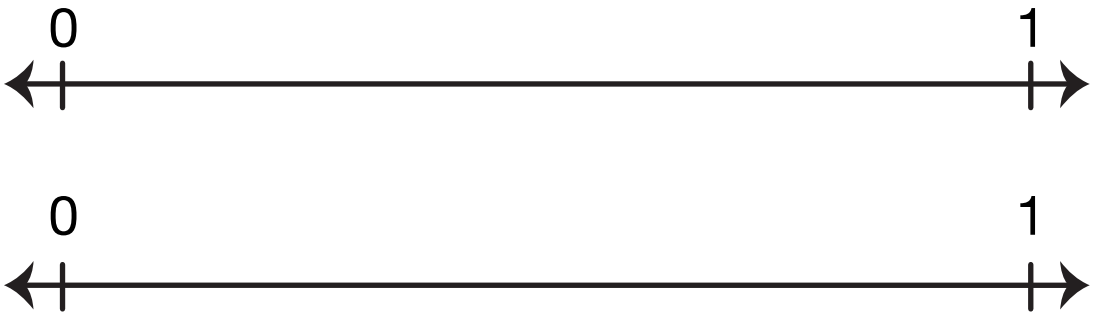
Name _____ Date _____

Show Equivalent Fractions

Fraction: _____





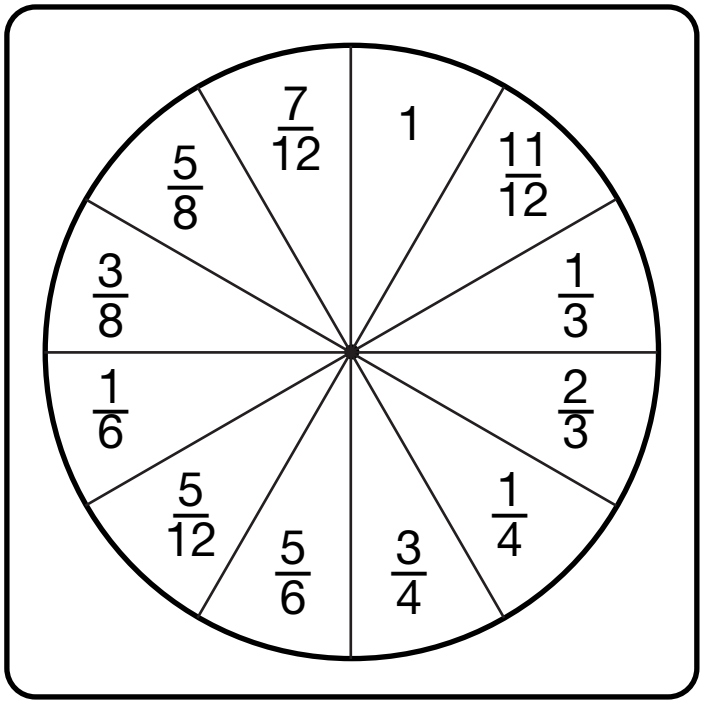


Number sentence: _____

How do you know the fractions are equivalent?

Name _____ Date _____

Fraction Games Spinner 3



Name _____ Date _____

Fraction Fill 3

The object of this game is to be the first team to earn 6 points by filling 6 circles (unit wholes) with fraction pieces. Points are recorded using number sentences to represent each filled circle. This game is for two teams of two players each.

Materials

- pink, orange, yellow, aqua, blue, and black circle pieces from two circle pieces sets
- one Fraction Fill 1 Game Board and one Fraction Fill 2 Game Board
- Spinner 3 on the *Fraction Games Spinners* pages
- clear plastic spinner or paper clip and pencil

Directions

1. For this game, the unit whole is the full circle.
2. To begin, place one piece of each color (pink, yellow, and blue) on the Fraction Fill 1 Game Board. Place one piece of each color (orange, aqua, and black) on the Fraction Fill 2 Game Board.
3. The first team spins one time. The team must place a piece or pieces on the game boards equal to the fraction shown on the spinner. For example, if a team spins $\frac{3}{8}$, they can fill 1 yellow and 1 blue on Fraction Fill 1 Game Board or they can fill 1 blue on Fraction Fill 1 Game Board and 3 blacks on Fraction Fill 2 Game Board.

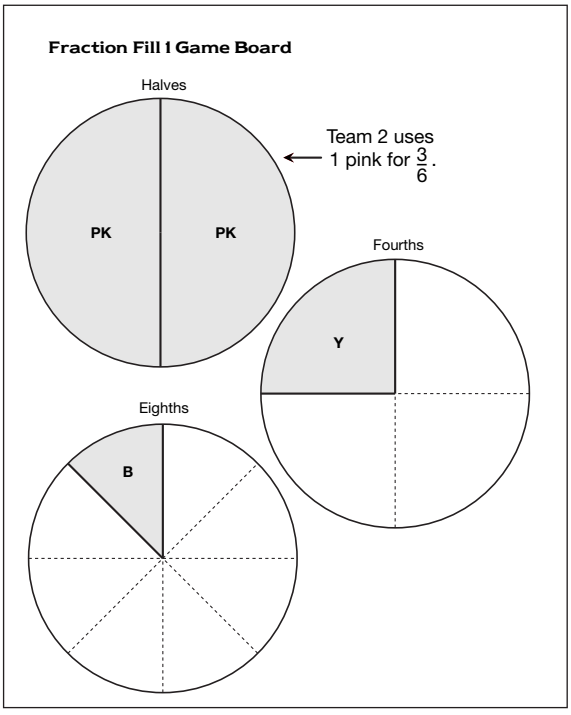
   The outside edges of the pieces must line up with the lines on the circle. This means that:

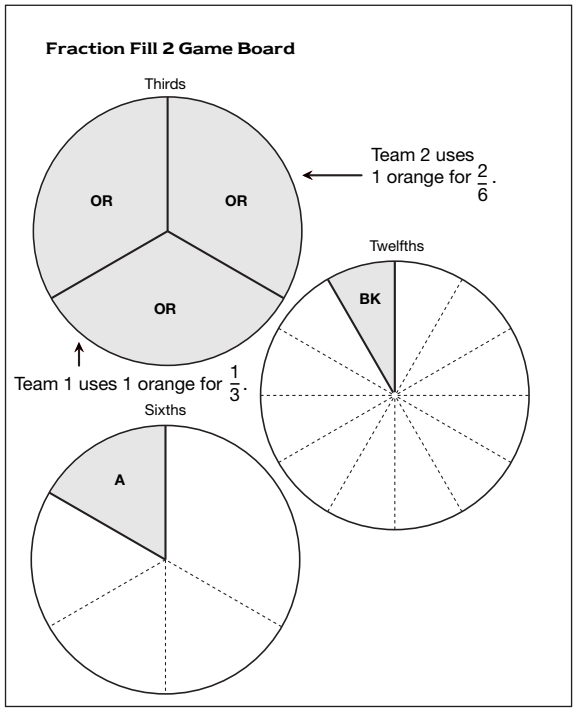
   - Only pink pieces can go the lines on the halves circle.
   - Only pink and yellow pieces can go in the fourths circle.
   - Pink, yellow, and blue pieces can go on the eighths circle.
   - Only orange pieces can go in the lines on the thirds circle.
   - Pink, orange, and aqua pieces can go in the sixths circle.
   - Pink, yellow, orange, blue, aqua, and black can go in the twelfths circle.
4. Teams earn one point each time they complete a circle. They record their points by writing a number sentence for the completed circle. For example, $\frac{1}{4}+\frac{1}{4}+\frac{1}{8}+\frac{1}{8}+\frac{1}{12}+\frac{1}{12}+\frac{1}{12}+\frac{1}{12}=1$ or $\frac{1}{4}+\frac{1}{4}+\frac{2}{8}+\frac{4}{12}=1$ represents a filled circle. The other team can ask players to explain why a move is correct before a point is recorded.

Name _____ Date _____

5. When a team fills a circle they cannot use that circle again until their next turn. They remove the pieces to reset the circle with one piece, so the circle may be used by the other team.
6. Teams take turns spinning and adding pieces. The first team to earn 6 points wins the game.

Example:
As shown on the sample game boards, Team 1 spins $\frac{1}{3}$ and places an orange on the thirds circle on Fraction Fill 2 Game Board. Team 2 spins $\frac{5}{6}$. They break $\frac{5}{6}$ into the sum of $\frac{3}{6} + \frac{2}{6}$. They know $\frac{3}{6} = \frac{1}{2}$ and $\frac{2}{6} = \frac{1}{3}$, so they place 1 pink on the halves circle on Fraction Fill 1 Game Board and 1 orange on Fraction Fill 2 Game Board. That fills two circles. They write $\frac{1}{2} + \frac{1}{2} = 1$ and $\frac{3}{3} = 1$ to record 2 points.

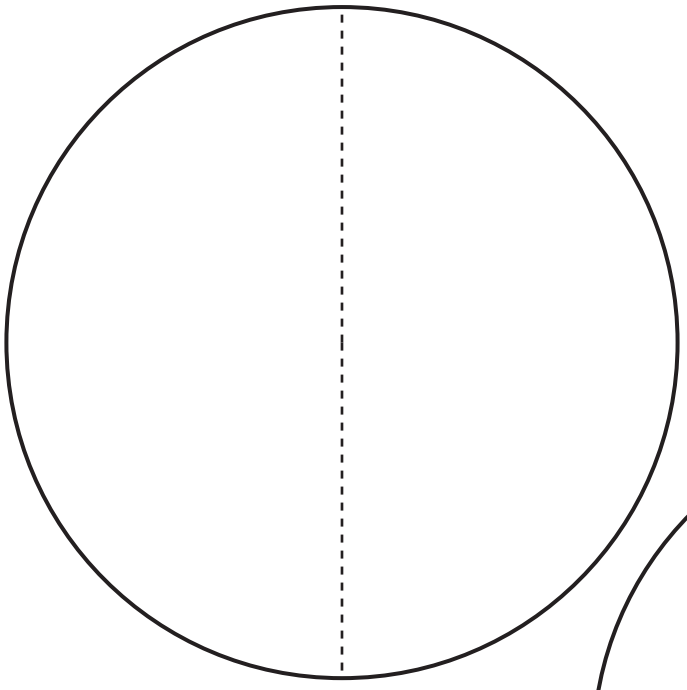




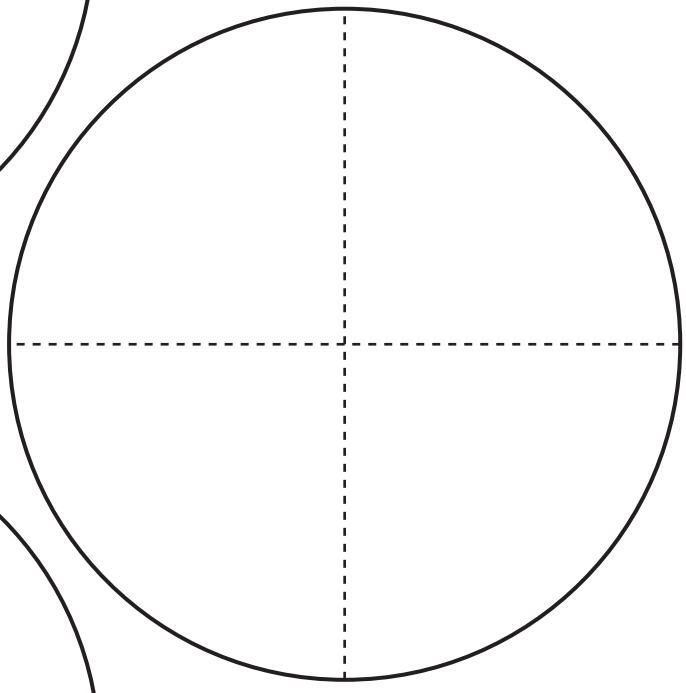
Name _____ Date _____

Fraction Fill 1 Game Board

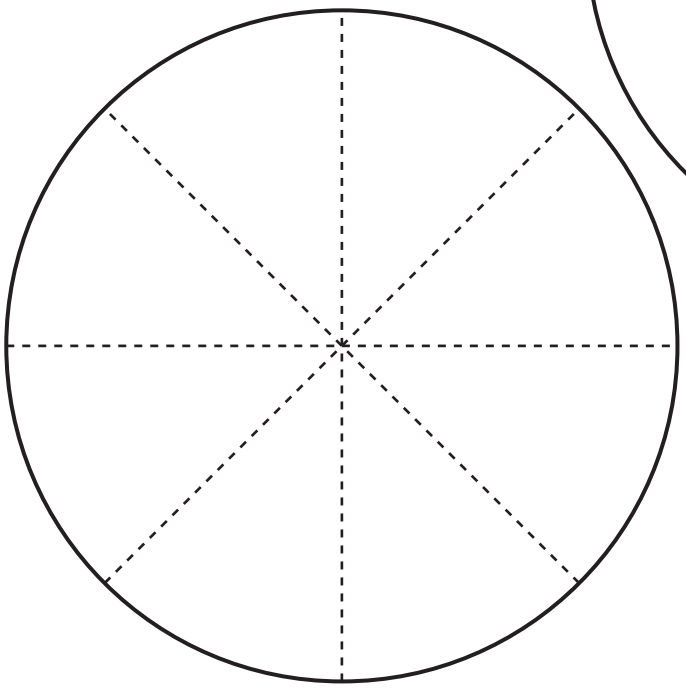
Halves



Fourths



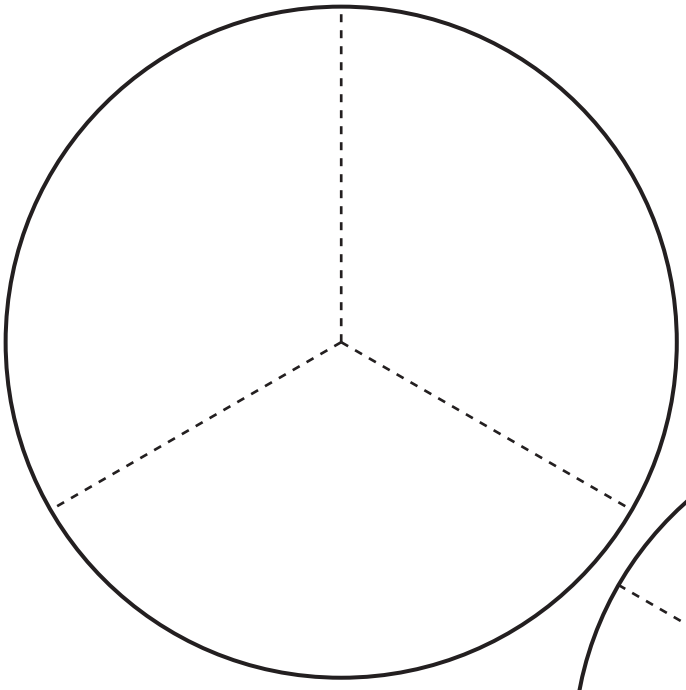
Eighths



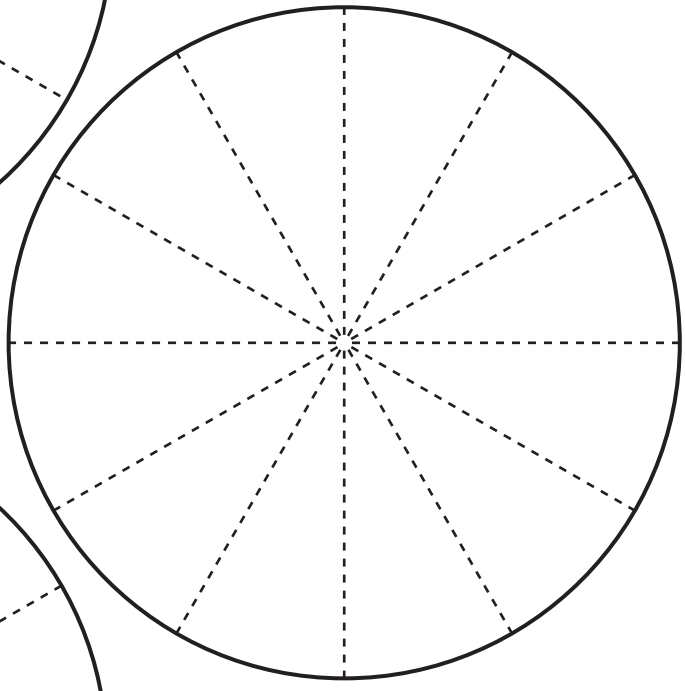
Name _____ Date _____

Fraction Fill 2 Game Board

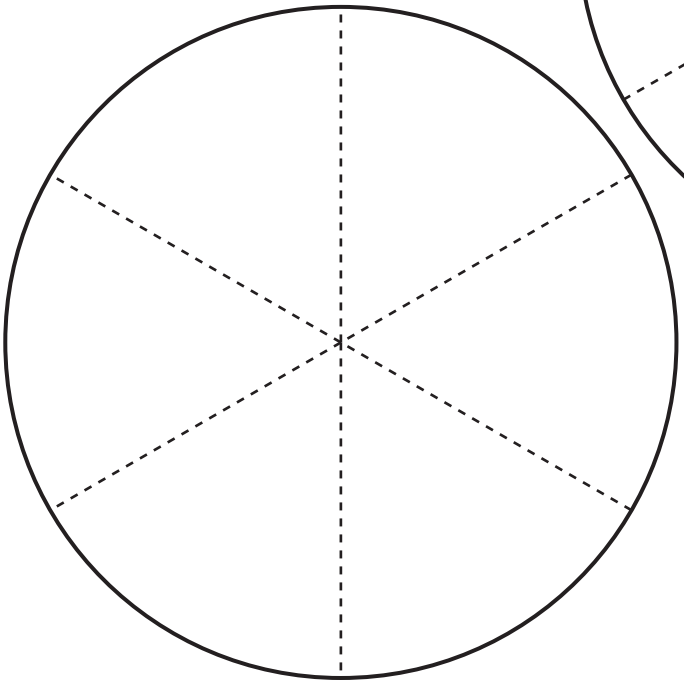
Thirds



Twelfths



Sixths



Name _____ Date _____

Fraction Trails 3

The object of this game is to be the first player to earn 6 points by landing a marker on 1 whole. This is a game for two players.

Materials

- one Fraction Trails 1 Game Board
- Spinner 3 on the *Fraction Games Spinners* pages
- clear plastic spinner or paper clip and pencil
- 6 small markers such as beans or centimeter connecting cubes

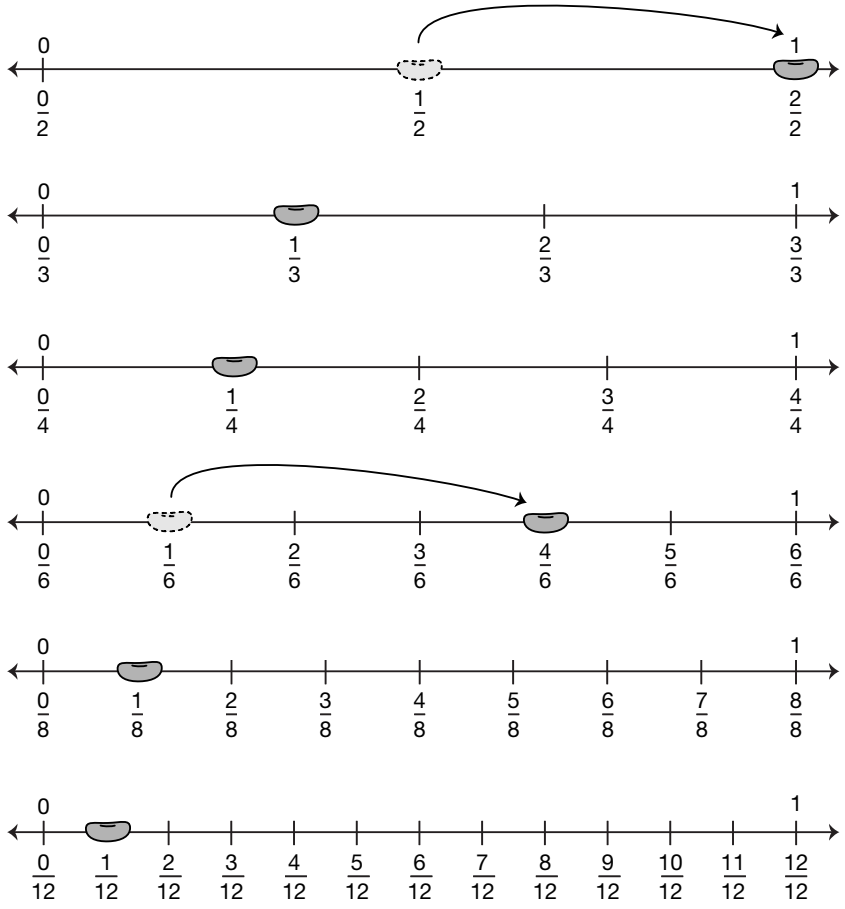
Directions

1. To begin, place one marker on the first fraction after zero on each trail of the Fraction Trails 3 Game Board.
2. The first player spins once. The player moves one or more markers a total distance equal to the fraction on the spinner. He or she must answer any questions about the move from the other player.
3. A player earns one point by moving a marker so that it lands exactly on 1 whole on any number line or trail. Once a player moves a marker to 1 whole, he or she cannot use that trail again on that turn. The marker is moved back to the first fraction after zero to be used again by the other player.
4. Players take turns until a player scores 6 points.

See the example on the next page.

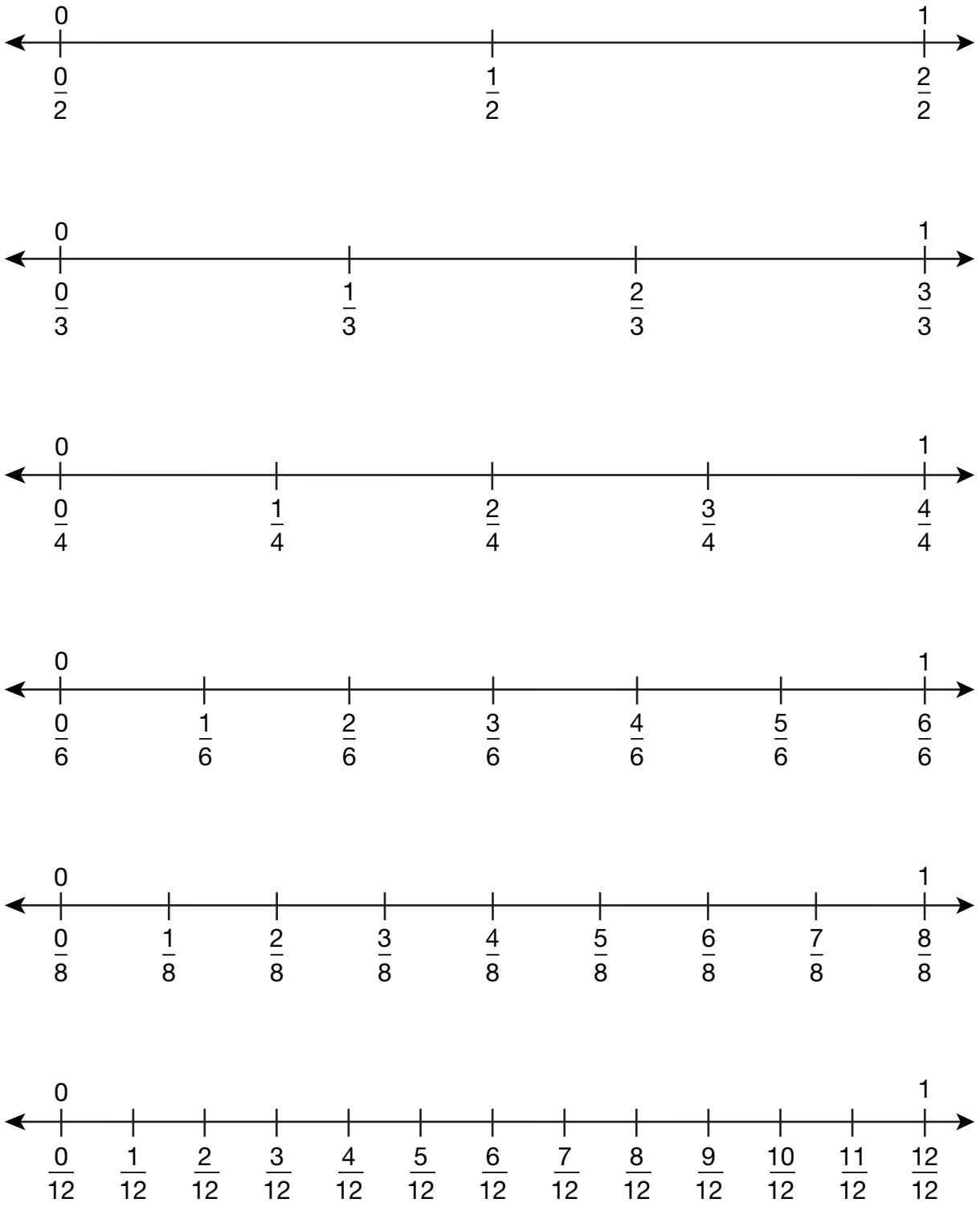
Name _____ Date _____

Example: A player's first spin lands on 1. He or she thinks, "1 is the same as $\frac{3}{6} + \frac{1}{2}$". The player moves a marker a distance of $\frac{3}{6}$ by moving it from $\frac{1}{6}$ to $\frac{4}{6}$ on the sixths trail. He or she moves a marker from $\frac{1}{2}$ to 1 on the halves trail. The player earns 1 point.



Name _____ Date _____

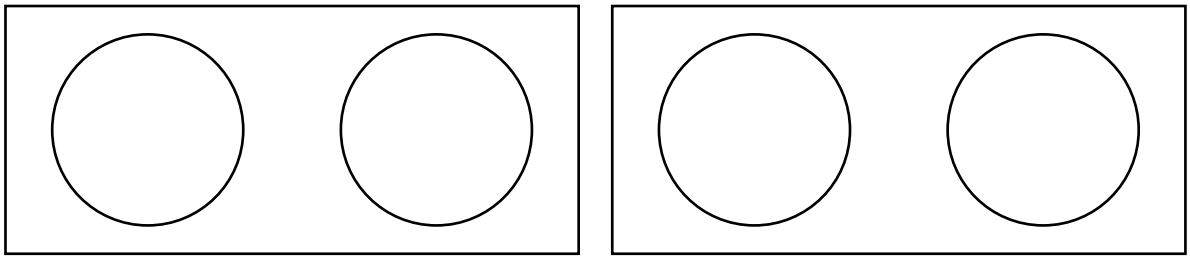
Fraction Trails 3 Game Board

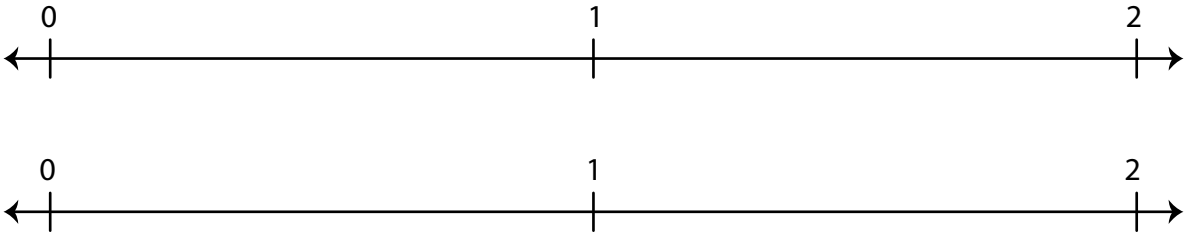


Greater Than, Less Than, or Equal To

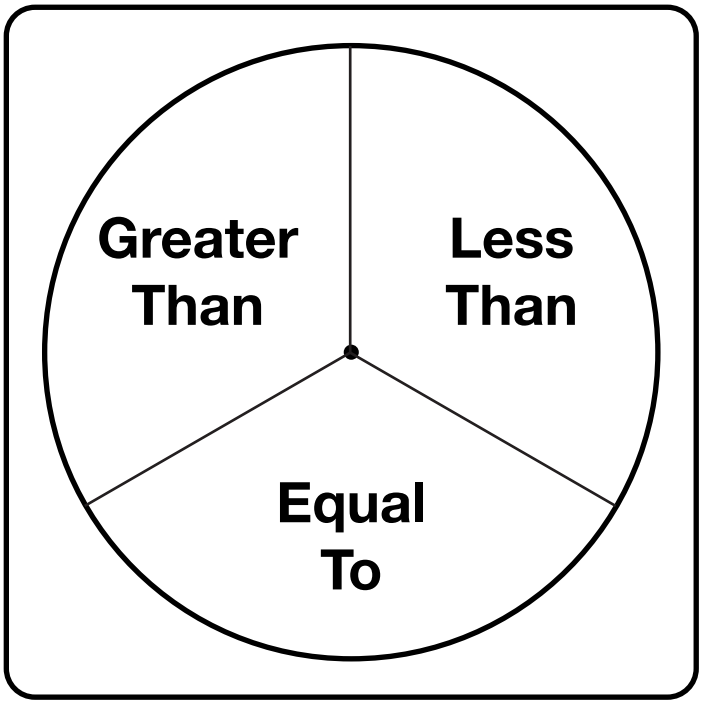
Words: _____ Numbers: _____

Words: _____ Numbers: _____

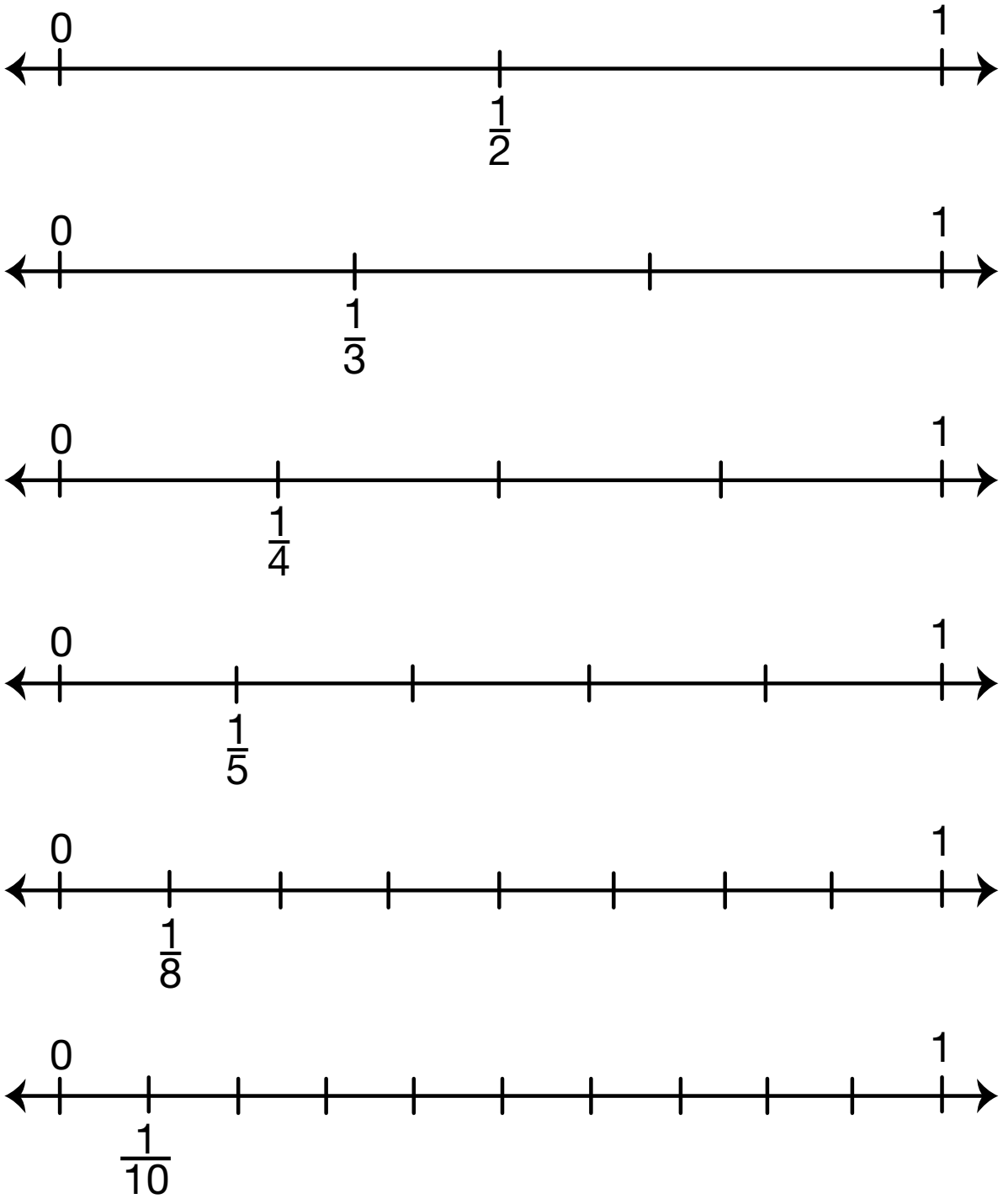




Greater Than, Less Than, Or Equal To Spinner



Fractions with 1 as the Numerator



Name _____ Date _____

Comparing Fractions Quiz

Use circle pieces, the *Fractions on Number Lines Chart* in the *Student Guide* Reference section, or your own tools and strategies to compare each pair of fractions below. For each question:

- Circle the larger fraction.
- If the fractions are equivalent, circle them both.
- Show or tell how you made your decision.

1. $\frac{7}{8}$ $\frac{7}{10}$

2. $\frac{3}{6}$ $\frac{1}{6}$

3. $\frac{4}{5}$ $\frac{2}{6}$

4. $\frac{6}{12}$ $\frac{1}{2}$

Name _____ Date _____

5. $\frac{13}{14}$ $\frac{13}{100}$

6. $\frac{10}{16}$ $\frac{5}{8}$

Comparing Fractions Quiz Feedback Box	Expectation	Check In	Comments
Compare fractions using area models and number lines.	E6		
• Fractions with the same numerator but different denominator [Q#1, 5]			
• Fractions with the same denominator but different numerators [Q#2]			
• Fractions with different numerators and denominators [Q#3, 4, 6]			
Identify equivalent fractions. [Q#4, 6]	E4		

	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.				

Name _____ Date _____

Add Fractions
Check-In: Questions 13–18
Feedback Box

	Expect-ation	Check In	Comments
Find equivalent fractions using area models and multiplication and division strategies. [Q#13–18]	E4		
Add fractions including those with unlike denominators. [Q#13–18]	E7		
Use visual models and equations to represent the solution for word problems involving adding fractions. [Q#13–18]	E8		
Use benchmark fractions to estimate sums. [Q#16]	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.				

Subtract Fractions
Check-In: Questions 14–20
Feedback Box

	Expectation	Check In	Comments
Find equivalent fractions using tools and multiplication and division strategies. [Q#14–20]	E4		
Subtract fractions including those with unlike denominators. [Q# 14–20]	E7		
Use visual models or equations to represent the solution for word problems involving subtracting fractions. [Q# 14–18]	E8		
Use benchmark fractions to estimate differences and assess the reasonableness of answers. [Q# 14–18]	E9		

	Yes . . .	Yes, but . . .	No, but . . .	No. . .
MPE2. **Find a strategy.** I choose good tools and an efficient strategy for solving the problem. [Q# 20]				
MPE5. **Show my work.** I show or tell how I arrived at my answer so someone else can understand my thinking. [Q# 20]				

Comparing and Ordering Fractions Game Cards