Unit 06: Fractions (12 days)

Possible Lesson 01 (6 days)
Possible Lesson 02 (6 days)

POSSIBLE LESSON 02 (6 days)

Lesson Synopsis:
Students use manipulatives and pictorial representations to construct and identify fractions greater than 1 (mixed numbers and improper fractions), relate fractions to decimals, and compare and order fractions.

TEKS:

4.2 ***Number, operation, and quantitative reasoning. The student describes and compares fractional parts of whole objects or sets of objects. The student is expected to:***

4.2A **Use concrete objects and pictorial models to generate equivalent fractions.** ***Supporting Standard***
4.2B **Model fraction quantities greater than one using concrete objects and pictorial models.** ***Supporting Standard***
4.2C **Compare and order fractions using concrete and pictorial models.** ***Supporting Standard***
4.2D **Relate decimals to fractions that name tenths and hundredths using concrete objects and pictorial models.** ***Readiness Standard***

4.10 ***Geometry and spatial reasoning. The student recognizes the connection between numbers and their properties and points on a number line. The student is expected to:***

4.10 **Locate and name points on a number line using whole numbers, fractions such as halves and fourths, and decimals such as tenths.** ***Readiness Standard***

Underlying Processes and Mathematical Tools:

4.14 ***Underlying processes and mathematical tools. The student applies Grade 4 mathematics to solve problems connected to everyday experiences and activities in and outside of school. The student is expected to:***

4.14A **Identify the mathematics in everyday situations.**
4.14D **Use tools such as real objects, manipulatives, and technology to solve problems.**

4.15 ***Underlying processes and mathematical tools. The student communicates about Grade 4 mathematics using informal language. The student is expected to:***

4.15A **Explain and record observations using objects, words, pictures, numbers, and technology.**
4.15B **Relate informal language to mathematical language and symbols.**

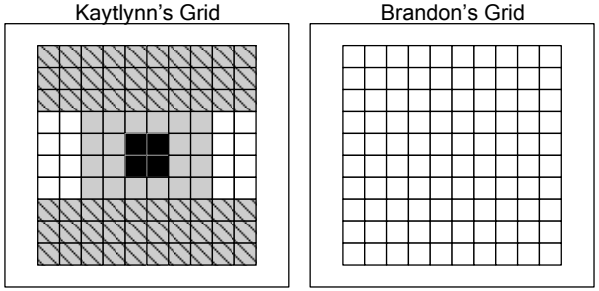
4.16 ***Underlying processes and mathematical tools. The student uses logical reasoning. The student is expected to:***

4.16A **Make generalizations from patterns or sets of examples ~~and non-examples~~.**
4.16B **Justify why an answer is reasonable and explain the solution process.**

Performance Indicator(s):
Generate an equivalent fraction and decimal from a given concrete or pictorial model that contains at least one fractional quantity greater than one and represents a real-life scenario. Place each equivalent fraction at its approximate location on a number line. In a journal entry, describe the strategy used to order the fraction totals from least to greatest. (4.2A, 4.2B, 4.2C, 4.2D; 4.10; 4.14A, 4.14D, 4.15A, 4.15B; 4.16A; 4.16B)
ELPS 1E; 5F

Sample Performance Indicator:

- Kaytlynn shaded a hundredths grid on the card below to create a tile design. In a table, record a fraction and decimal for each of the four parts of Kaytlynn's grid (e.g., black, white, gray, and striped).



Complete Brandon's design to create the same tile design as Kaytlynn. In the same table, record a fraction and decimal for each of the four parts of Brandon's grid (e.g., black, white, gray, and striped). Combine the fraction totals and decimal equivalents for each of the four parts of both Brandon's and Kaytlynn's grids.

Place each fraction total at its approximate location on a number line. In a journal entry, describe the strategy used to order the fraction totals from least to greatest.

Key Understanding(s):

- An equivalent fraction and/or an equivalent model can be generated from a given fraction, concrete object and/or pictorial model, and described using words, numbers, and symbols.
- Fractions can be related to decimals that name tenths and hundredths by using concrete objects and pictorial models.
- A mixed number is a number greater than one that represents the sum of two parts: a whole number part and a fractional part.
- A mixed number can be represented using concrete models and pictorial representations.
- Fractions in real-life situations can involve mixed numbers and improper fractions, both of which can be modeled, compared, and ordered on a number line to demonstrate and justify their numerical value in relation to one another.
- The value of an improper fraction and a mixed number in a real-life situation can be compared and justified from observations and generalizations using concrete models and pictorial representations.

Misconception(s):

- Some students may think that it is not possible or may find it very difficult to model or draw more than one whole to show improper fractions greater than one.

Underdeveloped Concept(s):

- Some students may think that the fraction with the larger digit has the greater value. Although this is true in some instances, students need to be exposed to

problems where this is not true. Also, if students are using fraction strips, circles, or other fraction manipulatives, they will be able to compare fractions without making this common error.

Vocabulary of Instruction:

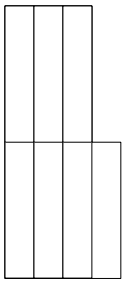
- denominator
- improper fraction
- mixed number
- numerator

Resources and References:

- National Library of Virtual Manipulatives: http://nlvm.usu.edu/en/nav/vlibrary.html

Suggested Day	Suggested Instructional Procedures	Notes for Teacher
1	**Topics:** • Fractions greater than one **Engage 1** Students use fraction strips to investigate fractions greater than one. **Instructional Procedures:** 1. Place students in pairs and distribute a set of Fraction Strips to each student. 2. Display teacher resource: **Fraction Strip Activity**. Instruct student pairs to use their Fraction Strips to model each problem and record their solutions in their math journals. Allow time for students to complete the activity. Monitor and assess student pairs to check for understanding. Facilitate a class discussion to debrief student solutions. Ask: • **What generalization can you make from your answers?** *Answers may vary. If a fraction is equal to one, the numerator and the denominator are equal; etc.* • **When have you used fractions that were equal to one?** *Answers may vary. When I was generating equivalent fractions; etc.* 3. Explain to students that a fraction equal to 1 will always have the same numerator and denominator.	**SPIRALING REVIEW** **ATTACHMENTS** • Teacher Resource: **Fraction Strip Activity KEY** (1 per teacher) • Teacher Resource: **Fraction Strip Activity** (1 per teacher) **MATERIALS** • Fraction Strips (1 set per student) (previously created in Unit 06 Lesson 01 Explore/Explain 2) • math journal (1 per student) **TEACHER NOTE** Students should be aware that fractions with the same numerator and denominator are included in the definition of an improper fraction, which is a fraction with a numerator that is greater than or equal to the denominator.

Suggested Day	Suggested Instructional Procedures	Notes for Teacher
	Topics: • Mixed number representations **Explore/Explain 1** Students investigate mixed numbers and improper fractions using fraction strips. Students discuss patterns and relationships between mixed numbers and improper fractions. **Instructional Procedures:** 1. Display the number $3\frac{1}{2}$ for the class to see. Ask: • **Can you have $3\frac{1}{2}$ of something? Explain.** *(yes) Answers may vary. Quantities of food; measurement; time; etc.* • **What do you think $3\frac{1}{2}$ means?** *(3 wholes and $\frac{1}{2}$ of 1 whole)* 2. Explain to students that, in mathematics, this is called a mixed number. Ask: • **Why do you think $3\frac{1}{2}$ is called a mixed number?** *Answers may vary. It contains a "mixture" of a whole number and a fraction; etc.* • **What do you think a model of $3\frac{1}{2}$ would look like?** *(3 wholes and $\frac{1}{2}$ of a whole)* 3. Instruct students to record the number $3\frac{1}{2}$ in their math journal and then sketch a model to represent this mixed number. Allow time for students to complete the activity. Monitor and assess students to check for understanding. Facilitate a class discussion for students to share their models. 4. Place students in pairs and distribute a set of Fraction Strips and 6 copies of handout: **Mixed Number Recording Sheet** to each student. 5. Display teacher resource: **Mixed Number Recording Sheet**. Explain to students that they are going to be renaming $3\frac{1}{2}$ as an improper fraction. Ask: • **How many names do you think you can find?** *Answers may vary; but the number of ways for this*	**ATTACHMENTS** • Teacher Resource: **Mixed Number Recording Sheet KEY** (1 per teacher) • Teacher Resource: **Mixed Number Recording Sheet** (1 per teacher) • Handout: **Mixed Number Recording Sheet** (6 per student) **MATERIALS** • math journal (1 per student) • Fraction Strips (1 set per teacher, 1 set per student) (previously created) **TEACHER NOTE** Some students. Remind students that may think that it is not possible, or may find it very difficult, to model or draw more than one whole to show improper fractions greater than 1 that the denominator of the fraction in a mixed number determines how many parts each of the whole is divided into. It also determines what the denominator of the improper fraction will be. **TEACHER NOTE** When naming mixed numbers, the word "and" is used between the "whole" and the "fractional part" of the whole. Remind students, using "and" occurs in

Suggested Day	Suggested Instructional Procedures	Notes for Teacher
	activity will depend upon the fraction strips used. 6. Using the displayed teacher resource: **Mixed Number Recording Sheet**, place a "one whole" fraction strip into the top space. Instruct students to replicate the model on a copy of their handout: **Mixed Number Recording Sheet**, and trace each fraction strip laid on the model and label it. Continue to cover each whole space on the recording sheet with "one whole" strips. Ask: • **How many whole pieces will fit in this shape?** *(3)* 7. Instruct student pairs to find the remaining piece from their set of Fraction Strips that will fit into the leftover part of the shape on their handout: **Mixed Number Recording Sheet**. Allow time for students to complete the activity. Monitor and assess student pairs to check for understanding. Facilitate a class discussion to debrief student solutions. Ask: • **What is the size of the piece needed to fit in the blank space?** *($\frac{1}{2}$)* 8. Facilitate a class discussion to summarize that the name of this shape when it is covered with fraction strips is three and one-half. 9. Instruct student pairs to repeat the process with another copy of their handout: **Mixed Number Recording Sheet** to find how many halves it would take to cover the shape. Remind students to trace and label the recording sheet to show the number of $\frac{1}{2}$ pieces in the shape.  $3\frac{1}{2} = \frac{7}{2}$ Ask: • **How many one-half pieces are needed to cover this model?** *(7)* • **What is unusual about the fraction created by this model?** *Answers may vary: The numerator is greater than the denominator; etc.* 10. Instruct students to record the equation $3\frac{1}{2} = \frac{7}{2}$ on their handout: **Mixed Number Recording Sheet**. 11. Record the words **improper fraction** and **mixed number** for the class to see. Instruct students to	decimal numbers and mixed numbers.

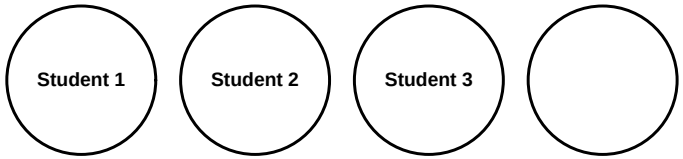
Suggested Day	Suggested Instructional Procedures	Notes for Teacher
	examine the numbers $3\frac{1}{2}$ and $\frac{7}{2}$, and then logically explain to their partner which term matches the numbers created. Allow time for students to complete their discussions. Monitor and assess student pairs to check for understanding. Facilitate a class discussion about the terms improper fraction and mixed number. Ask: • **Which number is a mixed number? Explain.** *($3\frac{1}{2}$ is a mixed number because it is composed of a whole number "3" and a fractional part of the whole "$\frac{1}{2}$".)* • **Which number is an improper fraction? Explain**. *($\frac{7}{2}$ is an improper fraction because the numerator is greater than the denominator.)* 12. Instruct student pairs to select another fraction strip and try to cover the shape on their handout: **Mixed Number Recording Sheet** with that piece. If they are successful, they should trace and label the recording sheet to show the number of like fractional pieces that are needed to fill the shape. Instruct students to take turns selecting pieces until they have tried recording all the fraction strip sizes between pair. Allow time for students to complete the activity. Monitor and assess students to check for understanding. 13. Instruct students to record all the fraction relationships they discovered for $3\frac{1}{2}$ in their math journal. Allow time for students to complete the activity. Monitor and assess students to check for understanding. Facilitate a class discussion about the fraction relationships. $3\frac{1}{2}=\frac{7}{2}=\frac{14}{4}=\frac{28}{8}=\frac{21}{6}=\frac{35}{10}=\frac{42}{12}=\frac{56}{16}$ Ask: • **Which fraction strips did not work? Explain.** *(The $\frac{1}{3}$s and $\frac{1}{5}$s) Answers may vary: They would fit on the one whole but would not fit on the $\frac{1}{2}$ piece without cutting or tearing the fraction strip; etc.*	
2	**Topics:** • Mixed number representations **Explore/Explain 2**	**SPIRALING REVIEW** **ATTACHMENTS** • Class Resource: **Fraction**

Suggested Day	Suggested Instructional Procedures	Notes for Teacher

Students investigate mixed numbers and improper fractions using various representations including fraction circles. Students discuss patterns and relationships between mixed numbers and improper fractions.

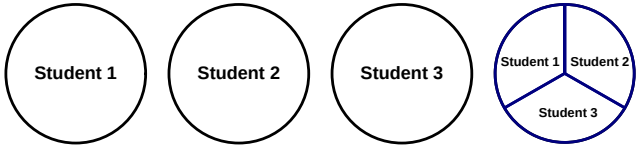
Instructional Procedures:

1. Prior to instruction, create a set of Fraction Circles for every 2 students by copying class resource: **Fraction Circles** on cardstock, cutting apart, and placing in a plastic zip bag. Additionally, create 2 sets of Fraction Circles for each teacher by copying teacher resource: **Fraction Circles** on cardstock, cutting apart, and placing in a plastic zip bag.
2. Invite 3 student volunteers to the front of the room and display 4 "one whole" circles from a set of Fraction Circles for the class to see. Explain to students that these circles (or wholes) each represent a pizza.
3. Display the following problem for the class to see: **Three friends share 4 pizzas equally**.
   Ask:
   - **How can these 3 students equally share the pizzas?** *(Each student would get 1 whole "pizza" and one slice of the fourth pizza that has been cut into three equal pieces.)*
   - **How much pizza will each friend get?** *(1 and* $\frac{1}{3}$ pieces*)*
4. Instruct students to record the problem and solution in their math journal. Allow students about 4 – 5 minutes to complete the activity. Monitor and assess students to check for understanding. Facilitate a class discussion to debrief student solutions.
   Ask:
   - **What operation could you use to solve this problem? Explain.** *(division; 4 ÷ 3 = ?)*
   - **What fraction represents this division problem?** *(*$\frac{4}{3}$*)*
5. Remind students that this is called an improper fraction. Draw 4 circles for the class to see.
   Ask:
   - **What does each of these circles represent in the problem?** *(The pizzas)*
6. Label each of the 3 whole pizzas with the names of the student volunteers- "Student 1," "Student 2," etc.



Ask:
- **How many pizzas are left?** *(1)*

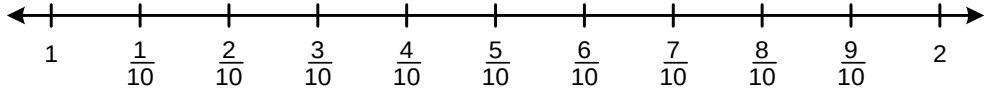
Circles (1 per 2 students)
- Teacher Resource: **Fraction Circles** (1 per teacher)
- Teacher Resource: **What's My Model? KEY** (1 per teacher)
- Handout: **What's My Model?** (1 per student)
- Teacher Resource: **Cyndy's Brownie KEY** (1 per teacher)
- Teacher Resource: **Cyndy's Brownie** (1 per teacher)
- Teacher Resource: **Fraction Models Greater Than One Problem Solving KEY** (1 per teacher)
- Teacher Resource: **Fraction Models Greater Than One Problem Solving** (1 per teacher)
- Handout: **Fraction Models Greater Than One Problem Solving** (1 per student)
- Teacher Resource (optional): **Mixed Numbers and Improper Fractions Modeling Practice KEY** (1 per teacher)
- Handout (optional): **Mixed Numbers and Improper Fractions Modeling Practice** (1 per student)
- Teacher Resource (optional): **Mixed Number Pattern Block Activity KEY** (1 per teacher)
- Handout (optional): **Mixed Number Pattern Block Activity** (1 per student)

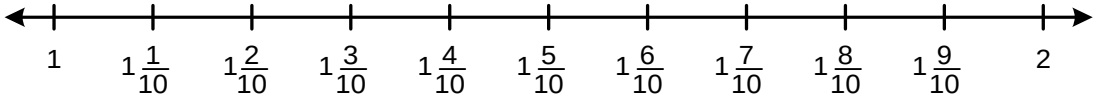
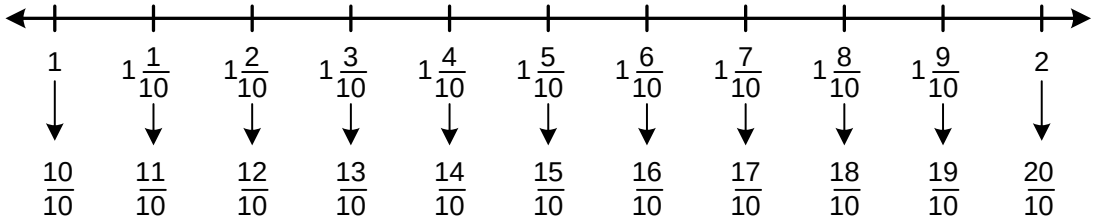
Suggested Day	Suggested Instructional Procedures	Notes for Teacher
	• **How can 3 friends share the 1 pizza?** *(Divide the pizza into 3 equal parts.)* 7. Demonstrate dividing the last pizza into 3 equal pieces and label each piece.  Ask: • **What fraction could you use to represent the division of the last pizza among the 3 friends?** *($\frac{1}{3}$)* • **How many pizzas will each friend get?** *($1\frac{1}{3}$)* • **What kind of number is this called?** *(mixed number)* • **Which number is the whole number?** *(1)* • **Which number is the fraction?** *($\frac{1}{3}$)* • **Are $\frac{4}{3}$ and $1\frac{1}{3}$ equivalent? Explain.** *(yes) Answers may vary. Because the model shows that the 4 pizzas divided among the 3 friends is equal to one and one-third; etc.* • **What do you notice about the denominators of improper fractions and their equivalent mixed number?** *(They are always the same number.)* 8. Distribute handout: **What's My Model?** to each student. Instruct students to use their set of Fraction Circles to create models for each problem. Allow time for students to complete the activity. Monitor and assess students to check for understanding. Facilitate a class discussion to debrief student solutions. Ask: • **How can you tell if a fraction can be written as a mixed number?** *(The numerator is greater than the denominator.)* • **How did you solve the pizza sharing problem?** *Answers may vary. I used models of fraction circles; etc.* 9. Display teacher resource: **Cyndy's Brownie**. Facilitate a class discussion about the problem situation. Instruct students to record the problem situation and solution process in their math journal. Ask:	**MATERIALS** • cardstock (9 sheets per 2 students, 18 sheets per teacher) • scissors (1 per teacher) • plastic zip bag (sandwich sized) (1 per 2 students, 1 per teacher) • math journal (1 per student) **RESEARCH** According to *NCTM (2007)*, "Experience with two or more manipulatives can help [students] develop facility with different models of fractions." **TEACHER NOTE** It is important for students to think about what the fractional part of the mixed number means in real-life situations. This goes back to "interpreting the remainder" in division. **ADDITIONAL PRACTICE** Handout (optional): **Mixed Numbers and Improper Fractions Modeling Practice** and handout: **Mixed Number Pattern Block Activity** may be used as additional practice if needed.

Suggested Day	Suggested Instructional Procedures	Notes for Teacher
	• **How many whole pans of brownies did Cyndy make?** *(3)* • **Cyndy cut each pan into how many equal parts? How do you know?** *(8) Answers may vary. She is sharing the brownies with 7 of her friends, and when she includes herself - that makes 8; etc.* • **How many whole pans of brownies did Cyndy have to share after she tasted the 1 brownie?** *(2)* • **What fractional part of the third pan of brownies is left to share?** *($\frac{7}{8}$)* • **How many individual brownies are left to share?** *(23)* • **How could you write the amount Cyndy has left to share as a mixed number and an improper fraction?** *($2\frac{7}{8}$ and $\frac{23}{8}$)* 10. Distribute handout: **Fraction Models Greater Than One Problem Solving** to each student 11. Display problem 1 from teacher resource: **Fraction Models Greater Than One Problem Solving**. Demonstrate the solution process of how to best complete the table to solve each problem. Instruct students to replicate the model on their handout: **Fraction Models Greater Than One Problem Solving**. 12. Instruct students to complete the remainder of handout: **Fraction Models Greater Than One Problem Solving** for independent practice and/or homework.	
3	**Topics:** • Relating fractions to decimals **Explore/Explain 3** Students investigate the relationship between fractions and decimals using money and grids. **Instructional Procedures:** 1. Prior to instruction, create a teacher resource: **Grid Overlays** for each teacher by copying on transparency film. 2. Place students in pairs. Instruct student pairs to imagine what the Fraction Strips they have been using to model fractions would look like if one strip were divided into 100 equal parts. Ask: • **Can you describe what the parts of the model would look like?** *Answers may vary. The sections would be smaller and there would be more of them; etc.* • **How would the denominator of the fraction be affected?** *(The denominator would be 100 because the strip was divided into 100 equal parts.)* 3. Display teacher resource: **Money Activity**. 4. Distribute handout: **Money Activity** to each student and a Bag of Play Money to each pair. Instruct	**SPIRALING REVIEW** **ATTACHMENTS** • Teacher Resource: **Money Activity KEY** (1 per teacher) • Teacher Resource: **Money Activity** (1 per teacher) • Handout: **Money Activity** (1 per student) • Teacher Resource: **Money/Fraction/Decimal Recording Grids SAMPLE KEY** (1 per teacher) • Teacher Resource: **Money/Fraction/Decimal Recording Grids** (1 per teacher) • Handout:

Suggested Day	Suggested Instructional Procedures	Notes for Teacher
	student pairs to use the pennies and dimes to complete the handout. Allow time for students to complete the activity. Monitor and assess student pairs to check for understanding. Facilitate a class discussion to debrief student solutions. Ask: • **What fractional part of a dollar is a penny? How do you know?** *($\frac{1}{100}$) Answers may vary. Because there are 100 pennies in a dollar and 1 out of 100 = $\frac{1}{100}$; etc.* • **What fractional part of a dollar is a dime? How do you know?** *($\frac{1}{10}$) Answers may vary. Because there are 10 dimes in a dollar and 1 out of 10 = $\frac{1}{10}$; etc.* • **How many pennies equal one dime?** *(10)* • **Is there another way to represent a dime as a fractional part of a dollar? Explain.** *(yes) Answers may vary: A dime also represents 10 pennies; a dime is also $\frac{10}{100}$ of a dollar; etc.* • **When you combine the dimes and pennies, what fraction of a dollar is represented?** *($\frac{44}{100}$)* • **How do you say this amount of money as a decimal?** *(forty-four hundredths)* 5. Explain to students that the word name for the fraction and the decimal are the same: forty-four hundredths. Therefore, if they can name either the fraction or decimal, they should be able to name its equivalent. 6. Display teacher resource: **Money/Fraction/Decimal Recording Grids**. Instruct student pairs to remove all the coins except the dimes from their Bag of Play Money. Demonstrate how to use the grids to show fraction to decimal equivalents. Explain to students that they will only be selecting dimes from their bags to begin the activity. Model taking 3 dimes out of a Bag of Play Money. Ask: • **How many dimes are here?** *(3)* • **What is the value of this collection of coins?** *(30 cents)* 7. Using the displayed teacher resource: **Money/Fraction/Decimal Recording Grids**, demonstrate completing problem 1 in the left column on the table to represent these amounts. Ask: • **How could you shade this first grid to show this amount of money?** *(Shade three of the columns since there are ten columns.)*	**Money/Fraction/Decimal Recording Grids** (3 per 2 students) • Teacher Resource: **Grid Overlays** (1 per teacher) • Teacher Resource: **Fraction to Decimal Practice KEY** (1 per teacher) • Handout: **Fraction to Decimal Practice** (1 per student) • Teacher Resource: **Money/Fraction/Decimal Recording Grids – Fractions Greater Than One SAMPLE KEY** (1 per teacher) • Teacher Resource: **Money/Fraction/Decimal Recording Grids – Fractions Greater Than One** (1 per teacher) • Handout: **Money/Fraction/Decimal Recording Grids – Fractions Greater Than One** (1 per student) **MATERIALS** • Bag of Play Money (1 per 2 students, 1 per teacher) (previously created in Unit 01 Lesson 02 Explore/Explain 2) • transparency film (1 sheet per teacher) **TEACHER NOTE** Hundredths and tenths grid

Suggested Day	Suggested Instructional Procedures	Notes for Teacher
	8. Using the displayed teacher resource: **Money/Fraction/Decimal Recording Grids**, demonstrate shading 3 tenths in the first grid. Facilitate a class discussion for students to indicate how to complete problems 2 – 5 in the left column of the table for the dimes selected. 9. Lay the hundredths portion of teacher resource: **Grid Overlay** over the tenths grid the displayed teacher resource: **Money/Fraction/Decimal Recording Grids** and shade the hundredths grid to show that there is an equivalency: $\frac{3}{10} = \frac{30}{100}$. 10. Using the displayed teacher resource: **Money/Fraction/Decimal Recording Grids**, demonstrate shading the hundredths grid to represent the equivalency. Facilitate a class discussion for students to indicate how to complete the right column of the teacher resource. 11. Distribute 3 copies of handout: **Money/Fraction/Decimal Recording Grids** to each student pair. Instruct student pairs to use their Bag of Play Money to select 3 separate amounts and complete a recording sheet for each amount. Allow time for student pairs to complete the activity. Monitor and assess students to check for understanding. Facilitate a class discussion to debrief student solutions. 12. Distribute handout: **Fraction to Decimal Practice** to each student. Instruct students to use the money amounts shown to shade each grid, and then complete the table to show the fraction to decimal equivalents. Allow time for students to complete the activity. Monitor and assess students to check for understanding. Facilitate a class discussion to debrief student solutions. 13. Explain to students that the money amounts used in the activity were all under $1.00. Ask: • **What if you had more than a dollar's worth of coins in your Bag of Play Money? Could you still find a fraction to decimal equivalent for that amount of money? How do you know?** *(yes) Answers may vary. The dollar amounts would represent the "wholes" and the remaining coins would represent the fraction or decimal amount; etc.* • **What do you call a number that has a whole number and a fraction?** *(a mixed number)* 14. Display teacher resource: **Money/Fraction/Decimal Recording Grids – Fractions Greater than One**. Invite several students to identify an amount of money that is greater than 1 dollar, but less than 4 dollars. Facilitate a class discussion about how to use the grids to represent these amounts. Ask: • **How could you use these grids to represent this amount?** *(Shade the grids as necessary.)* • **What mixed number could be used to represent this amount?** *Answers may vary.* • **What decimal represents this amount?** *Answers may vary.* • **How could you write these amounts in words?** *Answers may vary.* Remind students that the word name for the mixed number and the decimal are the same – just as it was for fractions to decimals. Therefore, if they can name either the mixed number or decimal, they should be able to name its equivalent. 15. Instruct student pairs to return the 10 dimes to their Bag of Play Money and remove the dollar bill for the	transparencies can be made for students who struggle with the tenths to hundredths equivalencies. This way, they can manipulate the grids themselves to better understand the relationship between tenths and hundredths.

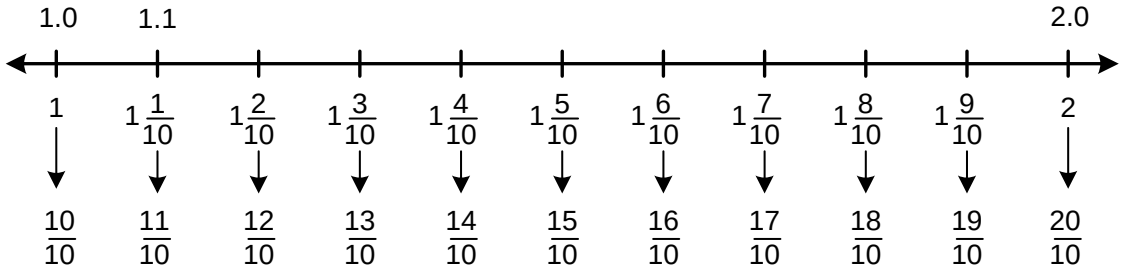
Suggested Day	Suggested Instructional Procedures	Notes for Teacher
	remainder of the activity. 16. Distribute handout: **Money/Fraction/Decimal Recording Grids – Fractions Greater than One** to each student. Instruct student pairs to take turns drawing a handful of money from their bag (must be an amount greater than $1), shade the grids to represent the value of the collection of coins drawn, and record the mixed number to decimal equivalents. Allow time for students to complete the activity. Monitor and assess student pairs to check for understanding. Facilitate a class discussion to debrief student solutions.	
4	**Topics:** • Relating fractions to decimals **Explore/Explain 4** Students investigate the relationship between fractions and decimals using number lines **Instructional Procedures:** 1. Prior to instruction, create class resource: **Fraction to Decimal Model Cards** for every 2 students by copying on cardstock, cutting apart, laminating, and placing in a plastic zip bag. 2. Display teacher resource: **Mixed Number Line**. 3. Distribute handout: **Mixed Number Line** to each student. Ask: • **What are the two whole numbers labeled on this number line?** *(1 and 2)* • **How many equal sections has this number line been divided into?** *(10)* 4. Using the displayed teacher resource: **Mixed Number Line**, demonstrate how to count the sections on the number line to ensure students are not counting the tick marks and are only counting the sections between the tick marks. Ask: • **What fraction could be used to represent each mark on the number line?** ($\frac{1}{10}$) 5. Instruct students to label their number lines on their handout: **Mixed Number Line** with the fraction one-tenth. Allow time for students to complete their labels. 6. Using the displayed teacher resource: **Mixed Number Line**, create the following number line for the class to see.  Ask:	**SPIRALING REVIEW** **ATTACHMENTS** • Teacher Resource: **Mixed Number Line** (1 per teacher) • Handout: **Mixed Number Line** (1 per student) • Class Resource: **Fraction to Decimal Model Cards** (1 per 2 students) • Teacher Resource: **Fraction to Decimal Model Recording Sheet KEY** (1 per teacher) • Handout: **Fraction to Decimal Model Recording Sheet** (1 per student) **MATERIALS** • cardstock (1 sheet per 2 students) • scissors (1 per teacher) • plastic zip bag (sandwich sized) (1 per 2 students) **TEACHER NOTE** The number line is another model

Suggested Day	Suggested Instructional Procedures	Notes for Teacher
	• **Why is this number line labeled incorrectly?** *(Even though the fractions are correct, this number line shows the whole numbers 1 and 2. So, the numbers in between these numbers should be mixed numbers.)* 7. Using the displayed teacher resource: **Mixed Number Line**, create the following number line for the class to see.  Allow time for students to make self-corrections, if needed, and label their number lines correctly with the mixed numbers. 8. Facilitate a class discussion about how and where to label the decimal equivalents on this same number line. Ask: • **How could you write the whole number 1 on this number line as an improper fraction?** *($\frac{10}{10}$)* • **What will the next improper fraction be on this number line? Explain.** *($\frac{11}{10}$) Answers may vary.* *Because the distance from 1 to $\frac{11}{10}$ is $\frac{1}{10}$ more. So, $\frac{10}{10}$ plus $\frac{1}{10}$ more is $\frac{11}{10}$; etc.* 9. Instruct students to label their number lines on their handout: **Mixed Number Line** with the corresponding improper fractions. Allow time for students to complete their labels.  Ask: • **What improper fraction is equivalent to the whole number 2? How do you know?** *($\frac{20}{10}$) Answers*	to show that a mixed number, an improper fraction, and a decimal are different representations of the same value. It demonstrates how these numbers are the same distance from zero on the number line.

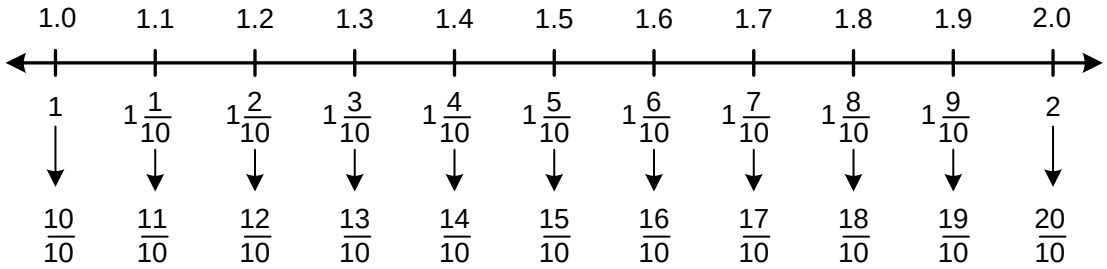
Suggested Day	Suggested Instructional Procedures	Notes for Teacher

may vary. Because it is $\frac{1}{10}$ away from $\frac{19}{10}$ the previous improper fraction; OR because $\frac{20}{10}$ is the same as 20 ÷ 10 = 2; etc.

- **How and where could you write the mixed number $1\frac{1}{10}$ on this number line as a decimal?** *(1.1)*



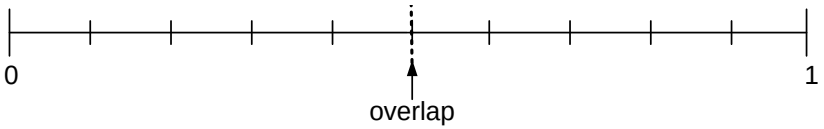
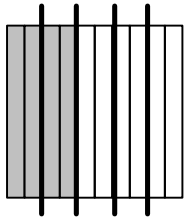
10. Instruct students to label their number lines on their handout: **Mixed Number Line** with the corresponding decimal numbers. Allow time for students to complete their labels.

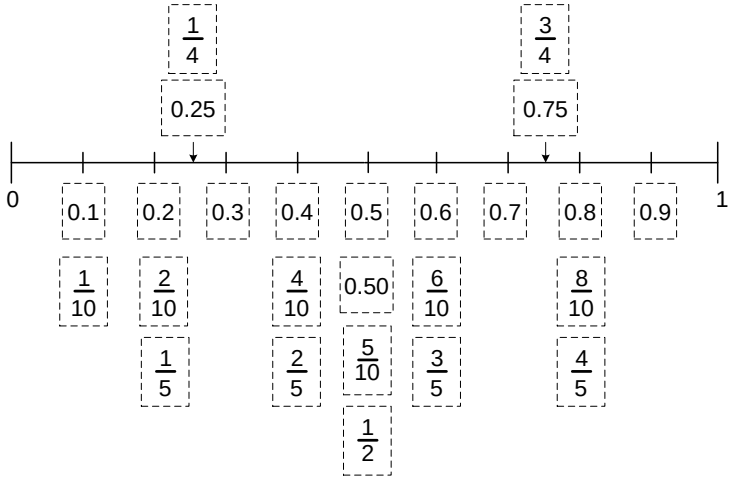


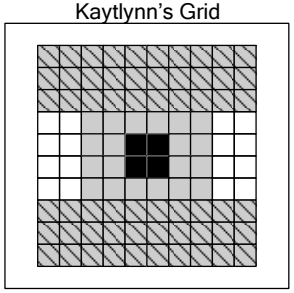
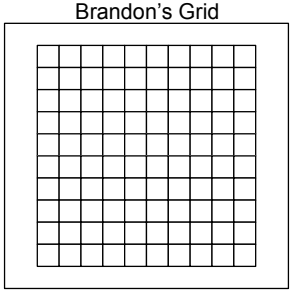
Ask:

- **What decimal number is equivalent to the whole numbers 1 and 2?** *(1.0 and 2.0)* Instruct students to label these parts of their number lines as well.

11. Place students in pairs. Distribute class resource: **Fraction to Decimal Model Cards** to each pair and handout: **Fraction to Decimal Model Recording Sheet** to each student. Instruct student pairs to identify the cards that model each mixed number or decimal, and record the decimal equivalents to each mixed number. Allow time for students to complete the activity. Monitor and assess student pairs to check for understanding. Facilitate a class discussion to debrief student solutions.

Suggested Day	Suggested Instructional Procedures	Notes for Teacher
5	**Topics:** • Relating fractions to decimals **Elaborate 1** Students investigate the relationship between fractions and decimals using number lines **Instructional Procedures:** 1. Distribute a sheet of 12” x 18” construction paper, pair of scissors, glue stick, handout: **Number Line – Tenths**, handout: **Fraction/Decimal Number Cards**, and handout: **Fraction/Decimal Model Cards** to each student. Instruct students to cut-out and glue each number line onto their sheet of construction paper, overlapping the half-way point to connect the number lines.  2. Instruct students to cut out the cards from both handout: **Fraction/Decimal Number Cards** and handout: **Fraction/Decimal Model Cards**. Instruct students to match the cards from handout: **Fraction/Decimal Model Cards** to its equivalent card from handout: **Fraction/Decimal Number Cards** and record the fraction/decimal number in the spaces provided on each model card. Remind students that some fractions and/or decimals may be equivalent. Encourage students to mark their models to show all equivalencies they may find.  ***This model shows*** $\frac{4}{10} = \frac{2}{5}$ Allow time for students to complete the activity. Monitor and assess students to check for understanding. Ask: • **How can you use your Fraction/Decimal Model Cards to show or find an equivalent fraction?**	**SPIRALING REVIEW** **ATTACHMENTS** • Handout: **Number Line – Tenths** (1 per student) • Teacher Resource: **Fraction/Decimal Model Cards KEY** (1 per teacher) • Handout: **Fraction/Decimal Number Cards** (1 per student) • Handout: **Fraction/Decimal Model Cards** (1 per student) **MATERIALS** • construction paper (12” x 18”) (1 per student) • scissors (1 per student) • glue stick (1 per student) **TEACHER NOTE** Two blank hundredths grids are provided on handout: **Number Line – Tenths** as an extension for students to create their own fraction to decimal equivalent. They can write the “created” decimals/fractions on the number line provided. **RESOURCES & REFERENCES** The National Library of Virtual Manipulatives provides additional practice with comparing fractions and plotting fractions on a

Suggested Day	Suggested Instructional Procedures	Notes for Teacher
	Answers may vary. I can find other equal groupings by folding the cards or by marking the models to show the other equal groupings; etc. 3. Place students in pairs. Instruct student pairs to order the cards from their handout: **Fraction/Decimal Model Cards**. Allow time for students to complete the activity. Monitor and assess student pairs to check for understanding. Facilitate a class discussion about the locations of the cards on the number line. Ask: • **How can you use your cards from Fraction/Decimal Model Cards to help you find the appropriate location for the cards from Fraction/Decimal Number Cards on the number line?** *Answers may vary. I can look at the amount shaded on each grid to determine not only the decimal/fraction amount, but to determine which amount shaded is greater; etc.* 4. Instruct students to glue the cards from handout: **Fraction/Decimal Number Cards** below the number line on their sheet of construction paper. Encourage students that may need more room to glue the fraction/decimal equivalent for $\frac{1}{4}$ and $\frac{3}{4}$ to glue these cards above the number line. Allow time for students to complete the activity. Monitor and assess students to check for understanding. Facilitate a class discussion to debrief student solutions.  	number line. http://nlvm.usu.edu/en/nav/vlibrary.html **TEACHER NOTE** Teachers may have students glue the cards from handout: **Fraction/Decimal Model Cards** to the back of their sheet of construction paper. **STATE RESOURCES** • **MTC 3 – 5**: Fractions • **MTR 3 – 5**: How Do I Compare? • **Mathematics TEKS Toolkit**: TEKS Clarifying Activity/Lesson/Assessment • **TEXTEAMS: Rethinking Elementary Mathematics Part I**: Tenths Task Card; NOT Tenths Task Card; Hundredths Task Card; Show Me! Tell Me! Task Card • **TEXTEAMS: Rethinking**

Suggested Day	Suggested Instructional Procedures	Notes for Teacher
		Elementary Mathematics **Part II**: Dice Fractions 2
6	**Evaluate 1** **Instructional Procedures:** 1. Assess individual student understanding by using the following Performance Indicator(s): **Performance Indicator(s):** Generate an equivalent fraction and decimal from a given concrete or pictorial model that contains at least one fractional quantity greater than one and represents a real-life scenario. Place each equivalent fraction at its approximate location on a number line. In a journal entry, describe the strategy used to order the fraction totals from least to greatest. (4.2A, 4.2B, 4.2C, 4.2D; 4.10A; 4.14A, 4.14D; 4.16A) ELPS 1E; 5F Sample Performance Indicator: • Kaytlynn shaded a hundredths grid on the card below to create a tile design. In a table, record a fraction and decimal for each of the four parts of Kaytlynn's grid (e.g. black, white, gray, and striped). Kaytlynn's Grid  Brandon's Grid  Complete Brandon's design to create the same tile design as Kaytlynn. In the same table, record a fraction and decimal for each of the four parts of Brandon's grid (e.g. black, white, gray, and striped). Combine the fraction totals and decimal equivalents for each of the four parts of both Brandon's and Kaytlynn's grids. Place each fraction total at its approximate location on a number line. In a journal entry, describe the strategy used to order the fraction totals from least to greatest.	**MATERIALS** • math journal (1 per student)

Suggested Day	Suggested Instructional Procedures	Notes for Teacher

Fraction Strip Activity KEY

Use your fraction strips to show the following and then record the results in your math journal.

(1) Make 1 whole using halves. Write your answer as a fraction.

One whole	
$\frac{1}{2}$	$\frac{1}{2}$

$= \frac{2}{2}$

(2) Make 1 whole using thirds. Write your answer as a fraction.

One whole		
$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$

$= \frac{3}{3}$

(3) Make 1 whole using fifths. Write your answer as a fraction.

One whole				
$\frac{1}{5}$	$\frac{1}{5}$	$\frac{1}{5}$	$\frac{1}{5}$	$\frac{1}{5}$

$= \frac{5}{5}$

(4) Describe 2 ways that you know $\frac{2}{2}$ is equal to one whole.

Answers may vary and could include drawings; OR 2 ÷ 2 = 1 and the fraction $\frac{2}{2}$ means that one whole is divided into 2 sections and both sections are under consideration.

Fraction Strip Activity

Use your fraction strips to show the following and then record the results in your math journal.

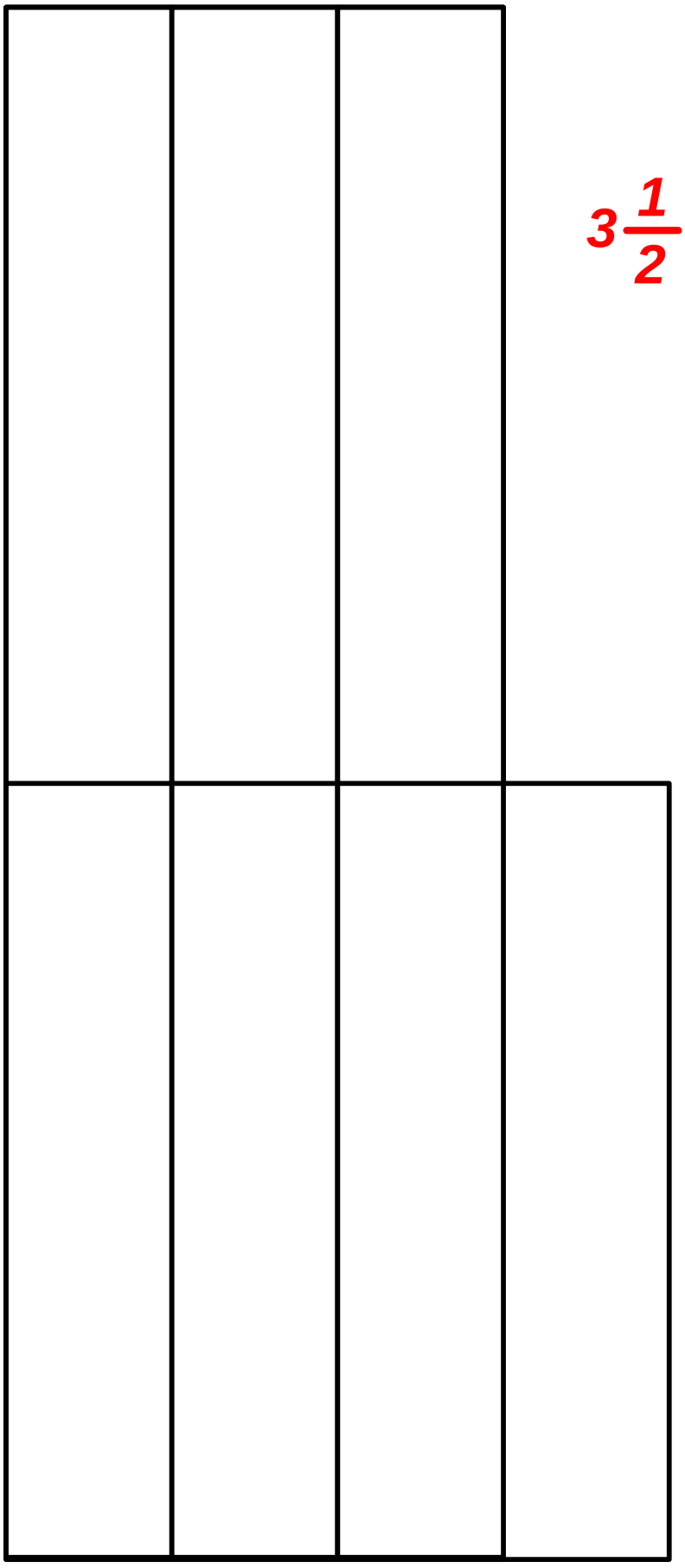
(1) Make 1 whole using halves. Write your answer as a fraction.

(2) Make 1 whole using thirds. Write your answer as a fraction.

(3) Make 1 whole using fifths. Write your answer as a fraction.

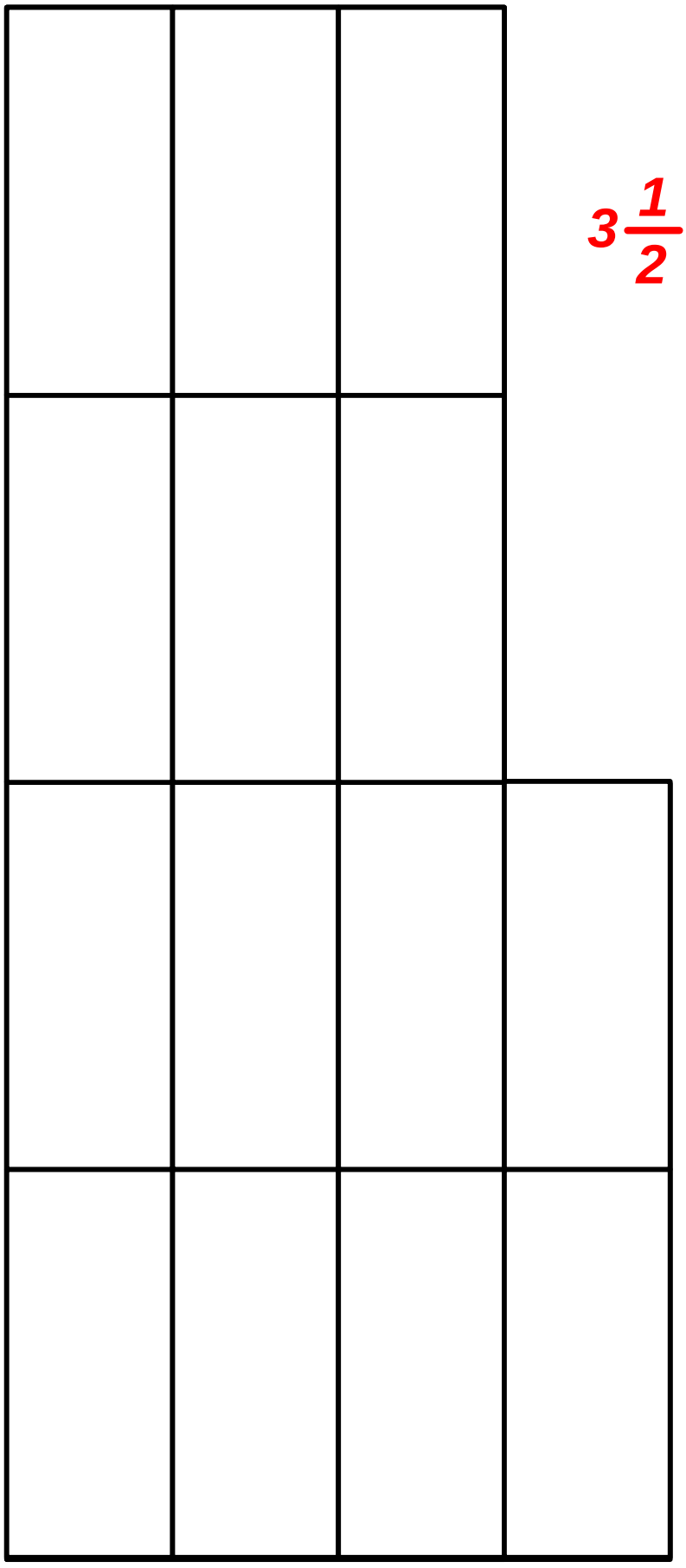
(4) Describe 2 ways that you know $\frac{2}{2}$ is equal to one whole.

Mixed Number Recording Sheet KEY (Halves)



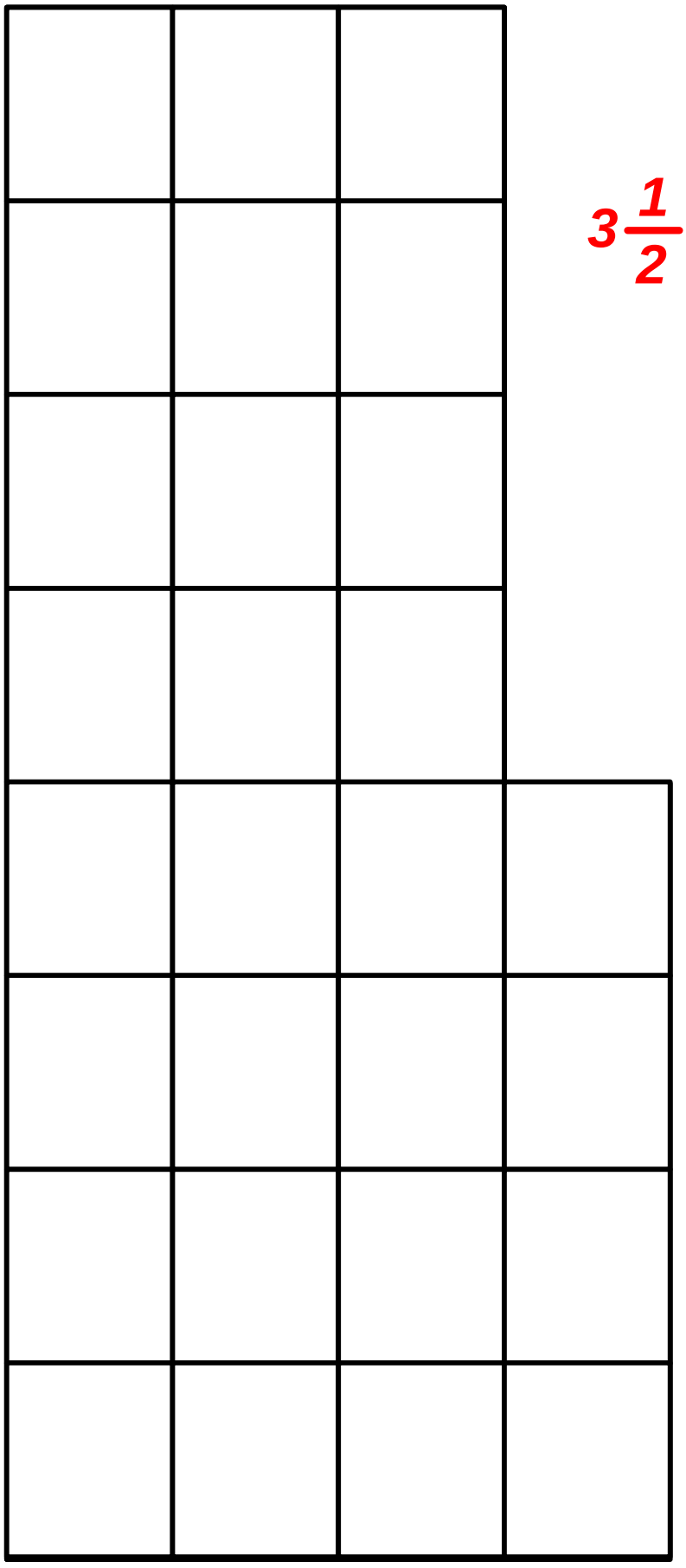
$$3\frac{1}{2} = \frac{7}{2}$$

Mixed Number Recording Sheet KEY (Fourths)



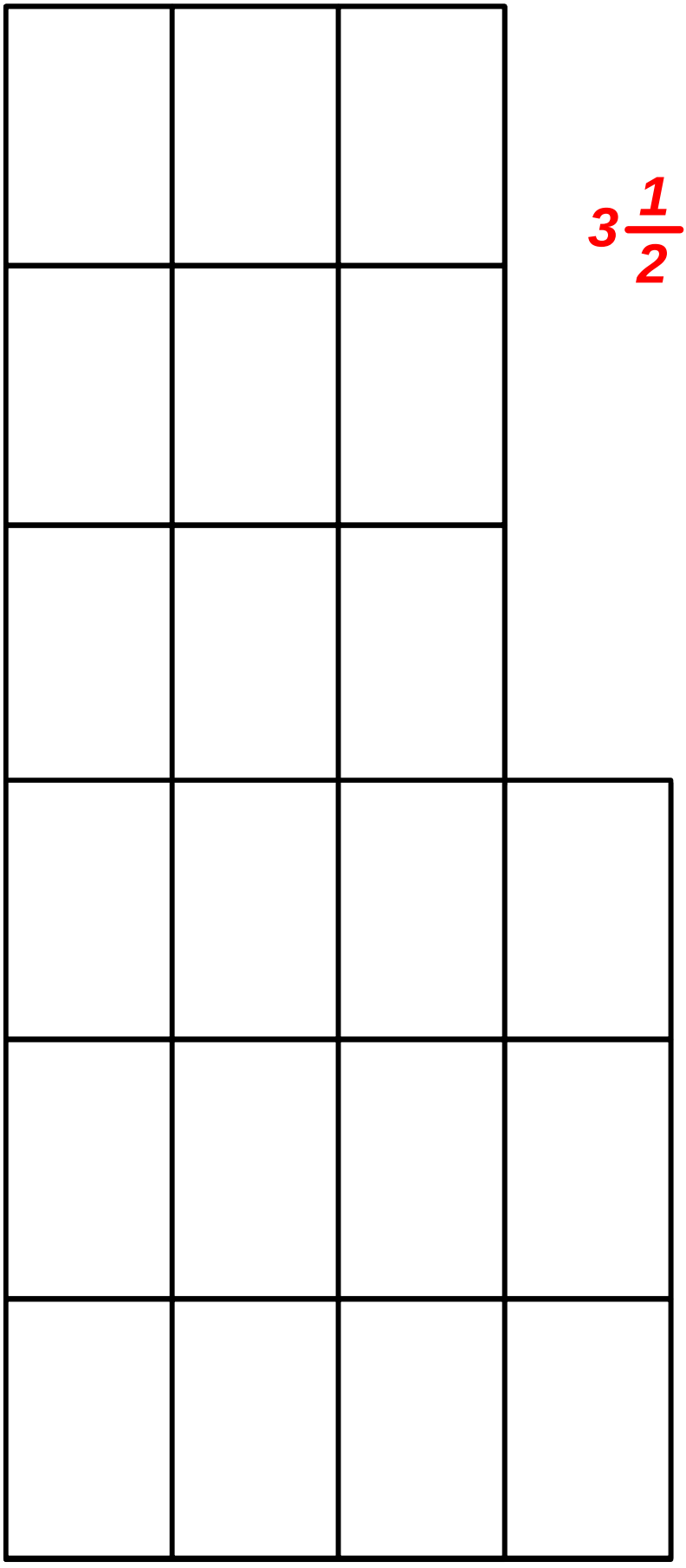
$$3\frac{1}{2}=\frac{14}{4}$$

Mixed Number Recording Sheet KEY (Eighths)



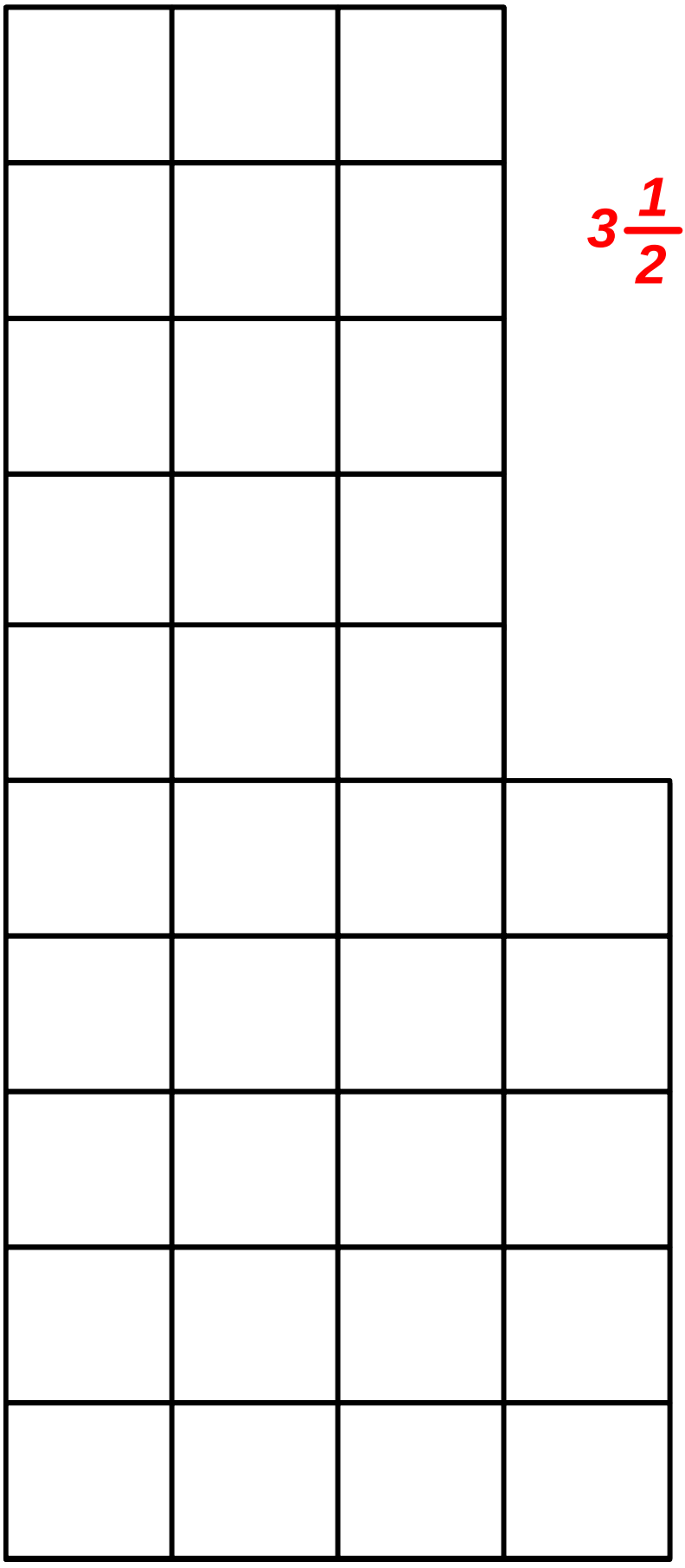
$3\frac{1}{2} = \frac{28}{8}$

Mixed Number Recording Sheet KEY (Sixths)



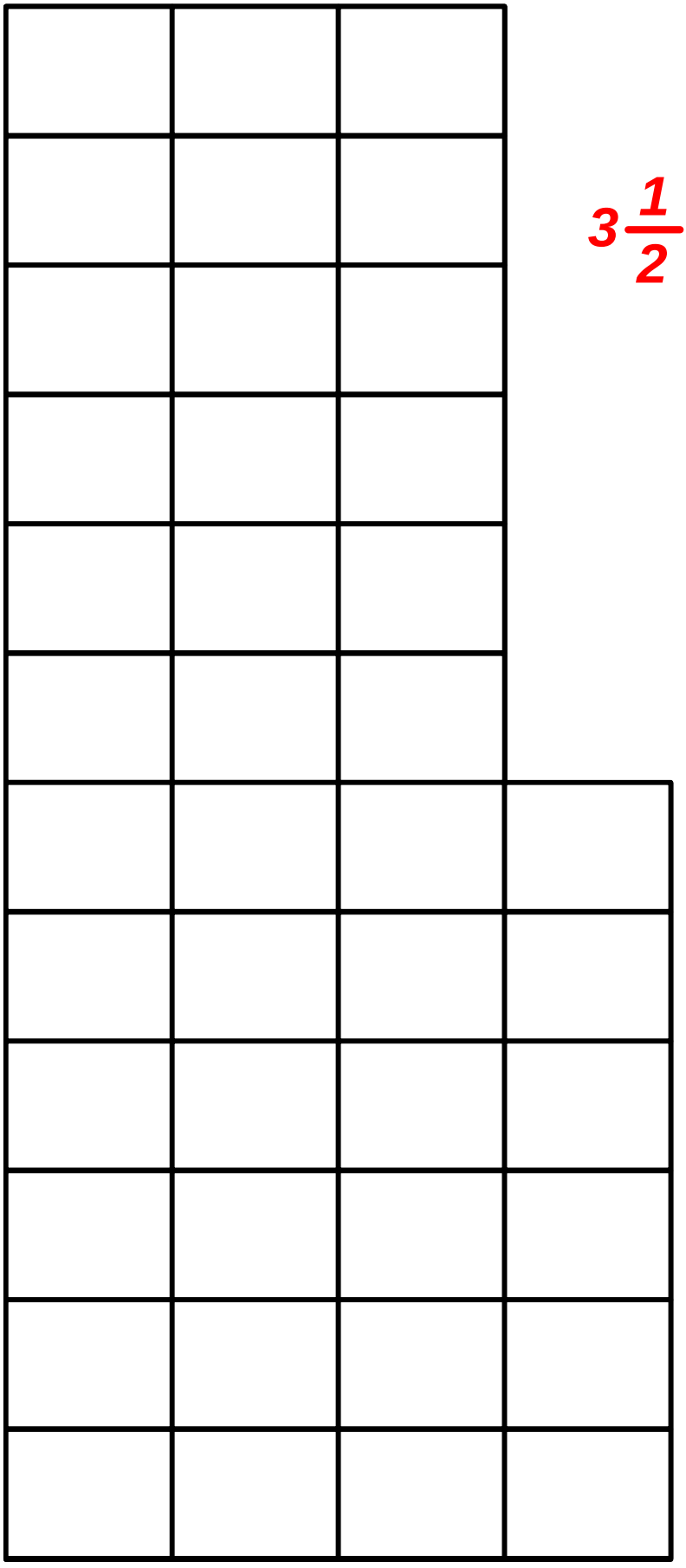
$$3\frac{1}{2} = \frac{21}{6}$$

Mixed Number Recording Sheet KEY (Tenths)



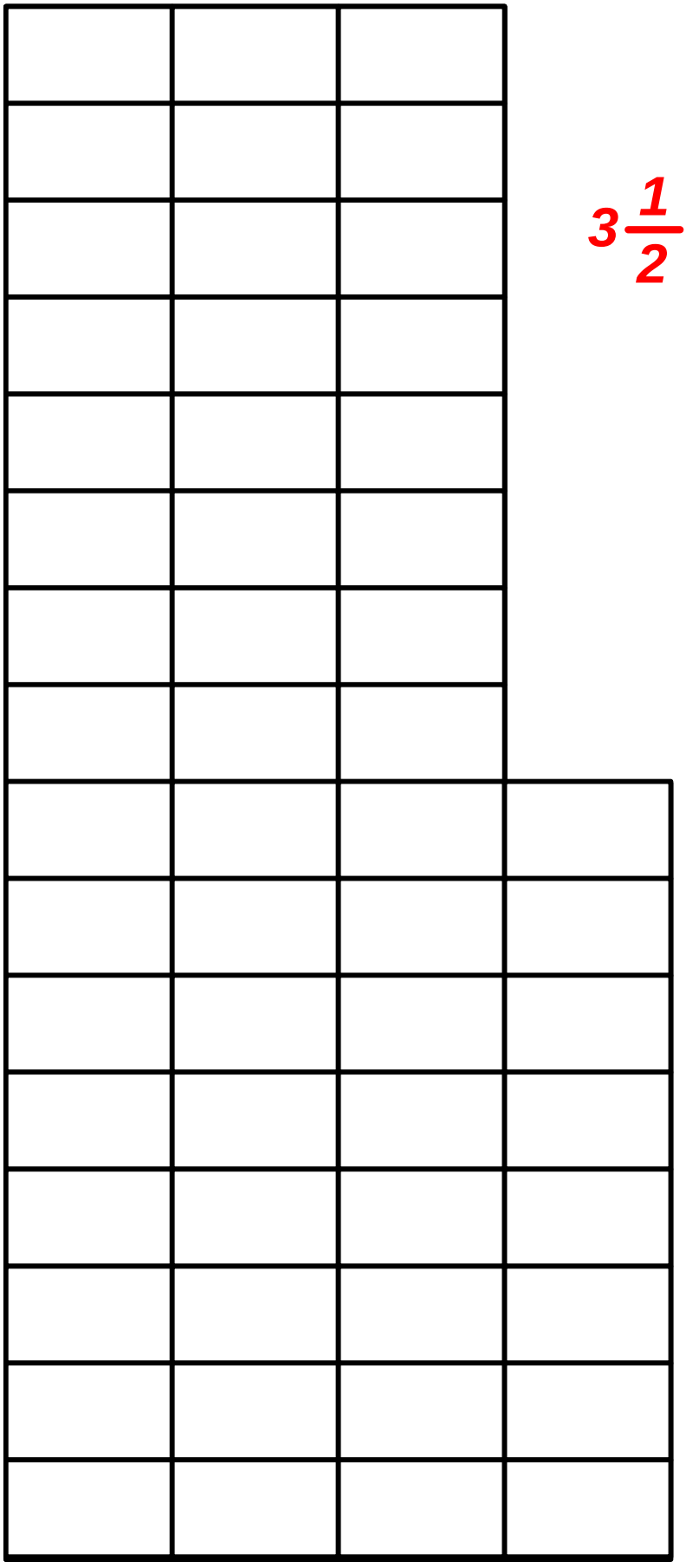
$$3\frac{1}{2} = \frac{35}{10}$$

Mixed Number Recording Sheet KEY (Twelfths)



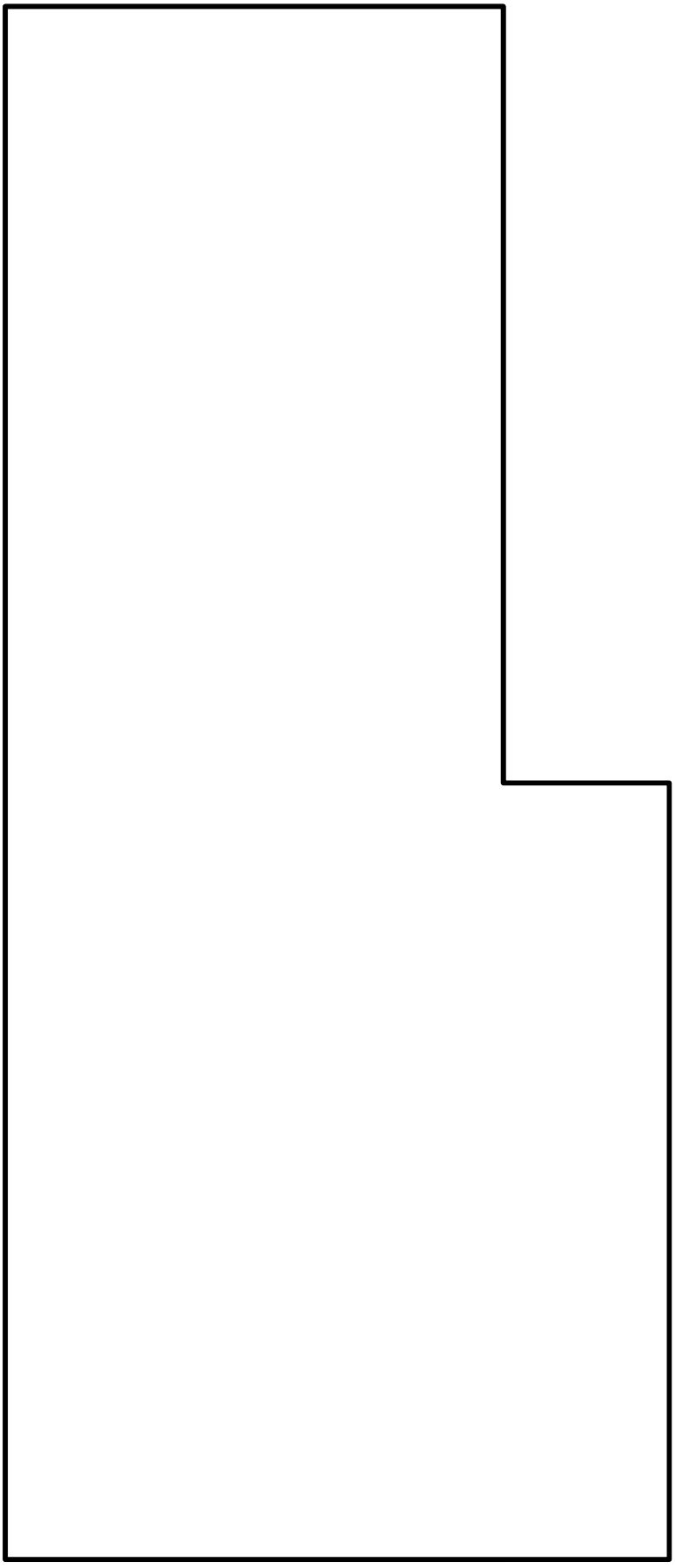
$$3\frac{1}{2} = \frac{42}{12}$$

Mixed Number Recording Sheet KEY (Sixteenths)

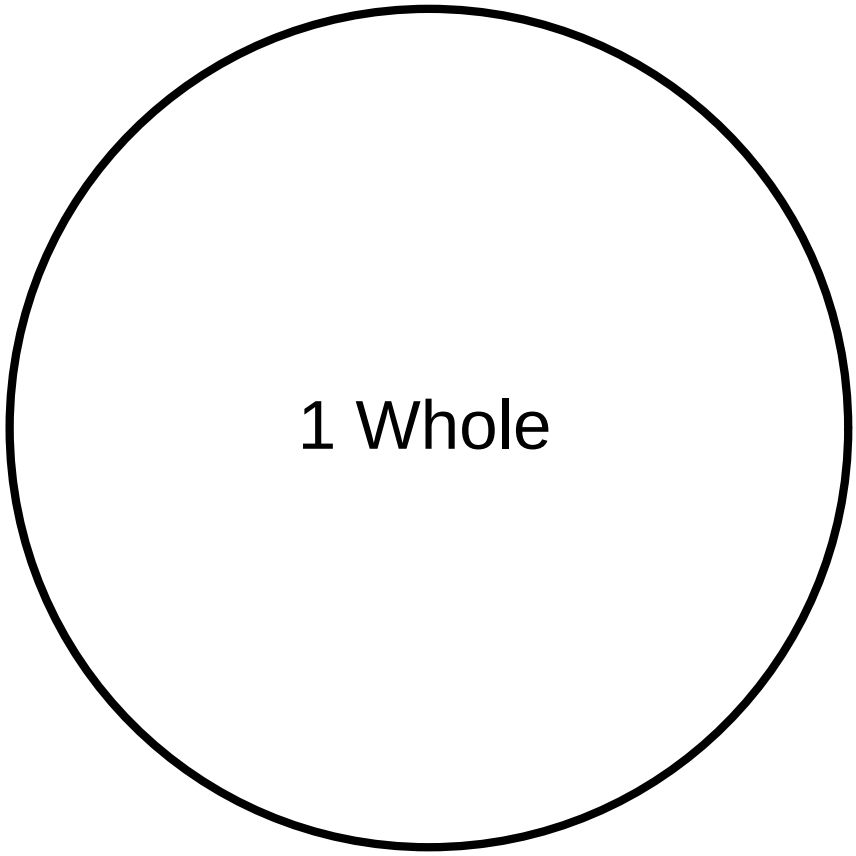


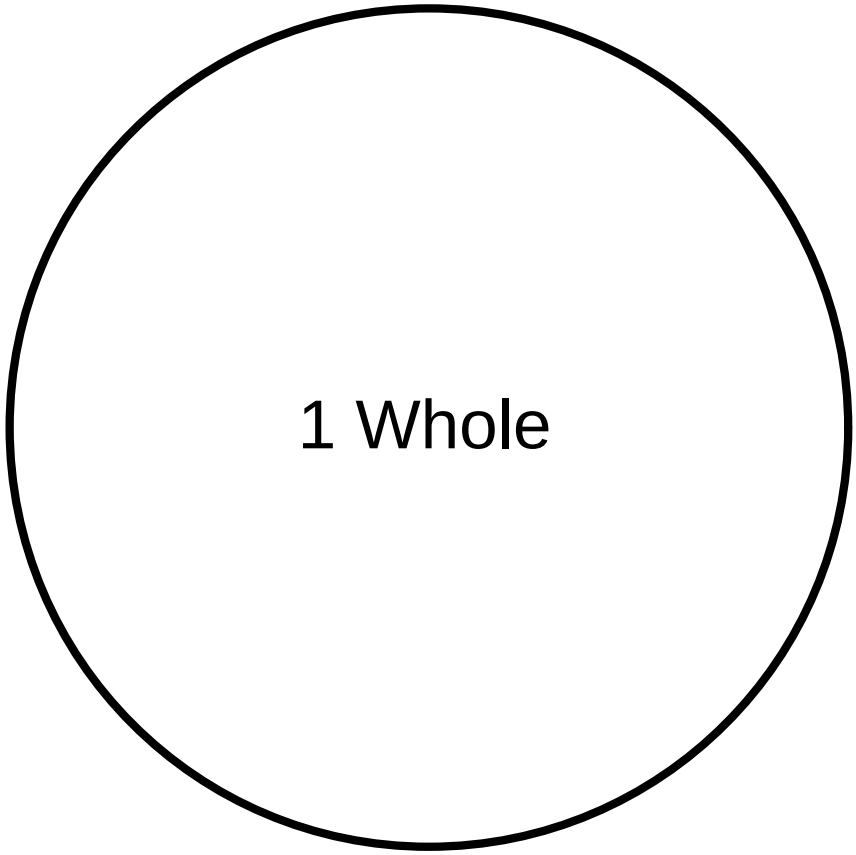
$$3\frac{1}{2} = \frac{56}{16}$$

Mixed Number Recording Sheet

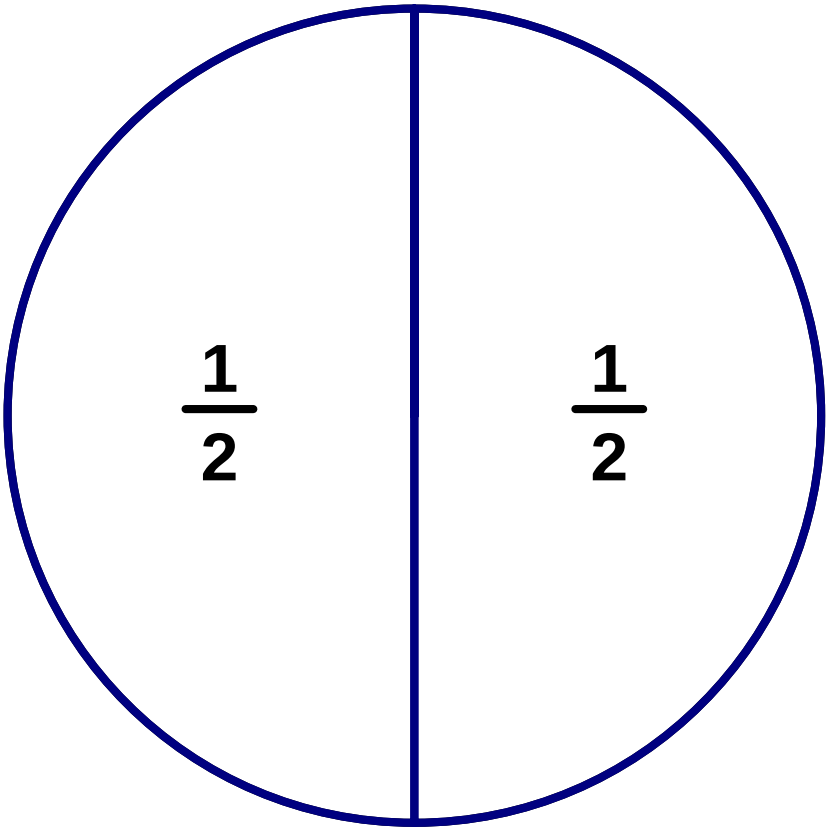


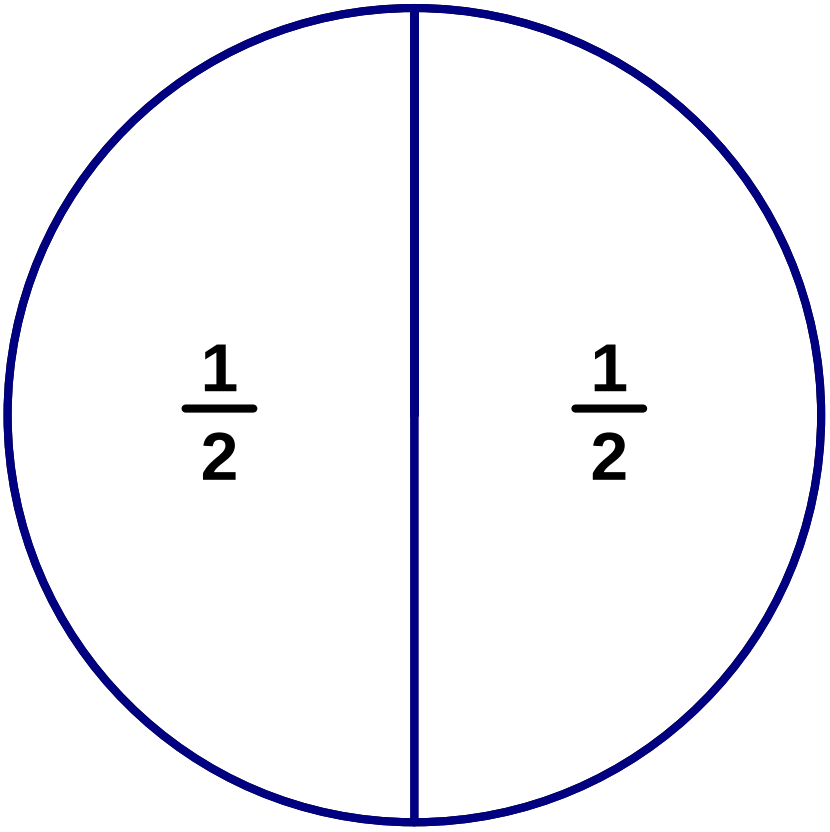
Fraction Circles



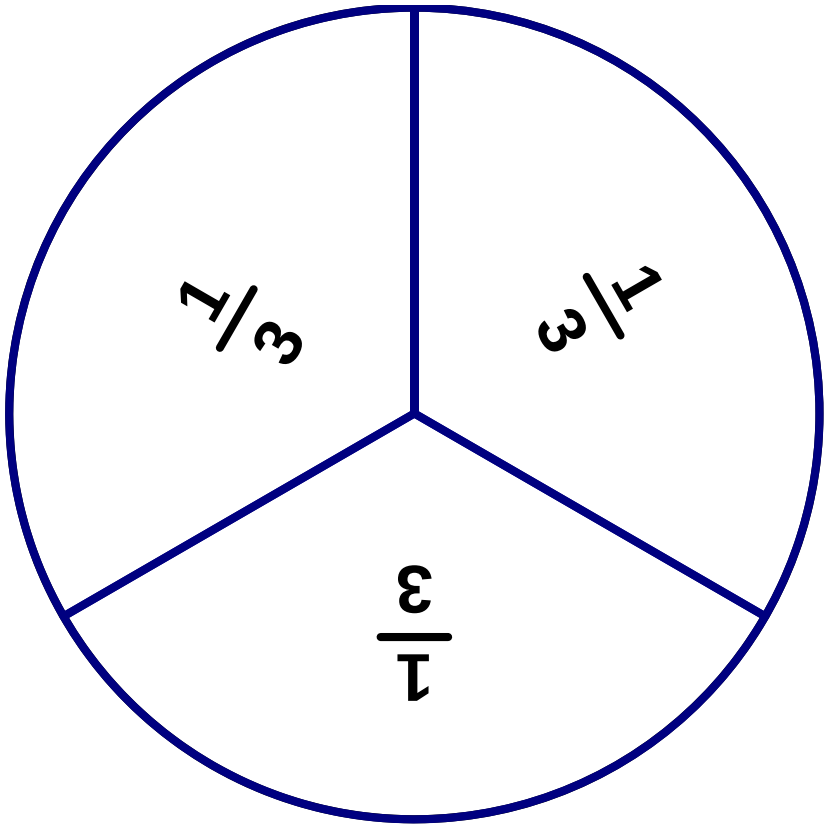


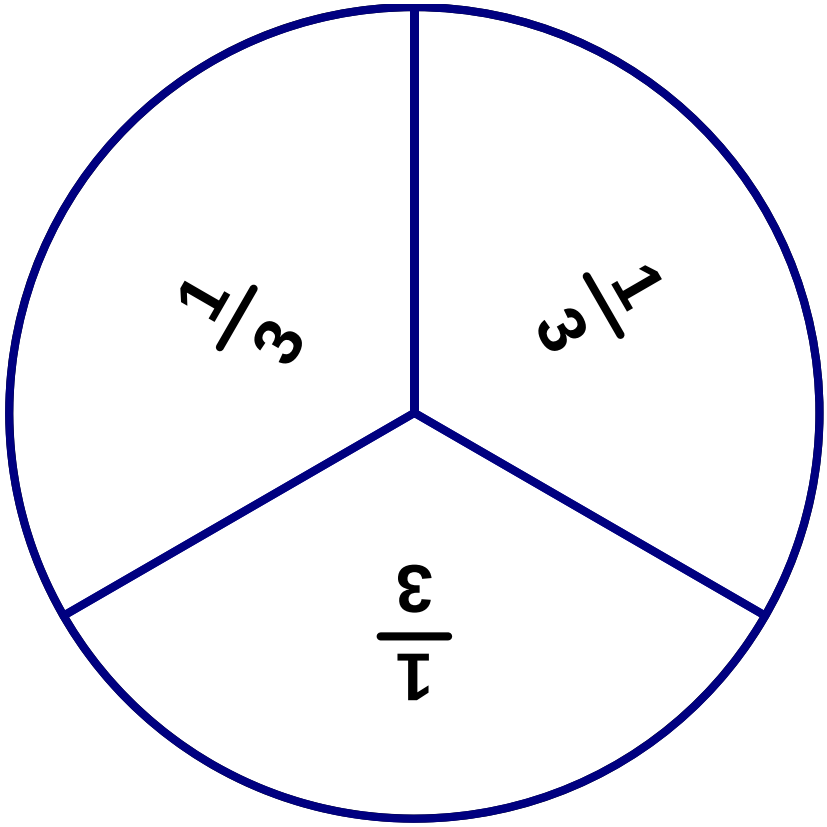
Fraction Circles



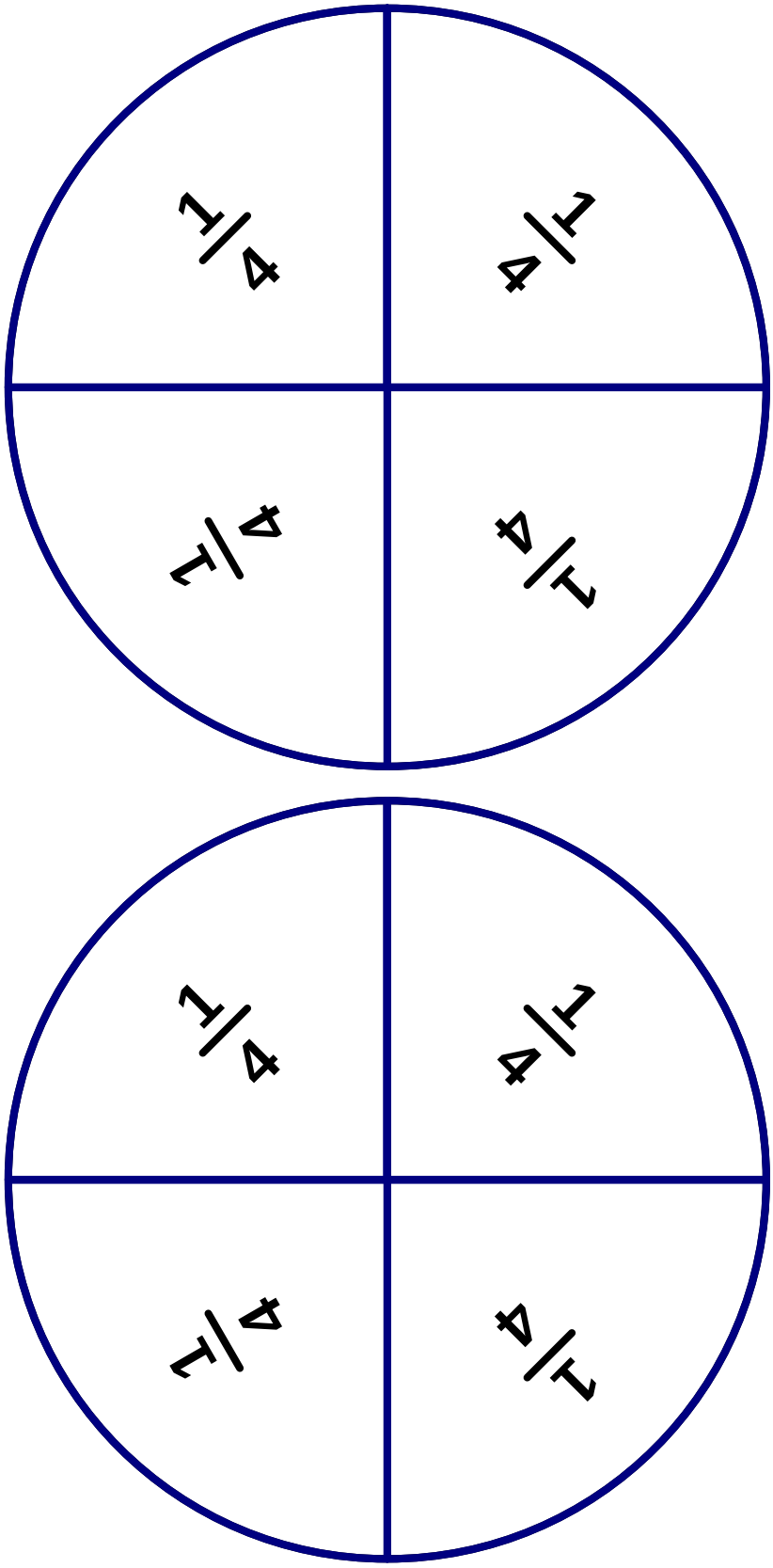


Fraction Circles

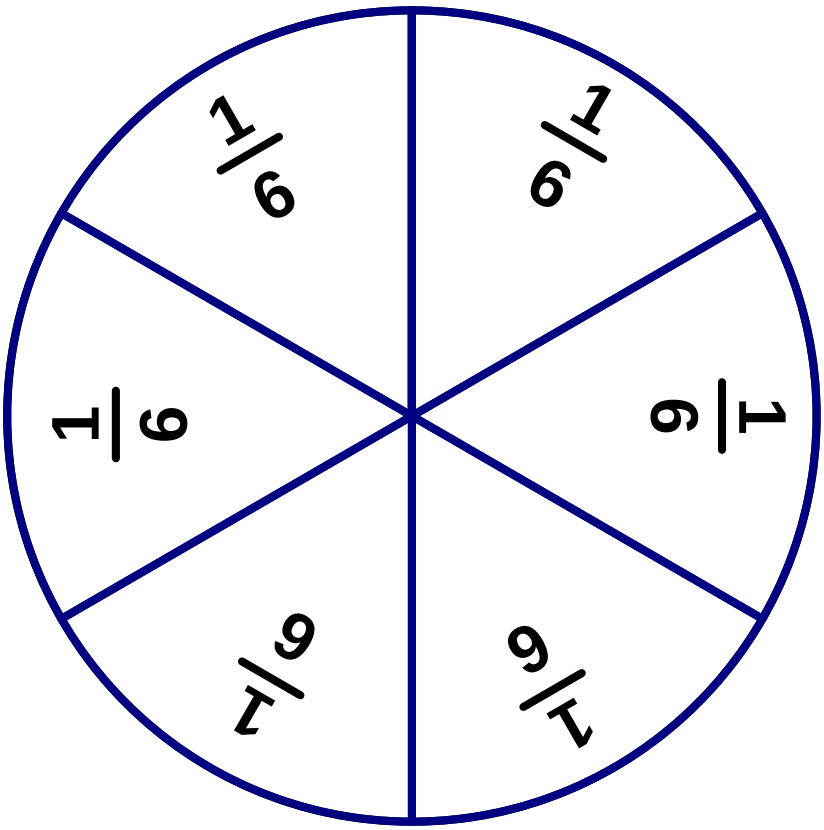


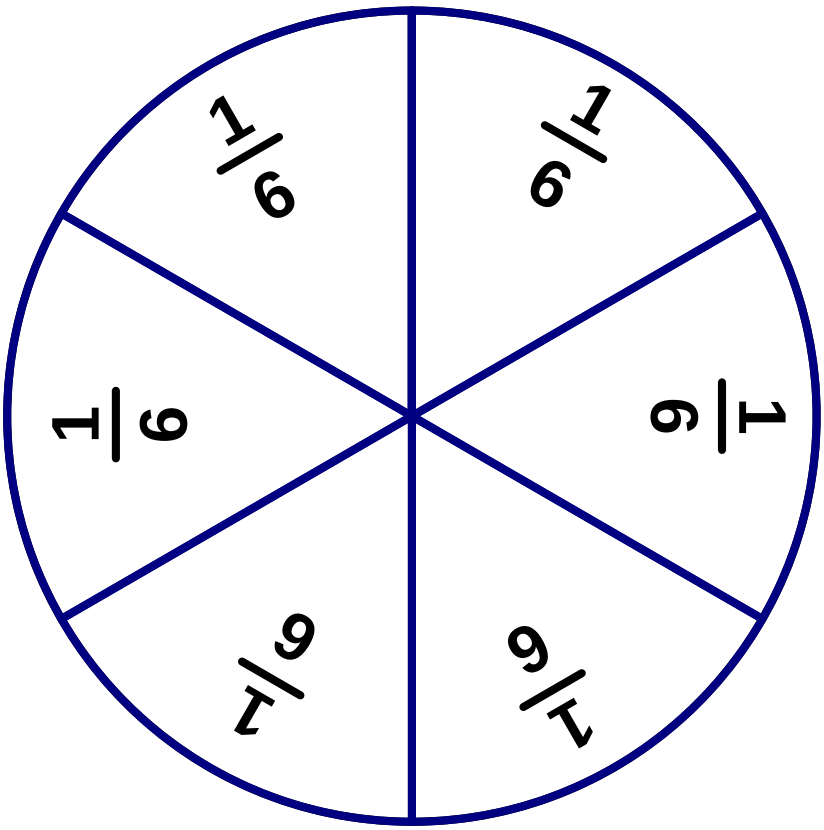


Fraction Circles

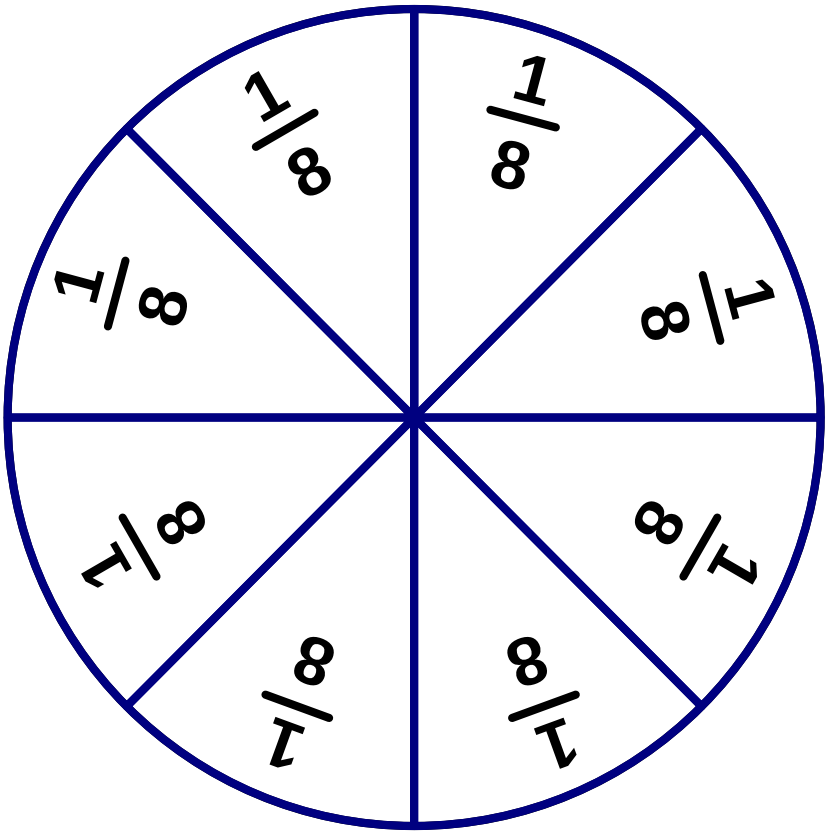


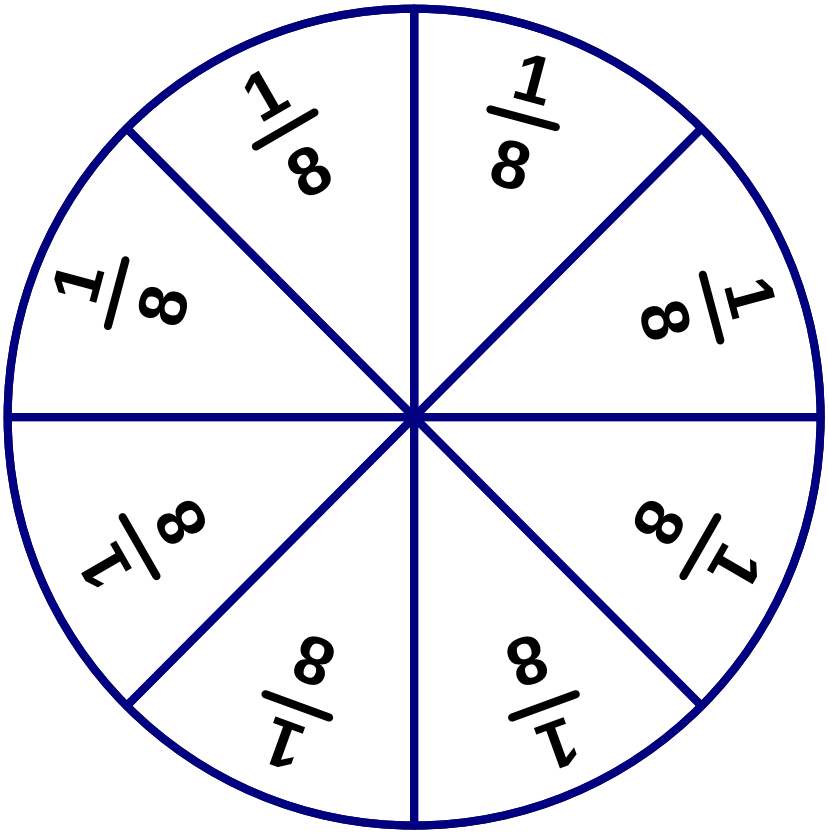
Fraction Circles



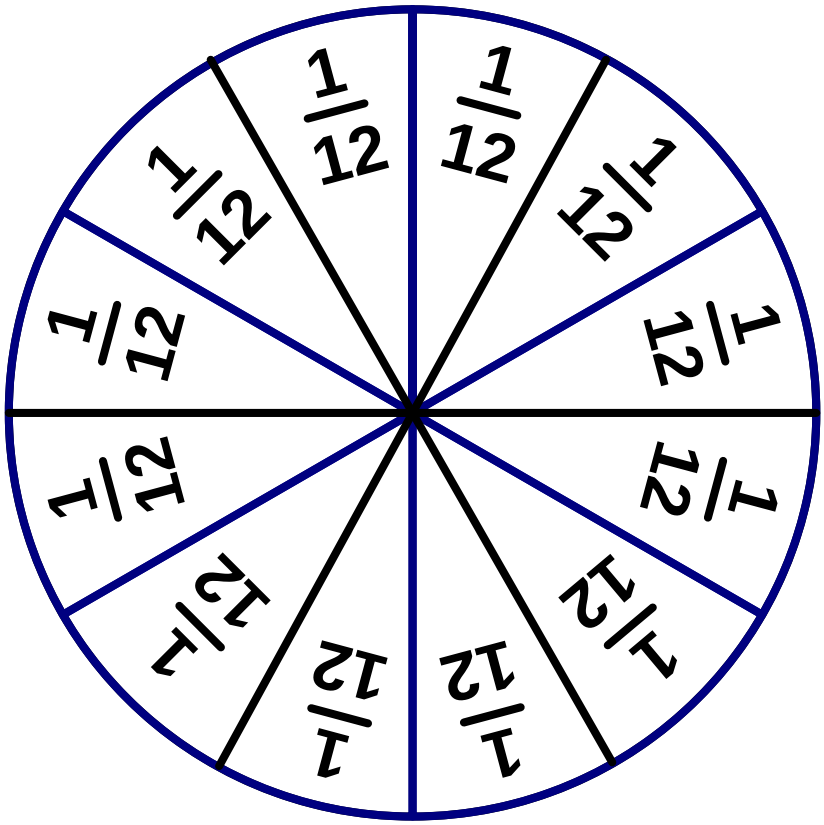


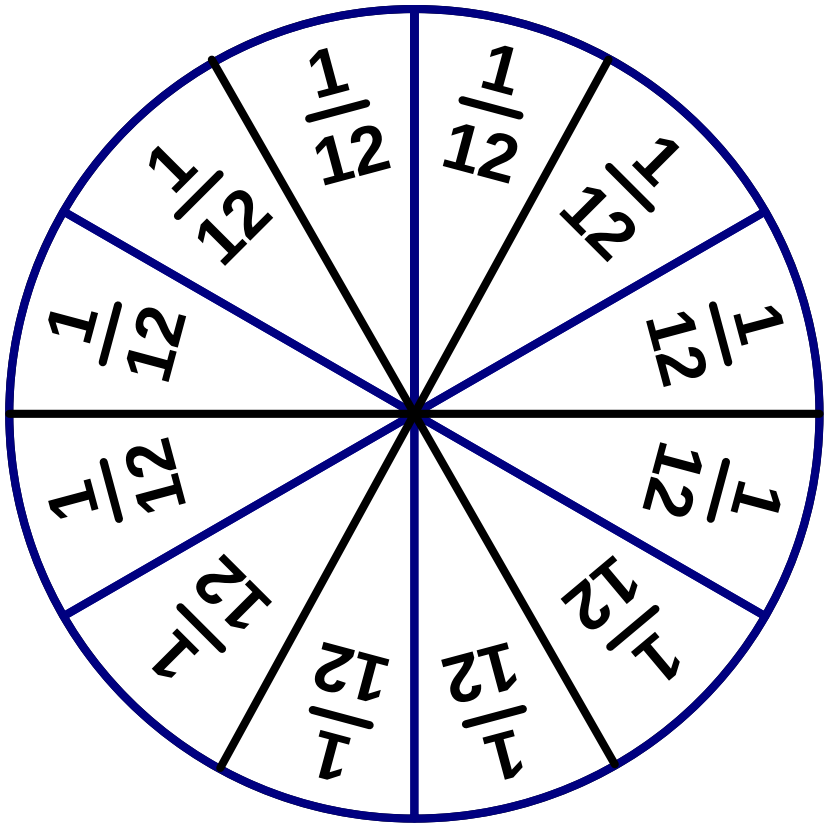
Fraction Circles



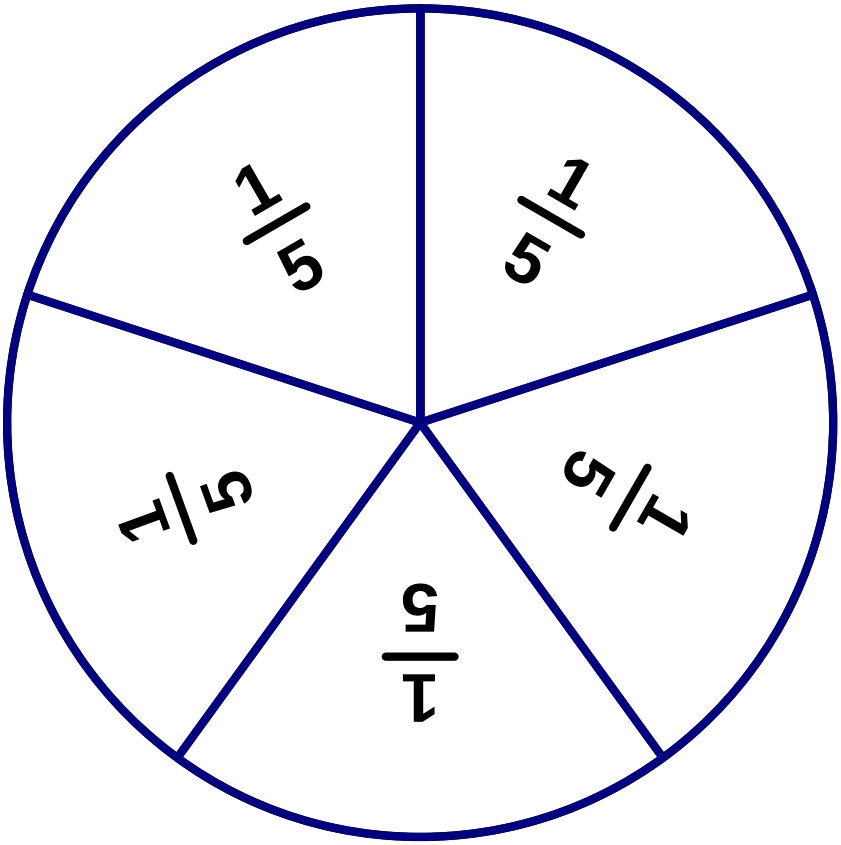


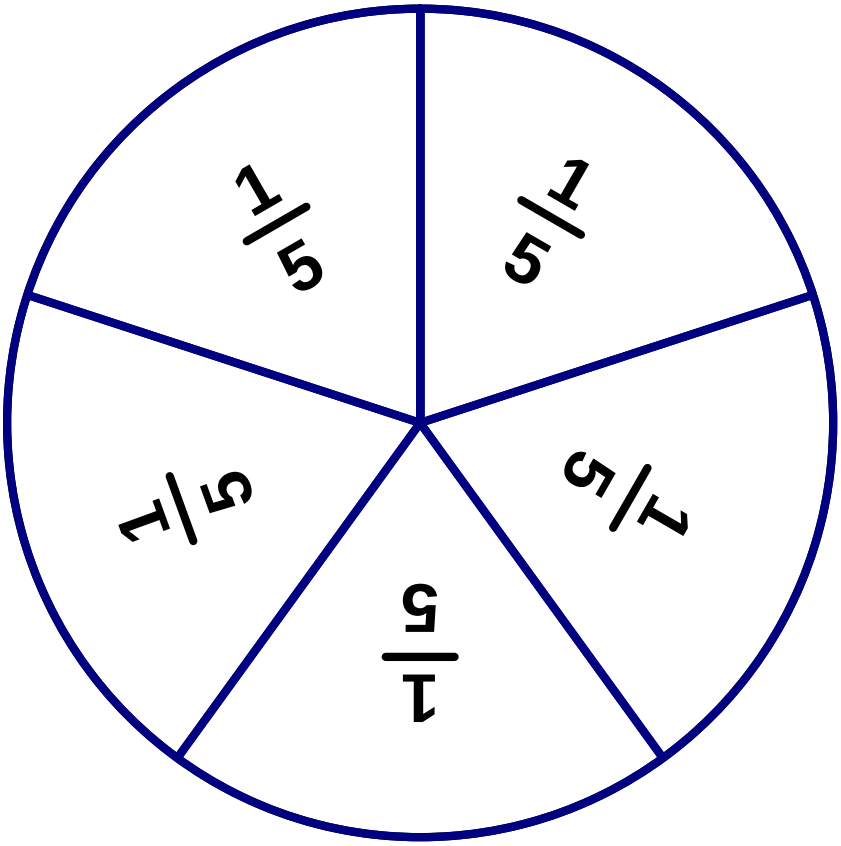
Fraction Circles



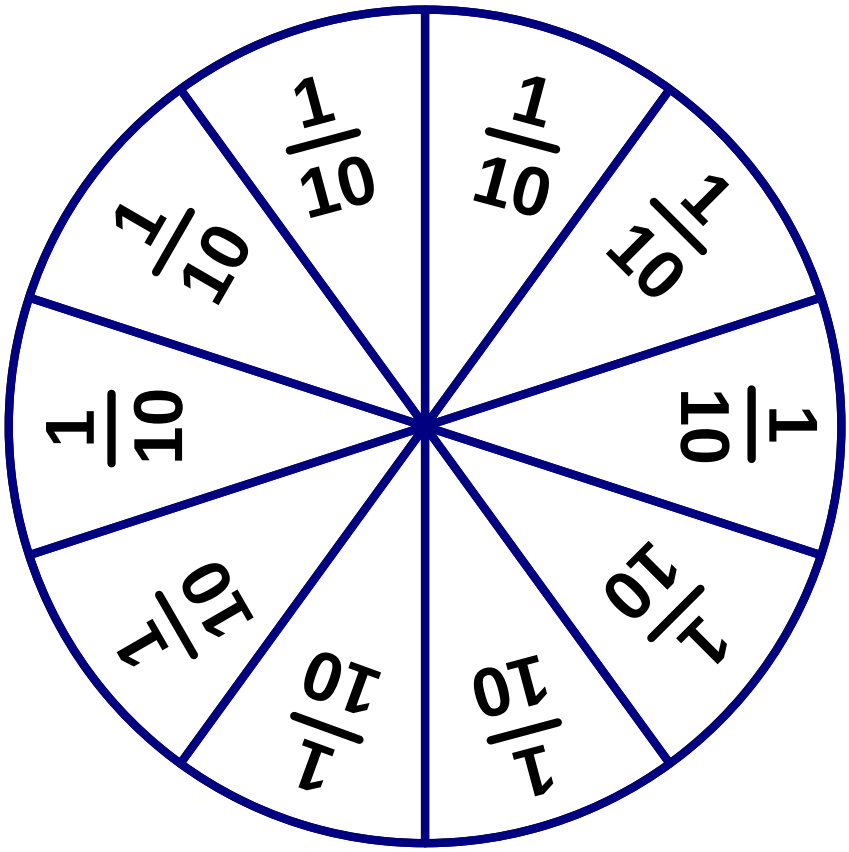


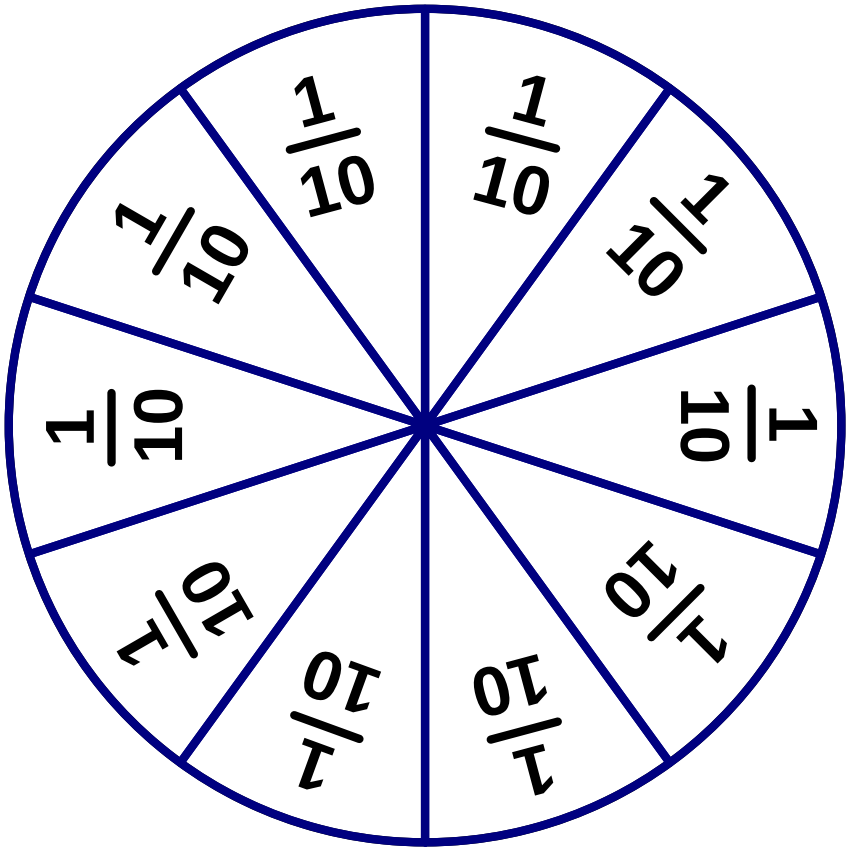
Fraction Circles





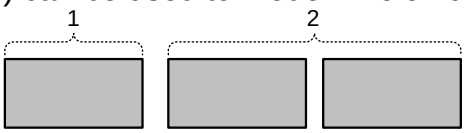
Fraction Circles



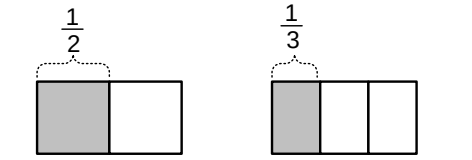


What's My Model? KEY

Remember:
Rectangles (like the fraction strips) can be used to model whole numbers.



The rectangles can be divided into equal parts to model fractions.

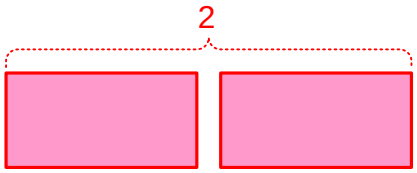


This rectangle is divided into 2 equal parts.

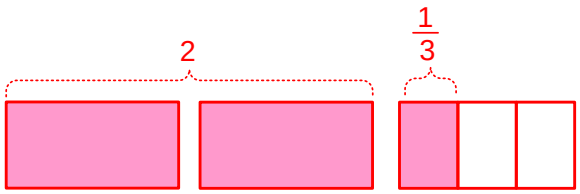
This rectangle is divided into 3 equal parts.

A ***mixed number*** has a whole number and a fractional part. Its value is a number greater than one.

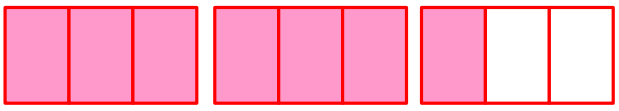
Step 1: Draw and shade 2 rectangles to represent 2. *(Leave room to draw another rectangle.)*



Step 2: Draw another rectangle of equal size and shade one-third of it to represent the fraction one-third.



Step 3: Divide each rectangle into thirds.



Step 4: Use the model in Step 3 to answer the following:

How many shaded thirds are there? ***7***

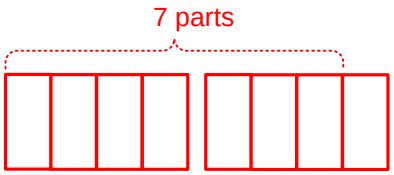
Write the improper fraction represented by the model. $\frac{7}{3}$

Write the mixed number represented by the model. $2\ \frac{1}{3}$

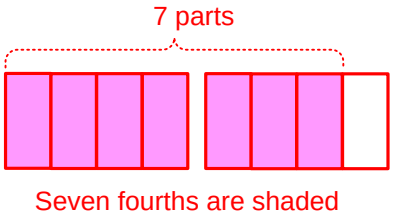
What's My Model? KEY

An ***improper fraction*** is a fraction that has a numerator greater than or equal to the denominator.

Step 1: Use a model to represent $\frac{7}{4}$. Since the denominator is 4, draw rectangles that are divided into 4 equal parts. Draw enough rectangles so that you can shade 7 parts.



Step 2: Since the numerator is 7, shade 7 of the parts.



Step 3: Use the model in Step 2 to answer the following:

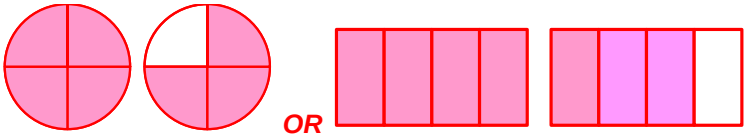
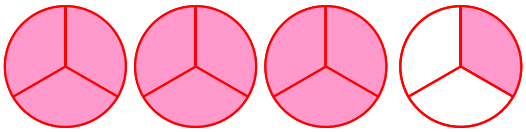
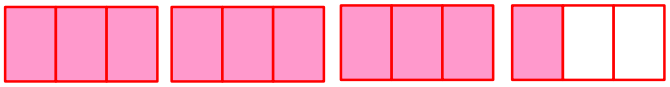
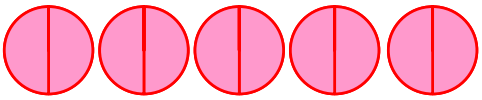
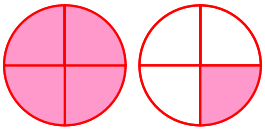
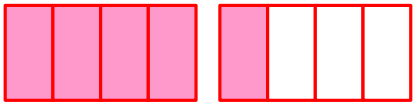
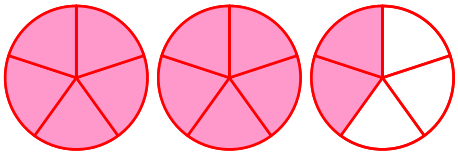
How many wholes are shaded? ***1***

What fractional part of the second rectangle is shaded? $\frac{3}{4}$

Write the mixed number represented by the model. $1\frac{3}{4}$

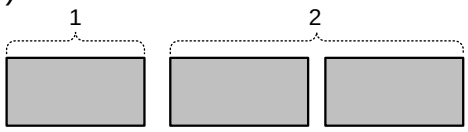
What's My Model? KEY

Use fraction strips or circles and draw pictures to show that these equations are true.

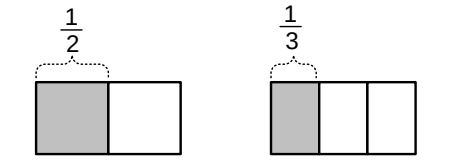
(1)	$1\frac{3}{4}=\frac{7}{4}$  OR
(2)	$\frac{10}{3}=3\frac{1}{3}$  OR 
(3)	$5=\frac{10}{2}$  OR 
(4)	$\frac{5}{4}=1\frac{1}{4}$  OR 
(5)	$2\frac{2}{5}=\frac{12}{5}$  OR 

What's My Model?

Remember:
Rectangles (like the fraction strips) can be used to model whole numbers.



The rectangles can be divided into equal parts to model fractions.



This rectangle is divided into 2 equal parts.

This rectangle is divided into 3 equal parts.

A ***mixed number*** has a whole number and a fractional part. Its value is a number greater than one

Step 1: Draw and shade 2 rectangles to represent 2. *(Leave room to draw another rectangle.)*

Step 2: Draw another rectangle of equal size and shade one-third of it to represent the fraction one-third.

Step 3: Divide each rectangle into thirds.

Step 4: Use the model in Step 3 to answer the following:

How many shaded thirds are there? _____

Write the improper fraction represented by the model. _____

Write the mixed number represented by the model. _____

What's My Model?

An ***improper fraction*** is a fraction that has a numerator greater than or equal to the denominator.

Step 1: Use a model to represent $\frac{7}{4}$. Since the denominator is 4, draw rectangles that are divided into 4 equal parts. Draw enough rectangles so that you can shade 7 parts.

Step 2: Since the numerator is 7, shade 7 of the parts.

Step 3: Use the model in Step 2 to answer the following:

How many wholes are shaded? _____

What fractional part of the second rectangle is shaded? _____

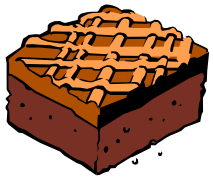
Write the mixed number represented by the model. _____

What's My Model?

Use fraction strips or circles and draw pictures to show that these equations are true.

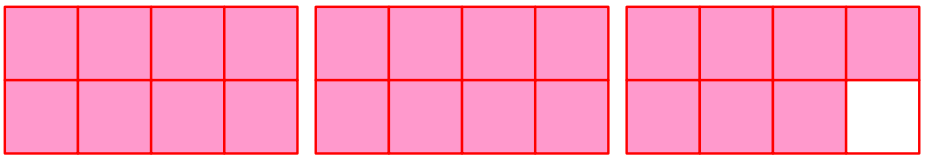
(1)	$1\frac{3}{4} = \frac{7}{4}$
(2)	$\frac{10}{3} = 3\frac{1}{3}$
(3)	$5 = \frac{10}{2}$
(4)	$\frac{5}{4} = 1\frac{1}{4}$
(5)	$2\frac{2}{5} = \frac{12}{5}$

Cyndy's Brownie KEY



Cyndy baked 3 pans of brownies to share with 7 of her friends. She cut each pan of brownies so that everyone would get an equal share. Then, she ate one of the brownies to see how it tasted. How much of the brownies did she have left to share?

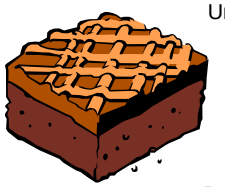
- Use your fraction strips to model this problem. Then sketch your model.



- Describe the amount of brownies Cyndy had left to share as a mixed number and as an improper fraction.

$$2\frac{7}{8} \text{ or } \frac{23}{8}$$

Cyndy's Brownie Problem



Cyndy baked 3 pans of brownies to share with 7 of her friends. She cut each pan of brownies so that everyone would get an equal share. Then, she ate one of the brownies to see how it tasted. How much of the brownies did she have left to share?

- Use your fraction strips to model this problem. Then sketch your model.

- Describe the amount of brownies Cyndy had left to share as a mixed number and as an improper fraction.

Fraction Models Greater Than One Problem Solving KEY

Solve this problem by completing the table provided.

(1) **Problem:**

Each pizza is cut into 6 slices. Jared eats 11 slices all by himself. How many pizzas did Jared eat?

Understand the problem/plan:

What are you trying to find? ***(The number of pizzas Jared ate.)***

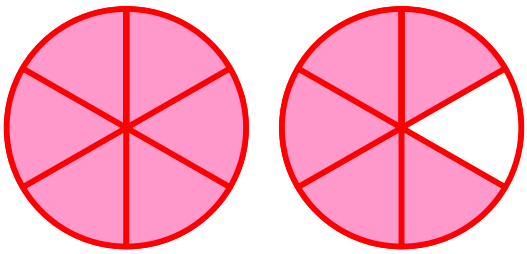
What do you know? ***(That each pizza is cut into 6 slices and that Jared ate 11 of these slices.)***

Which fraction pieces should you use to model the problem? Explain. ***(The $\frac{1}{6}$s because each pizza is cut into that many slices.)***

How many fraction pieces will you need to model the problem? Explain. ***(11 because that's how many pizza slices Jared ate.)***

Diagram:
Create a diagram to model this problem.

Diagrams will vary but could include:



Solve – Mixed Number	**Solve – Improper Fraction**
$1\frac{5}{6}$ *pizzas eaten by Jared*	$\frac{11}{6}$ *pizzas eaten by Jared*

Fraction Models Greater Than One Problem Solving KEY

Solve this problem by completing the table provided.

(2) **Problem:**

Each row of bleachers at the ball field can seat 8 people. If there are 35 people sitting in the bleachers at the game, what fraction of the rows of bleachers are filled?

Understand the problem/plan:

What are you trying to find? ***(The number of rows of bleachers that are filled with people.)***

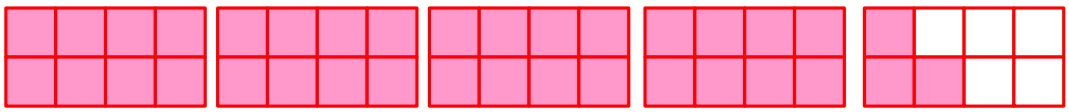
What do you know? ***(That each row of bleachers holds 8 people and there are 35 people altogether.)***

Which fraction pieces should you use to model the problem? Explain. ***(The $\frac{1}{8}$s because each bleacher can only hold 8 people. So, each bleacher is divided into 8 seats.)***

How many fraction pieces will you need to model the problem? Explain. ***(35 because there are 35 people sitting in the bleachers.)***

Diagram:
Create a diagram to model this problem.

Diagrams will vary, but could include:



Solve – Mixed Number	**Solve – Improper Fraction**
$4\frac{3}{8}$ of the rows of bleachers are filled	***$\frac{35}{8}$ of the rows of bleachers are filled***

Fraction Models Greater Than One Problem Solving KEY

Solve this problem by completing the table provided.

(3) **Problem:**

Lennie drinks 9 one-fourth cups of milk each day. How many cups of milk does Lennie drink each day?

Understand the problem/plan:

What are you trying to find? ***(The number of cups of milk Lennie drinks each day.)***

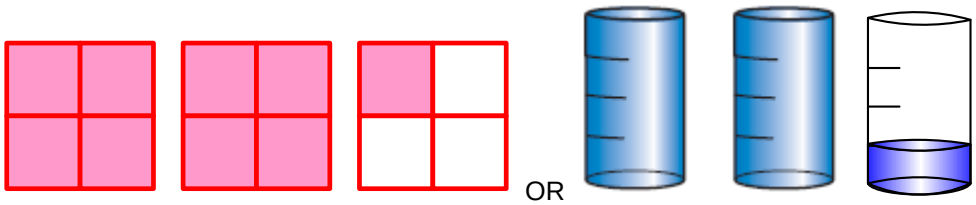
What do you know? ***(That he drinks 9 one-fourth cups of milk each day.)***

Which fraction pieces should you use to model the problem? Explain. ***(The $\frac{1}{4}$s because that's the serving size of milk he drinks.)***

How many fraction pieces will you need to model the problem? Explain. ***(9 because that's the number of each milk serving he drinks each day.)***

Diagram:
Create a diagram to model this problem.

Diagrams will vary, but could include:



Solve – Mixed Number	**Solve – Improper Fraction**
$2\frac{1}{4}$ cups of milk each day	***$\frac{9}{4}$ cups of milk each day***

Fraction Models Greater Than One Problem Solving KEY

Solve this problem by completing the table provided.

(4) **Problem:**

Mrs. Nolan made 3 trays of lasagna for a fundraiser supper. She cut each tray of lasagna into ten equal servings. Her sons ate 3 servings before she took the tray to the fundraiser. How much lasagna did she take to the fundraiser?

Understand the problem/plan:

What are you trying to find? ***(The amount of lasagna Mrs. Nolan took to the fundraiser.)***

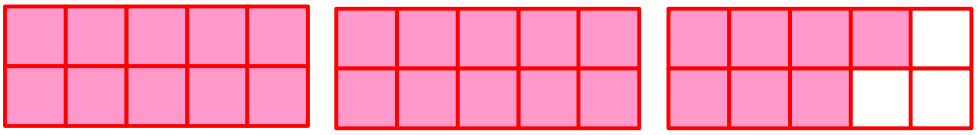
What do you know? ***(That she made 3 trays and cut each tray into 10 equal servings. Also, that her sons ate 3 of these servings before she left for the fundraiser.)***

Which fraction pieces should you use to model the problem? Explain. ***(The $\frac{1}{10}$ s because that's the size of each serving.)***

How many fraction pieces will you need to model the problem? Explain. ***(30 because 3 trays with 10 servings per tray equals 30 total servings.)***

Diagram:
Create a diagram to model this problem.

Diagrams will vary but could include:



Solve – Mixed Number	**Solve – Improper Fraction**
$2\frac{7}{10}$ trays of lasagna	***$\frac{27}{10}$ trays of lasagna*** ***OR 27 servings of lasagna***

Fraction Models Greater Than One Problem Solving

Solve this problem by completing the table provided.

(1) **Problem:**

Each pizza is cut into 6 slices. Jared eats 11 slices all by himself. How many pizzas did Jared eat?

Understand the problem/plan:

What are you trying to find?

What do you know?

Which fraction pieces should you use to model the problem? Explain.

How many fraction pieces will you need to model the problem? Explain.

Diagram:
Create a diagram to model this problem.

Solve – Mixed Number	**Solve – Improper Fraction**

Fraction Models Greater Than One Problem Solving

Solve this problem by completing the table provided.

(2) **Problem:**

Each row of bleachers at the ball field can seat 8 people. If there are 35 people sitting in the bleachers at the game, what fraction of the rows of bleachers are filled?

Understand the problem/plan:

What are you trying to find?

What do you know?

Which fraction pieces should you use to model the problem? Explain.

How many fraction pieces will you need to model the problem? Explain.

Diagram:
Create a diagram to model this problem.

Solve – Mixed Number	**Solve – Improper Fraction**

Fraction Models Greater Than One Problem Solving

Solve this problem by completing the table provided.

(3) **Problem:**

Lennie drinks 9 one-fourth cups of milk each day. How many cups of milk does Lennie drink each day?

Understand the problem/plan:

What are you trying to find?

What do you know?

Which fraction pieces should you use to model the problem? Explain.

How many fraction pieces will you need to model the problem? Explain.

Diagram:
Create a diagram to model this problem.

Solve – Mixed Number	**Solve – Improper Fraction**

Fraction Models Greater Than One Problem Solving

Solve this problem by completing the table provided.

(4) **Problem:**

Mrs. Nolan made 3 trays of lasagna for a fundraiser supper. She cut each tray of lasagna into ten equal servings. Her sons ate 3 servings before she took the tray to the fundraiser. How much lasagna did she take to the fundraiser?

Understand the problem/plan:

What are you trying to find?

What do you know?

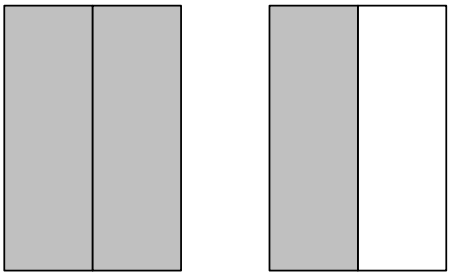
Which fraction pieces should you use to model the problem? Explain.

How many fraction pieces will you need to model the problem? Explain.

Diagram:
Create a diagram to model this problem.

Solve – Mixed Number	**Solve – Improper Fraction**

Mixed Numbers and Improper Fractions
Modeling Practice KEY



(1) Each rectangle has been divided into ***2*** parts.

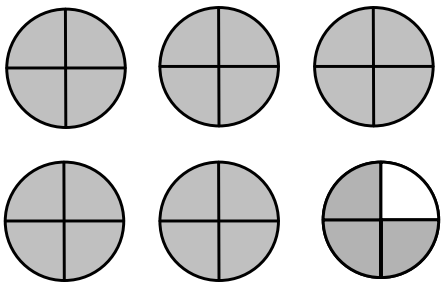
(2) Write an improper fraction for the fractional parts that are shaded. $\frac{3}{2}$

(3) Write a mixed number for the fractional parts that are shaded. $1\frac{1}{2}$

(4) Each glass has been divided into ***4*** parts.

(5) Write an improper fraction for the fractional parts that are filled. $\frac{11}{4}$

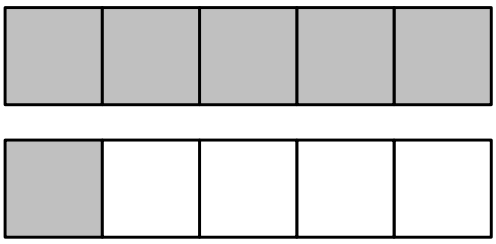
(6) Write a mixed number for the fractional parts that are shaded. $2\frac{3}{4}$



(7) Each circle has been divided into ***4*** parts.

(8) Write an improper fraction for the fractional parts that are shaded. $\frac{23}{4}$

(9) Write a mixed number for the fractional parts that are shaded. $5\frac{3}{4}$

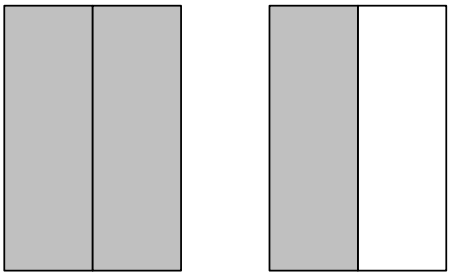


(10) Each rectangle has been divided into ***5*** parts.

(11) Write an improper fraction for the fractional parts that are shaded. $\frac{6}{5}$

(12) Write a mixed number for the fractional parts that are shaded. $1\frac{1}{5}$

Mixed Numbers and Improper Fractions
Modeling Practice

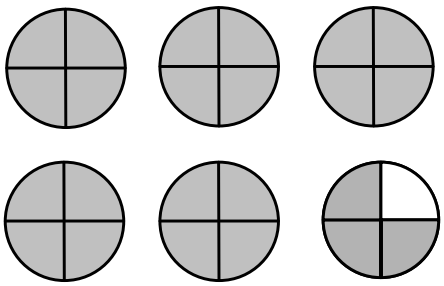


(1) Each rectangle has been divided into___ parts.
(2) Write an improper fraction for the fractional parts that are shaded.

(3) Write a mixed number for the fractional parts that are shaded.

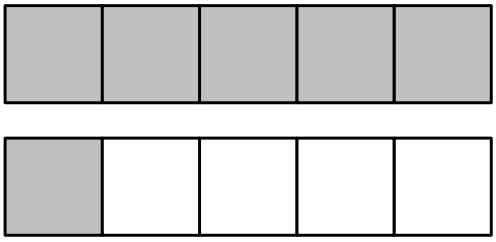
(4) Each glass has been divided into _____parts.
(5) Write an improper fraction for the fractional parts that are filled.

(6) Write a mixed number for the fractional parts that are shaded.



(7) Each circle has been divided into _____parts.
(8) Write an improper fraction for the fractional parts that are shaded.

(9) Write a mixed number for the fractional parts that are shaded.

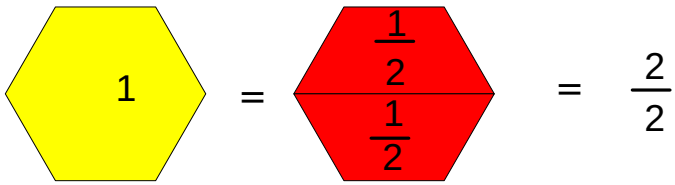


(10) Each rectangle has been divided into _____parts.
(11) Write an improper fraction for the fractional parts that are shaded.

(12) Write a mixed number for the fractional parts that are shaded.

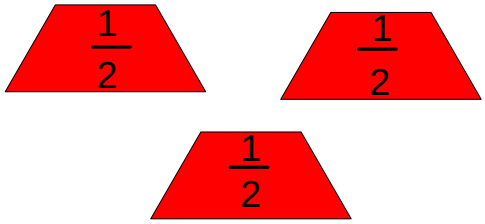
Mixed Number Pattern Block Activity
KEY

Use a yellow hexagon to represent one whole. Use your pattern blocks to find the part of the hexagon that two red trapezoids represent.

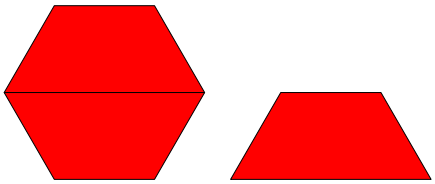


Each red trapezoid is $\frac{1}{2}$ of the yellow hexagon. So, 2 trapezoids represent $\frac{3}{2}$ of the whole.

Ask students what part of the whole do three red trapezoids represent? Have students model the trapezoids with partners to construct their answers.



Some students will say that the three trapezoids represent $\frac{3}{2}$.



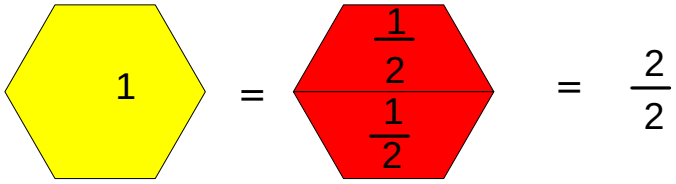
Others will discover that the trapezoids also represent one whole and a half.

Instruct students to complete this table with a hexagon representing a whole.

Fractional Part(s)	Fraction Name for One Part	Two Possible Ways to Name All Parts
3 red trapezoids	$\frac{1}{2}$	$\frac{3}{2}$ or $1\frac{1}{2}$
5 red trapezoids	$\frac{1}{2}$	$\frac{5}{2}$ or $2\frac{1}{2}$
4 blue rhombi	$\frac{1}{3}$	$\frac{4}{3}$ or $1\frac{1}{3}$
7 green triangles	$\frac{1}{6}$	$\frac{7}{6}$ or $1\frac{1}{6}$

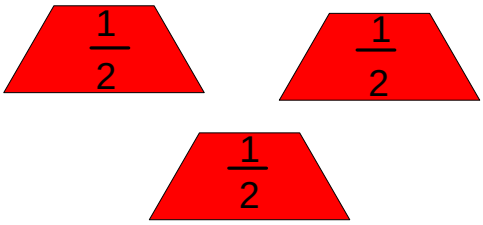
Mixed Number Pattern Block Activity

Use a yellow hexagon to represent one whole. Use your pattern blocks to find the part of the hexagon that two red trapezoids represent.

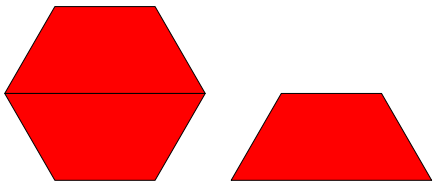


Each red trapezoid is $\frac{1}{2}$ of the yellow hexagon. So, 2 trapezoids represent $\frac{3}{2}$ of the whole.

Ask students what part of the whole do three red trapezoids represent? Have students model the trapezoids with partners to construct their answers.



Some students will say that the three trapezoids represent $\frac{3}{2}$.



Others will discover that the trapezoids also represent one whole and a half.

Instruct students to complete this table with a hexagon representing a whole.

Fractional Part(s)	Fraction Name for One Part	Two Possible Ways to Name All Parts
3 red trapezoids	$\frac{1}{2}$	$\frac{3}{2}$ or $1\frac{1}{2}$
5 red trapezoids		
4 blue rhombi		
7 green triangles		

Money Activity KEY

Step 1: Use pennies.

- One penny is $\frac{1}{100}$ of a dollar, because it is $\frac{1 \text{ penny}}{100 \text{ pennies}}$.
- Count out 4 pennies. What fraction does this represent?

$$\frac{4 \text{ pennies}}{100 \text{ pennies}}$$

Step 2: Use dimes.

- One dime is $\frac{1}{10}$ of a dollar, because it is $\frac{1 \text{ dime}}{10 \text{ dimes}}$ OR $\frac{10 \text{ pennies}}{100 \text{ pennies}}$.
- Count out 4 dimes. What fraction does this represent?

$$\frac{4 \text{ dimes}}{10 \text{ dimes}} \text{ or } \frac{40 \text{ pennies}}{100 \text{ pennies}}$$

Step 3: Combine the coins.

- When you combine the dimes and pennies, what fraction of a dollar does this represent?

$$\frac{44 \text{ pennies}}{100 \text{ pennies}}$$

Money Activity

Step 1: Use pennies.

- One penny is $\frac{1}{100}$ of a dollar, because it is $\frac{1 \text{ penny}}{100 \text{ pennies}}$.
- Count out 4 pennies. What fraction does this represent?

Step 2: Use dimes.

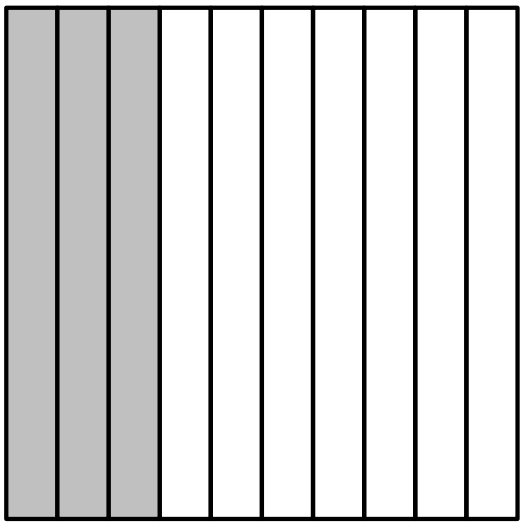
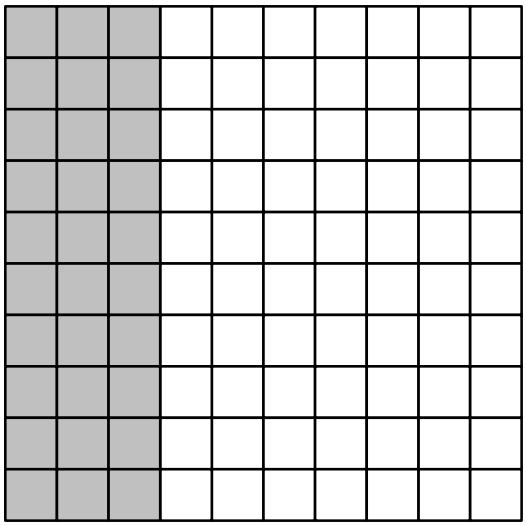
- One dime is $\frac{1}{10}$ of a dollar, because it is $\frac{1 \text{ dime}}{10 \text{ dimes}}$ OR $\frac{10 \text{ pennies}}{100 \text{ pennies}}$.
- Count out 4 dimes. What fraction does this represent?

Step 3: Combine the coins.

- When you combine the dimes and pennies, what fraction of a dollar does this represent?

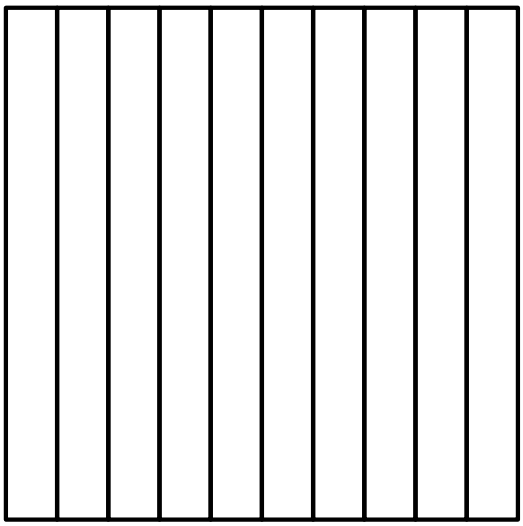
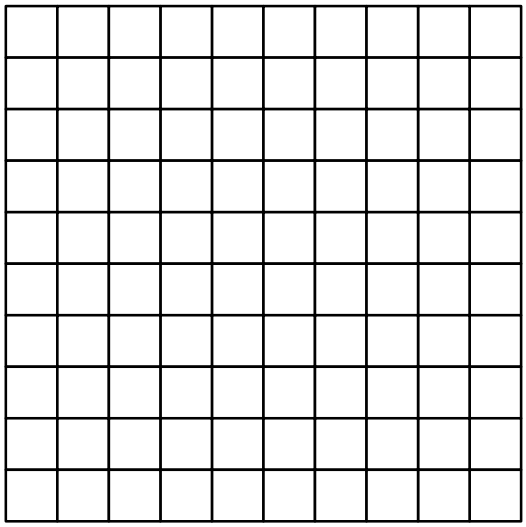
Money/Fraction/Decimal Recording Grids SAMPLE KEY

Select money amounts from the bags provided. Shade the grids to show the money amount selected. Then complete the table to show the fraction to decimal equivalents.

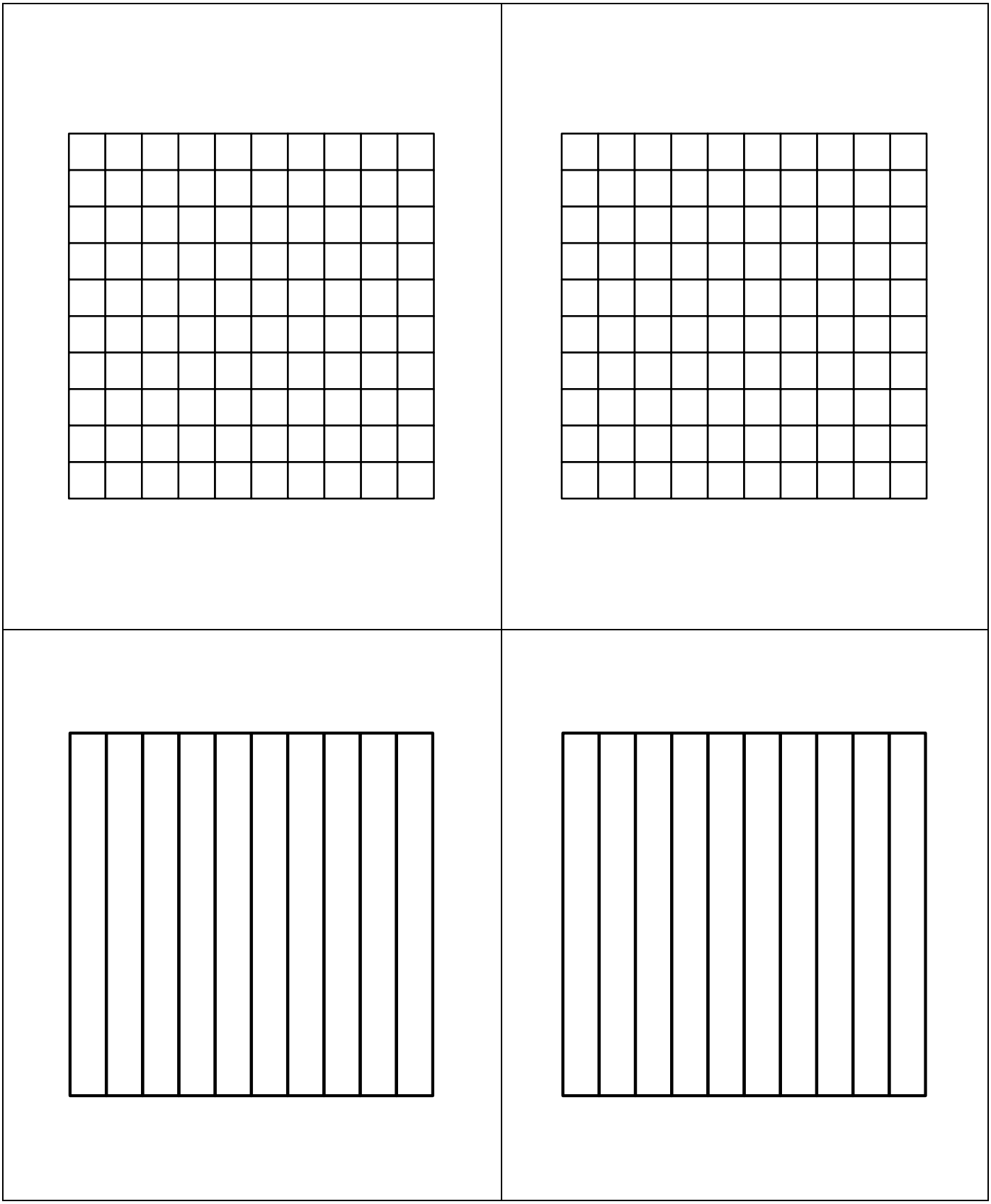
	=	
(1) ***3 dimes = $0.30***	=	***30 pennies = $0.30***
(2) ***3 out of 10 shaded***	=	***30 out of 100 shaded***
(3) $\frac{\boxed{3}\text{ dimes}}{10\text{ dimes}}$	=	$\frac{\boxed{30}\text{ pennies}}{100\text{ pennies}}$
(4) $\frac{\boxed{3}}{10} = 0.\boxed{3}$	=	$\frac{\boxed{30}}{100} = 0.\boxed{3}\boxed{0}$
(5) Fraction and decimal name in words. ***three-tenths***	=	***thirty-hundredths***

Money/Fraction/Decimal Recording Grids

Select money amounts from the bags provided. Shade the grids to show the money amount selected. Then complete the table to show the fraction to decimal equivalents.

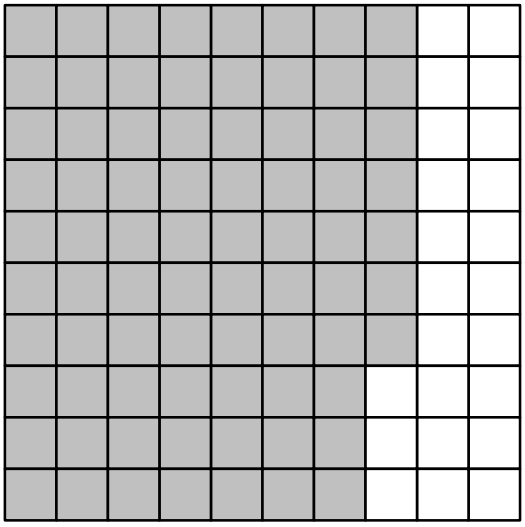
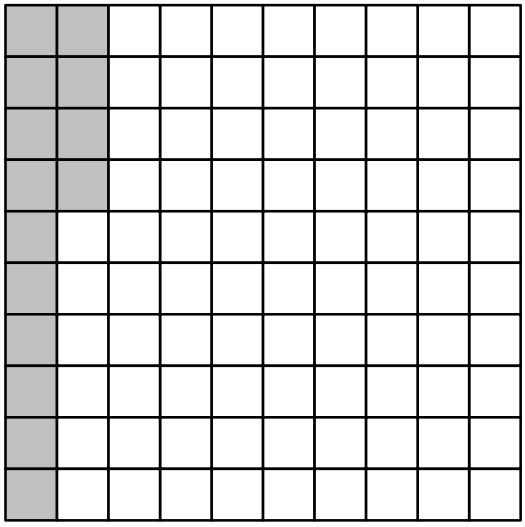
	=	
(1) _____ dimes = $_____	=	_____ pennies = $_____
(2) _____ out of 10 shaded	=	_____ out of 100 shaded
(3) $\frac{\square \text{ dimes}}{10 \text{ dimes}}$	=	$\frac{\square \text{ pennies}}{100 \text{ pennies}}$
(4) $\frac{\square}{10} = 0.\square$	=	$\frac{\square}{100} = 0.\square\square$
(5) Fraction and decimal name in words.	=	

Grid Overlays



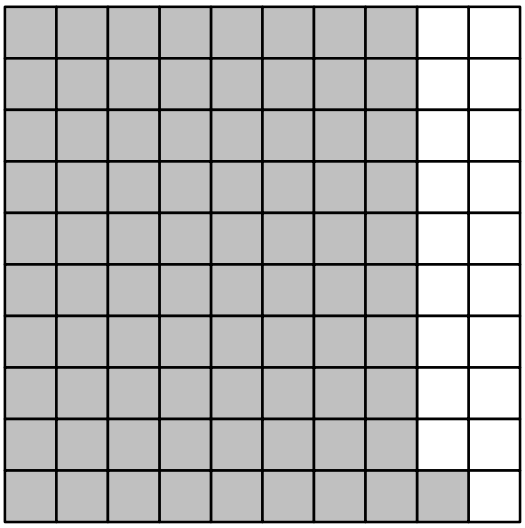
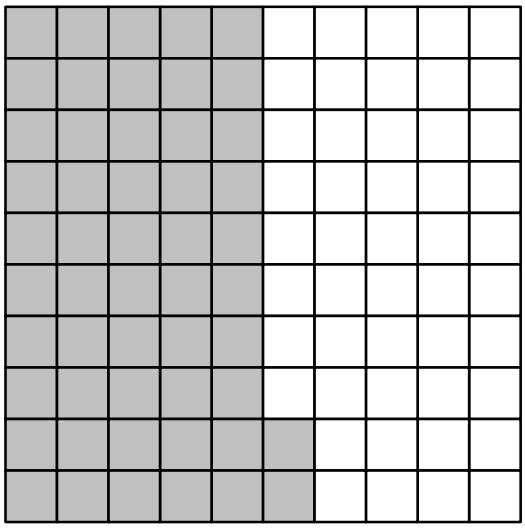
Fraction to Decimal Practice KEY

Use the money amounts shown to shade each grid. Then complete the table to show the fraction to decimal equivalents.

A	B
(1) Shade the grid below to show 77 cents.	(1) Shade the grid below to show 14 cents.
	
(2) ***77 out of 100 shaded***	(2) ***14 out of 100 shaded***
(3) Write a fraction that represents this amount of money. $\frac{77}{100}$	(3) Write a fraction that represents this amount of money. $\frac{14}{100}$
(4) Write a decimal that represents this amount of money. ***$0.77***	(4) Write a decimal that represents this amount of money. ***$0.14***
(5) Write the fraction and decimal name in words. ***seventy-seven hundredths***	(5) Write the fraction and decimal name in words. ***fourteen hundredths***

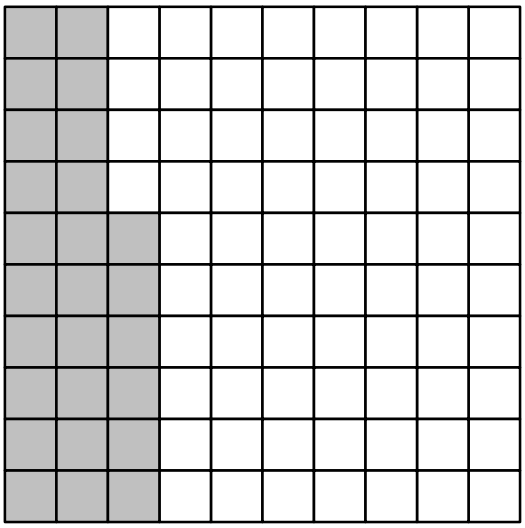
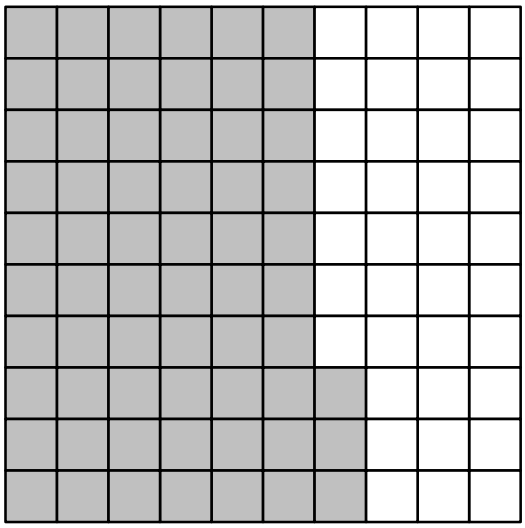
Fraction to Decimal Practice KEY

Use the money amounts shown to shade each grid. Then complete the table to show the fraction to decimal equivalents.

C	D
(1) Shade the grid below to show 81 cents.	(1) Shade the grid below to show 52 cents.
	
(2) ***81 out of 100 shaded***	(2) ***52 out of 100 shaded***
(3) Write a fraction that represents this amount of money. $\frac{81}{100}$	(3) Write a fraction that represents this amount of money. $\frac{52}{100}$
(4) Write a decimal that represents this amount of money. ***$0.81***	(4) Write a decimal that represents this amount of money. ***$0.52***
(5) Write the fraction and decimal name in words. ***eighty-one hundredths***	(5) Write the fraction and decimal name in words. ***fifty-two hundredths***

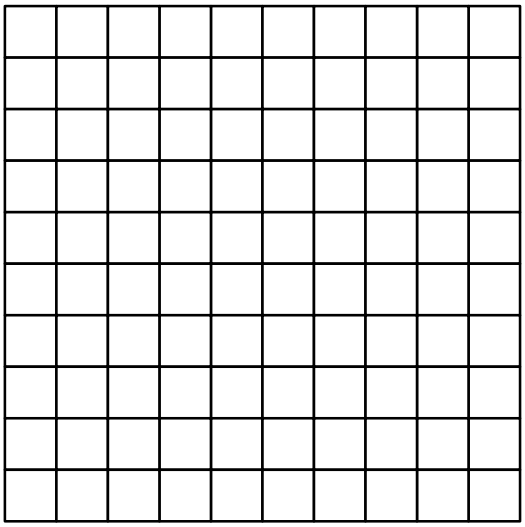
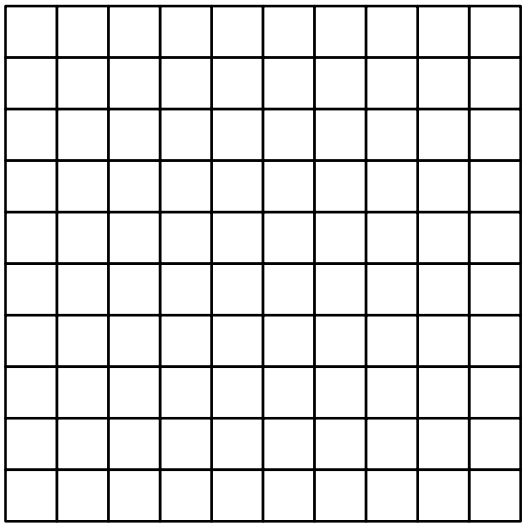
Fraction to Decimal Practice KEY

Use the money amounts shown to shade each grid. Then complete the table to show the fraction to decimal equivalents.

E	F
(1) Shade the grid below to show 26 cents.	(1) Shade the grid below to show 63 cents.
	
(2) *26 out of 100 shaded*	(2) *63 out of 100 shaded*
(3) Write a fraction that represents this amount of money. $\frac{26}{100}$	(3) Write a fraction that represents this amount of money. $\frac{63}{100}$
(4) Write a decimal that represents this amount of money. *$0.26*	(4) Write a decimal that represents this amount of money. *$0.63*
(5) Write the fraction and decimal name in words. *twenty-six hundredths*	(5) Write the fraction and decimal name in words. *sixty-three hundredths*

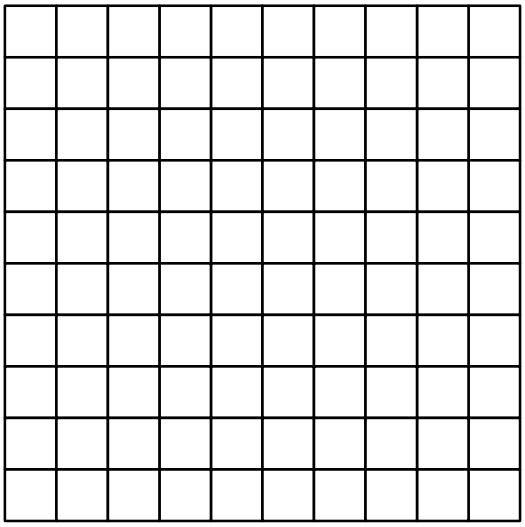
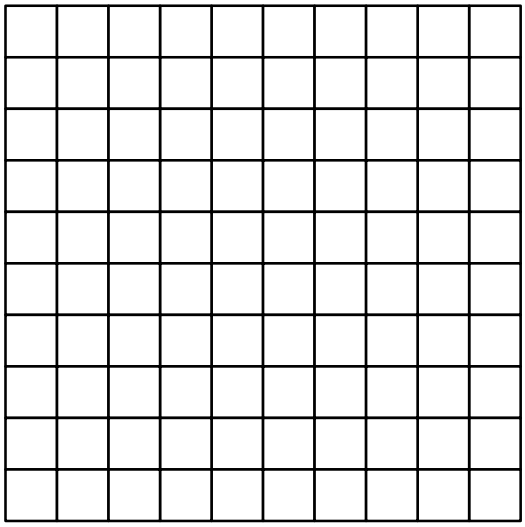
Fraction to Decimal Practice

Use the money amounts shown to shade each grid. Then complete the table to show the fraction to decimal equivalents.

A	B
(1) Shade the grid below to show 77 cents.	(1) Shade the grid below to show 14 cents.
	
(2) _____ out of _____ shaded	(2) _____ out of _____ shaded
(3) Write a fraction that represents this amount of money.	(3) Write a fraction that represents this amount of money.
(4) Write a decimal that represents this amount of money.	(4) Write a decimal that represents this amount of money.
(5) Write the fraction and decimal name in words.	(5) Write the fraction and decimal name in words.

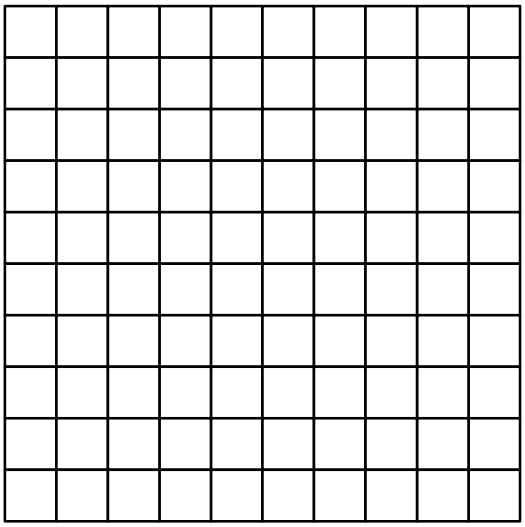
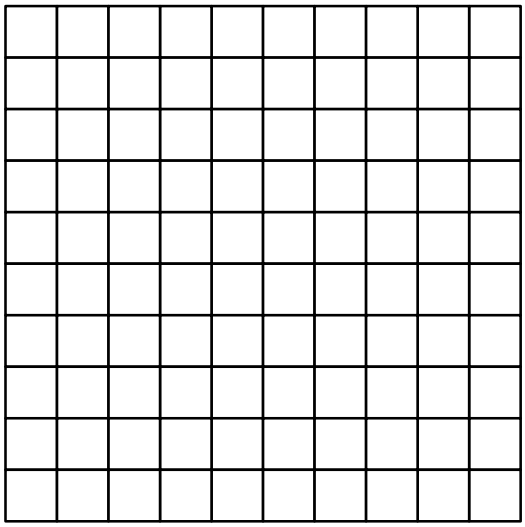
Fraction to Decimal Practice

Use the money amounts shown to shade each grid. Then complete the table to show the fraction to decimal equivalents.

C	D
(1) Shade the grid below to show 81 cents.	(1) Shade the grid below to show 52 cents.
	
(2) _____ out of _____ shaded	(2) _____ out of _____ shaded
(3) Write a fraction that represents this amount of money.	(3) Write a fraction that represents this amount of money.
(4) Write a decimal that represents this amount of money.	(4) Write a decimal that represents this amount of money.
(5) Write the fraction and decimal name in words.	(5) Write the fraction and decimal name in words.

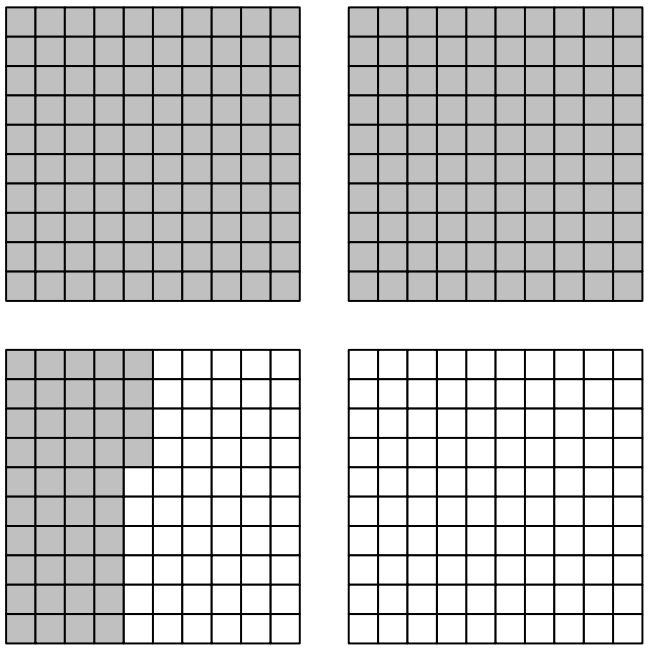
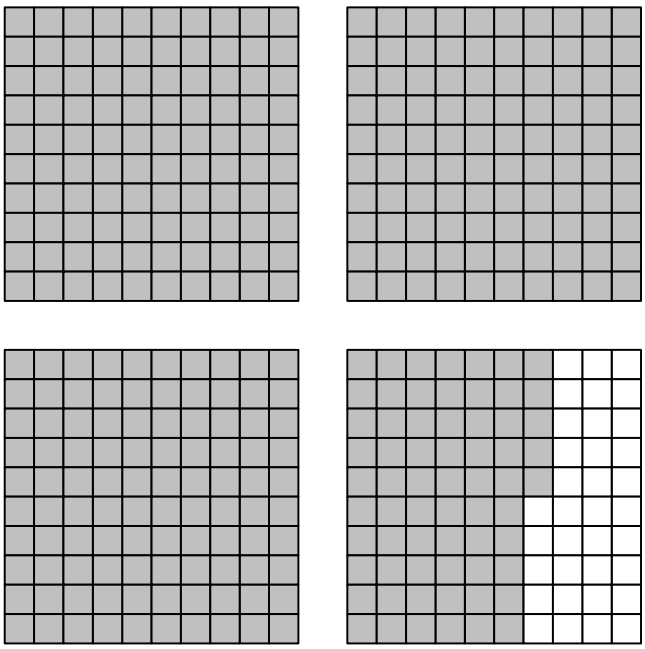
Fraction to Decimal Practice

Use the money amounts shown to shade each grid. Then complete the table to show the fraction to decimal equivalents.

E	F
(1) Shade the grid below to show 26 cents.	(1) Shade the grid below to show 63 cents.
	
(2) _____ out of _____ shaded	(2) _____ out of _____ shaded
(3) Write a fraction that represents this amount of money.	(3) Write a fraction that represents this amount of money.
(4) Write a decimal that represents this amount of money.	(4) Write a decimal that represents this amount of money.
(5) Write the fraction and decimal name in words.	(5) Write the fraction and decimal name in words.

Money/Fraction/Decimal Recording Grids
− Fractions Greater Than One SAMPLE KEY

Select money amounts from the bags provided. Shade the grids to show the money amount selected. Then complete the table to show the fraction to decimal equivalents.

<table>
<tr>
<td>  </td>
<td>  </td>
</tr>
<tr>
<td>(1) Write a mixed number that represents this amount of money.

$2\frac{44}{100}$</td>
<td>(1) Write a mixed number that represents this amount of money.

$3\frac{65}{100}$</td>
</tr>
<tr>
<td>(2) Write a decimal that represents this amount of money.

$2.44</td>
<td>(2) Write a decimal that represents this amount of money.

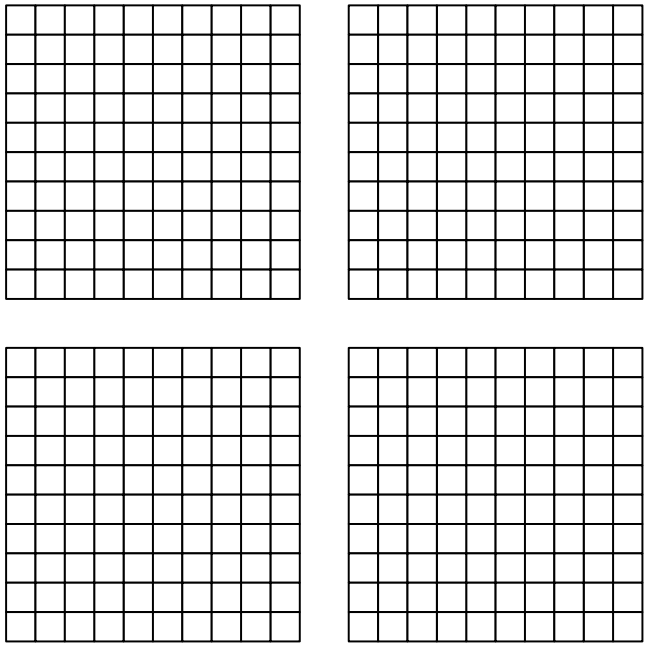
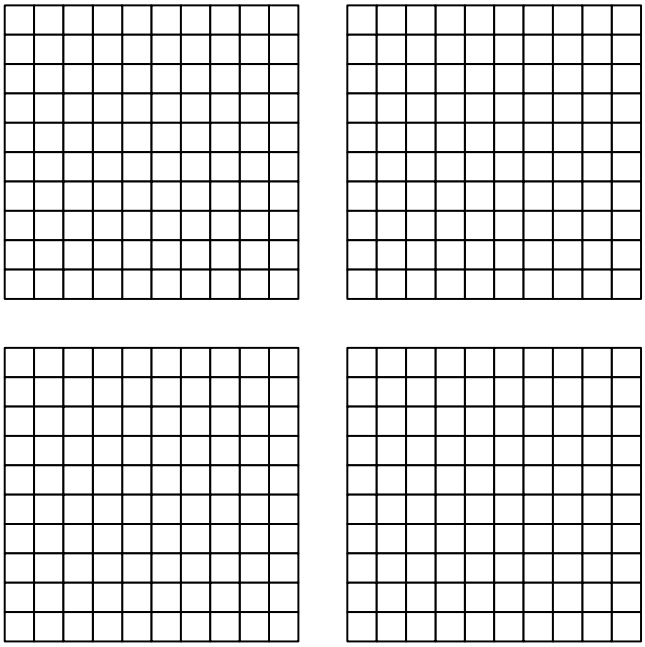
$3.65</td>
</tr>
<tr>
<td>(3) Write the mixed number and decimal name in words.

two and forty-four hundredths</td>
<td>(3) Write the mixed number and decimal name in words.

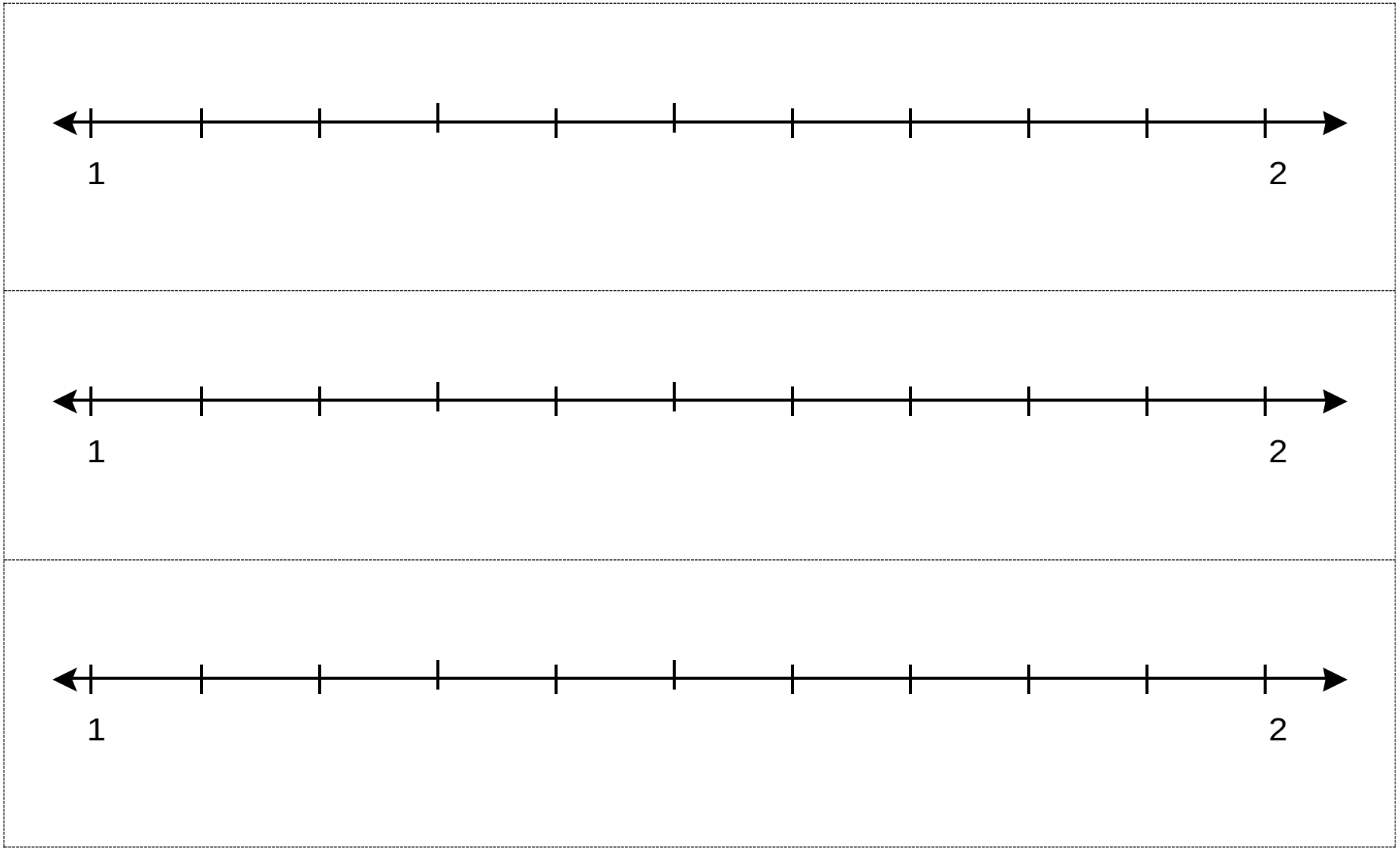
three and sixty-five hundredths</td>
</tr>
</table>

Money/Fraction/Decimal Recording Grids
− Fractions Greater Than One

Select money amounts from the bags provided. Shade the grids to show the money amount selected. Then complete the table to show the fraction to decimal equivalents.

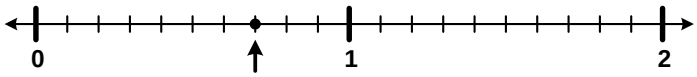
	
(1) Write a mixed number that represents this amount of money.	(1) Write a mixed number that represents this amount of money.
(2) Write a decimal that represents this amount of money.	(2) Write a decimal that represents this amount of money.
(3) Write the mixed number and decimal name in words.	(3) Write the mixed number and decimal name in words.

Mixed Number Line

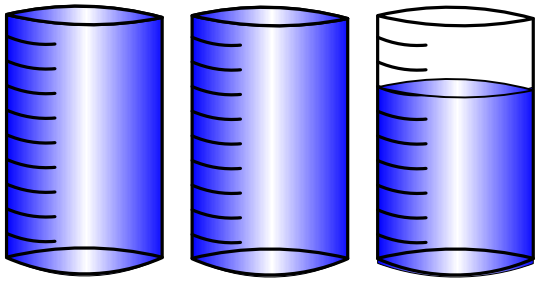


Fraction to Decimal Model Cards

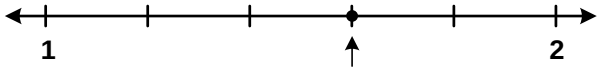
A



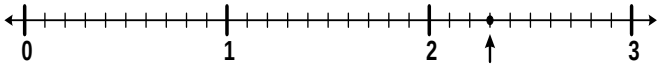
B



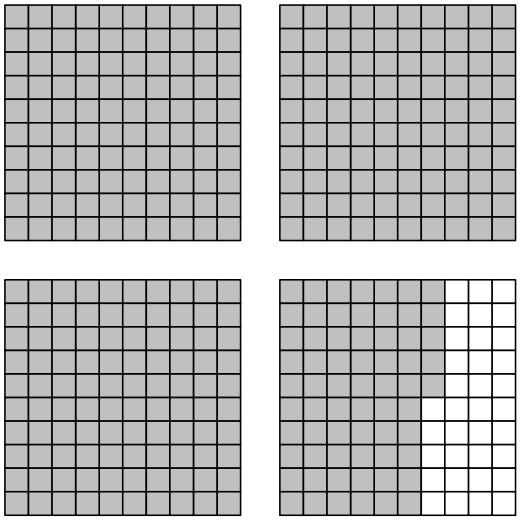
C



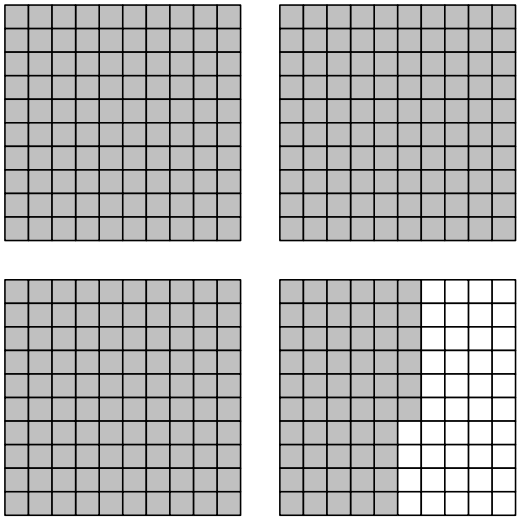
D



E



F



Fraction to Decimal Model Recording Sheet KEY

(1) $2\frac{3}{10}$ Model ***D***	(2) $\frac{7}{10}$ Model ***A***	(3) **0.7** Model ***A***	(4) $2\frac{7}{10}$ Model ***B***
(5) $1\frac{6}{10}$ Model ***C***	(6) **2.3** Model ***D***	(7) **1.6** Model ***C***	(8) **2.7** Model ***B***
(9) $3\frac{65}{100}$ Model ***E***	(10) $3\frac{56}{100}$ Model ***F***	(11) **3.56** Model ***F***	(12) **3.65** Model ***E***

Use the information from the table above, list the decimal equivalents to the fractions or mixed numbers.

Model A: $\frac{7}{10} = 0.7$	***Model B:*** $2\frac{7}{10} = 2.7$	***Model C:*** $1\frac{6}{10} = 1.6$
Model D: $2\frac{3}{10} = 2.3$	***Model E:*** $3\frac{65}{100} = 3.65$	***Model F:*** $3\frac{56}{100} = 3.56$

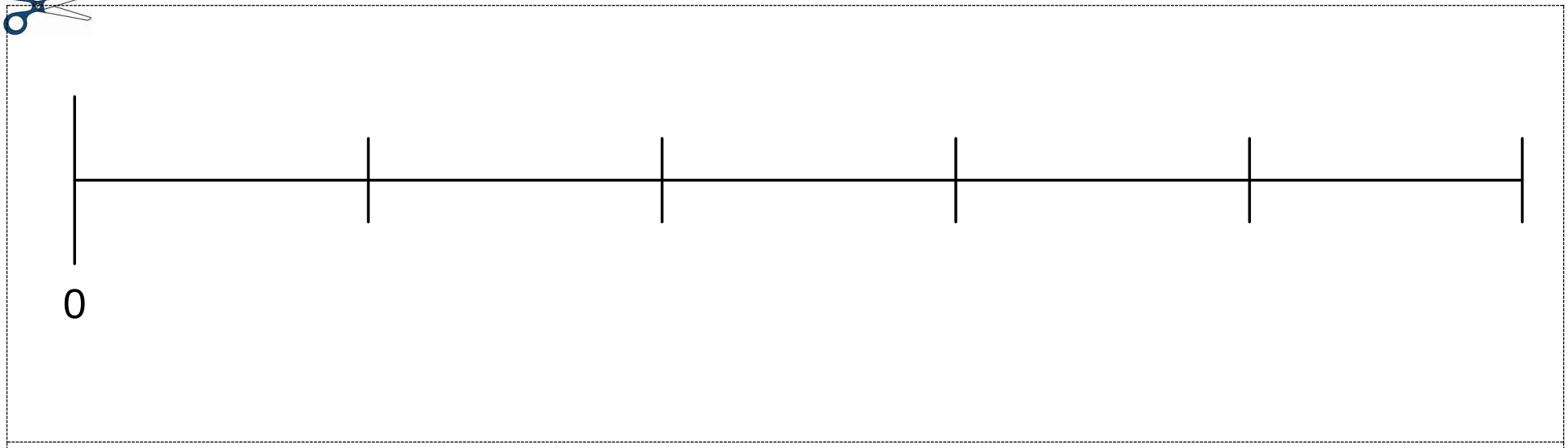
Fraction to Decimal Model Recording Sheet

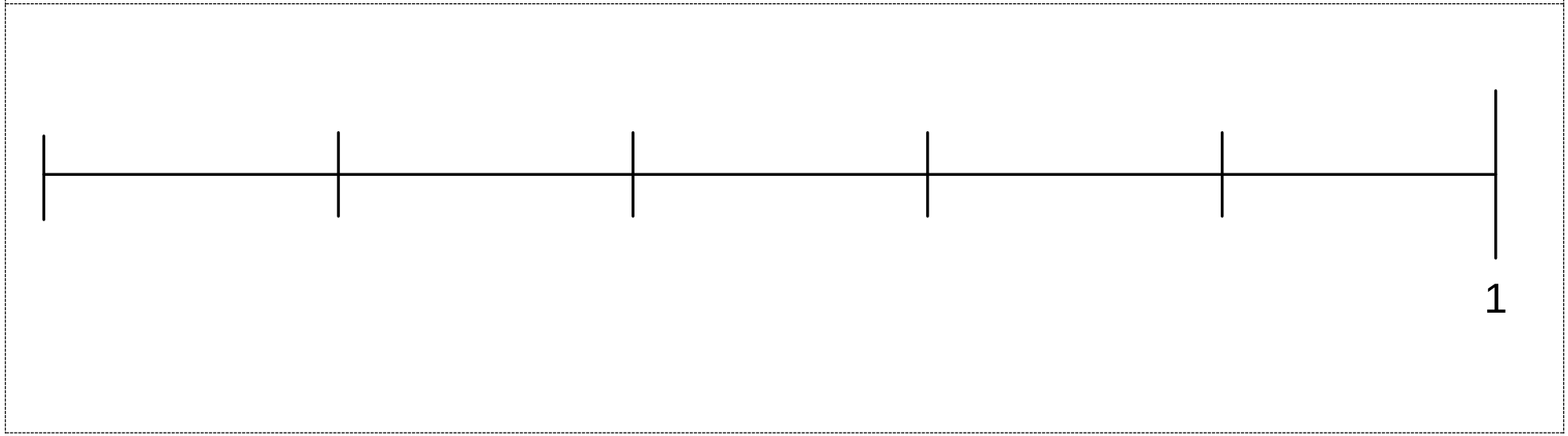
(1) $2\frac{3}{10}$ Model _____	(2) $\frac{7}{10}$ Model _____	(3) **0.7** Model _____	(4) $2\frac{7}{10}$ Model _____
(5) $1\frac{6}{10}$ Model _____	(6) **2.3** Model _____	(7) **1.6** Model _____	(8) **2.7** Model _____
(9) $3\frac{65}{100}$ Model _____	(10) $3\frac{56}{100}$ Model _____	(11) **3.56** Model _____	(12) **3.65** Model _____

Use the information from the table above, list the decimal equivalents to the fractions or mixed numbers.

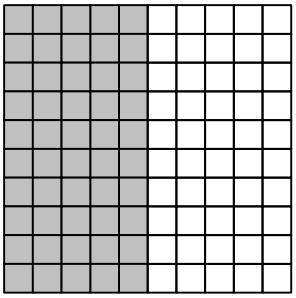
Model A:	***Model B:***	***Model C:***
Model D:	***Model E:***	***Model F:***

Number Line – Tenths



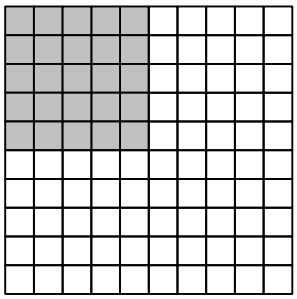


Fraction/Decimal Model Cards KEY



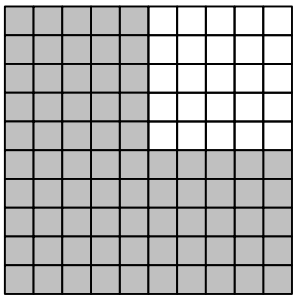
Fraction(s): $\frac{1}{2}, \frac{5}{10}, \frac{50}{100}$

Decimal(s): 0.5; 0.50



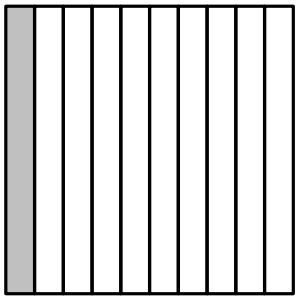
Fraction(s): $\frac{1}{4}$

Decimal(s): 0.25



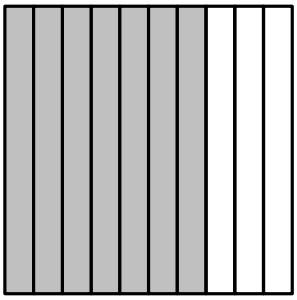
Fraction(s): $\frac{3}{4}$

Decimal(s): 0.75



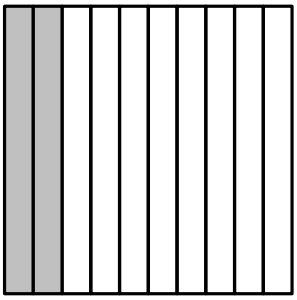
Fraction(s): $\frac{1}{10}$

Decimal(s): 0.1



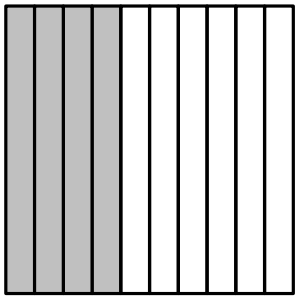
Fraction(s): $\frac{7}{10}$

Decimal(s): 0.7



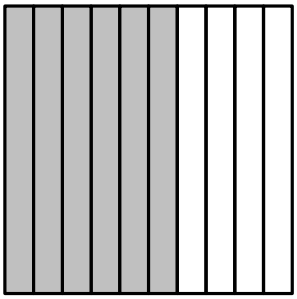
Fraction(s): $\frac{2}{10}, \frac{1}{5}$

Decimal(s): 0.2



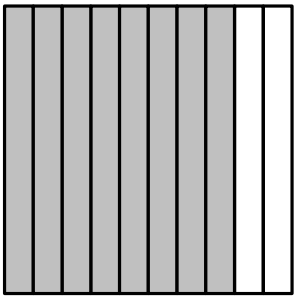
Fraction(s): $\frac{4}{10}, \frac{2}{5}$

Decimal(s): 0.4



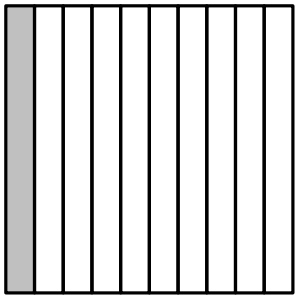
Fraction(s): $\frac{6}{10}, \frac{3}{5}$

Decimal(s): 0.6



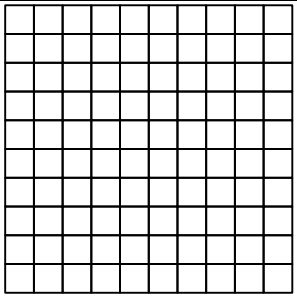
Fraction(s): $\frac{8}{10}, \frac{4}{5}$

Decimal(s): 0.8

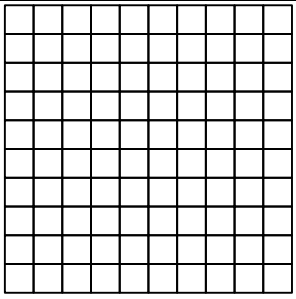


Fraction(s): $\frac{1}{10}$

Decimal(s): 0.1



Answers may vary.

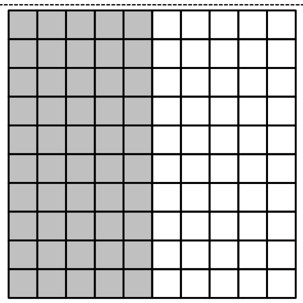


Answers may vary.

Fraction/Decimal Number Cards

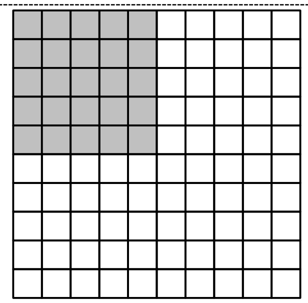
$\frac{1}{2}$	$\frac{1}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{1}{10}$
$\frac{5}{10}$	$\frac{1}{5}$	$\frac{2}{5}$	$\frac{3}{5}$	$\frac{4}{5}$
$\frac{4}{10}$	$\frac{2}{10}$	$\frac{6}{10}$	$\frac{8}{10}$	0.9
0.75	0.1	0.2	0.3	0.4
0.5	0.50	0.6	0.7	0.8

Fraction/Decimal Model Cards



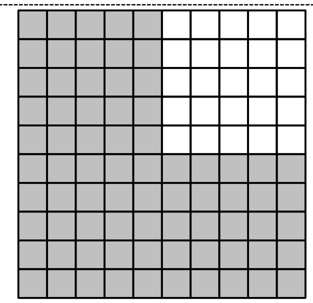
Fraction(s):__________

Decimal(s): __________



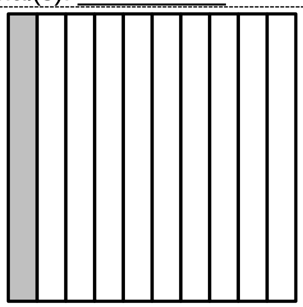
Fraction(s):__________

Decimal(s): __________



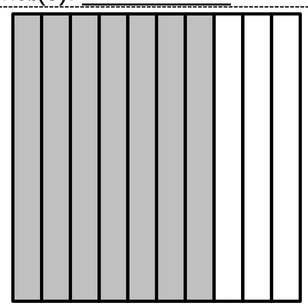
Fraction(s):__________

Decimal(s): __________



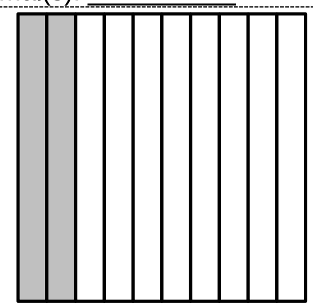
Fraction(s):__________

Decimal(s): __________



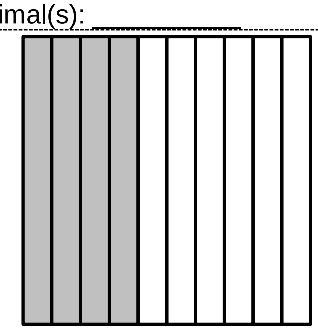
Fraction(s):__________

Decimal(s): __________



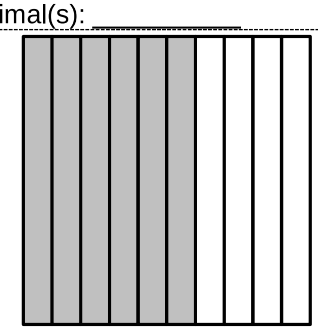
Fraction(s):__________

Decimal(s): __________



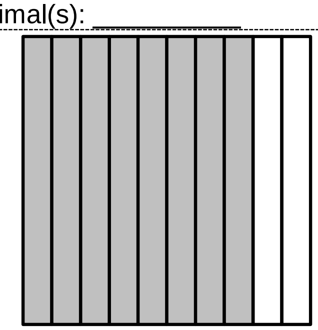
Fraction(s):__________

Decimal(s): __________



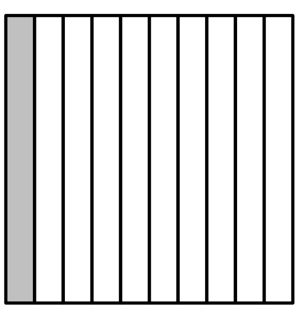
Fraction(s):__________

Decimal(s): __________



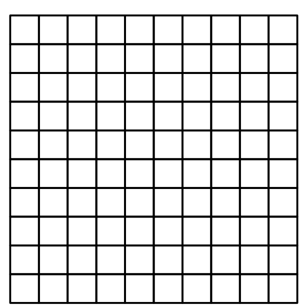
Fraction(s):__________

Decimal(s): __________



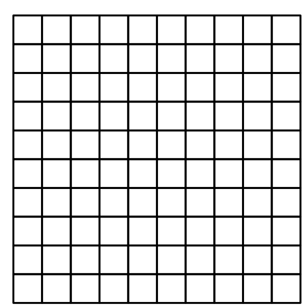
Fraction(s):__________

Decimal(s): __________



Fraction(s):__________

Decimal(s): __________



Fraction(s):__________

Decimal(s): __________