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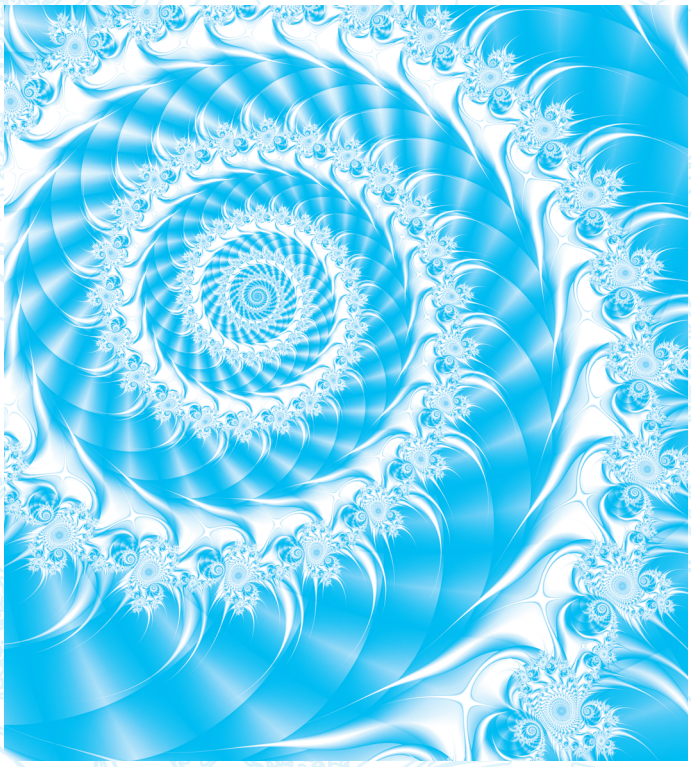
Polished Spiral Karin Kuhlmann



"Although the creation of fractals is bounded to strict mathematical rules, the results are always very inspiring."– **Karin Kuhlmann**

Investigations

IN NUMBER, DATA, AND SPACE®

Student Activity Book

Fraction Cards and Decimal Squares

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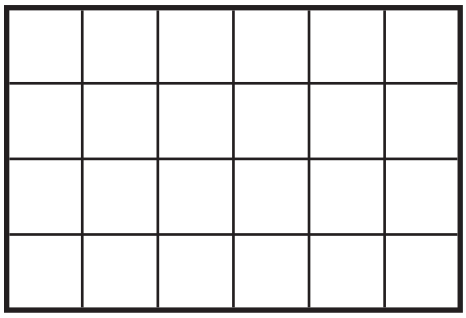
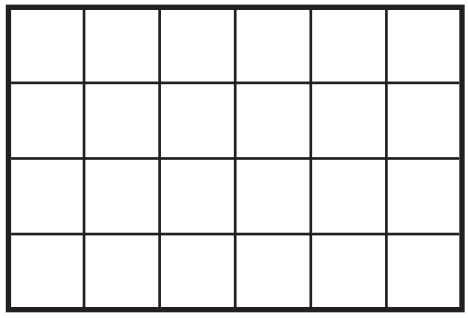
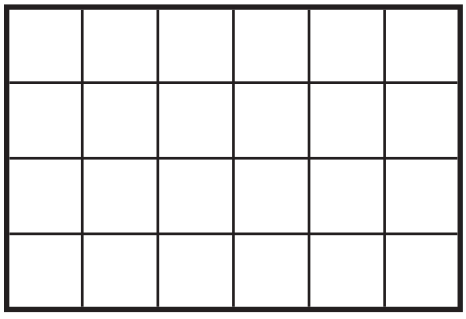
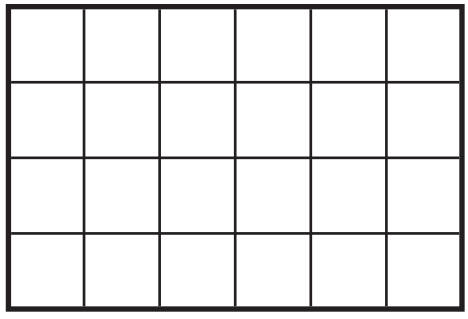
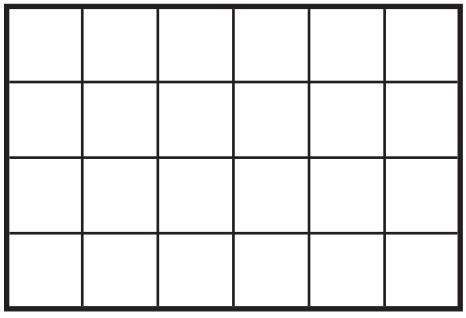
4 × 6 Rectangles

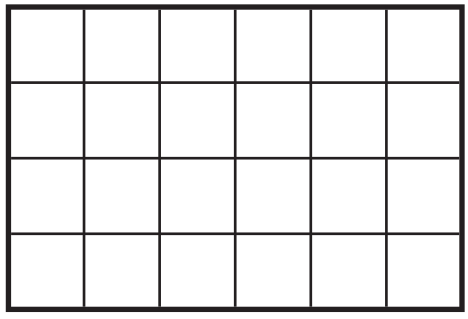


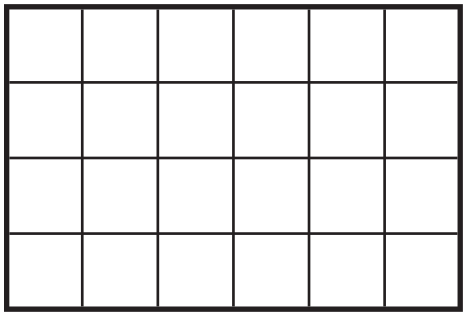


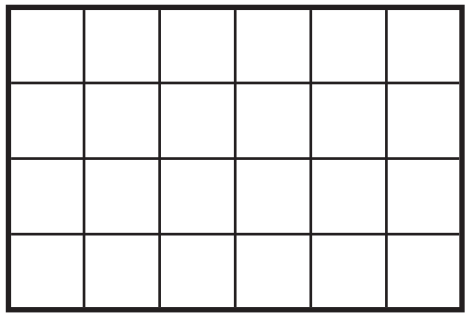












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Solve Two Ways, Addition

Solve this problem in two different ways.
Be sure to show how you got your answer.

293 + 851 = _____

Here is the first way I solved it:

Here is the second way I solved it:

NOTE Students practice strategies for solving addition problems in two different ways.

SMH 8–9

Ongoing Review

924 + 150 = _____

A. 1,024 **B.** 1,074 **C.** 1,390 **D.** 1,740

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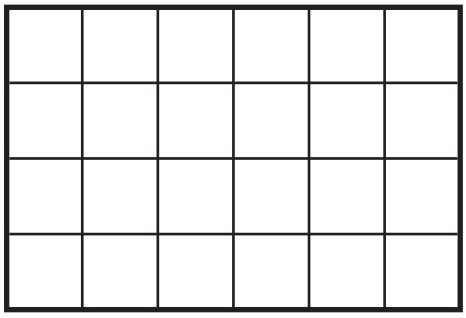
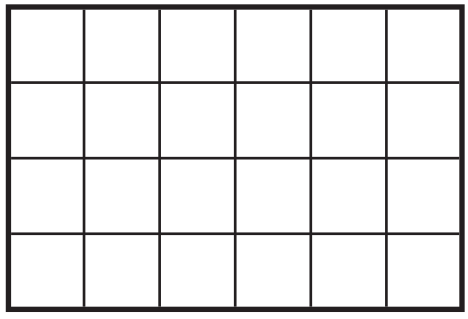
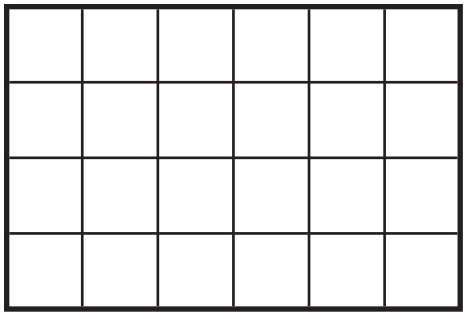
Halves, Fourths, and Eighths

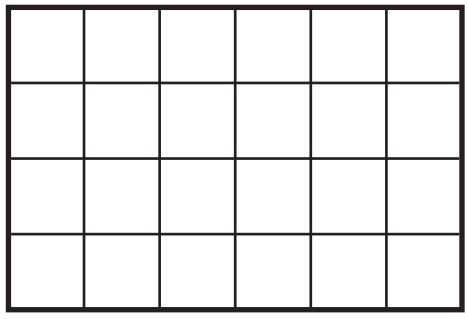
Shade in each fraction on one of the rectangles.
Label the fraction on each rectangle.

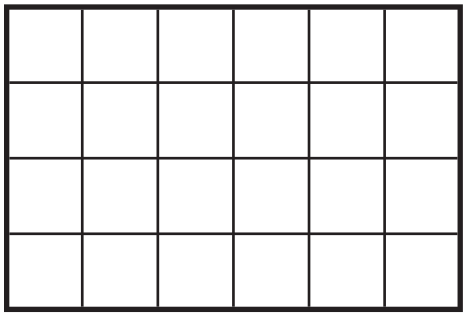
$\frac{1}{4}$ $\frac{1}{2}$ $\frac{2}{2}$ $\frac{3}{4}$ $\frac{1}{8}$ $\frac{7}{8}$

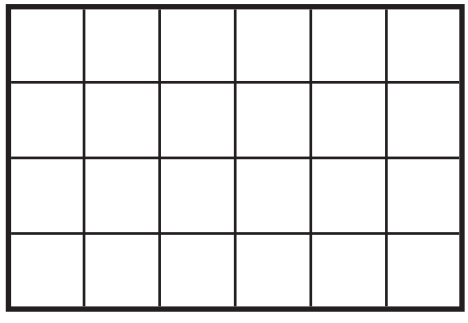












NOTE Students represent fractions on a 4×6 rectangle.

SMH **53, 54, 56**

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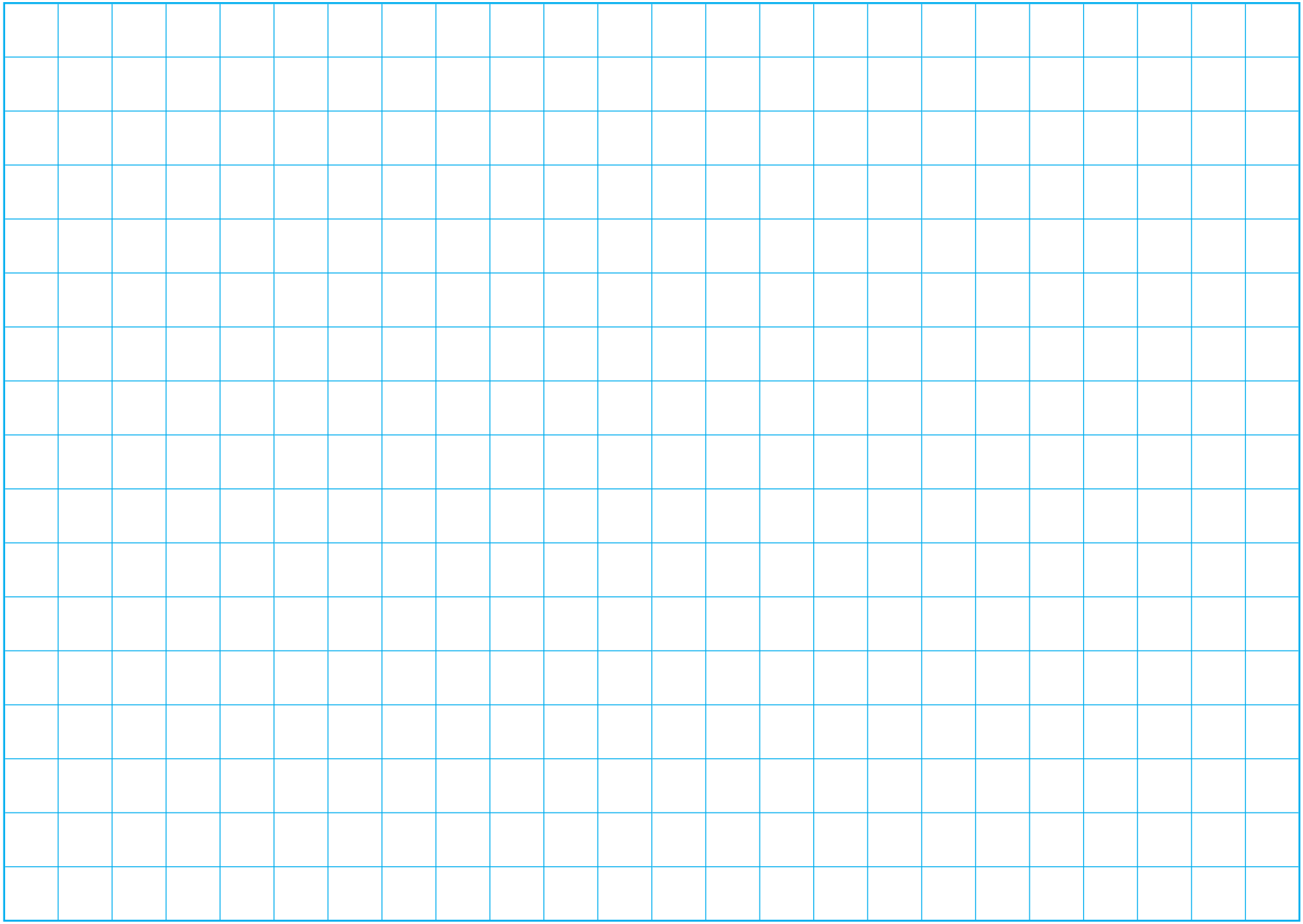

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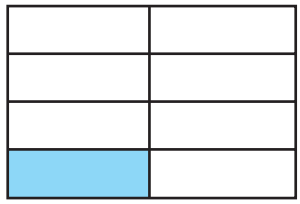
Parts of Rectangles

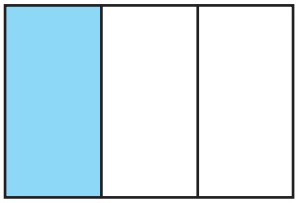
What fraction of the rectangle is shaded?
Write the fraction next to each figure.

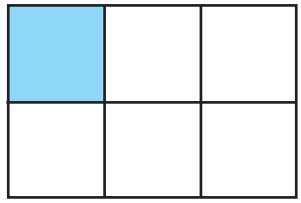
NOTE Students identify fractional parts of a rectangle.

SMH 56–57

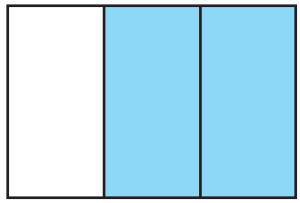
1. _____

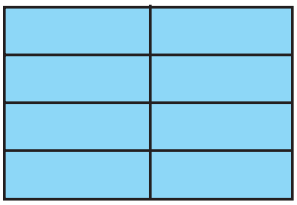
2.  _____

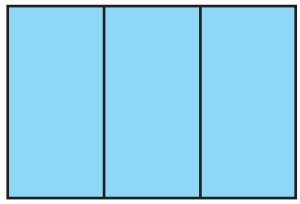
3.  _____

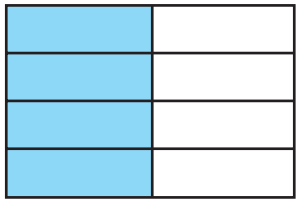
4.  _____

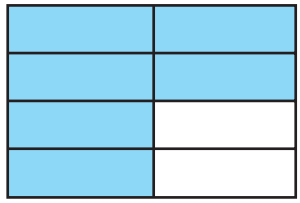
5. _____

6.  _____

7.  _____

8.  _____

9.  _____

10.  _____

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Story Problems About 24 (page 1 of 2)

Solve these problems and show your solutions.

1. Ethan has 24 marbles. He gives $\frac{2}{8}$ of his collection to his sister Ruby. How many marbles does Ruby get?

2. Ruby has a collection of 24 toy cars. She gives $\frac{3}{4}$ of her collection to Ethan. How many toy cars does Ethan get?

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Story Problems About 24 (page 2 of 2)

Solve these problems and show your solutions.

3. a. Ms. Ross's class has 24 students. $\frac{2}{3}$ of her students have brown hair. The rest have blonde hair. How many students have brown hair?

b. What fraction of the class has blonde hair and how many students is that?

4. a. Ms. Perez has a crate of 24 pieces of fruit. $\frac{1}{2}$ are oranges, $\frac{1}{4}$ are mangos, and $\frac{2}{8}$ are pineapples. How many oranges are there?

b. How many mangos are there?

c. How many pineapples are there?

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Solve Two Ways, Subtraction

NOTE Students practice strategies for solving subtraction problems in two different ways.

SMH 13–15

Solve this problem in two different ways.
Be sure to show how you got your answer.

745 − 328 = _____

Here is the first way I solved it:

Here is the second way I solved it:

Ongoing Review

2,050 − 400 − 30 =

A. 1,020 **B.** 1,520 **C.** 1,580 **D.** 1,620

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Sharing 24 (page 1 of 2)

NOTE Students find fractional parts of a group of objects.

SMH 55

Solve these problems and explain your solutions.

Mia had 24 marbles.

1. Mia gave $\frac{1}{2}$ of her 24 marbles to Shana. How many did Shana get?

2. Mia gave $\frac{1}{3}$ of her 24 marbles to David. How many did David get?

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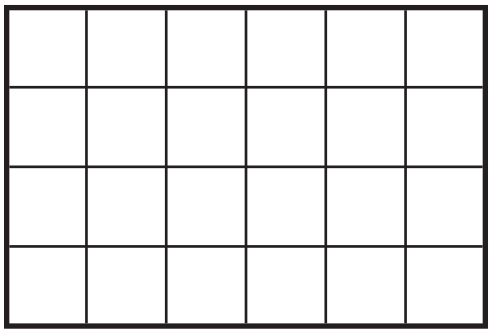
Sharing 24 (page 2 of 2)

3. Mia gave $\frac{1}{6}$ of her 24 marbles to Yama. How many did Yama get?

4. Show each fraction on the 4 × 6 rectangle below. Label each piece.



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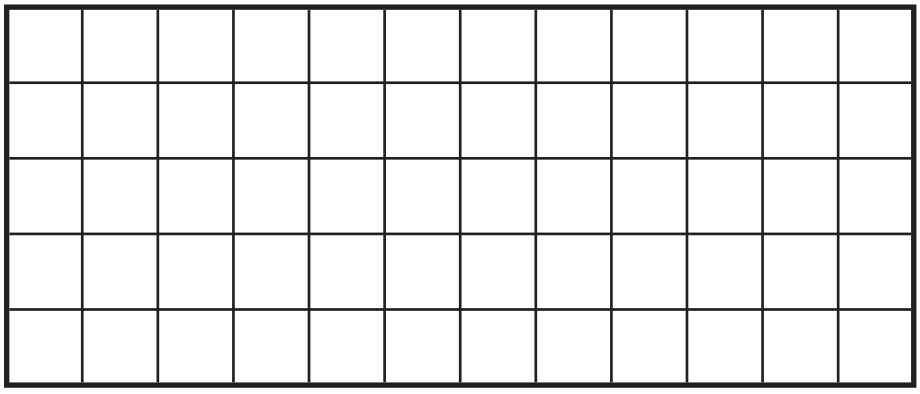
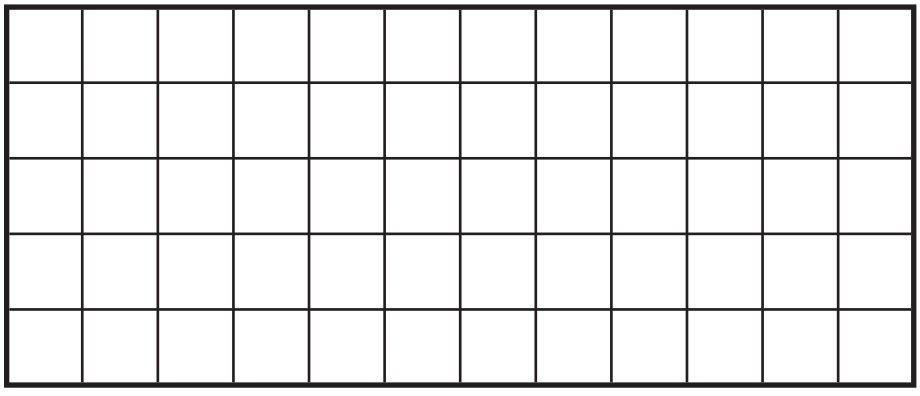
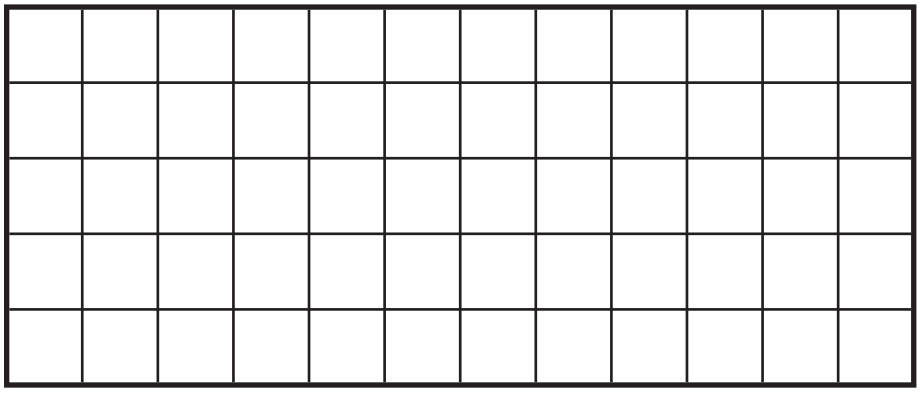
5 × 12 Rectangles







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Story Problems About a Class (page 1 of 2)

Solve each problem and show your solution clearly.

1. Renata's fourth-grade class has 28 students. $\frac{1}{2}$ of her class is on the soccer team. $\frac{1}{4}$ of her class takes karate classes.

a. How many students are on the soccer team?

b. How many students take karate?

2. Kenji's fourth-grade class has 32 students. $\frac{1}{2}$ of his class is in the school play. $\frac{1}{4}$ of his class is on the swim team.

a. How many students are in the play?

b. How many students are on the swim team?

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Story Problems About a Class (page 2 of 2)

Solve each problem and show your solution clearly.

3. The school play includes 60 students. $\frac{3}{5}$ of the students are actors. The rest of the students work behind the scenes.

a. How many students act in the play?

b. How many students work behind the scenes?

4. Luisa has 24 students in her class. $\frac{3}{4}$ of the students speak Spanish as well as English. How many students speak both Spanish and English?

5. Nick's class has 30 students. $\frac{2}{5}$ of his class sings in the school chorus. How many students sing in the chorus?

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Fractional Parts of Groups

NOTE Students identify fractional parts of a group.

SMH 55

Solve these problems and explain your solutions.

1. Logan caught 16 butterflies this morning. By the evening, $\frac{1}{4}$ of the butterflies had flown away. How many butterflies remain?

2. Talisha collected pledges from 40 people for the charity race. $\frac{1}{8}$ of the people are family members. How many people who pledged are family members?

3. Paul hit 33 tennis balls during practice. He hit $\frac{1}{3}$ of them out of the tennis court. How many balls did he hit out of the court?

4. Maria read 90 books last school year. She read $\frac{2}{3}$ of the books before spring break. How many books did she read before spring break last year?

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Finding Fractions of a Number

Solve these problems and show your solutions.

NOTE Students find fractional parts of different numbers.

SMH 55

1. **a.** What is $\frac{1}{2}$ of 24? **b.** What is $\frac{1}{3}$ of 24? **c.** What is $\frac{1}{4}$ of 24?

2. **a.** What is $\frac{1}{2}$ of 30? **b.** What is $\frac{1}{3}$ of 30? **c.** What is $\frac{2}{3}$ of 30?

3. **a.** What is $\frac{1}{2}$ of 60? **b.** What is $\frac{1}{3}$ of 60? **c.** What is $\frac{1}{4}$ of 60?

4. Show with a diagram or picture why $\frac{1}{2}$ of 60 is not the same as $\frac{1}{2}$ of 24.

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Addition and Subtraction Problems

NOTE Students practice solving addition and subtraction problems.

SMH 8–9, 13–15

Solve the problems below. Show your solutions using clear and concise notation.

1.
$$\begin{array}{r} 738 \\ -680 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 515 \\ -\ 472 \\ \hline \end{array}$$

3. 811 + 749 = _____

4.
$$\begin{array}{r} 1{,}234 \\ +\ 694 \\ \hline \end{array}$$

5. _____ + 349 = 1,250

6. 865 − _____ = 347

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Show the Fraction

NOTE Students represent fractional parts of a rectangle.

SMH 56–57

Use these rectangles to show the following fractions as clearly as you can. Explain your thinking about each one.

1. $\frac{5}{6}$

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

3. $\frac{4}{8}$

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

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Adding Fractions (page 1 of 3)

Solve each problem and show your solution.

1. Alexa ate $\frac{1}{8}$ of a sandwich. Dwayne ate another $\frac{1}{8}$ of the same sandwich. Sara ate $\frac{1}{4}$ of the same sandwich.

a. How much of the sandwich did Alexa, Dwayne, and Sara eat altogether?

b. What fraction of the sandwich is left?

2. Ms. Russell has 24 students in her class. $\frac{3}{8}$ of the class went out for recess. $\frac{1}{4}$ went to the library. The rest stayed in the classroom.

a. What fraction of the class was out of the classroom?

b. How many students is that?

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Adding Fractions (page 2 of 3)

Solve each problem and show your solution.

3. $\frac{1}{2} + \frac{3}{8} =$ _____

4. $\frac{1}{3} + \frac{1}{2} + \frac{2}{3} =$ _____

5. $\frac{1}{2} + \frac{3}{6} + \frac{4}{8} =$ _____

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

7. $\frac{3}{12} + \frac{1}{2} + \frac{1}{4} =$ _____

8. $\frac{1}{4} + \frac{3}{8} + \frac{1}{4} =$ _____

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Adding Fractions (page 3 of 3)

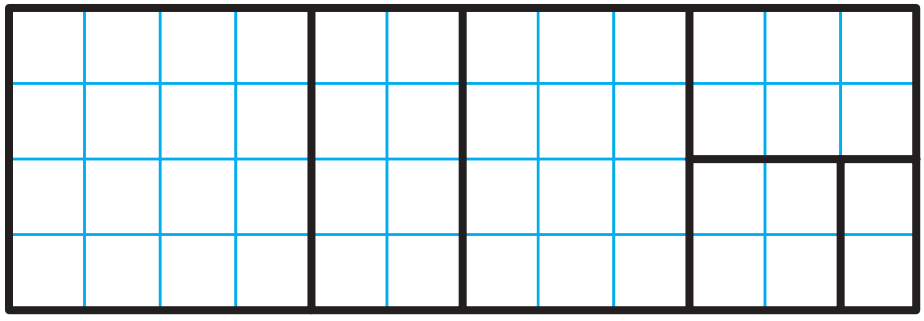
Solve each problem and show your solution.

9. Leon bought a big bag of marbles. $\frac{1}{3}$ of them are blue. $\frac{1}{6}$ of them are red. The rest are yellow.

a. What fraction of the marbles is yellow?

b. There were 30 marbles in the bag. Arielle borrowed the blue and red marbles. How many marbles did she borrow?

10. Write fractions to show all the parts of this rectangle. Then write an equation that shows how all the fractional parts add up to 1.



_____ + _____ + _____ + _____ + _____ + _____ = 1

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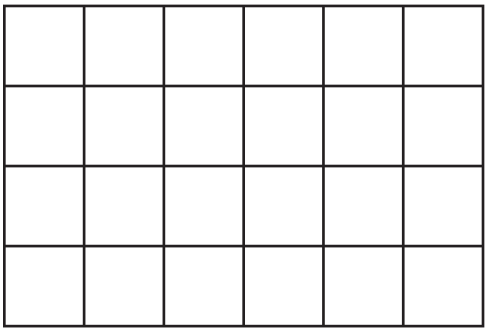
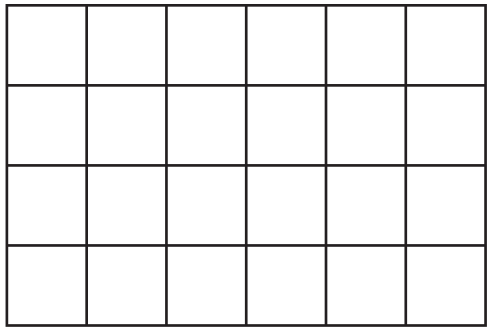
Combinations That Equal 1

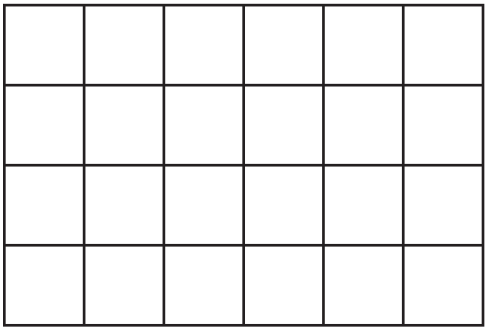
Use these rectangles to find combinations of fractions that equal 1. Show the fractions on each rectangle and write the matching equation underneath.



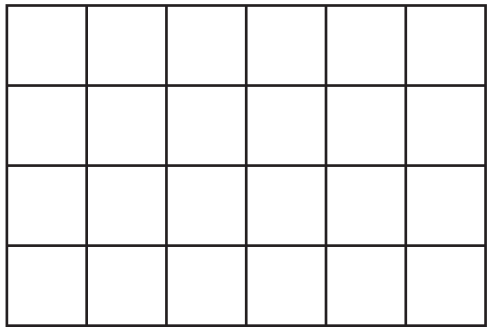
_____ = 1



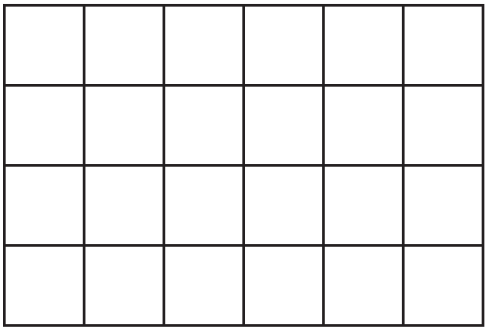
_____ = 1



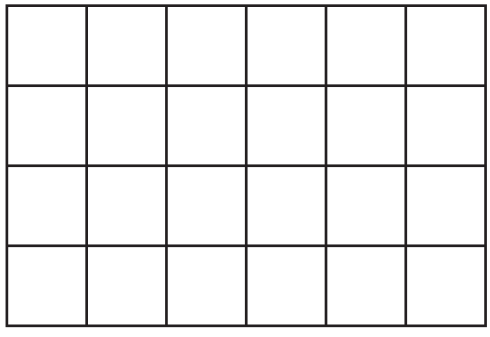
_____ = 1



_____ = 1



_____ = 1



_____ = 1

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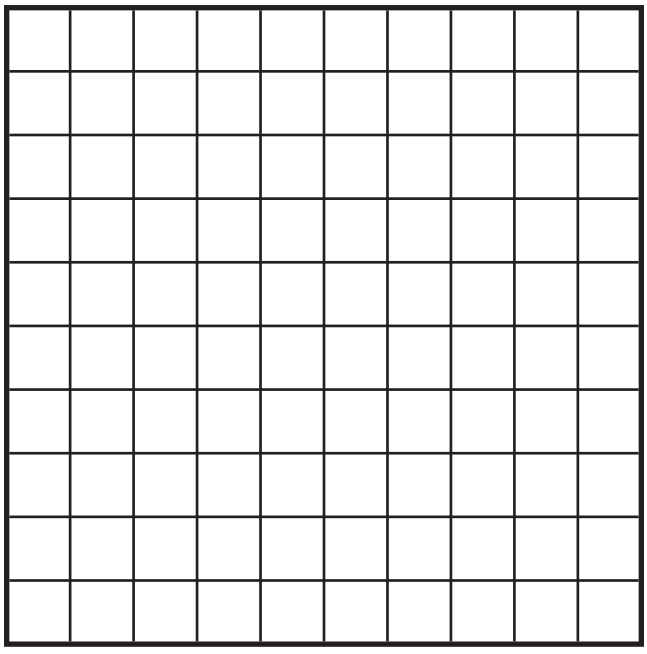
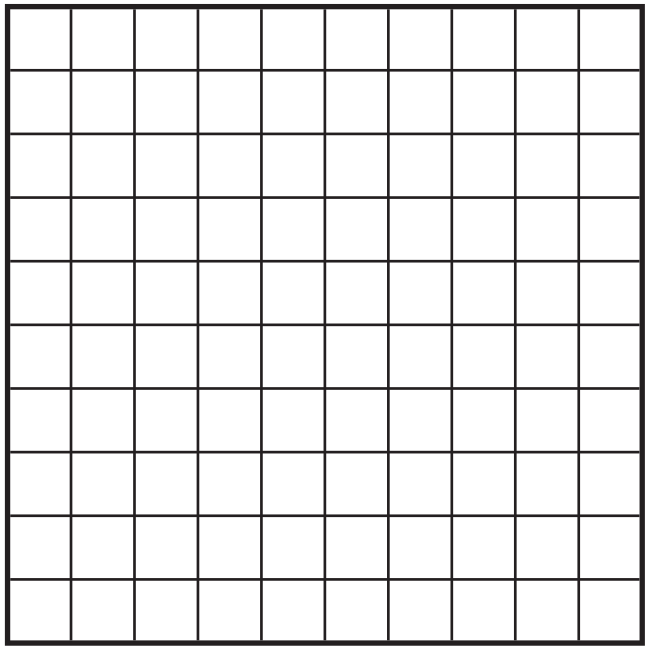
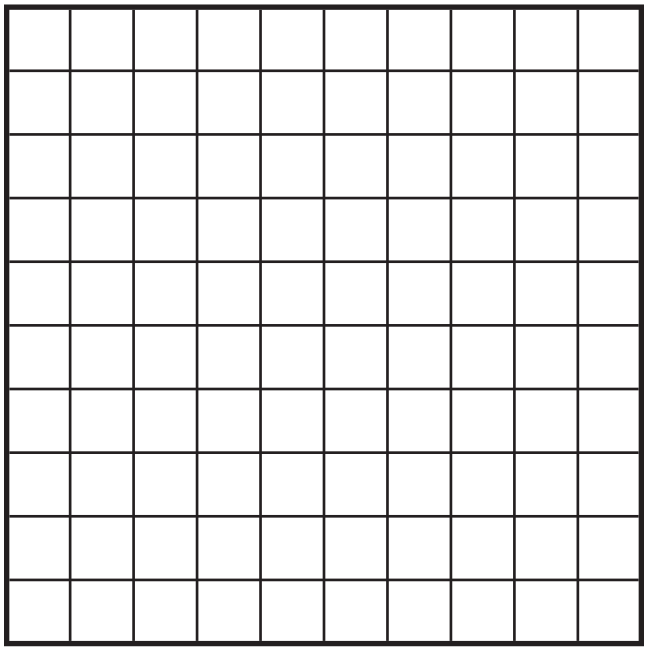
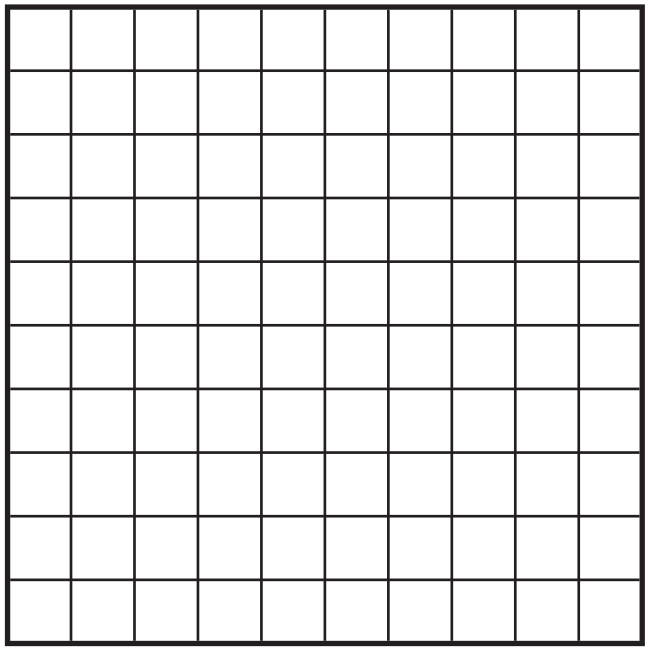
10 × 10 Squares









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Sums of Fractions That Equal 1: True or False?

NOTE Students decide whether an equation involving fractions is true or false.

SMH 62

Is the equation correct? Circle TRUE or FALSE and show how you know.

1. $\frac{1}{3} + \frac{2}{3} = 1$ TRUE or FALSE

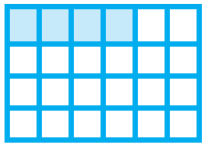
2. $\frac{4}{8} + \frac{3}{6} = 1$ TRUE or FALSE

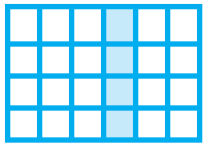
3. $\frac{3}{6} + \frac{1}{3} = 1$ TRUE or FALSE

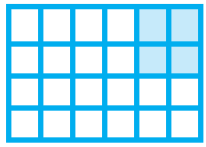
4. $\frac{2}{3} + \frac{3}{6} = 1$ TRUE or FALSE

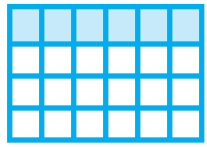
Ongoing Review

5. Which picture does **not** show $\frac{1}{6}$ of a rectangle shaded?

A. 

B. 

C. 

D. 

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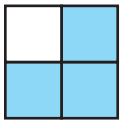
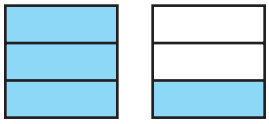
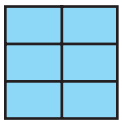
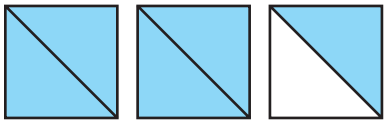
Fraction Match-Ups

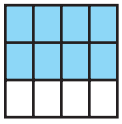
Draw a line connecting each diagram to its matching fraction.

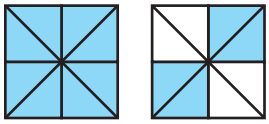
1. 

2. 

3. 

4. 

5. 

6. 

$\frac{6}{6}$

$\frac{8}{12}$

$\frac{3}{4}$

$\frac{12}{8}$

$\frac{4}{3}$

$\frac{5}{2}$

NOTE Students have been drawing diagrams to represent fractions. Ask students whether they can think of a different way to write the fraction for the diagrams in Problems 2, 3, 4, 5,and 6.

SMH **56, 57, 58**

Ongoing Review

7. 130 − 73 = _____

A. 67 **B.** 63 **C.** 57 **D.** 53

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Subtracting Fractions

Solve each problem and show your work. For the word problems, write an equation.

1. There was $\frac{7}{8}$ of a pan of brownies on the table. Some friends came over and ate $\frac{4}{8}$ of the pan of brownies. What fraction of the pan of brownies is left?

2. Marisol walks to school. The school is $\frac{6}{10}$ of a mile from her house. She has already walked $\frac{4}{10}$ of a mile. How much farther does Marisol have to walk?

3. There was $\frac{7}{12}$ of a gallon of milk in the refrigerator. The Jones family used $\frac{3}{12}$ of the gallon during breakfast. How much milk remains?

4. $\frac{4}{5} - \frac{2}{5} =$

5. $\frac{9}{12} - \frac{5}{12} =$

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More Subtracting Fractions

NOTE Students solve subtraction problems involving fractions with like denominators.

Solve each problem and show your work. For the word problems, write an equation.

1. There is $\frac{7}{8}$ of a carton of juice in the refrigerator. The Ortega family drank $\frac{5}{8}$ of the carton with their breakfast. What fraction of the carton remains?

2. Venetta was walking to the library, which is $\frac{3}{4}$ of a mile away. She has walked $\frac{1}{4}$ of a mile. How much farther does Venetta have to walk?

3. Richard had $\frac{4}{5}$ of a bag of carrots. He fed $\frac{2}{5}$ of the bag to his rabbit. What fraction of the bag did Richard have left?

4. $\frac{7}{10} - \frac{4}{10} =$

5. $\frac{6}{8} - \frac{1}{8} =$

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How to Make Fraction Cards

Materials for One Deck:

- 10 pieces of $8\frac{1}{2} \times 11$ inch colored oak tag or card stock, cut in fourths to make 40 cards
- *Student Activity Book* page 27, Fractions for Fraction Cards
- M16, Blank Wholes for Fraction Cards
- M17, Blank Thirds for Fraction Cards
- M18, Blank Fifths for Fraction Cards
- Scissors; glue sticks; rulers; colored pencils or crayons

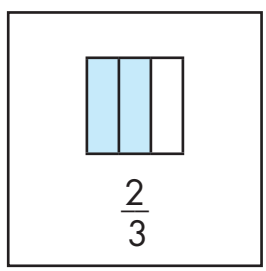
Making the Cards:

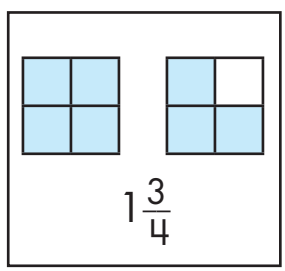
1. Choose a fraction from the list of Fractions for Fraction Cards.

2. Write your fraction on a blank Fraction Card.

3. Use any of the "blanks" (blank wholes, blank thirds, or blank fifths) to make a picture for this fraction.

4. Cut out and glue your picture onto your Fraction Card above the name of the fraction. Your finished cards will look like this:





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Fractions for Fraction Cards

$1\frac{3}{4}$	$\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{3}$
$\frac{4}{5}$	$1\frac{1}{4}$	$\frac{6}{8}$	$\frac{3}{6}$
$\frac{5}{3}$	$\frac{2}{4}$	$\frac{2}{6}$	$\frac{0}{4}$
$\frac{9}{4}$	$\frac{8}{6}$	$\frac{1}{4}$	$\frac{5}{4}$
$\frac{5}{6}$	$\frac{2}{5}$	$\frac{3}{12}$	$\frac{6}{3}$
$\frac{7}{8}$	$\frac{4}{10}$	$\frac{1}{5}$	$\frac{8}{12}$
$\frac{0}{2}$	$2\frac{1}{2}$	$\frac{8}{8}$	$\frac{3}{2}$
$\frac{2}{12}$	$\frac{1}{3}$	$\frac{9}{6}$	$\frac{2}{3}$
$\frac{1}{6}$	$\frac{3}{3}$	$\frac{4}{2}$	$\frac{1}{8}$
$\frac{5}{2}$	$\frac{3}{8}$	$\frac{3}{4}$	$\frac{4}{3}$

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How Many Miles?

NOTE Students use addition and subtraction to solve problems about distances in miles.

SMH 13–15

The Kwan family is taking a trip across the United States. They started in New York, will drive to California, and then drive back. Solve the following problems about their mileage and explain how you found the difference between the numbers.

1. On July 1, they have gone 425 miles. How many more miles until they have gone 1,000 miles?

2. On July 5, they have gone 620 miles. How many more miles until they have gone 2,000 miles?

3. On July 20, they have gone 1,495 miles. How many more miles until they have gone 3,000 miles?

4. On August 1, they are about halfway back to New York. They have gone 4,690 miles. Their total trip will be about 6,000 miles. How many more miles do they still have to drive?

Ongoing Review

5. 5,010 − _____ = 4,880

A. 30 **B.** 50 **C.** 130 **D.** 220

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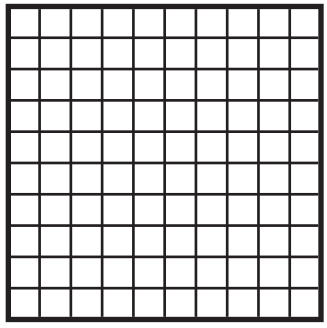
Combinations That Equal 1

NOTE Students find combinations of fractions with different denominators that equal 1. They use a 10 × 10 grid to model their work.

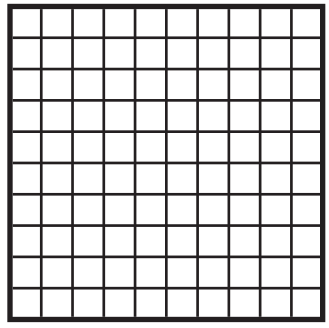
SMH **59, 62**

Fill in the blanks to make each equation true. You may want to use the grids to help you model each problem.

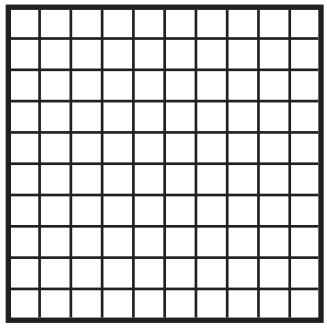
1. $\frac{1}{2} + \frac{1}{8} + _____ = 1$



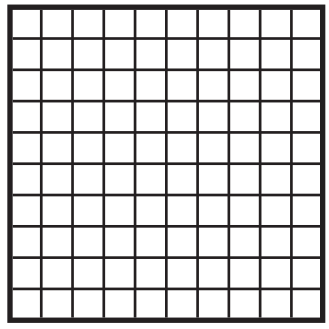
2. $\frac{2}{8} + \frac{1}{4} + _____ = 1$



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



4. $\frac{2}{5} + \frac{5}{10} + _____ = 1$



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Fraction Subtraction

NOTE Students solve subtraction problems involving fractions with like denominators.

Solve each problem and show your work. For the word problems, write an equation.

1. There is $\frac{5}{6}$ of a pot of soup on the stove. The Kim family ate $\frac{4}{6}$ of the pot of soup. What fraction of the pot of soup remains?

2. Nadeem is walking to the park, which is $\frac{9}{10}$ of a mile away. He has walked $\frac{4}{10}$ of a mile. How much farther does Nadeem have to walk?

3. Tonya had $\frac{10}{12}$ of a yard of fabric. She used $\frac{5}{12}$ of a yard of fabric to make a lamp shade. What fraction of a yard of fabric is left?

4. $\frac{7}{8} - \frac{2}{8} =$

5. $\frac{3}{5} - \frac{1}{5} =$

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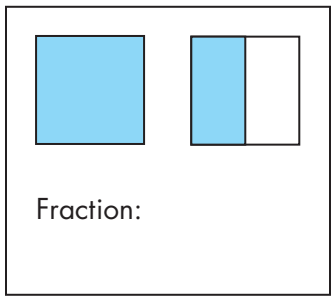
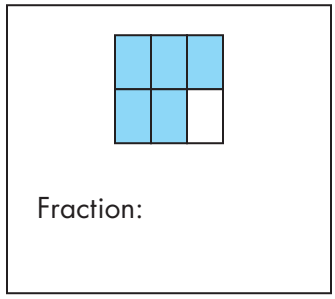
What's the Fraction?

1. Here are pictures of some Fraction Cards. On each one, write the name of the shaded fraction that is shown.



Fraction:



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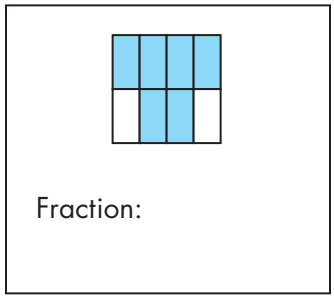
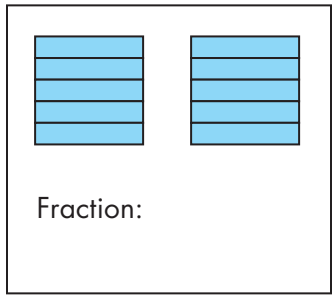


Fraction:



Fraction:

2. Choose one of the fractions above and draw a picture of an equivalent fraction.

3. How do you know these two fractions are equivalent? Write in the space below or on another sheet of paper.

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Is That True?

NOTE Students determine whether an equation involving fractions is true or false.

SMH 59, 62

Decide if each equation is true or false. Write T or F.

1. $\frac{1}{2} + \frac{1}{2} = 1$ _____

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

3. $\frac{2}{4} = \frac{1}{2}$ _____

4. $\frac{1}{8} + \frac{1}{8} = \frac{1}{16}$ _____

5. $\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = 1$ _____

6. $\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} = 1$ _____

7. $\frac{1}{16} + \frac{1}{16} = \frac{1}{8}$ _____

8. $\frac{1}{4} + \frac{1}{8} + \frac{1}{8} = \frac{1}{2}$ _____

9. $\frac{4}{8} = \frac{1}{4}$ _____

10. $\frac{2}{4} = \frac{4}{8}$ _____

Ongoing Review

11. If you take an elevator from the second floor below ground level to the 18th floor, how many floors have you traveled?

A. 36 **B.** 22 **C.** 20 **D.** 16

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Finding Equivalent Fractions

As you are playing *Capture Fractions,* keep track of the matches you make by writing equations that show equivalent fractions.

Example: $\frac{1}{2} = \frac{4}{8}$

I found these equivalent fractions:

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Reading a Long Book

NOTE Students practice solving addition and subtraction problems in a story problem context.

SMH **8–9, 13–15**

Solve these problems. Show your work.

1. Ravi is reading a book that is 1,200 pages long. So far, he has read 189 pages. How many more pages does he have to read to finish the book?

2. Over the next three weeks, Ravi reads 342 more pages. How many pages has he read so far?

3. At the end of six weeks, Ravi has read 977 pages. How many more pages does he have left to finish the book?

Ongoing Review

4. How many tens are there in 3,102?

A. 31 **B.** 310 **C.** 3,100 **D.** 3,102

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Which Is Larger?

WRITING

Which is larger, $\frac{2}{3}$ or $\frac{3}{2}$? Use words and pictures to explain your answer.

NOTE Students compare pairs of fractions.

SMH **60–61**

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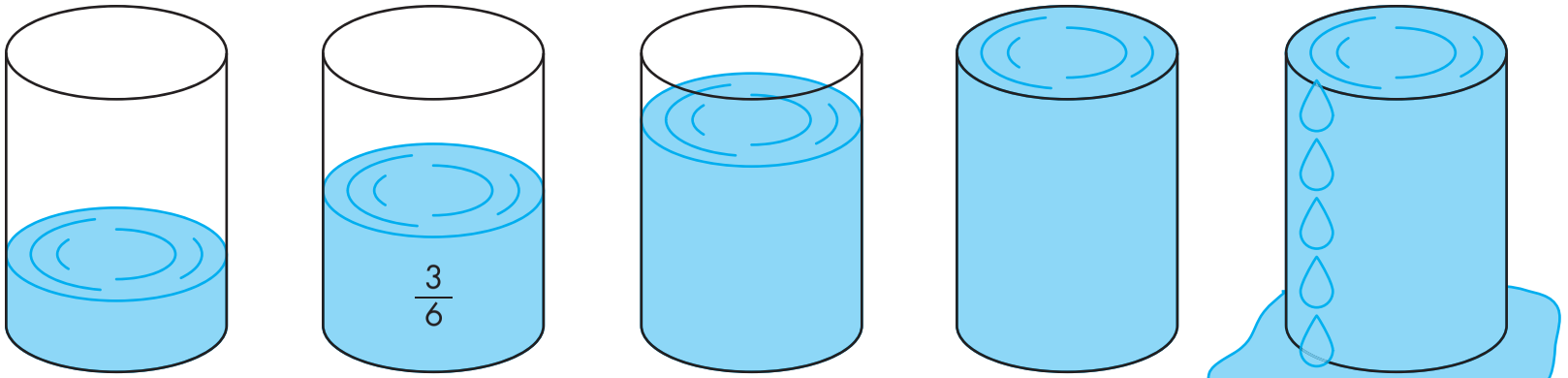
Name

Date

Fraction Cards and Decimal Squares

Fractions in Containers



Less than one half

One half

Between one half and one whole

One whole

More than one whole

Write each fraction in the container in which it belongs.

Cross out each fraction as you use it. ($\frac{3}{6}$ has been done for you.)

There are five fractions for each container.

$\frac{3}{6}$ $\frac{5}{5}$ $\frac{1}{4}$ $\frac{5}{2}$ $\frac{1}{5}$ $\frac{2}{3}$ $\frac{2}{2}$ $\frac{3}{5}$ $\frac{5}{7}$ $\frac{6}{3}$ $\frac{2}{5}$ $\frac{2}{4}$ $\frac{3}{3}$

$\frac{10}{20}$ $\frac{3}{10}$ $\frac{10}{5}$ $\frac{2}{6}$ $\frac{3}{2}$ $\frac{9}{10}$ $\frac{6}{5}$ $\frac{10}{10}$ $\frac{4}{8}$ $\frac{4}{5}$ $\frac{8}{8}$ $\frac{6}{12}$

Comparing Fractions

NOTE Students decide which of two fractions is greater and put the fractions in order on a number line.

SMH 60–61

1. Circle the larger fraction in each pair.
Write = if you think that the fractions are equal.
Next to each pair, show or write how you decided.

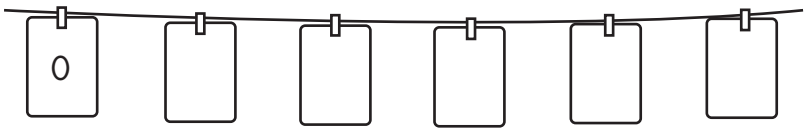
a. $\frac{5}{8}$ $\frac{1}{2}$

b. $\frac{3}{4}$ $\frac{7}{8}$

c. $\frac{2}{3}$ $\frac{3}{2}$

2. Put these fractions in order from smallest to largest.
Use the clothesline below to order them.

$\frac{1}{2}$ $\frac{3}{8}$ $\frac{9}{5}$ $\frac{1}{6}$ $\frac{3}{2}$



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Making Fraction Number Lines

With half of your group's deck of Fraction Cards, make a number line by laying each card out in order from least to greatest. Use your Landmark Cards (0, $\frac{1}{2}$, 1, and 2) to help you. Record where you place each fraction on the number lines below.

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School Supplies

NOTE Students practice solving addition and subtraction problems in a story problem context involving money.

SMH **8–9, 13–15**

1. Leah had $15.00 to spend on school supplies. She spent $3.75 on pencils, $2.55 on a pencil sharpener, and $5.25 on paper.

a. How much money did she spend on supplies?

b. After buying the supplies, how much of her $15.00 is left?

2. Diego purchases a dictionary for $12.89 and notebooks for $5.49.

a. How much money did he spend on these supplies?

b. If he pays $20.00, how much change will he receive?

Ongoing Review

3. Which fraction is equal to $\frac{1}{8}$?

A. $\frac{2}{18}$ **B.** $\frac{2}{4}$ **C.** $\frac{8}{16}$ **D.** $\frac{2}{16}$

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More or Less Than 1?

NOTE Students find combinations of fractions that equal 1 and decide which of two fractions is greater. Students can use the 10 × 10 squares to help them think through their ideas about fractional parts of wholes.

SMH **60–62**

Fill in <, >, or = to make each equation true.

1. $\frac{1}{4} + \frac{2}{4}$ _____ 1

2. 1 _____ $\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16}$

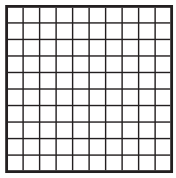
3. $\frac{2}{3} + \frac{2}{3}$ _____ 1

4. $\frac{3}{4}$ _____ $\frac{4}{5}$

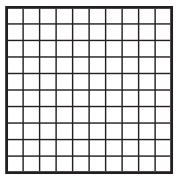
5. $\frac{1}{2} + \frac{5}{5}$ _____ 1

Write fractions in the blanks to make each equation true.

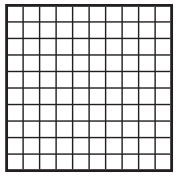
6. _____ + _____ > 1



7. _____ + _____ < 1



8. _____ + _____ = 1



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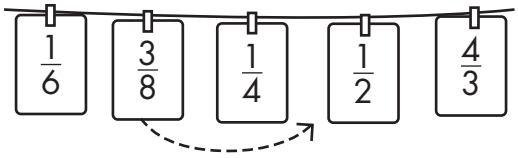
Make Your Move

NOTE Students put fractions in the correct order.

SMH 60–61

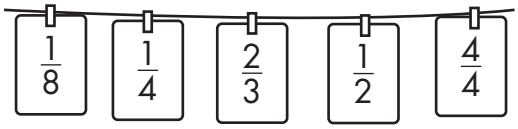
The fractions on each clothesline are out of order.
Show how to fix the order with just one move.

1.



I need to move the $\frac{3}{8}$. $\frac{1}{4}$ is the same as $\frac{2}{8}$, and $\frac{1}{2}$ is the same as $\frac{4}{8}$. So $\frac{3}{8}$ should go between them.

2.



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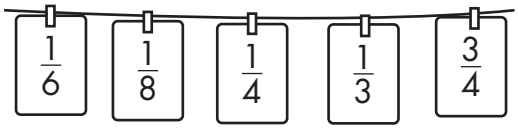

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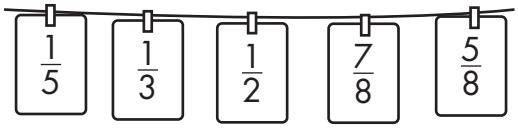

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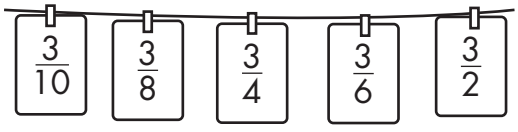

Ongoing Review

6. Which total is **less than** 100?

A. 44 + 54 **B.** 53 + 57 **C.** 81 + 20 **D.** 76 + 24

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Butterfly Wingspans (page 1 of 2)

Yuki went to the Natural History Museum to study butterflies. The information he has about some of the butterflies in the collection is shown below.

Name	Wingspan (inches)	Name	Wingspan (inches)
American Snout	$1\frac{1}{2}$	Pearl Crescent	$1\frac{5}{8}$
Giant Swallowtail	$5\frac{1}{4}$	Postman	$2\frac{1}{2}$
Julia	$3\frac{1}{2}$	Red Admiral	$3\frac{1}{8}$
Milbert's Tortoiseshell	$2\frac{5}{8}$	Saturn	$4\frac{1}{4}$
Monarch	$3\frac{1}{2}$	Tiger Swallowtail	$3\frac{3}{4}$
Painted Lady	$2\frac{1}{2}$	Viceroy	$2\frac{7}{8}$

Record the measurements on the line plot below.

Butterfly Wingspans (inches)

Write three statements that describe the data.

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Butterfly Wingspans (page 2 of 2)

Use the information on the previous page to solve the following problems. Show your work.

1. How much longer is the wingspan of the Viceroy butterfly than the wingspan of the Pearl Crescent butterfly?

2. How much longer is the wingspan of the Giant Swallowtail butterfly than the wingspan of the Tiger Swallowtail butterfly?

3. The American Snout butterfly and the Postman butterfly are side-by-side. What is the length of their combined wingspans?

4. How much longer is the wingspan of the Red Admiral butterfly than the wingspan of Milbert's Tortoiseshell butterfly?

5. The Pearl Crescent butterfly and the Viceroy butterfly are side-by-side. What is the length of their combined wingspans?

6. The Saturn butterfly and the Tiger Swallowtail butterfly are side-by-side. What is the length of their combined wingspans?

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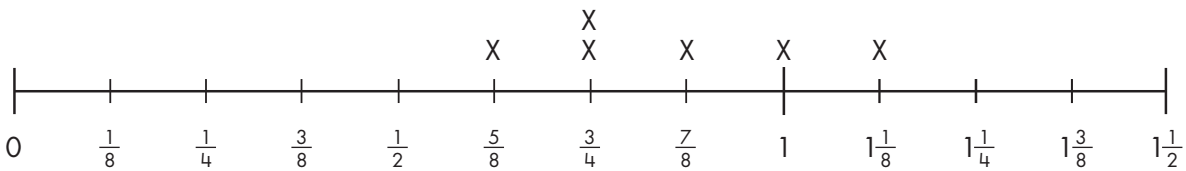
Pepper's Puppies

NOTE Students solve addition and subtraction problems involving fractions using data given in a line plot.

Cheyenne's dog, Pepper, had puppies. Cheyenne recorded their weights in the line plot below.



Weights of Pepper's Puppies (pounds)

Solve each problem and show your work.

1. Two puppies weighed the same amount. What was the total weight of the two puppies?

2. How many more pounds did the heaviest puppy weigh than the lightest puppy?

3. The heaviest puppy gained $\frac{4}{8}$ of a pound in its first month. How much did it weigh after the first month?

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Multiplying Whole Numbers and Fractions

Use a representation to solve each problem. For each word problem, write a multiplication equation that represents the problem.

1. Jake bought three kinds of pizza for a party. Each pizza was the same size. People were not very hungry, and at the end of the party there was $\frac{3}{4}$ of each pizza left. How much pizza was left in all?

2. A class is counting by $\frac{2}{6}$s. What number does the 7th person say?

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

4. $3 \times \frac{3}{8} =$

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Chunks of Cheese

NOTE Students solve problems involving multiplication of a whole number and a fraction.

Morris Mouse's Cheese House sells chunks of cheese. Each chunk weighs $\frac{3}{4}$ of a pound. Find the total weight of each kind of cheese. Use a representation to solve each problem. Also, write a multiplication equation that represents the problem. Show your work.

1. 5 chunks of cheddar cheese

Total weight _____

2. 10 chunks of Swiss cheese

Total weight _____

3. 4 chunks of American cheese

Total weight _____

4. 8 chunks of parmesan cheese

Total weight _____

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Multiplying Fractions and Whole Numbers

Use a representation to solve each problem. For each word problem, write a multiplication equation that represents the problem.

1. A grocery store sells bags of 9 apples. Anna used $\frac{2}{3}$ of the apples in a bag in an apple pie. How many apples did she use in the pie?

2. Steve was in a 7 mile race. He ran $\frac{1}{2}$ of it and walked the rest. How many miles did he run?

3. $\frac{2}{3} \times 12 =$

4. There are 10 boys in class. $\frac{4}{5}$ of them have brown hair. How many boys have brown hair?

5. $\frac{5}{8} \times 16 =$

6. $\frac{1}{2} \times 11 =$

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More Multiplying Fractions and Whole Numbers

Use a representation to solve each problem. For each word problem, write a multiplication equation that represents the problem.

1. Sabrina walks to school. Her house is $\frac{3}{8}$ of a mile from school. How many miles would she walk to and from school in 5 days?

2. $6 \times \frac{2}{5} =$

3. Damian has a recipe that calls for $\frac{2}{3}$ of a cup of flour. He wants to make 4 times the recipe. How much flour does he need?

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

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Multiplying with Fractions

NOTE Students solve problems involving multiplication of whole numbers and fractions.

Use a representation to solve each problem. For each word problem, write a multiplication equation that represents the problem.

1. $4 \times \frac{1}{5} =$

2. $\frac{3}{4} \times 16 =$

3. $\frac{1}{6} \times 9 =$

4. $12 \times \frac{1}{2} =$

5. Mr. Garcia has 15 grandchildren. $\frac{2}{3}$ of them are girls. How many are girls?

6. Helena needs 8 pieces of wire. Each piece needs to be $\frac{3}{4}$ of a foot long. What is the total length of the wire Helena needs?

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Multiplying Fractions

Use a representation to solve each problem. For each word problem, write a multiplication equation that represents the problem.

1. In the store Damian found pretzels that came in $\frac{1}{3}$-pound bags. He bought 5 bags of pretzels. How many pounds of pretzels did he buy?

2. $3 \times \frac{6}{8} =$

3. There were 25 students in class. One day, $\frac{3}{5}$ of them wore sneakers. How many students wore sneakers?

4. $\frac{7}{10} \times 4 =$

5. Jill used stones that were each $\frac{3}{4}$ of a foot high to build a wall. She piled 6 stones on top of each other. How many feet high was her wall?

6. $\frac{5}{6} \times 12 =$

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All Kinds of Nuts

NOTE Students solve problems involving multiplication of whole numbers and fractions.

Use a representation to solve each problem. Also, write an equation that represents the problem.

1. Emaan bought 6 bags of walnuts. Each bag contained $\frac{3}{4}$ of a pound of walnuts. What was the total weight of the walnuts?

2. A man bought 12 boxes of nuts. He took $\frac{1}{6}$ of the boxes to his office. How many boxes of nuts did he take to the office?

3. Kimberly is making 3 loaves of nut bread. For each loaf, she needs $\frac{3}{4}$ of a cup of pecans. How many cups of pecans does she need? Circle the best answer below.

between 3 and 4 cups

between 2 and 3 cups

between 1 and 2 cups

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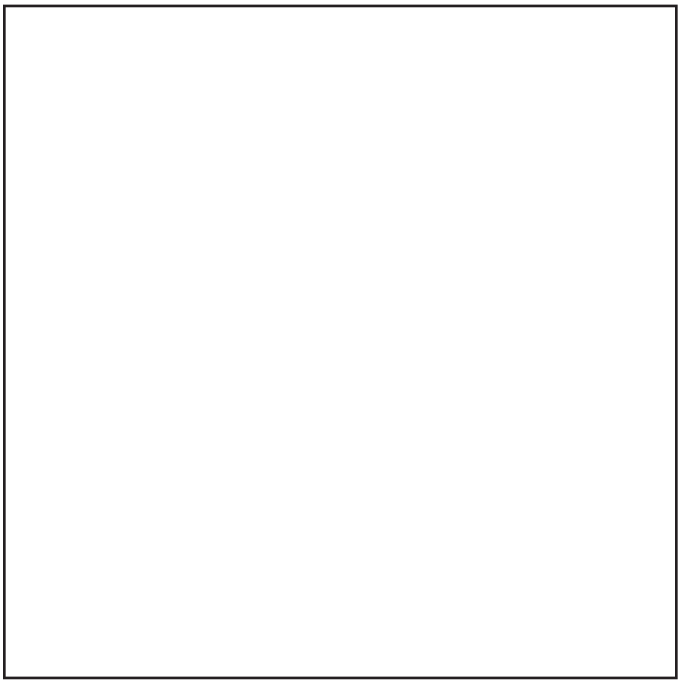
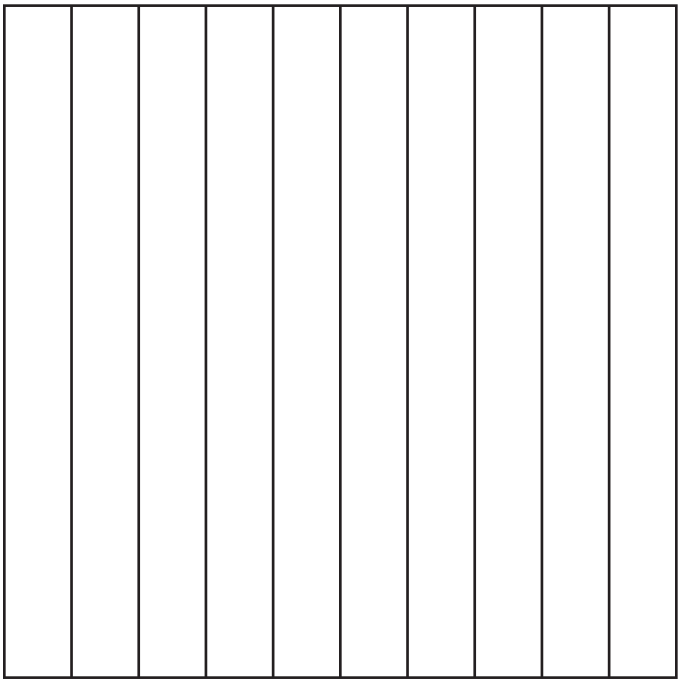
Decimal Grids (page 1 of 2)

Whole



Grid A



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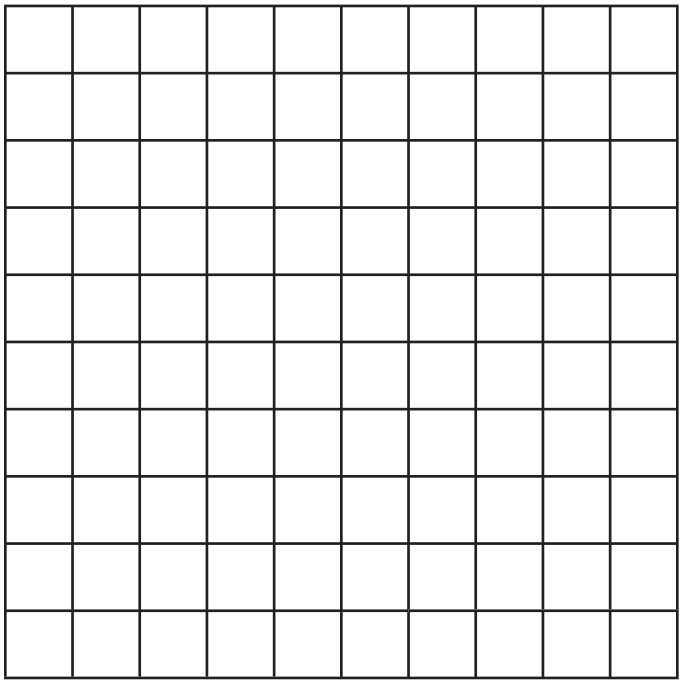
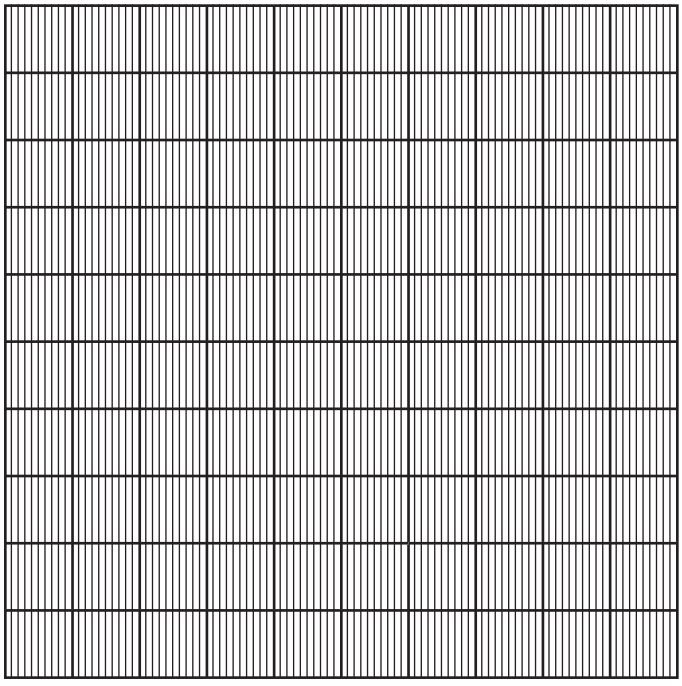
Decimal Grids (page 2 of 2)

Grid B



Grid C



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Stamp Collection

NOTE Students practice solving addition and subtraction problems in a story problem context.

SMH 8–9, 13–15

1. José has a collection of stamps. He has 399 stamps from North America and 218 stamps from South America.

a. How many stamps does José have?

b. How many more stamps does he need to have 800 altogether?

2. Aliyah also has a stamp collection. She has 441 North American stamps and 183 European stamps.

a. How many stamps does Aliyah have?

b. How many more stamps does she need to have 800 altogether?

3. Who has more stamps, José or Aliyah? By how many stamps?

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Everyday Uses of Fractions and Decimals

NOTE Students learn about decimals and how they relate to fractions. At home, they will look for examples of how fractions and decimals are used in the real world.

SMH **53, 64**

Look for everyday uses of fractions and decimals. List what you find below. Try looking in the newspaper, in your cupboards, and all around your home.

Everyday uses of fractions:

Everyday uses of decimals:

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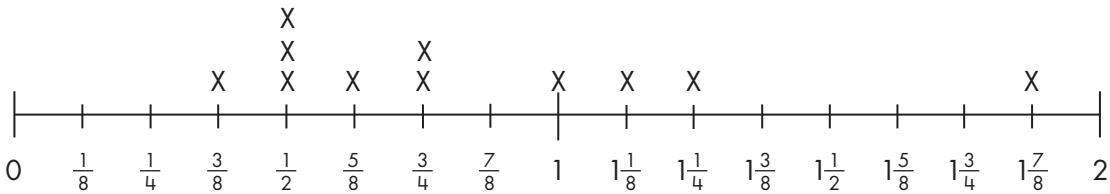
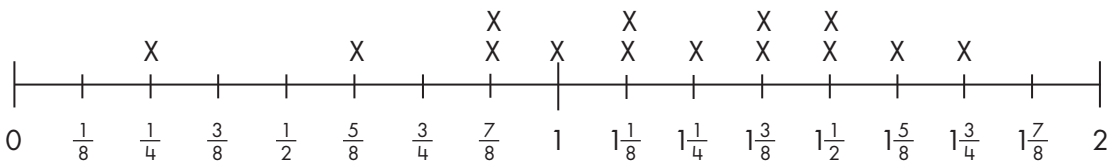
Bug Collections

NOTE Students solve addition and subtraction problems involving fractions using data given in a line plot.

The science class collected crickets and beetles. The students made line plots to show the lengths of the insects.



Lengths of Crickets (inches)



Lengths of Beetles (inches)

1. How much longer is the longest cricket than the shortest cricket?

_____

2. How much longer is the longest beetle than the shortest beetle?

_____

3. The cricket Benson found is $1\frac{1}{8}$ inches long. How much longer is this cricket than the shortest one in the collection?

_____

4. The beetle Tonya found is $1\frac{1}{4}$ inches long. How much shorter is this beetle than the longest one in the collection?

_____

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Selling Fruit

NOTE Students practice solving addition and subtraction problems in a story problem context.

SMH 8–9, 13–15

1. On Monday, a grocery store received a shipment of 700 peaches. The store sold 567 of them that day. How many peaches were left to sell the next day?

2. On Wednesday, the store received a shipment of 850 grapefruits. The store sold 362 grapefruits that day. How many grapefruits were left to sell the next day?

3. On Saturday, the store received a shipment of 1,500 melons. The store sold 734 melons on Saturday and 674 melons on Sunday.

a. How many melons did they sell on the weekend (Saturday and Sunday)?

b. How many melons were left to sell on Monday morning?

Ongoing Review

4. Which number is "three tenths"?

A. 0.03 **B.** 0.3 **C.** 3.0 **D.** 3.10

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Showing Decimals on a 10 × 10 Square

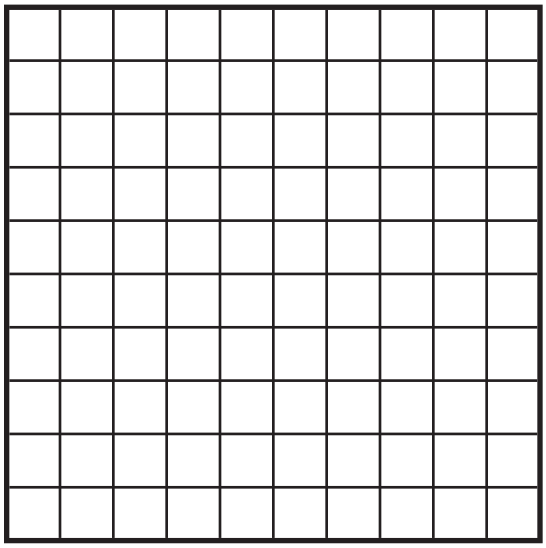
NOTE Students shade in decimal numbers on a square that represents 1.

SMH 65–68

Show the following decimal numbers on the squares below by shading in each amount. Each square represents 1.

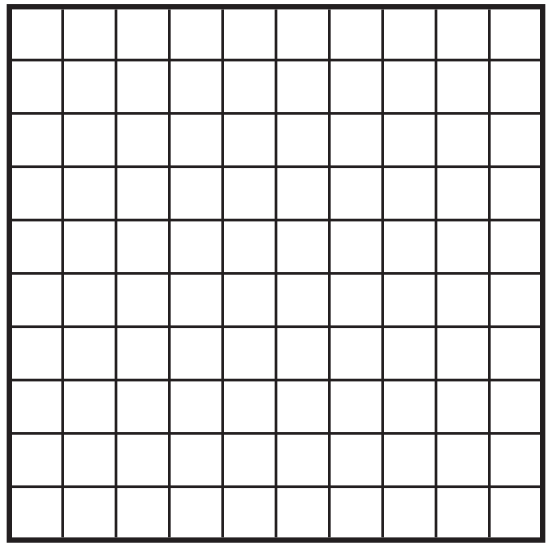
0.7

1.



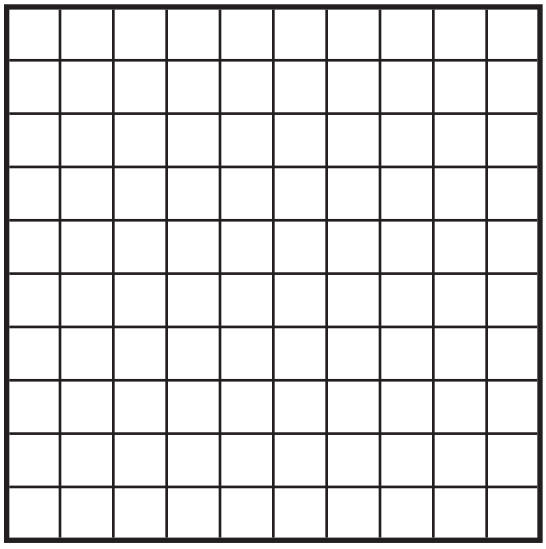
0.75

2.



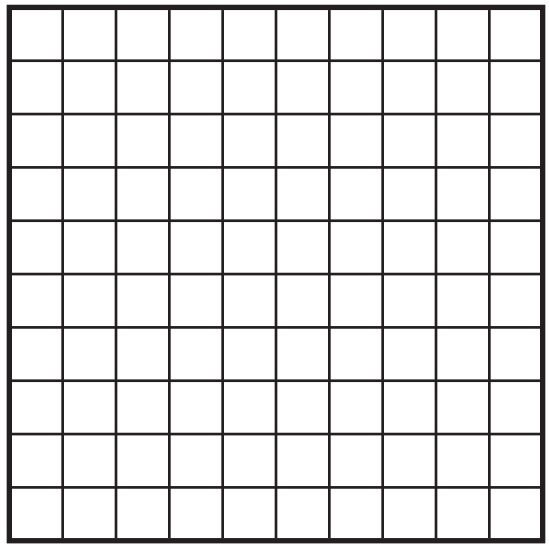
0.5

3.



0.38

4.



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More Showing Decimals on a 10 × 10 Square

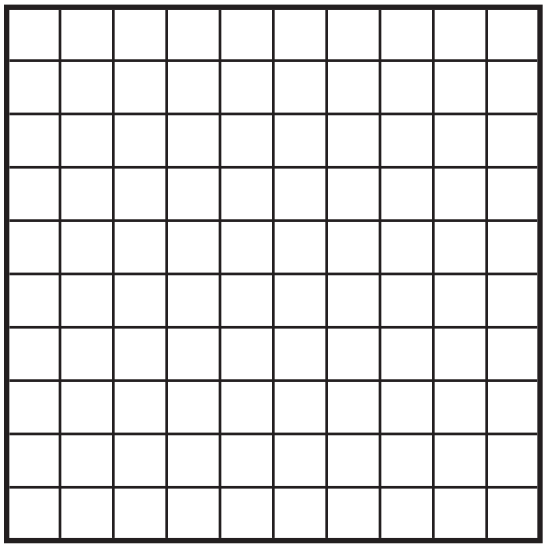
NOTE Students represent decimals on a square that represents 1.

SMH 65

Show the following decimal numbers on the squares below by shading in each amount. Each square represents 1.

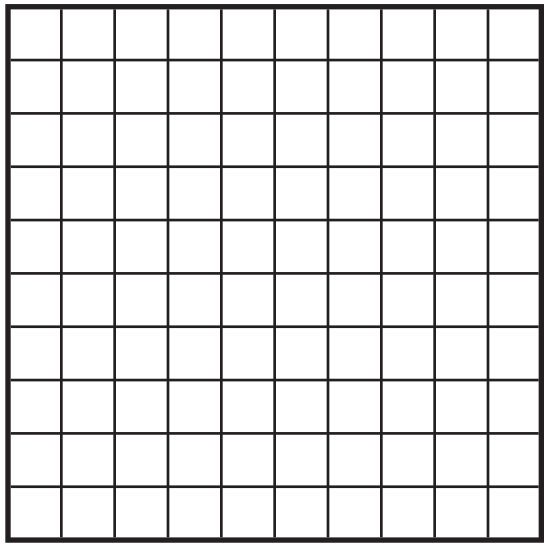
0.1

1.



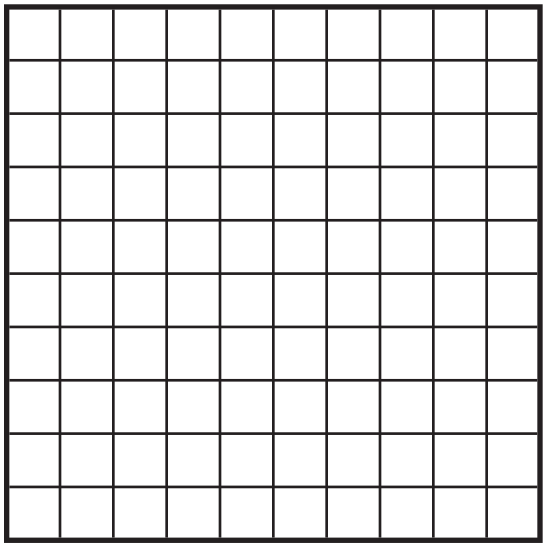
0.45

2.



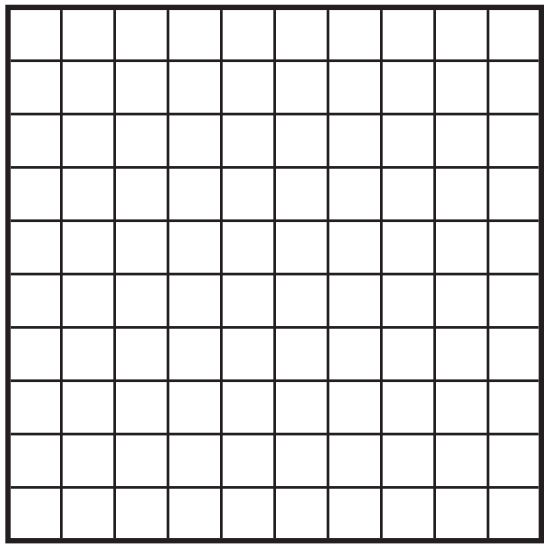
0.6

3.



0.95

4.



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Runner's Log (page 1 of 2)

Tony made a log of how many miles he ran during a week.

Day	Mileage	Comments
Monday	2.2 miles	I ran around the pond once.
Tuesday	1.5 miles	I ran on the track, six times around.
Wednesday	1.25 miles	I ran on the track again.
Thursday	0 miles	I was tired and took the day off.
Friday	2.9 miles	I was visiting my aunt and ran with her.
Saturday	0.8 mile	I was worn out from yesterday.
Sunday	1 mile	I ran pretty slowly.

1. How far did Tony run this week? _____

2. Show how you figured it out.

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Runner's Log (page 2 of 2)

Dana: $9\frac{1}{2}$ years old; has run two races before

Day	Mileage	Comments
Monday	1.75 miles	I ran with my mom to the store, but we got a ride back.
Tuesday	1.6 miles	Jamie and I ran to school because we were late!
Wednesday	0 miles	I had to babysit today, so I could not run.
Thursday	3.2 miles	I ran slowly, but much farther than before.
Friday	0.5 miles	I was really tired, so I only ran around the track twice.
Saturday	1.75 miles	I ran home from the store, but slowly.
Sunday	0.8 mile	I ran pretty fast, but not very far.

3. How many miles did Dana run? _____

4. Show how you figured it out.

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Coin Jars

NOTE Students solve problems about combinations of coins.

SMH 70–71

1. Quincy has a coin jar full of pennies, dimes, nickels, and quarters. He knows that there is $4.50 in his coin jar. What combination of coins could be in Quincy's coin jar that would equal $4.50?

First solution: Second solution:

2. Petra also has a coin jar. There are only two kinds of coins in her coin jar. She knows that there is $3.90 in her jar. What combination of coins could be in Petra's coin jar that would equal $3.90?

First solution: Second solution:

Ongoing Review

3. Which number is less than 0.5?

A. 0.05 **B.** 0.55 **C.** .5 **D.** 0.50

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Which Is More?

Circle the decimal that is a larger amount. Explain how you figured out which is more.

1. 0.5 or 0.45

2. 0.10 or 0.01

3. 0.5 or 0.50

NOTE Students work with and compare some common decimals in order to decide which number is larger.

SMH 69

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Buying Fabric

NOTE Students solve problems involving multiplication of a whole number by a fraction.

Use a representation to solve each problem. For each word problem, write a multiplication equation that represents the problem.

1. Bill bought 6 pieces of yellow fabric. Each piece was $\frac{1}{3}$ of a yard long. How many yards of fabric did Bill buy in all?

2. Kimberly bought 2 pieces of blue fabric. Each piece was $\frac{7}{8}$ of a yard long. How many yards of fabric did Kimberly buy in all?

3. Alejandro bought 7 pieces of red fabric. Each piece was $\frac{3}{4}$ of a yard long. How many yards of fabric did Alejandro buy in all?

4. $2 \times \frac{3}{10} =$

5. $9 \times \frac{1}{6} =$

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Make a Running Log (page 1 of 2)

Make an imaginary running log. Fill in the mileage for each day. Make sure that your total mileage for the week is 10.5.

Log 1: Each distance must include tenths or hundredths.

Day	Mileage	Comments

How did you make the miles add up to 10.5?
How did you think about this problem?

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Make a Running Log (page 2 of 2)

Make an imaginary running log. Fill in the mileage for each day. Make sure that your total mileage for the week is 10.5.

Log 2: Day 1 is 2.3 miles and Day 5 is 1.7 miles.

Fill in the rest to make a total of 10.5 miles.

Day	Mileage	Comments
1	2.3 miles	
5	1.7 miles	

How did you make the miles add up to 10.5?
How did you think about this problem?

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Comparing Fractions 2

NOTE Students determine which is the greater fraction in each pair.

SMH 60–61

Circle the greater fraction.

1. $\frac{1}{3}$ $\frac{3}{5}$

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

3. $\frac{1}{2}$ $\frac{1}{8}$

4. $\frac{3}{10}$ $\frac{3}{5}$

5. $\frac{4}{5}$ $\frac{1}{2}$

6. $\frac{7}{10}$ $\frac{1}{4}$

7. $\frac{3}{8}$ $\frac{5}{8}$

8. $\frac{2}{3}$ $\frac{3}{4}$

9. $\frac{1}{4}$ $\frac{3}{8}$

10. $\frac{4}{8}$ $\frac{3}{5}$

11. $\frac{9}{10}$ $\frac{4}{5}$

12. $\frac{2}{8}$ $\frac{1}{3}$

Ongoing Review

13. Which shows the fractions in order from least to greatest?

A. $\frac{1}{2}, \frac{3}{8}, \frac{1}{6}$

B. $\frac{1}{6}, \frac{3}{8}, \frac{1}{2}$

C. $\frac{3}{8}, \frac{1}{2}, \frac{1}{6}$

D. $\frac{1}{6}, \frac{1}{2}, \frac{3}{8}$

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Multiplying with Fractions

NOTE Students solve problems involving multiplication of whole numbers and fractions.

Use a representation to solve each problem. For each word problem, write a multiplication equation that represents the problem.

1. $\frac{1}{5} \times 8 =$

2. $6 \times \frac{2}{3} =$

3. $2 \times \frac{5}{6} =$

4. $\frac{7}{8} \times 8 =$

5. LaTanya had a piece of fabric that was 3 yards long. She used $\frac{1}{2}$ of it to make a skirt. How much of the fabric did she use?

6. Benson had 16 marbles. He gave $\frac{3}{8}$ of them away. How many marbles did he give away?

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Working Hard

NOTE Students solve problems involving multiplication of whole numbers and fractions.

Use a representation to solve each problem. Also, write an equation that represents the problem.

1. Last week, Ms. Cortez sold 24 computers. $\frac{5}{8}$ of them were laptops. How many laptops did Ms. Cortez sell?

2. An office building has 14 offices, all the same size. A painter uses $\frac{3}{4}$ of a gallon of paint to paint one office ceiling. How much paint will the painter need to paint all of the office ceilings?

3. Mr. Stein bikes to work. The roundtrip distance he bikes each day is $\frac{7}{8}$ of a mile. What is the total distance he bikes in 5 days? Circle the best answer below.

between 6 and 7 miles

between 5 and 6 miles

between 4 and 5 miles

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How Many Hundreds? How Many Altogether?

NOTE Students estimate and solve addition problems.

SMH 8–9

Number of Postcards in Six Collections	About how many hundreds altogether? Estimate.	Add the numbers to find the exact total.
61 14 52 39 59 98	100 or 200 or 300 or 400? How did you decide?	

Cost of Four Items at the Grocery Store	About how many dollars altogether? Estimate.	Add the numbers to find the exact total.
\$0.91 \$2.41 \$1.77 \$3.04	\$6.00 or \$7.00 or \$8.00 or \$9.00 How did you decide?	

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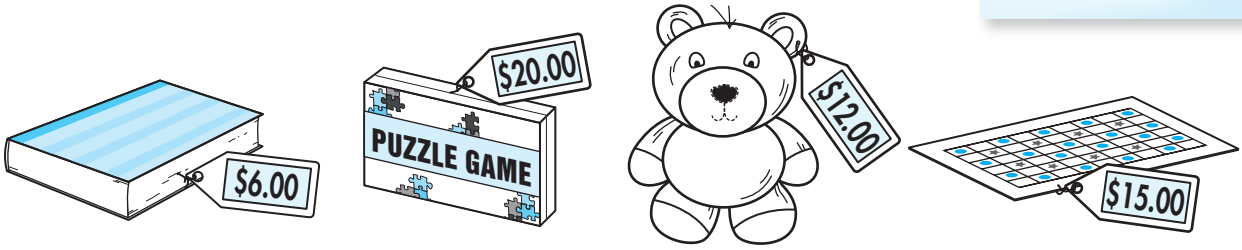
Summer Sale!

Belinda's Toys and Hobby Shop is having a summer sale. Here are some of the sale items.

NOTE Students calculate and compare fractional parts of groups.

SMH 55



1. Calculate the sale prices.

$\frac{1}{4}$ off a stuffed animal _____
You saved $_____

$\frac{1}{3}$ off a book _____
You saved $_____

$\frac{1}{2}$ off a puzzle _____
You saved $_____

$\frac{1}{5}$ off a board game _____
You saved $_____

2. Which discount is greater?

a. $\frac{1}{3}$ off 2 stuffed animals or $\frac{1}{4}$ off 4 books _____
Explain your thinking.

b. $\frac{1}{3}$ off a puzzle or $\frac{1}{3}$ off 3 books _____
Explain your thinking.

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