Chapter 4

Lesson 1

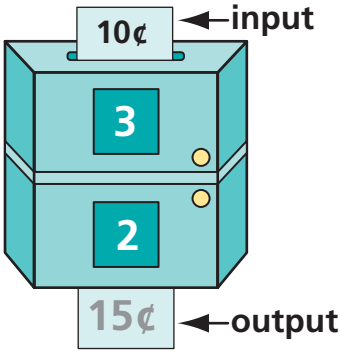
Name _____ Date _____

Investigating the Result of Two Operations

NCTM Standards 1, 2, 6, 7, 8, 9, 10

Write the outputs.

Example



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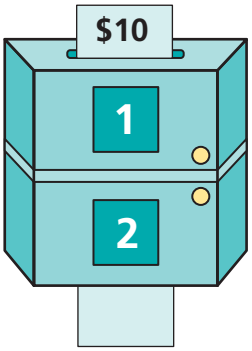

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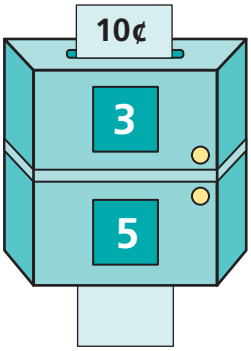

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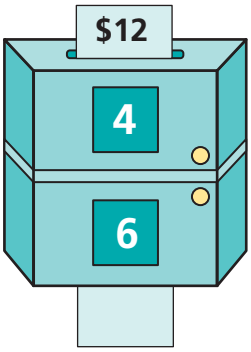

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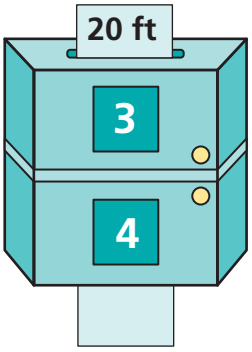

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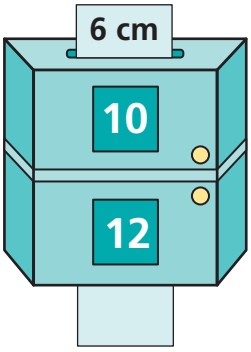

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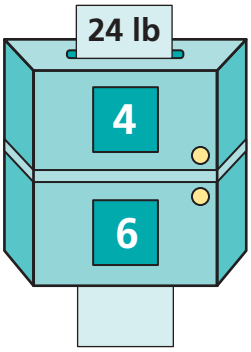

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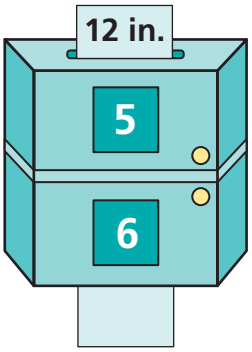

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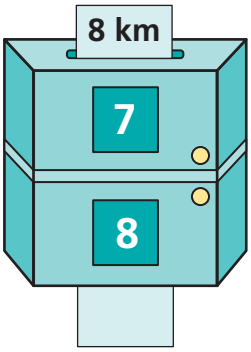


Solve the problems. Show your work.

9 Anne had thirty shells. Tom had three times as many shells. He gave all his shells to his two brothers. Each brother received the same number of shells. How many shells did each brother receive from Tom?

_____

10 Mrs. Maxwell had a half-dozen eggs. She used a third of them in a salad. How many eggs did Mrs. Maxwell have left over?

_____

11 A group of 9 friends together earned $36 each afternoon. They divided the money evenly among themselves. If they earned this same amount each afternoon for 5 afternoons, how much would each friend receive?

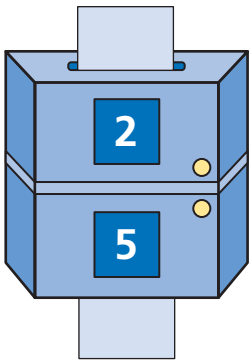
_____

12 Divide seventy-two by four and multiply the result by three.

_____

Write inputs and outputs for the machines.

13



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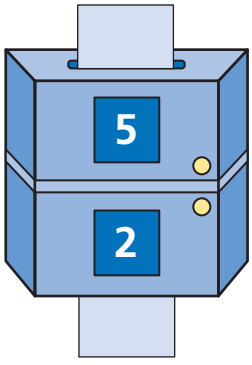
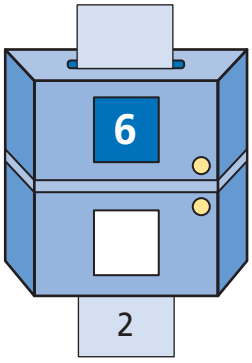


15 Challenge Write the missing numbers.



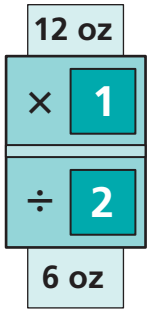
Chapter 4
Lesson 2

Name _____ Date _____

Investigating the Order of Two Operations

NCTM Standards 1, 2, 7, 8, 9, 10

Record the outputs.



1. 8 ft × 3 ÷ 4 = ____

2. $15 × 7 ÷ 3 = ____

3. 30¢ × 10 ÷ 15 = ____

4. 42 oz × 2 ÷ 7 = ____

5. 12 ft × 10 ÷ 5 = ____

6. $11 × 5 ÷ 5 = ____

7. 55¢ × 3 ÷ 11 = ____

Fill in the missing numbers.

8. 12 in. × ____ ÷ 6 = 8 in.

9. 12 in. × 6 ÷ ____ = 8 in.

10. 12 in. × ____ ÷ 3 = 8 in.

11. 12 in. × 10 ÷ ____ = 8 in.

12. $90 × 4 ÷ ____ = $60

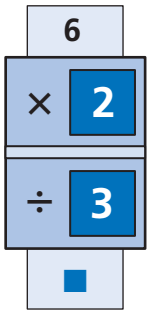
13. $90 × ____ ÷ 3 = $60

14. $90 × 6 ÷ ____ = $60

15. $90 × ____ ÷ 15 = $60

Shade the bars to show the multiplying and dividing performed by the fraction machines.

16



6

6 × 2

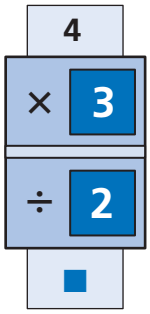
(6 × 2) ÷ 3

6

6 ÷ 3

(6 ÷ 3) × 2

17



4

4 × 3

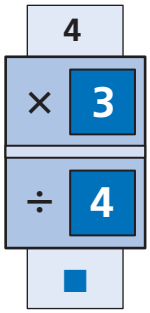
(4 × 3) ÷ 2

4

4 ÷ 2

(4 ÷ 2) × 3

18



4

4 × 3

(4 × 3) ÷ 4

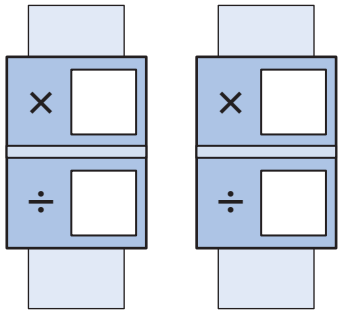
4

4 ÷ 4

(4 ÷ 4) × 3

19 Challenge Make up an example in which it is more convenient to divide first. Make another in which it is more convenient to multiply first.

Why is it more convenient to multiply first in your second example?



Chapter 4

Lesson 3

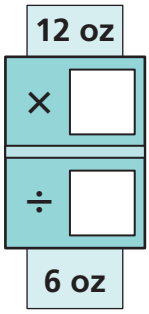
Name _____ Date _____

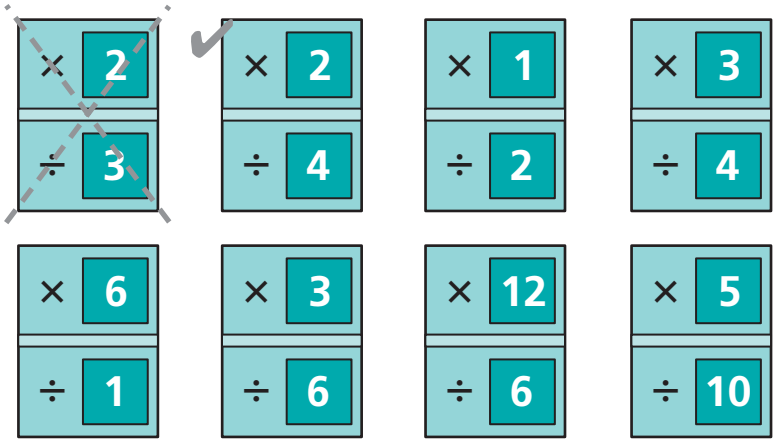
Finding Equivalent Fractions

NCTM Standards 1, 2, 7, 8, 9, 10

- **Check (✓) the fraction machines that produce the result shown.**
- **Cross out (✗) the fraction machines that do not.**
- **Fill in the boxes on the left with the smallest numbers that produce the result shown.**

1





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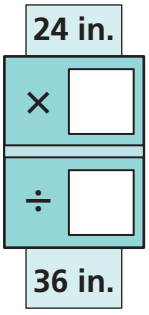

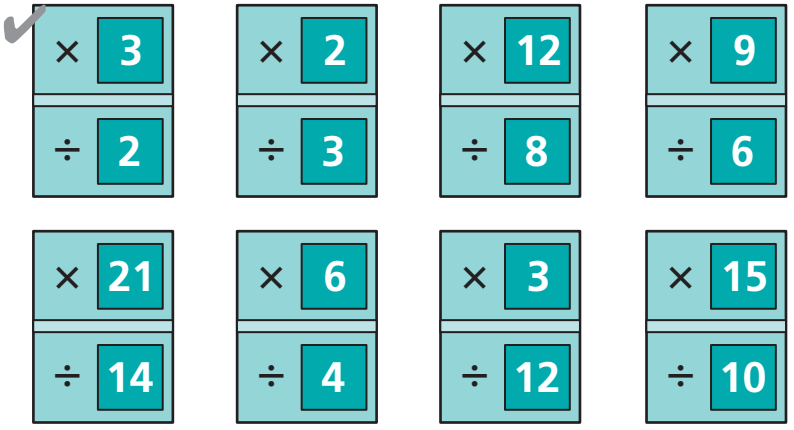

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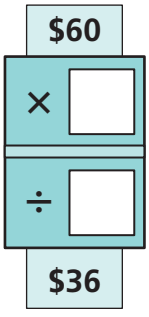
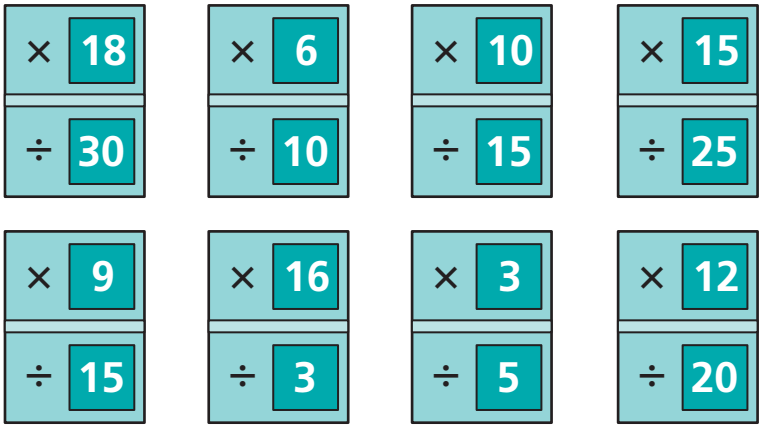
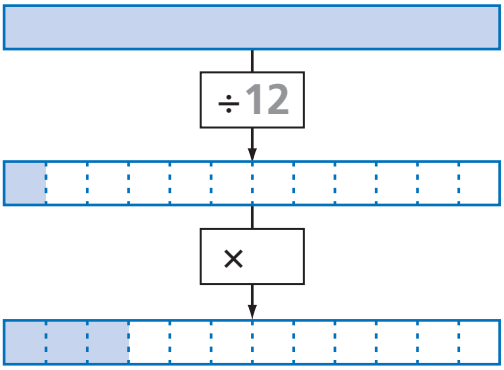




Write the numbers to show the dividing and multiplying.

4



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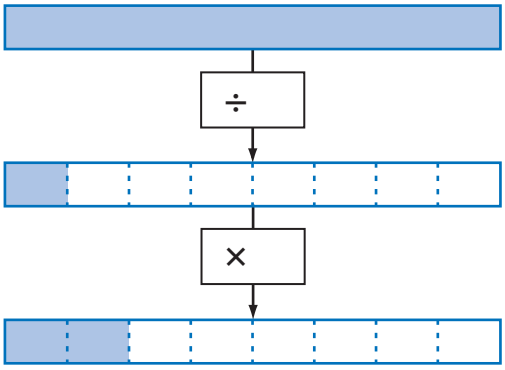

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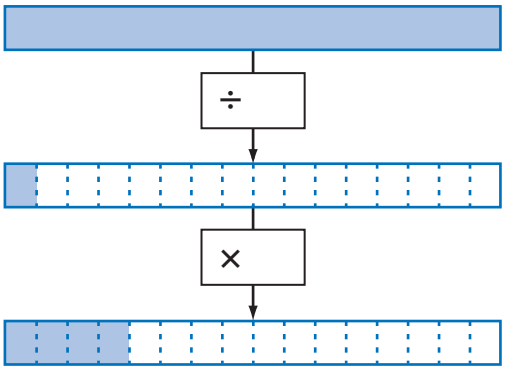
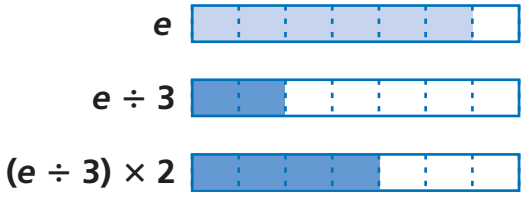


Complete the grids.

Example



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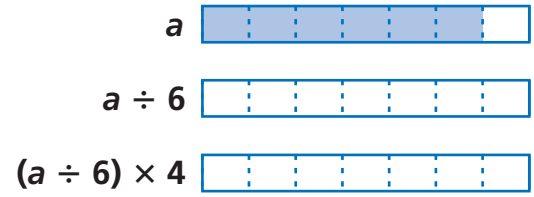
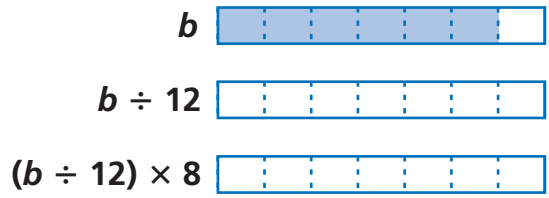


8 Challenge



Chapter 4

Lesson 4

Name _____ Date _____

Equivalent Fractions Using Dot Sketches

NCTM Standards 1, 2, 7, 8, 9, 10

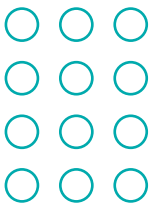
Complete the dot sketches and write the fractions.

1 $\frac{1}{4} = \frac{\square}{8} = \frac{\square}{12} = \frac{\square}{\square}$

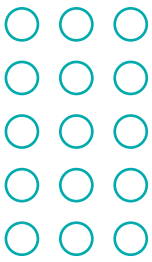
2 $\frac{2}{3} = \frac{\square}{6} = \frac{\square}{\square} = \frac{\square}{\square}$

Use dot sketches to find equivalent fractions.

3 $\frac{3}{4} = \frac{\square}{12}$



4 $\frac{3}{5} = \frac{\square}{15}$



Complete the dot sketches and find equivalent fractions.

5 $\frac{5}{6} = \frac{\square}{24}$

6 $\frac{2}{3} = \frac{\square}{27}$

Find any equivalent fraction with a dot sketch.

7 $\frac{1}{7} = \frac{\square}{\square}$

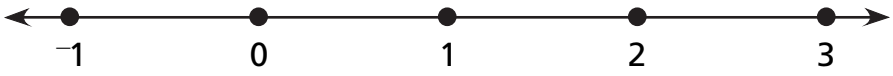
8 $\frac{2}{9} = \frac{\square}{\square}$

9 $\frac{2}{5} = \frac{\square}{\square}$

10 $\frac{3}{8} = \frac{\square}{\square}$

11 Challenge Show each number's location on the number line.

$1\frac{9}{18}$ $2\frac{1}{4}$ $\frac{8}{24}$ $2\frac{2}{8}$ $2\frac{1}{2}$ $\frac{3}{9}$



Chapter 4

Lesson 5

Name _____ Date _____

Strategies for Comparing Fractions

NCTM Standards 1, 2, 7, 8, 9, 10

Compare the fractions. Write <, >, or =.

1 $\frac{3}{4}$ ◯ $\frac{3}{6}$

How did you figure it out? Choose one or more.

- ☐ Same denominators—compared the numerators.
- ☐ Same numerators—compared the denominators.
- ☐ Compared each fraction to $\frac{1}{2}$.
- ☐ Figured out which fraction is closer to 1.
- ☐ Recognized equivalent fractions.
- ☐ Something else: _____

2 $\frac{5}{12}$ ◯ $\frac{6}{8}$

How did you figure it out? Choose one or more.

- ☐ Same denominators—compared the numerators.
- ☐ Same numerators—compared the denominators.
- ☐ Compared each fraction to $\frac{1}{2}$.
- ☐ Figured out which fraction is closer to 1.
- ☐ Recognized equivalent fractions.
- ☐ Something else: _____

3 $\frac{5}{8}$ ◯ $\frac{7}{16}$

How did you figure it out? Choose one or more.

- ☐ Same denominators—compared the numerators.
- ☐ Same numerators—compared the denominators.
- ☐ Compared each fraction to $\frac{1}{2}$.
- ☐ Figured out which fraction is closer to 1.
- ☐ Recognized equivalent fractions.
- ☐ Something else: _____

4 Casey and Caitlin disagreed over whether the fractions $\frac{2}{6}$ and $\frac{3}{9}$ are equal. Are the fractions equal? Tell or show how you know.

For 5–6, write <, >, or =. Tell or show how you know.

5 $\frac{12}{18}$ ◯ $\frac{6}{9}$

6 $\frac{8}{10}$ ◯ $\frac{16}{18}$

Alberto used $\frac{2}{3}$ cup of peanuts, $\frac{3}{4}$ cup almonds, and $\frac{3}{5}$ cup raisins to make a trail mix for his hiking trip.

7 Did he use more almonds or raisins? Explain how you know.

8 Did he use more peanuts or almonds? Explain how you know.

9 **Challenge** Write two new fractions that have the same denominator and that make these sentences true.

$\frac{5}{6} = \frac{\square}{\square}$ $\frac{3}{4} = \frac{\square}{\square}$

Which fraction is greater: $\frac{5}{6}$ or $\frac{3}{4}$? _____ How much greater is it? _____

Chapter 4

Lesson 6

Name _____ Date _____

Comparing Fractions Using Common Denominators

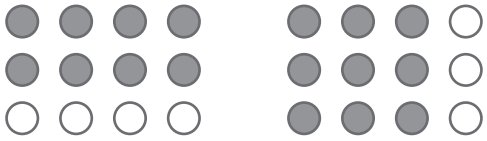
NCTM Standards 1, 2, 6, 7, 8, 9, 10

For each pair of fractions:

- **Write an equivalent pair of fractions, but with a common denominator.**
- **Use dot sketches to make equivalent fractions, if you wish.**
- **Write <, >, or = between the fractions.**

Example 1

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



$\frac{8}{12}$ $<$ $\frac{9}{12}$

Example 2

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

$\frac{4}{6}$ $\quad$ $\frac{5}{6}$

$\frac{4}{6}$ $<$ $\frac{5}{6}$

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

$\frac{\square}{20}$ $\bigcirc$ $\frac{\square}{20}$

2 $\frac{2}{4}$ $\quad$ $\frac{3}{5}$

$\frac{\square}{20}$ $\bigcirc$ $\frac{\square}{20}$

3 $\frac{4}{6}$ $\quad$ $\frac{3}{4}$

$\frac{\square}{\square}$ $\bigcirc$ $\frac{\square}{\square}$

4 $\frac{1}{4}$ $\quad$ $\frac{2}{6}$

$\frac{\square}{\square}$ $\bigcirc$ $\frac{\square}{\square}$

Write the fractions with a common denominator in order to solve the problems.

5 Scott ate $\frac{4}{5}$ of a pizza and Todd ate $\frac{3}{4}$ of a pizza.

Who ate more pizza? _____

6 In Sam's class, $\frac{1}{8}$ of the students chose strawberry, $\frac{1}{2}$ chose chocolate, and $\frac{3}{8}$ chose vanilla as their favorite ice cream flavor.

Which flavor was most popular?

_____

7 Twin sisters Bethany and Britney receive the same allowance. Bethany saves $\frac{2}{3}$ of hers each week, and Britney saves $\frac{1}{2}$ of hers.

Who saves less each week?

_____

8 Aki ran $\frac{5}{6}$ of the route to school. His brother, Yoshi, ran $\frac{6}{8}$ of the same route.

Who was closer to school when he stopped running?

_____

9 **Challenge** Drew spent $\frac{3}{4}$ of his lunch hour eating and he spent the rest of the time talking. Meg spent $\frac{1}{6}$ of her lunch hour talking and the rest of the time eating.

If they have the same amount of time for lunch, who spends more time talking?

_____

How do you know?

Chapter 4

Lesson 7

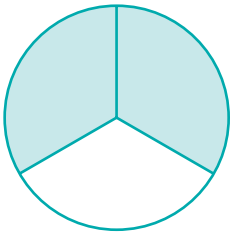
Name _____ Date _____

Area Models and Number Lines

NCTM Standards 1, 2, 7, 9, 10

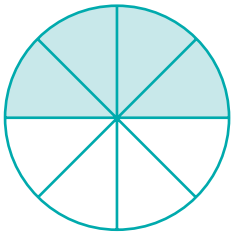
Write the fractions for the shaded shapes. The denominators must show the total number of pieces.

1



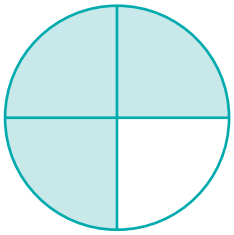
$\frac{\square}{3}$

2



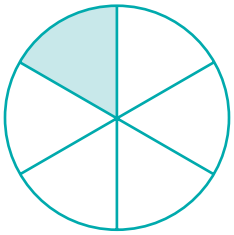
$\frac{\square}{\square}$

3



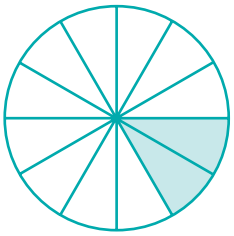
$\frac{\square}{\square}$

4



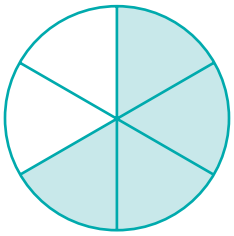
$\frac{\square}{\square}$

5



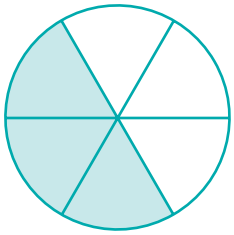
$\frac{\square}{\square}$

6



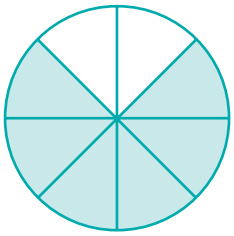
$\frac{\square}{\square}$

7



$\frac{\square}{\square}$

8



$\frac{\square}{\square}$

Write the fractions from Problems 1–8 as pairs of equivalent fractions.

9 $\frac{4}{8} = \frac{\square}{\square}$

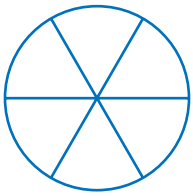
10 $\frac{6}{8} = \frac{\square}{\square}$

11 $\frac{1}{6} = \frac{\square}{\square}$

12 $\frac{4}{6} = \frac{\square}{\square}$

Shade the sketches for the fractions. You may need to draw lines to split up some of the pieces.

13



$\frac{2}{6}$

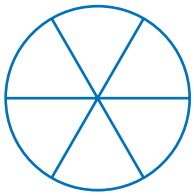
14

$\frac{10}{12}$

15

$\frac{1}{3}$

16



$\frac{5}{6}$

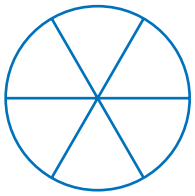
17

$\frac{8}{12}$

18

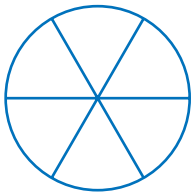
$\frac{2}{3}$

19



$\frac{1}{4}$

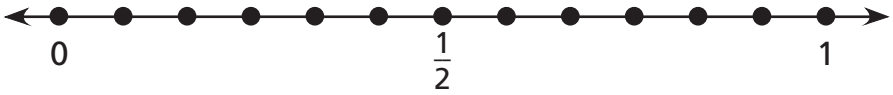
20



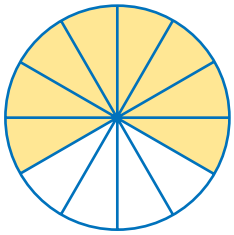
$\frac{3}{12}$

Write the fractions from Problems 13–20 at their locations on the number line.

21



22 Challenge Write four equivalent fractions to match the sketch.



$\frac{\square}{\square} = \frac{\square}{\square} = \frac{\square}{\square} = \frac{\square}{\square}$

Chapter 4

Lesson 8

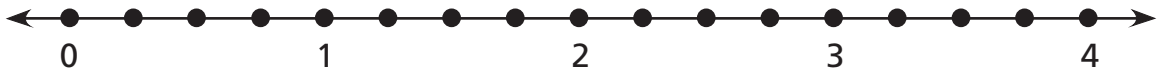
Name _____ Date _____

Numbers Greater Than 1

NCTM Standards 1, 2, 6, 7, 8, 9, 10

1 Write the numbers at their locations on the number line. If two numbers label the same point, write one above the line and the other below.

$\frac{16}{4}$ $\frac{11}{4}$ $1\frac{1}{4}$ $\frac{7}{2}$ $1\frac{3}{4}$ $\frac{7}{4}$ $3\frac{1}{2}$ $\frac{6}{8}$



Solve the problems.

2 Alex's family likes to celebrate "half-birthdays" every half year. Alex had his first when he was $\frac{1}{2}$ year old, his second at 1, his third at $1\frac{1}{2}$, and so on. He just celebrated his 19th half-birthday. How old is he? Explain how you know.

3 Lauren walks $2\frac{1}{4}$ miles each day. Write the number of miles as an improper fraction. Explain.

4 Ryan had only a $\frac{1}{3}$-cup measuring cup to measure the flour for a cake recipe. He filled the measuring cup seven times. How much flour did Ryan measure?

_____

5 Tifani had $3\frac{1}{2}$ meters of rope. Her sister had 7 half-meter pieces, and thought that was more than Tifani had.

Who had more rope? Tell or show how you know.

_____

6 Mr. Lopez had seven pieces of paper and cut each one into fourths.

Does he have enough paper to give a fourth of a piece of paper to each of his 26 students? Tell or show how you know.

_____

7 **Challenge** The bus traveled $7\frac{2}{3}$ miles before stopping for gas. It then traveled another $4\frac{2}{3}$ miles to the bus station. How far did the bus travel?

_____

Chapter 4

Lesson 9

Name _____ Date _____

Equivalent Fractions Greater Than 1

NCTM Standards 1, 2, 6, 7, 8, 9

1 Draw lines to match the equivalent numbers.

$2\frac{3}{4}$ $3\frac{2}{6}$ $4\frac{6}{8}$ $\frac{15}{6}$ $\frac{8}{6}$

$\frac{16}{12}$ $2\frac{9}{12}$ $\frac{5}{2}$ $4\frac{9}{12}$ $3\frac{3}{9}$

Write three equivalent fractions or mixed numbers for each.

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

3 $4\frac{3}{4} =$ _____ $=$ _____ $=$ _____

4 $\frac{10}{4} =$ _____ $=$ _____ $=$ _____

5 $\frac{19}{3} =$ _____ $=$ _____ $=$ _____

6 $11\frac{1}{3} =$ _____ $=$ _____ $=$ _____

7 $\frac{35}{4} =$ _____ $=$ _____ $=$ _____

8 $\frac{56}{6} =$ _____ _____ _____

9 $9\frac{5}{7}$ _____ _____ _____

10 $11\frac{7}{10}$ _____ _____ _____

11 $\frac{51}{8} =$ _____ _____ _____

Solve the problem.

12 Anh and Maya were both braiding chains out of yarn. Anh's measured $4\frac{3}{8}$ feet long, and Maya's measured $4\frac{9}{16}$ feet long.

Whose chain is longer? Tell or show how you know.

_____

_____

13 Challenge

Which is bigger: $(9 + \frac{7}{4})$ or $(10 + \frac{3}{5})$? _____

How much bigger? _____

Chapter 4

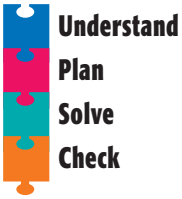
Lesson 10

Name _____ Date _____

Problem Solving Strategy

Draw a Picture

NCTM Standards 1, 2, 6, 7, 8, 9, 10



1 The class sold 2 dozen brownies at their bake sale. Kelly sold $\frac{1}{8}$ of them, Alima sold $\frac{3}{8}$ of them, and Jake $\frac{2}{8}$ of them.

How many brownies did each person sell?

Kelly: _____ Alima: _____ Jake: _____

What fraction of the brownies were sold by others? _____

How many brownies were sold by others? _____

---

2 A pizza is cut into 12 equal pieces. Shayne serves $\frac{2}{6}$ of the pizza, Bryanna serves $\frac{2}{12}$ of the pizza, and Patrick serves $\frac{1}{3}$ of it.

What fraction of the pizza is left? _____

How many pieces are left? _____

---

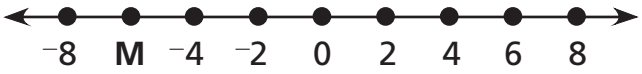
3 Find at least one way to completely cover a yellow hexagonal pattern block with other pattern blocks that are not all the same shape.

Tell or show the fraction of the hexagon that each shape you used represents.

Problem Solving Test Prep

Choose the correct answer.

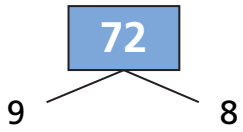
1 What is the value of **M** on the number line?



A. −5 **C.** −7

B. −6 **D.** −9

2 A factor tree for 72 has been started. What are the prime factors of 72?



A. 3, 3, 4, 4 **C.** 3, 3, 4, 2

B. 3, 3, 4 **D.** 3, 3, 2, 2, 2

3 What is the least whole number that is described below?

- It is divisible by 2, 3, 4, 6, and 8, but not by 5.
- The sum of its digits is a 2-digit number.

A. 12

B. 24

C. 48

D. 96

4 Which number sentence is NOT equivalent to the one below?

$$(23 \times 23) - 16$$

A. $(23 \times 23) - (4 \times 4)$

B. $(19 \times 27) - (4 \times 4)$

C. 27×19

D. $(18 \times 28) + (3 \times 3)$

Show What You Know

Solve each problem. Explain your answer.

5 In a 24-mile relay race, Edward ran $\frac{1}{4}$ of the distance, Carlos ran $\frac{1}{8}$ of the distance, Armand ran $\frac{1}{3}$, and Ronnie ran the rest. How many miles did Ronnie run? Explain.

6 The sum of the Magic Square is 45.

How could the numbers be changed so that the sum would be 51? Explain.

6	27	12
21	15	9
18	3	24

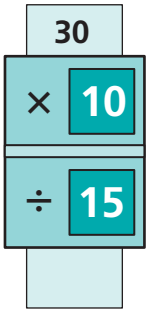
Chapter 4

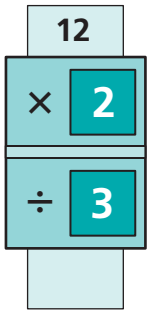
Name _____ Date _____

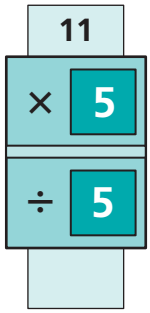
Review/Assessment

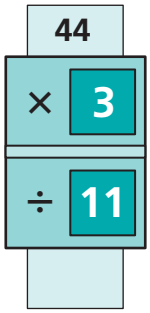
NCTM Standards 1, 2, 6, 7, 8, 9, 10

Record the outputs. Lessons 1 and 2

1. 

2. 

3. 

4. 

Write a fraction equivalent to each. Draw dot sketches, if you wish. Lessons 3 and 4

5. $\frac{3}{4} = \frac{\square}{\square}$

6. $\frac{2}{8} = \frac{\square}{\square}$

7. $\frac{2}{5} = \frac{\square}{\square}$

8. $\frac{8}{16} = \frac{\square}{\square}$

Solve. Lessons 5 and 6

9. Melinda uses a recipe that calls for $\frac{1}{2}$ cup of sugar, $\frac{3}{4}$ cup of flour, $\frac{1}{4}$ cup of nuts and $\frac{1}{3}$ cup of oil. List the ingredients in order from greatest to least amount.

_____

10. Drew ran $\frac{7}{8}$ of the route to the baseball field. Scott ran $\frac{4}{6}$ of the same route. Who was closer to the baseball field when he stopped running?

_____

For each pair of fractions: Lesson 6

- **Write an equivalent pair of fractions with a common denominator. Make dot sketches, if you wish.**
- **Write <, >, or = between the fractions.**

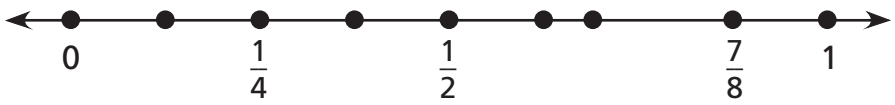
11. $\frac{4}{6}$ $\frac{3}{4}$

$\frac{\square}{\square}$ ○ $\frac{\square}{\square}$

12. $\frac{2}{5}$ $\frac{1}{3}$

$\frac{\square}{\square}$ ○ $\frac{\square}{\square}$

For 13–15, write a fraction equivalent to each fraction labeled on the number line. Lesson 7



13 _____ 14 _____ 15 _____

Write the numbers at their locations on the number line.

16 $1\frac{3}{4}$ 17 $\frac{7}{3}$ 18 $\frac{2}{8}$ 19 $3\frac{5}{10}$ 20 $\frac{12}{3}$ 21 $\frac{7}{4}$

Write equivalent fractions. Write one in simplest form and circle it. Lesson 9

22	23	24		25	26	27
$\frac{3}{6}$ = _____	= _____	_____		$\frac{2}{6}$	_____	_____	_____

Solve the problem. Show your work. Lesson 10

28 Maria was shopping for a jump rope. One store sold ropes that were $10\frac{3}{8}$ feet long and another had ropes that were $10\frac{1}{2}$ feet long. Which is longer?

_____