

About the Resources by Chapter

Family Letter (English and Spanish)

The Family Letters provide a way to quickly communicate to family members how they can help their student with the material of the chapter. They make the mathematics less intimidating and provide suggestions for helping students see mathematical concepts in common activities. A chart with the Learning Target and Success Criteria for each lesson is also provided.

Warm-Ups

Each section has three options for getting the class started. The Cumulative Practice questions review previously-learned concepts. The Vocabulary Practice questions review previously-learned vocabulary words or preview vocabulary words in the upcoming section. The Prerequisite Skills Practice questions review prerequisite skills needed for the section.

Extra Practice

The Extra Practice exercises provide additional practice on the key concepts taught in the lesson.

Reteach

Each Reteach provides additional examples with more support for students who are struggling to understand the concepts. Exercises for these examples are also provided.

Enrichment and Extension

Each Enrichment and Extension extends the lesson and provides a challenging application of the key concepts.

Puzzle Time

Each Puzzle Time provides additional practice in a fun format in which students use their mathematical knowledge to solve a riddle. This format allows students to self-check their work.

**Chapter
3****Fractions and Decimals**

Dear Family,

Many of us have a number of recipes that we enjoy preparing. Perhaps they are old family recipes or simply someone's favorite meal. Some recipes we can prepare without much effort: a quarter cup of butter, a quarter cup of flour, and two cups of milk for a white sauce.

However, when we have guests over for dinner, we find these familiar recipes have to be adjusted. Maybe we have to make three times as many servings. Now we need three quarter cups of butter, three quarter cups of flour, and so on.

Sometimes we want to make a smaller portion, such as when part of the family is away. Now we find ourselves using half a quarter cup of butter, half a quarter cup of flour, and so on.

You and your student can discuss strategies for preparing a meal when you have to change the recipe. For example, you might ask your student:

- "We have to use two quarter cups of sugar. Should we use the $\frac{1}{4}$ cup measure twice, or use the $\frac{1}{2}$ cup measure?" Your student may answer, "The amount will be the same either way."
- "The recipe calls for $\frac{2}{3}$ cup of milk, but we only want a half batch. What measuring cup should we use?" Your student may answer, "Use the $\frac{1}{3}$ cup measure, but only once."
- "Grandma's brownie muffin recipe makes enough for three dozen muffins, but we only want one dozen. What should we do?" Your student may answer, "We can divide the recipe measures by three."

Sometimes you have to make a judgment call. How do you cut the recipe in half, if it calls for three eggs? Talk with your student about different strategies for changing a recipe like this.

Enjoy your cooking time together!

Homemade Macaroni & Cheese

$\frac{1}{4}$ c butter	$2\frac{1}{2}$ c grated cheese
$\frac{1}{4}$ c flour	$\frac{1}{2}$ 16 oz box of macaroni
2 c milk	salt & pepper

Make the macaroni using instructions on the box. Make a roux of the butter and flour. Add the milk over low heat while stirring until smooth. Add cheese to thickened sauce. Salt & pepper to taste. Stir in macaroni and serve.

Lesson	Learning Target	Success Criteria
3.1 Adding and Subtracting Fractions	Add and subtract fractions and mixed numbers.	<ul style="list-style-type: none"> • I can draw a model to explain fraction addition and subtraction. • I can add and subtract fractions. • I can write a mixed number as an improper fraction. • I can add and subtract mixed numbers.
3.2 Multiplying Fractions	Find products involving fractions and mixed numbers.	<ul style="list-style-type: none"> • I can draw a model to explain fraction multiplications. • I can multiply fractions. • I can find products involving mixed numbers. • I can interpret products involving fractions and mixed numbers to solve real-life problems.
3.3 Dividing Fractions	Compute quotients of fractions and solve problems involving division by fractions.	<ul style="list-style-type: none"> • I can draw a model to explain division of fractions. • I can find reciprocals of numbers. • I can divide fractions by fractions. • I can divide fractions and whole numbers.
3.4 Dividing Mixed Numbers	Compute quotients with mixed numbers and solve problems involving division with mixed numbers.	<ul style="list-style-type: none"> • I can draw a model to explain division of mixed numbers. • I can write a mixed number as an improper fraction. • I can divide with mixed numbers. • I can evaluate expressions involving mixed numbers using the order of operations.
3.5 Adding and Subtracting Decimals	Add and subtract decimals and solve problems involving addition and subtraction of decimals.	<ul style="list-style-type: none"> • I can explain why it is necessary to line up the decimal points when adding and subtracting decimals. • I can add decimals. • I can subtract decimals. • I can evaluate expressions involving addition and subtraction of decimals.
3.6 Multiplying Decimals and Whole Numbers	Multiply decimals and whole numbers.	<ul style="list-style-type: none"> • I can use repeated addition and models to multiply. • I can use place value to multiply decimals by whole numbers. • I can use partial products to multiply.
3.7 Multiplying Decimals	Multiply decimals and solve problems involving multiplication of decimals.	<ul style="list-style-type: none"> • I can use models to multiply decimals. • I can multiply decimals using place value. • I can multiply decimals using partial products.
3.8 Dividing Whole Numbers	Divide whole numbers and solve problems involving division of whole numbers.	<ul style="list-style-type: none"> • I can use partial quotients to divide whole numbers. • I can use long division to divide whole numbers. • I can write a remainder as a fraction. • I can interpret quotients in real-life problems.
3.9 Dividing Decimals by Whole Numbers	Divide decimals by whole numbers.	<ul style="list-style-type: none"> • I can use models to divide. • I can use partial quotients to divide. • I can use place value to divide a decimal by a whole number. • I can check a quotient using estimation or multiplication.
3.10 Dividing Decimals	Divide decimals and solve problems involving division of decimals.	<ul style="list-style-type: none"> • I can use models to divide decimals. • I can divide decimals by decimals. • I can divide whole numbers by decimals.

Capítulo
3
Fracciones y decimales

Querida familia:

Muchos de nosotros tenemos cierta cantidad de recetas que nos encanta preparar. Pueden ser viejas recetas de familia o, simplemente, una de nuestras comidas favoritas. Algunas de estas recetas pueden prepararse sin mayor esfuerzo: un cuarto de taza de mantequilla, un cuarto de taza de harina y dos tazas de leche para preparar una salsa blanca.

Macarrones con queso hechos en casa

1/4 t mantequilla	2 1/2 t queso rayado
1/4 t harina	2 t de leche
1/2 caja de macarrones de 16 oz	sal y pimienta

Prepare los macarrones según las instrucciones en la caja. Mezcle la mantequilla y la harina. Agregue la leche y caliente a fuego lento. Revuelva hasta que la mezcla esté suave. Agregue el queso para espesar la salsa y sal y pimienta al gusto. Agregue los macarrones, revuelva y sirva.

Sin embargo, cuando tenemos invitados a cenar, nos damos cuenta de que estas recetas deben modificarse. Es posible que tengamos que preparar tres veces la cantidad de porciones. En ese caso necesitamos tres cuartos de taza de mantequilla, tres cuartos de taza de harina, etc.

Otras veces queremos preparar porciones más pequeñas, en casos en que parte de la familia está por fuera, por ejemplo. Entonces, vemos que solo hay que usar la mitad de un cuarto de taza de mantequilla, la mitad de un cuarto de taza de harina, etc.

Usted y su estudiante pueden comentar estrategias para preparar una comida en casos en que haya que modificar la receta. Por ejemplo, usted podría preguntarle a su estudiante:

- "Tenemos que usar dos cuartos de taza de azúcar. ¿Deberíamos usar 1/4 de taza para medir, dos veces, o 1/2 taza para medir?". Es posible que su estudiante responda: "La cantidad es la mismo en cualquiera de los casos".
- "La receta requiere 2/3 de taza de leche, pero solo queremos preparar media tanda. ¿Qué taza para medir deberíamos usar?". Es posible que su estudiante responda: "Usa 1/3 de taza para medir, pero solo una vez".
- "La receta de pastelitos de chocolate de la abuela alcanza para tres docenas de pastelitos, pero solo necesitamos preparar una docena. ¿Qué podemos hacer?". Es posible que su estudiante responda: "Podemos dividir las medidas de la receta entre tres".

Algunas veces será necesario tomar decisiones. ¿Cómo reducir la receta a la mitad cuando se requieren tres huevos? Comente con su estudiante diferentes estrategias para modificar recetas como esta.

¡Disfruten de su tiempo cocinando juntos!

Lección	Objetivo de aprendizaje	Criterios de éxito
3.1 Sumar y restar fracciones	Sumar y restar fracciones y números mixtos.	<ul style="list-style-type: none"> • Sé hacer un modelo para explicar la suma y resta con fracciones. • Sé sumar y restar fracciones. • Sé escribir un número mixto como una fracción impropia. • Sé sumar y restar números mixtos.
3.2 Multiplicar fracciones	Hallar productos relacionados con fracciones y números mixtos.	<ul style="list-style-type: none"> • Sé hacer un modelo para explicar la multiplicación de fracciones. • Sé multiplicar fracciones. • Sé hallar productos relacionados con números mixtos. • Sé interpretar productos relacionados con fracciones y números mixtos para resolver problemas de la vida diaria.
3.3 Dividir fracciones	Calcular cocientes de fracciones y resolver problemas relacionados con la división de fracciones.	<ul style="list-style-type: none"> • Sé hacer un modelo para explicar la división de fracciones. • Sé hallar los recíprocos de un número. • Sé dividir fracciones entre fracciones. • Sé dividir fracciones y números enteros.
3.4 Dividir números mixtos	Calcular cocientes con números mixtos y resolver problemas relacionados con la división de números mixtos.	<ul style="list-style-type: none"> • Sé hacer un modelo para explicar la división de números mixtos. • Sé escribir un número mixto como una fracción impropia. • Sé dividir con números mixtos. • Sé evaluar expresiones relacionadas con números mixtos usando el orden de operaciones.
3.5 Sumar y restar decimales	Sumar y restar decimales y resolver problemas relacionados con la suma y resta de decimales.	<ul style="list-style-type: none"> • Sé explicar por qué es necesario alinear los puntos decimales al sumar y restar decimales. • Sé sumar decimales. • Sé restar decimales. • Sé evaluar expresiones relacionadas con la suma y la resta de decimales.
3.6 Multiplicar decimales y números enteros	Multiplicar decimales y números enteros.	<ul style="list-style-type: none"> • Sé usar adición repetida y modelos para multiplicar. • Sé usar valor posicional para multiplicar decimales por números enteros. • Sé usar productos parciales para multiplicar.
3.7 Multiplicar decimales	Multiplicar decimales y resolver problemas relacionados con la multiplicación de decimales.	<ul style="list-style-type: none"> • Se utilizar modelos para multiplicar decimales. • Se multiplicar decimales con el uso de valor posicional. • Se multiplicar decimales con el uso de productos parciales
3.8 Dividir números enteros	Dividir números enteros y resolver problemas relacionados con la división de números enteros.	<ul style="list-style-type: none"> • Se usar cocientes parciales para dividir números enteros • Sé usar la división larga para dividir números enteros. • Sé escribir un residuo como una fracción. • Sé interpretar cocientes en problemas de la vida diaria.
3.9 Dividir decimales por números enteros	Dividir decimales por números enteros.	<ul style="list-style-type: none"> • Sé usar modelos para dividir. • Sé usar cocientes parciales para dividir. • Sé usar valor posicional para dividir un decimal por un número. • Sé revisar un cociente con estimación o multiplicación.
3.10 Dividir decimales	Dividir decimales y resolver problemas relacionados con la división de decimales.	<ul style="list-style-type: none"> • Se usar modelos para dividir decimales • Sé dividir decimales entre decimales. • Sé dividir números enteros entre decimales.

Lesson
3.1**Cumulative Practice**

For use before Lesson 3.1

Order the fractions from least to greatest.

1. $\frac{2}{3}, \frac{5}{12}, \frac{3}{4}, \frac{3}{6}$

2. $\frac{1}{2}, \frac{5}{8}, \frac{7}{16}, \frac{1}{4}$

Lesson
3.1**Vocabulary Practice**

For use before Lesson 3.1

1. Write what you know about this word.

Review: denominator

Lesson
3.1**Prerequisite Skills Practice**

For use before Lesson 3.1

Write the mixed number as a fraction.

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

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

**Lesson
3.1****Extra Practice****Find the sum or difference.**

1. $\frac{5}{9} + \frac{2}{9}$

2. $\frac{8}{11} - \frac{1}{11}$

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

4. $\frac{11}{14} - \frac{5}{7}$

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

6. $\frac{4}{5} - \frac{7}{15}$

7. $\frac{3}{4} - \frac{1}{6}$

8. $\frac{6}{7} - \frac{3}{4}$

9. $\frac{11}{12} - \frac{7}{8}$

10. You do $\frac{1}{2}$ of a load of laundry on Tuesday and $\frac{1}{3}$ of a load of laundry on Thursday. What fraction of a load of laundry do you do in total?
11. A recipe calls for $\frac{2}{3}$ cup of chopped tomatoes and $\frac{1}{4}$ cup of diced tomatoes. How much more chopped tomatoes than diced tomatoes are in the recipe?

Find the sum or difference.

12. $6\frac{1}{3} + 2\frac{2}{3}$

13. $3\frac{4}{5} - 2\frac{3}{5}$

14. $10\frac{5}{8} - 4\frac{3}{8}$

15. $12\frac{1}{7} + 2\frac{5}{14}$

16. $6\frac{5}{12} - 1\frac{1}{4}$

17. $4\frac{4}{9} + 4\frac{2}{3}$

18. $6\frac{2}{5} - 2\frac{3}{8}$

19. $3\frac{5}{6} + 8\frac{5}{15}$

20. $5\frac{7}{13} - 1\frac{7}{52}$

21. You spend $2\frac{1}{2}$ hours on homework on Tuesday. On Wednesday, you spend $1\frac{2}{3}$ hours on homework. Find the total amount of time you spend doing homework on Tuesday and Wednesday.
22. You buy $5\frac{1}{2}$ pounds of potatoes and $4\frac{5}{16}$ pounds of grapes. How many more pounds of potatoes do you buy than grapes?
23. Your bamboo is $6\frac{1}{2}$ inches tall. You cut off $1\frac{1}{4}$ inches and another $2\frac{1}{2}$ inches. How tall is your bamboo now?
24. For school spirit day, the school purchases $21\frac{1}{2}$ gallons of lemonade. During the day, a teacher buys an additional $5\frac{1}{4}$ gallons of lemonade. At the end of the day, the school has $1\frac{3}{4}$ gallons of lemonade left. How much lemonade is consumed during the day?

Lesson
3.1
Reteach

To add or subtract fractions with like denominators, add or subtract the numerators. Then write the sum or difference over the common denominator.

$$\frac{3}{7} + \frac{1}{7} = \frac{3+1}{7} = \frac{4}{7}$$

To add or subtract fractions with unlike denominators, write the fractions with a common denominator. Then find the sum or difference.

$$\frac{5}{6} - \frac{2}{3} = \frac{5}{6} - \frac{4}{6} = \frac{5-4}{6} = \frac{1}{6}$$

EXAMPLE Adding and Subtracting Fractions

a. Add $\frac{1}{5} + \frac{2}{5}$.

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

Write the sum of the numerators over the common denominator.

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

Simplify.

► The solution is $\frac{3}{5}$.

b. Subtract $\frac{3}{4} - \frac{7}{16}$.

Find the common denominator. Rewrite $\frac{3}{4}$ so it has a denominator of 16.

$$\frac{3}{4} = \frac{3 \times 4}{4 \times 4} = \frac{12}{16}$$

Then subtract.

$$\frac{3}{4} - \frac{7}{16} = \frac{12}{16} - \frac{7}{16}$$

Rewrite $\frac{3}{4}$ as $\frac{12}{16}$.

$$= \frac{12-7}{16}$$

Write the difference of the numerators over the common denominator.

$$= \frac{5}{16}$$

Simplify.

► The solution is $\frac{5}{16}$.

Lesson
3.1
Reteach (continued)

To add or subtract mixed numbers, write each mixed number as an improper fraction. Then add or subtract as you would with fractions.

EXAMPLE Adding and Subtracting Mixed Numbers

a. Add $2\frac{1}{8} + 1\frac{2}{8}$.

$$\begin{aligned} 2\frac{1}{8} + 1\frac{2}{8} &= \frac{17}{8} + \frac{10}{8} \\ &= \frac{17+10}{8} \\ &= \frac{27}{8}, \text{ or } 3\frac{3}{8} \end{aligned}$$

Write each mixed number as an improper fraction.

Write the sum of the numerators over the common denominator.

Simplify.

► The solution is $3\frac{3}{8}$.

b. Subtract $4\frac{1}{6} - 2\frac{2}{3}$.

$$\begin{aligned} 4\frac{1}{6} - 2\frac{2}{3} &= \frac{25}{6} - \frac{8}{3} \\ &= \frac{25}{6} - \frac{16}{6} \\ &= \frac{25-16}{6} \\ &= \frac{9}{6}, \text{ or } 1\frac{3}{6} \end{aligned}$$

Write each mixed number as an improper fraction.

Rewrite $\frac{8}{3}$ as $\frac{8 \times 2}{3 \times 2} = \frac{16}{6}$.

Write the difference of the numerators over the common denominator.

Simplify.

► The solution is $1\frac{3}{6}$.

Find the sum or difference.

1. $\frac{3}{7} + \frac{4}{7}$

2. $\frac{11}{20} - \frac{6}{20}$

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

4. $\frac{8}{18} - \frac{2}{9}$

5. $5\frac{5}{11} - 2\frac{4}{11}$

6. $9\frac{3}{7} + 4\frac{1}{7}$

7. $2\frac{2}{3} + 7\frac{4}{9}$

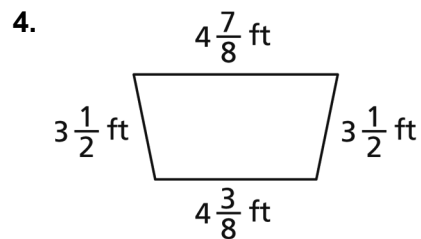
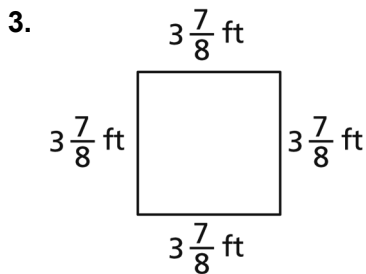
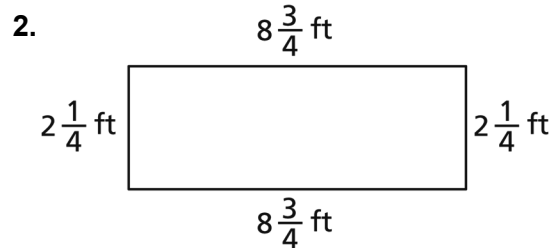
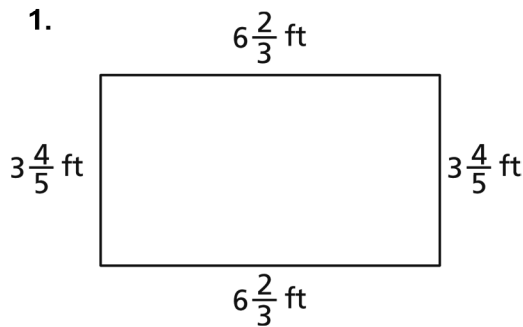
8. $3\frac{3}{10} - 1\frac{1}{2}$

Lesson
3.1

Enrichment and Extension

Using Fractions

Find the perimeter of the figure.



5. A maintenance worker has a total of 27 feet of fencing. The worker needs to enclose a rectangular region of the ground for an air conditioner. If the region has a length of $10\frac{1}{4}$ feet and a width of $2\frac{1}{2}$ feet, does the worker have enough fencing to enclose the region? If so, how much fencing will be left over?

6. The rectangle has a perimeter of $95\frac{1}{2}$ feet. Find the length of the rectangle.



3.1 Puzzle Time

What Is Always In Front Of You But Can't Be Seen?

Write the letter of each answer in the box containing the exercise number.

Find the sum or difference.

1. $\frac{5}{12} + \frac{4}{12}$

2. $\frac{6}{8} - \frac{3}{8}$

3. $3\frac{5}{20} + 1\frac{4}{20}$

4. $3\frac{8}{9} - 2\frac{6}{9}$

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

6. $1\frac{10}{11} - 1\frac{1}{3}$

7. $5\frac{1}{2} + 5\frac{1}{4}$

8. A lawn service company uses $3\frac{1}{4}$ tons of mulch on the first lawn and $5\frac{3}{4}$ tons of mulch on the second lawn. How many total tons of mulch are used on the two lawns?

9. A restaurant starts the day with $7\frac{2}{3}$ gallons of orange juice. After two hours, there are $3\frac{1}{4}$ gallons of orange juice left. How many gallons of orange juice have been dispensed?

Answers	
E. 9	A. $\frac{5}{12}$
T. $10\frac{3}{4}$	S. $6\frac{4}{5}$
H. $4\frac{9}{20}$	U. $4\frac{5}{12}$
R. $\frac{3}{8}$	P. $2\frac{1}{2}$
F. $\frac{9}{12}$	T. $4\frac{1}{10}$
D. $4\frac{7}{8}$	E. $\frac{19}{33}$
L. $9\frac{1}{6}$	U. $1\frac{2}{9}$

5	3	8		1	9	7	4	2	6
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Lesson
3.2

Cumulative Practice

For use before Lesson 3.2

Find the median and mode of the data.

1. 18, 9, 10, 16, 10, 15, 14
2. 23, 27, 29, 28, 21, 13, 29, 23, 23, 31

Lesson
3.2

Vocabulary Practice

For use before Lesson 3.2

1. Write what you know about this phrase.

Review: unit fraction

Lesson
3.2

Prerequisite Skills Practice

For use before Lesson 3.2

Find the product.

1. 8×3
2. 5×7

Lesson
3.2**Extra Practice****Multiply.**

1. $\frac{3}{5} \times \frac{1}{4}$

2. $\frac{1}{3} \times \frac{4}{7}$

3. $\frac{2}{3} \times \frac{7}{11}$

4. $\frac{6}{7} \times \frac{5}{6}$

5. $\frac{2}{5} \times \frac{5}{8}$

6. $\frac{8}{15} \times \frac{3}{10}$

7. $\frac{2}{9} \times \frac{12}{13}$

8. $\frac{7}{8} \times 12$

9. $4 \times \frac{5}{12}$

10. $\frac{4}{9} \times \frac{4}{9}$

11. $\frac{3}{14} \times \frac{7}{9}$

12. $\frac{8}{9} \times \frac{24}{11}$

13. $2\frac{2}{5} \times \frac{1}{4}$

14. $5\frac{3}{5} \times \frac{5}{7}$

15. $5\frac{1}{2} \times \frac{7}{11}$

16. $6\frac{2}{3} \times 12$

17. $4\frac{2}{5} \times 1\frac{7}{8}$

18. $9 \times 2\frac{2}{3}$

19. $4\frac{4}{9} \times \frac{3}{8}$

20. $3\frac{5}{8} \times 12$

21. $4\frac{2}{3} \times \frac{3}{14}$

22. Your friend finds the product. Is your friend correct? Explain your reasoning.

$$3\frac{7}{8} \times 6\frac{2}{5} = 18\frac{14}{40}$$

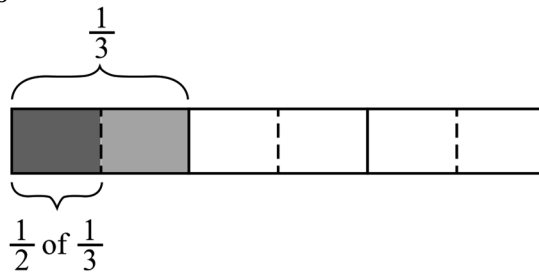
23. Two-fifths of the students in your class are in the band. Of these, one-fourth play the saxophone.
- What fraction of your class plays the saxophone?
 - There are 30 students in your class. How many students in your class play the saxophone?
24. Five years ago, an alligator was $2\frac{1}{6}$ feet long. Today, the alligator is three times longer. How long is the alligator now?
25. A poster is $8\frac{1}{2}$ inches by 11 inches. You enlarge the poster by increasing each dimension by a factor of $2\frac{1}{2}$. What is the area of the new poster?

Lesson
3.2
Reteach
EXAMPLE Multiplying Fractions

Find $\frac{1}{2} \times \frac{1}{3}$.

Draw a fraction model of 1 divided into three sections, each representing $\frac{1}{3}$.

Divide each $\frac{1}{3}$ section in half.



The entire model represents 1. One of the six sections represents $\frac{1}{2}$ of $\frac{1}{3}$.

► So, the product is $\frac{1}{6}$.

EXAMPLE Multiplying Fractions

Find $\frac{2}{5} \times \frac{3}{4}$.

Multiply the numerators and the denominators.

$$\begin{aligned} \frac{2}{5} \times \frac{3}{4} &= \frac{2 \times 3}{5 \times 4} \\ &= \frac{6}{20}, \text{ or } \frac{3}{10} \end{aligned}$$

► The product is $\frac{6}{20}$, or $\frac{3}{10}$.

Lesson
3.2**Reteach** (continued)**EXAMPLE** Multiplying a Fraction and a Mixed Number**Find** $\frac{1}{4} \times 2\frac{2}{3}$.First, write $2\frac{2}{3}$ as an improper fraction.

$$2\frac{2}{3} = 2 + \frac{2}{3} = \frac{6}{3} + \frac{2}{3} = \frac{8}{3}$$

Multiply the numerators and the denominators.

$$\begin{aligned}\frac{1}{4} \times \frac{8}{3} &= \frac{1 \times 8}{4 \times 3} \\ &= \frac{8}{12}, \text{ or } \frac{2}{3}\end{aligned}$$

► The product is $\frac{8}{12}$, or $\frac{2}{3}$.**Multiply.**

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

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

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

4. $\frac{2}{5} \times \frac{7}{8}$

5. $\frac{6}{7} \times \frac{2}{9}$

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

7. $\frac{5}{24} \times \frac{8}{15}$

8. $\frac{16}{7} \times \frac{21}{8}$

9. $\frac{2}{5} \times 2\frac{11}{12}$

10. $\frac{20}{21} \times 1\frac{3}{4}$

11. $4\frac{9}{10} \times 1\frac{1}{7}$

12. $28 \times 8\frac{2}{7}$

13. $5\frac{5}{12} \times 2\frac{2}{5}$

14. $8\frac{1}{3} \times 4\frac{1}{2}$

Lesson
3.2

Enrichment and Extension

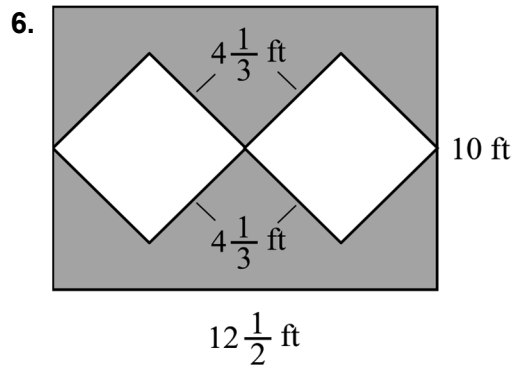
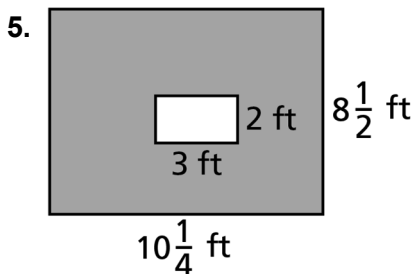
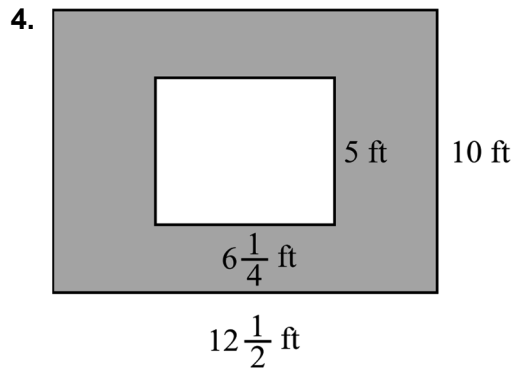
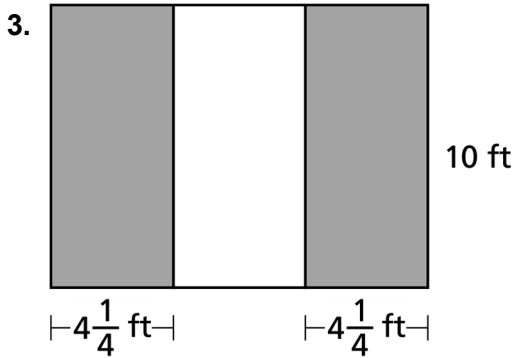
Using Fractions

Use fractions to solve each problem.

1. After each round of a basketball tournament, half of the teams are eliminated. The tournament began with 64 teams.
 - a. How many teams are left after the third round?
 - b. How many rounds will have been completed after the championship game?

2. A deposit of \$1000 is made in a savings account. After one year, the new balance is $\frac{11}{10}$ the value of the original deposit.
 - a. Write a product that can be used to find the new balance in the account.
 - b. After the second year, the balance is $\frac{6}{5}$ the value of the account balance after the first year. Find the balance after the second year.

You make painting designs for your ceiling. You will paint the shaded region. Find the area of the shaded region in the design.



3.2 Puzzle Time

Why Did The Turkey Volunteer To Be The Drummer In The Popular Bird Band?

Write the letter of each answer in the box containing the exercise number.

Multiply.

- | | | |
|---------------------------------------|--|---|
| 1. $\frac{1}{8} \times \frac{3}{5}$ | 2. $\frac{1}{6} \times \frac{3}{8}$ | 3. $\frac{3}{4} \times \frac{9}{13}$ |
| 4. $\frac{5}{6} \times \frac{6}{7}$ | 5. $\frac{5}{16} \times \frac{1}{10}$ | 6. $\frac{3}{14} \times 12$ |
| 7. $8 \times \frac{9}{10}$ | 8. $\frac{5}{7} \times \frac{5}{8}$ | 9. $\frac{14}{15} \times \frac{5}{7}$ |
| 10. $1\frac{1}{4} \times \frac{3}{4}$ | 11. $7\frac{1}{2} \times \frac{4}{5}$ | 12. $\frac{5}{8} \times 1\frac{3}{5}$ |
| 13. $6\frac{1}{4} \times \frac{2}{5}$ | 14. $2\frac{7}{10} \times \frac{5}{9}$ | 15. $\frac{2}{9} \times 3\frac{1}{6}$ |
| 16. $1\frac{5}{7} \times 21$ | 17. $4\frac{3}{8} \times 2\frac{2}{7}$ | 18. $\frac{1}{8} \times \frac{3}{5} \times \frac{2}{3}$ |
| 19. $\frac{6}{7} \cdot \frac{6}{7}$ | 20. $\frac{2}{5} \times \frac{2}{5}$ | 21. $\frac{1}{4} \times \frac{3}{4}$ |
22. The photo of you and your friends at the local amusement park has a length of $5\frac{1}{3}$ inches and a width of $3\frac{1}{4}$ inches. Find the area in square inches of the photo of you and your friends.

Answers	
S. $7\frac{2}{10}$	C. $\frac{27}{52}$
A. $\frac{3}{40}$	E. $\frac{38}{54}$
Y. $\frac{70}{105}$	D. $2\frac{10}{20}$
H. $\frac{3}{48}$	U. 36
L. $\frac{6}{120}$	D. $1\frac{45}{90}$
A. $\frac{4}{25}$	D. $\frac{5}{160}$
E. $\frac{3}{16}$	R. $\frac{15}{16}$
R. 1	T. 6
K. $\frac{36}{49}$	I. 10
A. $2\frac{8}{14}$	M. $\frac{30}{42}$
H. $\frac{25}{56}$	S. $17\frac{4}{12}$

2	15		6	18	10	21	1	13	9		8	20	5		14	12	16	4	22	11	17	3	19	7
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Lesson
3.3**Cumulative Practice**

For use before Lesson 3.3

Divide.

1. $876 \div 63 = \underline{\quad\quad} \text{ R } \underline{\quad\quad}$

2. $365 \div 73 = \underline{\quad\quad}$

Lesson
3.3**Vocabulary Practice**

For use before Lesson 3.3

1. Write what you know about this word.

Preview: reciprocal

Lesson
3.3**Prerequisite Skills Practice**

For use before Lesson 3.3

Multiply.

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

2. $\frac{4}{7} \times \frac{5}{16}$

Lesson
3.3
Extra Practice

Write the reciprocal of the number.

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

2. 6

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

4. $\frac{7}{4}$

Divide.

5. $\frac{1}{6} \div \frac{1}{3}$

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

7. $\frac{3}{5} \div \frac{2}{15}$

8. $10 \div \frac{2}{7}$

9. $\frac{3}{8} \div \frac{9}{16}$

10. $\frac{5}{9} \div 15$

11. $\frac{10}{27} \div \frac{2}{3}$

12. $\frac{18}{25} \div \frac{8}{15}$

13. $\frac{7}{12} \div 14$

14. Your friend evaluates the quotient. Is your friend correct? Explain your reasoning.

$\frac{3}{4} \div 6 = \frac{3}{4} \div \frac{6}{1} = \frac{18}{4} = 4\frac{2}{4}$

Determine whether the numbers are reciprocals. If not, write the reciprocal of each number.

15. $\frac{5}{8}, \frac{16}{10}$

16. $\frac{1}{12}, 12$

17. $\frac{2}{3}, \frac{12}{18}$

18. $\frac{4}{7}, \frac{7}{8}$

Copy and complete the statement.

19. $\frac{10}{7} \times \underline{\quad ? \quad} = 1$

20. $8 \div \underline{\quad ? \quad} = 24$

21. You have $\frac{2}{3}$ of a pizza left from yesterday. You divide it into 4 equal pieces. What fraction of the pizza is each piece?

22. You have five quarts of paint. It takes $\frac{5}{8}$ quart to paint each chair you are asked to paint. How many chairs can you paint?

23. Is the reciprocal of a fraction always a whole number? Explain.

Lesson
3.3
Reteach

Two numbers whose product is 1 are **reciprocals**, or **multiplicative inverses**.
 To write the reciprocal of a number, write the number as a fraction and invert it.

EXAMPLE Writing Reciprocals

Write the reciprocal of $\frac{4}{7}$.

To write the reciprocal, invert the fraction.

$$\frac{4}{7}$$

← numerator
← denominator

To invert the fraction, switch the positions of the numerator and the denominator.

$$\frac{4}{7} \rightarrow \frac{7}{4}$$

► So, the reciprocal of $\frac{4}{7}$ is $\frac{7}{4}$.

CHECK Multiply the fraction and its reciprocal. The product should be 1.

$$\frac{4}{7} \times \frac{7}{4} = \frac{4 \times 7}{7 \times 4} = \frac{28}{28} = 1 \checkmark$$

To divide a number by a fraction, multiply the number by the reciprocal of the fraction.

EXAMPLE Dividing a Fraction by a Fraction

Find $\frac{1}{3} \div \frac{2}{5}$.

First, write the reciprocal of $\frac{2}{5}$ by inverting it.

$$\frac{2}{5} \rightarrow \frac{5}{2}$$

Then, change from dividing by a fraction to multiplying by its reciprocal.

$$\frac{1}{3} \div \frac{2}{5} = \frac{1}{3} \times \frac{5}{2} = \frac{1 \times 5}{3 \times 2} = \frac{5}{6}$$

► So, the quotient is $\frac{5}{6}$.

Lesson
3.3
Reteach (continued)

EXAMPLE Dividing a Fraction by a Whole Number

 Find $\frac{3}{4} \div 5$.

First, write 5 as an improper fraction.

$$5 = \frac{5}{1}$$

Then, write the reciprocal.

$$\frac{5}{1} \rightarrow \frac{1}{5}$$

Multiply by the reciprocal.

$$\frac{3}{4} \div 5 = \frac{3}{4} \times \frac{1}{5} = \frac{3 \times 1}{4 \times 5} = \frac{3}{20}$$

 ► So, the quotient is $\frac{3}{20}$.

Write the reciprocal of the number.

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

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

3. 14

4. $\frac{22}{4}$

Divide.

5. $\frac{3}{8} \div \frac{15}{16}$

6. $\frac{2}{3} \div \frac{2}{9}$

7. $\frac{3}{7} \div \frac{9}{14}$

8. $\frac{3}{4} \div \frac{7}{12}$

9. $\frac{5}{16} \div \frac{5}{12}$

10. $\frac{16}{25} \div \frac{3}{5}$

Divide.

11. $\frac{4}{15} \div 12$

12. $\frac{8}{15} \div 20$

13. $\frac{6}{7} \div 4$

14. $\frac{5}{8} \div 10$

Lesson
3.3
Enrichment and Extension
Finding a Combination

9, 9

1, 8

3, 8

4, 2

2, 3

8, 9

3, 6

4, 5

You keep money in a locked box and do not want to write the combination down to open the box. So, you create the problems below and numbers above to hide the combination. Choose a set of numbers and fill in the boxes to make each equation true. Each set of numbers will be used once.

1. $\frac{\square}{2} \div \frac{3}{8} = \frac{\square}{6}$

2. $\frac{\square}{4} \div 2 = \frac{\square}{8}$

3. $\frac{\square}{2} \div \frac{1}{4} = \square$

4. $\frac{2}{7} \div \square = \frac{\square}{21}$

5. $\frac{1}{\square} \div \frac{3}{5} = \frac{\square}{12}$

6. $\frac{4}{\square} \div \frac{3}{2} = \frac{\square}{27}$

7. $\frac{5}{8} \div \frac{1}{\square} = \frac{15}{\square}$

8. $\frac{1}{\square} \div \frac{3}{2} = \frac{\square}{12}$

9. Starting at Exercise 1 and ending at Exercise 8, write down each number that was missing from the right side of the equation. Place a dash after every second digit. This series of two digit numbers will unlock the box. What is the combination to the box?

3.3 Puzzle Time

Why Was The Gentleman Who Was Selling Watches Unhappy?

Write the letter of each answer in the box containing the exercise number.

Write the reciprocal of the number.

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

Evaluate.

7. $\frac{1}{16} \div \frac{1}{8}$ 8. $\frac{6}{7} \div \frac{3}{5}$ 9. $14 \div \frac{2}{7}$
 10. $\frac{5}{8} \div 10$ 11. $\frac{14}{15} \div 7$ 12. $\frac{5}{24} \div \frac{5}{6}$
 13. $\frac{9}{20} \div \frac{3}{4}$ 14. $\frac{1}{4} \div \frac{1}{36}$ 15. $\frac{7}{8} \div 28$
 16. $3 \div \frac{2}{3}$ 17. $\frac{3}{14} \div \frac{9}{11}$ 18. $18 \div \frac{9}{13}$
 19. $\frac{1}{9} \div 9 \div 9$ 20. $3 \div \frac{9}{11} + \frac{1}{3}$ 21. $\frac{1}{2} + \frac{7}{8} \div \frac{11}{24}$
 22. $\frac{5}{12} \times \frac{2}{3} \div \frac{2}{9}$ 23. $\frac{8}{21} \div \frac{2}{3} \times \frac{4}{9}$ 24. $\frac{9}{16} \div 18 \div 8$

25. There are 3 pieces of pizza left. How many $\frac{1}{4}$ pieces of pizza can be sliced from the 3 pieces of pizza?

Answers for 1–6.

A. $\frac{6}{7}$ M. $\frac{9}{4}$ H. $\frac{1}{5}$
 O. 8 N. $\frac{3}{2}$ S. $\frac{1}{12}$

Answers for 7–25.

A. $\frac{33}{126}$ N. $4\frac{1}{2}$ I. 49
 O. $\frac{14}{105}$ H. $\frac{8}{16}$ L. 26
 S. 9 I. $\frac{36}{60}$ D. $\frac{5}{80}$
 F. $1\frac{9}{21}$ T. $\frac{7}{224}$ H. $\frac{30}{120}$
 O. 12 H. $2\frac{36}{88}$ E. $\frac{9}{2304}$
 A. $1\frac{18}{72}$ E. $\frac{1}{729}$ T. 4
 D. $\frac{96}{378}$

12	24		1	22	10		17		18	25	15		11	8		20	9	4	19	
6	16		21	13	2		7	5	3	23	14									

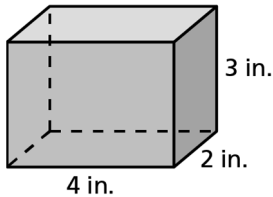
Lesson
3.4

Cumulative Practice

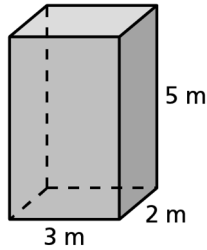
For use before Lesson 3.4

Find the volume.

1.



2.



Lesson
3.4

Vocabulary Practice

For use before Lesson 3.4

1. Write what you know about this phrase.

Review: improper fraction

Lesson
3.4

Prerequisite Skills Practice

For use before Lesson 3.4

Write the improper fraction as a mixed number.

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

2. $\frac{21}{4}$

Lesson
3.4
Extra Practice
Divide.

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

2. $4\frac{1}{3} \div \frac{2}{3}$

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

4. $8\frac{1}{3} \div 2\frac{2}{9}$

5. $9\frac{4}{5} \div 7$

6. $3\frac{5}{9} \div 16$

7. $\frac{8}{27} \div 4\frac{2}{9}$

8. $21 \div 5\frac{1}{4}$

9. $9\frac{3}{5} \div 12$

10. $3\frac{3}{4} \div 5\frac{1}{4}$

11. $7\frac{1}{2} \div 1\frac{3}{4}$

12. $6\frac{2}{9} \div 6\frac{2}{3}$

13. Your friend evaluates the quotient. Is your friend correct? Explain your reasoning.

$$8 \div 2\frac{3}{4} = \frac{1}{8} \div \frac{11}{4} = \frac{1}{8} \times \frac{4}{11} = \frac{4}{88}$$

Evaluate the expression.

14. $3\frac{3}{8} \div 4\frac{7}{8} + 3$

15. $4\frac{1}{2} - \frac{3}{4} \div 2\frac{3}{8}$

16. $3\frac{3}{5} - \frac{1}{2} \div 4\frac{3}{8}$

17. $\frac{2}{3} \times \frac{5}{8} \div 3\frac{7}{12}$

18. How many $6\frac{1}{4}$ -inch pieces of fabric can be cut from a 75-inch roll?

19. How many times heavier is a $16\frac{1}{2}$ -pound rock than a $10\frac{1}{2}$ -pound rock?

20. How many $2\frac{1}{2}$ -acre plots can be made out of a 35-acre field?

21. A bag contains 36 cups of flour. How many loaves of bread can be made if each loaf takes $5\frac{1}{3}$ cups? Is there any flour left over? If so, how much?

Lesson
3.4
Reteach
EXAMPLE Dividing with Mixed Numbers

Find $2\frac{3}{4} \div \frac{2}{5}$.

Write $2\frac{3}{4}$ as an improper fraction: $2\frac{3}{4} = 2 + \frac{3}{4} = \frac{8}{4} + \frac{3}{4} = \frac{11}{4}$

Multiply by the reciprocal to divide: $\frac{11}{4} \div \frac{2}{5} = \frac{11}{4} \times \frac{5}{2} = \frac{11 \times 5}{4 \times 2} = \frac{55}{8}$

Write as a mixed number: $\frac{55}{8} = \frac{48}{8} + \frac{7}{8} = 6\frac{7}{8}$

► So, the quotient is $6\frac{7}{8}$.

EXAMPLE Using Order of Operations

Evaluate $8\frac{1}{3} \div 2\frac{5}{6} + \frac{2}{17}$.

Write each mixed number as an improper fraction.

$$8\frac{1}{3} \div 8 + \frac{1}{3} = \frac{24}{3} + \frac{1}{3} = \frac{25}{3} \qquad 2\frac{5}{6} = 2 + \frac{5}{6} = \frac{12}{6} + \frac{5}{6} = \frac{17}{6}$$

Use the improper fractions to rewrite the problem.

$$\begin{aligned} 8\frac{1}{3} \div 2\frac{5}{6} + \frac{2}{17} &= \frac{25}{3} \div \frac{17}{6} + \frac{2}{17} \\ &= \frac{25}{3} \times \frac{6}{17} + \frac{2}{17} \\ &= \frac{25 \times 6}{3 \times 17} + \frac{2}{17} \\ &= \frac{150}{51} + \frac{2}{17} \\ &= \frac{50}{17} + \frac{2}{17} \\ &= \frac{52}{17} = \frac{51}{17} + \frac{1}{17} = 3\frac{1}{17} \end{aligned}$$

Rewrite using improper fractions.

Multiply by the reciprocal of $\frac{17}{6}$.

Multiply fractions.

Multiply.

Rewrite $\frac{150}{51}$ as $\frac{150}{51}$ as $\frac{150}{51} = \frac{150 \div 3}{51 \div 3} = \frac{50}{17}$.

Add. Rewrite as a mixed number.

► So, the answer is $3\frac{1}{17}$.

Lesson
3.4**Reteach (continued)****Divide.**

1. $2\frac{1}{2} \div \frac{3}{4}$

2. $6\frac{1}{4} \div \frac{3}{8}$

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

4. $8\frac{1}{2} \div 2\frac{1}{4}$

5. $16\frac{2}{5} \div 12$

6. $7\frac{4}{5} \div 4$

7. $\frac{1}{4} \div 6\frac{3}{4}$

8. $\frac{5}{16} \div 3\frac{1}{4}$

9. $18 \div 3\frac{3}{5}$

10. $12 \div 3\frac{5}{9}$

11. $10\frac{1}{5} \div 4\frac{2}{5}$

12. $7\frac{4}{9} \div 3\frac{2}{3}$

Evaluate the expression.

13. $4\frac{3}{5} \div 1\frac{3}{10} - \frac{1}{2}$

14. $7\frac{1}{8} \div 2\frac{5}{8} + \frac{3}{5}$

15. $3\frac{1}{2} + 4\frac{1}{6} \div 3$

16. $6\frac{2}{3} + 2\frac{5}{12} \div \frac{3}{4}$

17. $3\frac{4}{7} \div \frac{1}{3} \times \frac{1}{4}$

18. $5\frac{5}{8} \div \frac{3}{16} \times \frac{1}{4}$

19. $10\frac{2}{3} \times 5\frac{1}{2} + 4\frac{3}{5}$

20. $3\frac{2}{9} \times 2\frac{1}{3} \div 1\frac{4}{9}$

21. $1\frac{3}{4} \div \left(2\frac{1}{3} \cdot 1\frac{1}{6}\right)$

22. $2\frac{3}{4} \div \left(2\frac{3}{5} \times 2\frac{5}{13}\right)$

Lesson
3.4
Enrichment and Extension
Tic-Tac-Toe

Copy the value descriptions below on pieces of paper and place them in a hat. Choose one description from the hat. Then find the expression on the board whose value matches the description. Put an "X" in the box above that expression. Choose another description and put an "O" above its matching expression. Keep alternating between X and O until the board is full. Get three Xs or three Os in a row horizontally, vertically, or diagonally to win. Did the Xs or Os win?

Do not put the descriptions back in the hat after you have chosen them.

<div style="border: 2px solid black; width: 80%; margin: 0 auto; height: 80%;"></div> $2\frac{11}{12} \div \frac{7}{9} \times 3\frac{1}{20}$	<div style="border: 2px solid black; width: 80%; margin: 0 auto; height: 80%;"></div> $10\frac{1}{2} \div 4\frac{5}{7} \div \frac{10}{11}$	<div style="border: 2px solid black; width: 80%; margin: 0 auto; height: 80%;"></div> $4\frac{2}{5} \times 3\frac{3}{10} \div 2\frac{14}{15}$
<div style="border: 2px solid black; width: 80%; margin: 0 auto; height: 80%;"></div> $15\frac{3}{4} \div 2\frac{9}{20} + 1\frac{11}{28}$	<div style="border: 2px solid black; width: 80%; margin: 0 auto; height: 80%;"></div> $28\frac{1}{8} \div 6\frac{3}{7} \div 4\frac{13}{20}$	<div style="border: 2px solid black; width: 80%; margin: 0 auto; height: 80%;"></div> $6\frac{12}{13} - 6\frac{9}{10} \div 1\frac{4}{35}$
<div style="border: 2px solid black; width: 80%; margin: 0 auto; height: 80%;"></div> $8\frac{1}{6} \div 1\frac{2}{5} - 1\frac{1}{6}$	<div style="border: 2px solid black; width: 80%; margin: 0 auto; height: 80%;"></div> $12\frac{3}{4} + 5\frac{5}{8} \div 4\frac{1}{14}$	<div style="border: 2px solid black; width: 80%; margin: 0 auto; height: 80%;"></div> $7\frac{3}{11} \div \frac{5}{22} \div 3\frac{5}{17}$

• The value is about $2\frac{1}{2}$.

• The value is about $9\frac{1}{2}$.

• The value is more than 14.

• The value is about $\frac{3}{4}$.

• The value is between 7 and 8.

• The value is about $11\frac{1}{2}$.

• The value is about 1.

• The value is about 5.

• The value is about $4\frac{1}{2}$.

3.4 Puzzle Time

What Does An Ant Use To Keep All Of Its Hair In Place?

Write the letter of each answer in the box containing the exercise number.

Divide.

1. $1\frac{3}{5} \div \frac{4}{5}$

2. $5\frac{1}{4} \div \frac{3}{4}$

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

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

5. $7\frac{1}{7} \div \frac{10}{11}$

6. $3\frac{1}{6} \div \frac{5}{6}$

7. $\frac{7}{9} \div 2\frac{13}{18}$

8. $12\frac{1}{2} \div 15$

9. $14 \div 9\frac{1}{3}$

10. $5\frac{1}{8} \div 6\frac{5}{6}$

11. $3\frac{5}{8} \div 5\frac{4}{5}$

12. $16 \div 4\frac{2}{3}$

13. $4\frac{1}{4} \div \frac{1}{8}$

14. $9 \div 2\frac{2}{6} + 2\frac{2}{3}$

15. $1\frac{3}{7} \div \frac{5}{6} \div 4\frac{4}{5}$

16. $2\frac{3}{4} \div 1\frac{4}{8} \times 1\frac{2}{5}$

17. $2\frac{3}{11} + \frac{4}{9} \div 1\frac{7}{15}$

Answers

E. $2\frac{136}{240}$

A. $3\frac{6}{14}$

G. 1

D. $1\frac{14}{28}$

H. 2

P. $\frac{126}{441}$

R. 34

X. $\frac{145}{232}$

U. $7\frac{60}{70}$

Y. 7

A. $6\frac{22}{42}$

O. $2\frac{114}{198}$

T. $\frac{25}{30}$

B. $\frac{246}{328}$

L. 62

S. $3\frac{24}{30}$

R. $\frac{300}{840}$

16	11	8	13	14		1	17	3	9		10	5	4		6	7	15	12	2
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**Lesson
3.5****Cumulative Practice**

For use before Lesson 3.5

Divide.

1. $5242 \div 75 = \underline{\quad\quad} \text{ R } \underline{\quad\quad}$

2. $7634 \div 48 = \underline{\quad\quad} \text{ R } \underline{\quad\quad}$

**Lesson
3.5****Vocabulary Practice**

For use before Lesson 3.5

1. Write what you know about this phrase.

Review: place value

**Lesson
3.5****Prerequisite Skills Practice**

For use before Lesson 3.5

Subtract.

1. $225 - 17$

2. $315 - 86$

Lesson
3.5**Extra Practice****Add.**

1. $6.58 + 2.436$ 2. $1.8 + 4.307$ 3. $11.415 + 15.32$
4. $16.75 + 14.349$ 5. $18.741 + 14.113$ 6. $12.799 + 17.301$

Subtract.

7. $5.64 - 2.31$ 8. $9.385 - 5.216$ 9. $9.75 - 6.523$
10. $16.435 - 12.144$ 11. $18.908 - 14.76$ 12. $10.8 - 8.752$

13. Your friend evaluates the expression. Is your friend correct? Explain your reasoning.

$$5.52 - 3.70 = 5.52 - 3.7 = 5.15$$

Evaluate the expression.

14. $7.85 + 12.19 + 5.401$ 15. $9.112 + 7.649 - 11.52$
16. $16.072 - 13.18 + 3.982$ 17. $18.2 - 14.33 + 9.757$
18. $17.816 - 8.623 - 5.94$ 19. $6.58 + 7.64 - 10.006$
20. Write two decimals that have a sum of 16.825.
21. Write two decimals that have a difference of 16.825.
22. To find the girth of a suitcase, add the length, width, and depth.
- a. Your suitcase has a length of 24.5 inches, a width of 14.25 inches, and a depth of 6.875 inches. Find the girth of your suitcase.
- b. In order to store your suitcase in the overhead compartment, the girth must not exceed 45 inches. Will you be able to store your suitcase in the overhead compartment? Explain.
23. You are saving money for a new bicycle, which costs \$85.99. So far you have saved \$47.52. How much more money do you need before you can purchase the new bicycle?
24. A triangle has sides of length 15.463 centimeters, 11.34 centimeters, and 20.875 centimeters. What is the perimeter of the triangle?

Lesson
3.5
Reteach

To add or subtract decimals vertically, line up the decimal points. Bring down a decimal point and add or subtract as you would with whole numbers.

EXAMPLE Adding Decimals

Add $3.65 + 5.1$.

Write the numbers with the decimal points lined up vertically. Insert zeros so that both numbers have the same number of decimal places.

$$\begin{array}{r}
 3.65 \\
 + 5.10 \\
 \hline
 \end{array}$$

Line up the decimal points.

Insert zero.

decimal point

Add as you would with whole numbers.

$$\begin{array}{r}
 3.65 \\
 + 5.10 \\
 \hline
 8.75
 \end{array}$$

► So, the sum is 8.75.

EXAMPLE Subtracting Decimals

Subtract $9.436 - 5.29$.

Write the numbers with the decimal points lined up vertically. Insert zeros so that both numbers have the same number of decimal places.

$$\begin{array}{r}
 9.436 \\
 - 5.290 \\
 \hline
 \end{array}$$

Line up the decimal points.

Insert zero.

decimal point

Subtract as you would with whole numbers.

$$\begin{array}{r}
 ^{313} \\
 9.4\cancel{3}6 \\
 - 5.290 \\
 \hline
 4.146
 \end{array}$$

► So, the difference is 4.146.

Lesson
3.5
Reteach (continued)

EXAMPLE Adding and Subtracting Decimals

 Evaluate $6.951 + 7.32 - 1.984$.

Use the order of operations to add and subtract from left to right.

 Expression: $6.951 + 7.32 - 1.984$

 Add the two numbers at the left:

$$\begin{array}{r} 6.951 \\ + 7.320 \\ \hline 14.271 \end{array}$$

 New expression: $14.271 - 1.984$

 Subtract.

$$\begin{array}{r} ^{\text{11}}^{\text{16}} \\ ^{\text{3}}\cancel{}^{\text{11}} \\ 14.\cancel{27}^{\text{16}} \\ - 1.984 \\ \hline 12.287 \end{array}$$

► So, the answer is 12.287.

Add.

- | | |
|----------------------|----------------------|
| 1. $4.27 + 9.3$ | 2. $8.436 + 2.52$ |
| 3. $15.627 + 11.308$ | 4. $24.561 + 6.37$ |
| 5. $16.018 + 22.910$ | 6. $16.613 + 18.225$ |

Subtract.

- | | |
|-----------------------|----------------------|
| 7. $7.98 - 3.46$ | 8. $9.357 - 2.28$ |
| 9. $12.821 - 6.43$ | 10. $25.92 - 12.371$ |
| 11. $20.964 - 16.372$ | 12. $27.61 - 21.202$ |

Evaluate the expression.

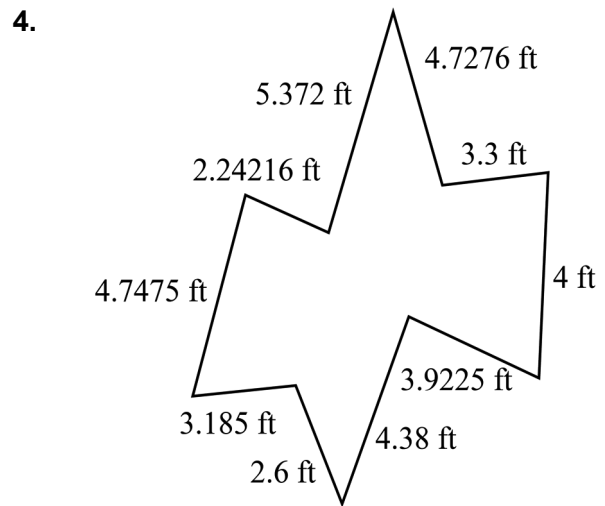
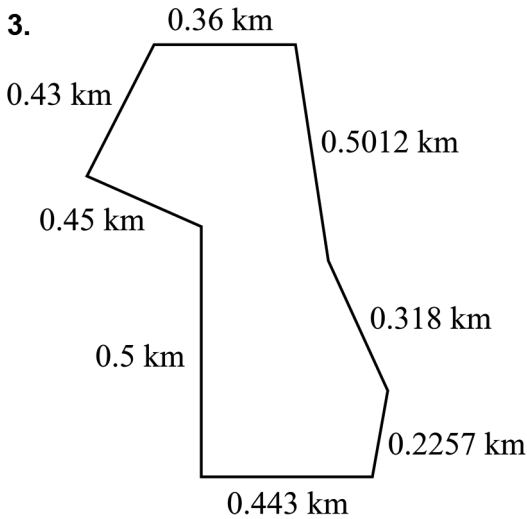
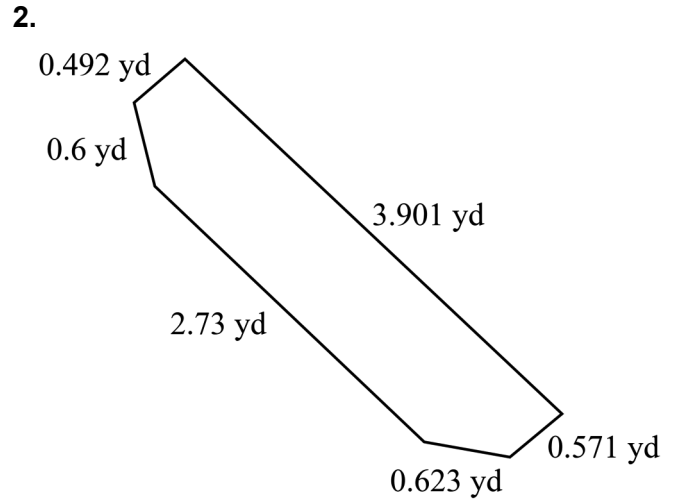
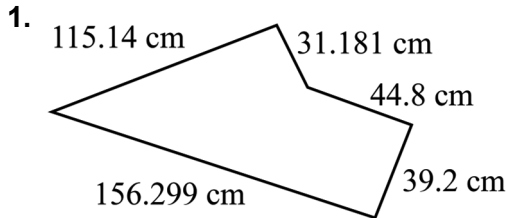
- | | |
|-------------------------------|------------------------------|
| 13. $5.27 + 10.54 + 6.812$ | 14. $32.59 - 17.36 + 6.821$ |
| 15. $2.69 + 14.38 - 15.166$ | 16. $35.948 - 3.54 - 7.159$ |
| 17. $21.258 + 13.649 - 5.107$ | 18. $29.736 - 13.249 - 3.92$ |

Lesson
3.5

Enrichment and Extension

Perimeter

In Exercises 1–4, find the perimeter of the figure.



5. In Exercise 1, the side of the figure that is 156.299 centimeters decreased to 103.1 centimeters.
- How can you find the new perimeter using subtraction?
 - What is the new perimeter?
6. The figure in Exercise 3 is being used to construct a new city zoo. The perimeter will be enclosed with fencing. How much fencing, in meters, will be needed to enclose the zoo property? (Hint: 1000 meters = 1 kilometer)

3.5 Puzzle Time

Did You Hear About...

A	B	C	D	E	F
G	H	I	J	K	L
M	N	O	P	Q	

Complete each exercise. Find the answer in the answer column. Write the word under the answer in the box containing the exercise letter.

44.5 BEAK
11.524 ELECTRIC
3.31 A
4.883 HE
17.2 BULB
5.65 HAVE
6.485 BIRD
8.012 SWITCH
7.652 WATER
2.633 SO
11.11 POND
40.059 HIS

Add.

- A. $8.93 + 2.108$ B. $2.6 + 3.885$
 C. $23.938 + 9.06$ D. $19.46 + 12.657$
 E. $28.551 + 11.508$ F. $26.367 + 18.133$

Subtract.

- G. $5.69 - 4.23$ H. $7.518 - 4.208$
 I. $5.87 - 3.725$ J. $16.242 - 12.68$
 K. $24.6 - 21.967$ L. $26.73 - 21.847$

Evaluate the expression.

- M. $7.206 + 9.3 + 4.186$
 N. $23.7 - 13.397 - 4.653$
 O. $26.46 + 8.715 - 14.065$
 P. $17.6 - 14.56 + 8.484$
 Q. The rectangular sandbox at the local community park has a width of 24.5 meters and its length is 31.7 meters. What is the perimeter, in meters, of the rectangular sandbox?

32.998 WHO
20.692 COULD
41.691 BRIGHT
11.038 THE
112.4 BILL
2.145 LIGHT
21.11 AN
32.117 STUCK
3.562 SOCKET
1.46 INTO
43.21 DUCK
28.51 KILOWATT

**Lesson
3.6****Cumulative Practice**

For use before Lesson 3.6

Find the difference.

1. $\frac{2}{3} - \frac{5}{12} = \underline{\hspace{2cm}}$

2. $4\frac{3}{8} - 1\frac{18}{32} = \underline{\hspace{2cm}}$

**Lesson
3.6****Vocabulary Practice**

For use before Lesson 3.6

1. Write what you know about this phrase.

Review: partial products**Lesson
3.6****Prerequisite Skills Practice**

For use before Lesson 3.6

Find the product.

1.
$$\begin{array}{r} 28 \\ \times 14 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 324 \\ \times 21 \\ \hline \end{array}$$

Lesson
3.6
Extra Practice

Copy the problem and place the decimal point in the product.

$$\begin{array}{r} 1. \quad 2.6 \\ \times \quad 9 \\ \hline 234 \end{array}$$

$$\begin{array}{r} 2. \quad 5.012 \\ \times \quad 4 \\ \hline 20048 \end{array}$$

$$\begin{array}{r} 3. \quad 9.45 \\ \times \quad 5 \\ \hline 4725 \end{array}$$

Multiply. Check your answer.

$$\begin{array}{r} 4. \quad 0.3 \\ \times \quad 4 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 0.05 \\ \times \quad 9 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad 0.34 \\ \times \quad 7 \\ \hline \end{array}$$

$$7. \quad 5.4 \times 2$$

$$8. \quad 6 \times 3.2$$

$$9. \quad 1.46 \times 5$$

$$10. \quad 8.4 \times 3$$

$$11. \quad 6.2 \times 7$$

$$12. \quad 19.4 \times 8$$

$$13. \quad 5.12 \times 23$$

$$14. \quad 1.3 \times 3$$

$$15. \quad 8 \times 5.1$$

$$16. \quad 6.13 \times 15$$

$$17. \quad 14 \times 0.34$$

$$18. \quad 100 \times 0.092$$

$$19. \quad 2.024 \times 135$$

$$20. \quad 0.032 \times 164$$

$$21. \quad 2.965 \times 38$$

22. Your friend finds the product. Is your friend correct?
Explain your reasoning.

$\begin{array}{r} 0.004 \\ \times \quad 8 \\ \hline 0.32 \end{array}$

Evaluate the expression.

$$23. \quad 3.2 \times 2 + 12$$

$$24. \quad 7 + 8 \times 1.5$$

$$25. \quad 3.24 \times 4 \times 100$$

26. An international long-distance phone call costs \$0.79 per minute. How much will a 22-minute call cost?
27. The area of Pennsylvania is 44,742 square miles. The area of Georgia is about 1.29 times larger than Pennsylvania. What is the area of Georgia to the nearest square mile?
28. You buy 3 baskets of fruit. Each basket costs \$5.65. You hand the cashier a \$20 bill. How much change will you receive?

Lesson
3.6**Reteach****EXAMPLE** Multiplying Decimals and Whole Numbers**a. Find 2×4.31 .**

When multiplying a decimal by a whole number, first multiply as you would with whole numbers.

$$\begin{array}{r} 4.31 \\ \times \quad 2 \\ \hline 862 \end{array}$$

Then count the total number of decimal places in the factors. This will be the number of decimal places in the product.

$$\begin{array}{r} 4.31 \longleftarrow 2 \text{ decimal places} \\ \times \quad 2 \\ \hline 8.62 \longleftarrow \text{Count 2 decimal places right to left.} \end{array}$$

► So, the product is 8.62.

b. Find 3×1.012 .

First, multiply as you would with whole numbers.

$$\begin{array}{r} 1.012 \\ \times \quad 3 \\ \hline 3036 \end{array}$$

Then count the total number of decimal places in the factors. This will be the number of decimal places in the product.

$$\begin{array}{r} 1.012 \longleftarrow 3 \text{ decimal places} \\ \times \quad 3 \\ \hline 3.036 \longleftarrow \text{Count 3 decimal places right to left.} \end{array}$$

► So, the product is 3.036.

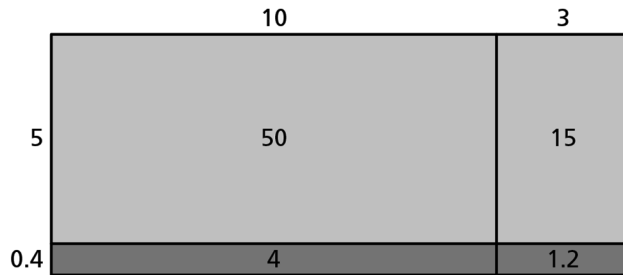
Lesson 3.6 **Reteach** (continued)

Another way to multiply a decimal and a whole number is to use partial products.

EXAMPLE Using Partial Products to Multiply

Find 13×5.4 .

$$\begin{array}{r}
 13 \\
 \times 5.4 \\
 \hline
 1.2 \quad \text{Multiply tenths by ones.} \\
 4 \quad \text{Multiply tenths by tens.} \\
 15 \quad \text{Multiply ones by ones.} \\
 + 50 \quad \text{Multiply ones by tens.} \\
 \hline
 70.2 \quad \text{Add the partial products.}
 \end{array}$$



► So, the product is 70.2.

EXAMPLE Inserting Zeros in the Product

Find 4×0.013 .

First, multiply as you would with whole numbers. Then count the total number of decimal places in the factors. This will be the number of decimal places in the product.

$$\begin{array}{r}
 1 \\
 0.013 \quad \leftarrow \text{3 decimal places} \\
 \times 4 \\
 \hline
 0.052 \quad \leftarrow \text{To have 3 decimal places, insert zeros to the left of 52.}
 \end{array}$$

► So, the product is 0.052.

Multiply.

1. $\begin{array}{r} 3.1 \\ \times 6 \\ \hline \end{array}$

2. $\begin{array}{r} 5.2 \\ \times 4 \\ \hline \end{array}$

3. $\begin{array}{r} 0.41 \\ \times 38 \\ \hline \end{array}$

4. $\begin{array}{r} 6.27 \\ \times 13 \\ \hline \end{array}$

5. 5×0.048

6. 3×0.059

7. 0.086×2

8. 0.0098×8

9. 35×4.337

10. 60×15.13

11. 10×0.0075

12. 101×2.674

Lesson
3.6**Enrichment and Extension****What Does Money Weigh?**

Coin	Thickness (mm)	Weight (oz)	Coins per Roll
Penny	1.55	0.088	50
Nickel	1.95	0.176	40
Dime	1.35	0.08	50
Quarter	1.75	0.2	40

1. How much taller is a roll of nickels than a roll of dimes?
2. How much taller is a roll of pennies than a roll of quarters?
3. You have 6 rolls of pennies and 4 rolls of quarters.
 - a. How much money do you have?
 - b. How much do the coins weigh?
4. You have 1 roll of nickels, 4 rolls of dimes, and 2 rolls of quarters. Your friend has 3 rolls of pennies, 2 rolls of nickels, 1 roll of dimes, and 3 rolls of quarters.
 - a. Who has more money? by how much?
 - b. Whose coins weigh more? by how much?



3.6 Puzzle Time

What Is There More Of The Less You See?

Write the letter of each answer in the box containing the exercise number.

Multiply.

$$\begin{array}{r} 1. \quad 2.86 \\ \times \quad 7 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 5.17 \\ \times \quad 12 \\ \hline \end{array}$$

$$3. \quad 4.002 \times 5$$

$$4. \quad 6 \times 3.8025$$

$$\begin{array}{r} 5. \quad 0.41 \\ \times \quad 38 \\ \hline \end{array}$$

$$6. \quad 16 \times 4.14$$

$$7. \quad 24 \times 0.62$$

$$8. \quad 2.14 \times 9$$

Answers

K. 14.88

D. 19.26

N. 15.58

A. 20.01

S. 20.02

E. 22.815

R. 62.04

S. 66.24

8	3	2	7	5	4	1	6
---	---	---	---	---	---	---	---

**Lesson
3.7****Cumulative Practice**

For use before Lesson 3.7

Find the product.

1. $119 \times 100 = \underline{\hspace{2cm}}$

2. $22 \times 100 = \underline{\hspace{2cm}}$

**Lesson
3.7****Vocabulary Practice**

For use before Lesson 3.7

1. Write what you know about this word.

Review: product

**Lesson
3.7****Prerequisite Skills Practice**

For use before Lesson 3.7

Multiply.

1.
$$\begin{array}{r} 28 \\ \times 14 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 324 \\ \times 21 \\ \hline \end{array}$$

Lesson
3.7
Extra Practice

Copy the problem and place the decimal point in the product.

$$\begin{array}{r} 1. \quad 2.6 \\ \times 7.9 \\ \hline 2054 \end{array}$$

$$\begin{array}{r} 2. \quad 8.83 \\ \times 0.42 \\ \hline 37086 \end{array}$$

$$\begin{array}{r} 3. \quad 9.44 \\ \times 1.95 \\ \hline 184080 \end{array}$$

Multiply.

$$\begin{array}{r} 4. \quad 0.3 \\ \times 0.7 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 0.08 \\ \times 0.9 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad 0.34 \\ \times 0.8 \\ \hline \end{array}$$

$$7. \quad 6.1 \times 3.2$$

$$8. \quad 8.2 \times 5.1$$

$$9. \quad 1.4 \times 0.34$$

$$10. \quad 8.4 \times 3.2$$

$$11. \quad 6.2 \times 7.4$$

$$12. \quad 1.3 \times 3.8$$

$$13. \quad 5.4 \times 0.22$$

$$14. \quad 6.13 \times 1.5$$

$$15. \quad 1.2 \times 0.092$$

$$16. \quad 1.52 \times 0.5$$

$$17. \quad 19.4 \times 4.8$$

$$18. \quad 3.12 \times 0.23$$

$$19. \quad 2.024 \times 1.05$$

$$20. \quad 0.0032 \times 16.4$$

$$21. \quad 2.725 \times 3.15$$

22. Your friend finds the product of 0.005 and 8.1. Is your friend correct? Explain your reasoning.

$\begin{array}{r} 0.005 \\ \times 8.1 \\ \hline 0.405 \end{array}$
--

Evaluate the expression.

$$23. \quad 3.4 \times 1.5 + 9$$

$$24. \quad 5.21(4.3 + 1.25)$$

$$25. \quad 0.8 \times 3.14 + 12.027$$

26. The floor of a rectangular chicken pen has a length of 15.25 feet and a width of 10.25 feet. What is the area of the floor of the chicken pen?
27. A dollar bill has a length of 6.14 inches and a width of 2.61 inches. What is the area of the dollar bill?
28. You buy 2.8 pounds of pears and 5.2 pounds of potatoes. A store offers pears for \$1.65 per pound and potatoes for \$1.25 per pound. You hand the cashier a \$20 bill. How much change will you receive?

Lesson
3.7
Reteach
EXAMPLE Multiplying Decimals

a. Find 2.4×7.2 .

When multiplying a decimal by a decimal, first multiply as you would with whole numbers.

$$\begin{array}{r} ^2 2.4 \\ \times 7.2 \\ \hline 48 \\ 168 \\ \hline 1728 \end{array}$$

Then count the total number of decimal places in the factors. This will be the number of decimal places in the product.

$$\begin{array}{r} 2.4 \longleftarrow 1 \text{ decimal place} \\ \times 7.2 \longleftarrow + 1 \text{ decimal place} \\ \hline 48 \\ 168 \\ \hline 17.28 \longleftarrow 2 \text{ decimal places} \end{array}$$

► So, the product is 17.28.

b. Find 2.321×4.1 .

First, multiply as you would with whole numbers.

$$\begin{array}{r} ^1 2.321 \\ \times 4.1 \\ \hline 2321 \\ 9284 \\ \hline 95161 \end{array}$$

Then count the total number of decimal places in the factors. This will be the number of decimal places in the product.

$$\begin{array}{r} 2.321 \longleftarrow 3 \text{ decimal places} \\ \times 4.1 \longleftarrow + 1 \text{ decimal place} \\ \hline 2321 \\ 9284 \\ \hline 9.5161 \longleftarrow 4 \text{ decimal places} \end{array}$$

► So, the product is 9.5161.

Lesson
3.7
Reteach (continued)

EXAMPLE Using Partial Products to Multiply Decimals

 Find 2.3×8.4 .

$$\begin{array}{r}
 2.3 \\
 \times 8.4 \\
 \hline
 0.12 \quad \text{Multiply tenths by tenths.} \\
 0.8 \quad \text{Multiply tenths by tens.} \\
 2.4 \quad \text{Multiply ones by tenths.} \\
 + 16 \quad \text{Multiply ones by ones.} \\
 \hline
 19.32 \quad \text{Add the partial products.}
 \end{array}$$

► So, the product is 19.32.

Multiply.

1. 4.1×9.1

2. 1.3×0.65

3. 2.8×7.32

4. 3.17×0.25

5. 0.028×0.4

6. 0.016×6.1

7.
$$\begin{array}{r}
 0.4 \\
 \times 0.6 \\
 \hline
 \end{array}$$

8.
$$\begin{array}{r}
 0.71 \\
 \times 0.3 \\
 \hline
 \end{array}$$

9.
$$\begin{array}{r}
 0.0028 \\
 \times 0.003 \\
 \hline
 \end{array}$$

10. 4.524×3.19

11. 5.27×0.0061

12. 5.261×5.324

Lesson
3.7

Enrichment and Extension

Placing the Decimal Point

Fill in the blanks and place a decimal point in the first factor to complete the statement.

$$\begin{array}{r}
 1. \quad \square 6 \\
 \times 9.\square \\
 \hline
 33\square \\
 5\square 4 \\
 \hline
 5\square.7 6
 \end{array}$$

$$\begin{array}{r}
 2. \quad 78\square \\
 \times \square.4 \\
 \hline
 312\square \\
 23\square 6 \\
 \hline
 26.\square 8 8
 \end{array}$$

$$\begin{array}{r}
 3. \quad 2\square 15 \\
 \times \square.3\square \\
 \hline
 846\square \\
 \square 345 \\
 \hline
 1\square 9 20 \\
 \hline
 17.6\square 9 10
 \end{array}$$

$$\begin{array}{r}
 4. \quad 7\square 4 \\
 \times \square.5 \\
 \hline
 362\square \\
 5\square 9 2 \\
 \hline
 61.\square 4 0
 \end{array}$$

$$\begin{array}{r}
 5. \quad \square 5 2 \\
 \times \square.8 \\
 \hline
 \square 8 1 6 \\
 35\square \\
 \hline
 63.\square 6
 \end{array}$$

$$\begin{array}{r}
 6. \quad \square 3 1\square \\
 \times 4.\square 6 \\
 \hline
 1\square 8 9 0 \\
 463\square \\
 \hline
 \square 2 6 0 \\
 \hline
 9.86190
 \end{array}$$

3.7 Puzzle Time

How Did The Goblin Football Player Score The Winning Touchdown?

Write the letter of each answer in the box containing the exercise number.

Multiply.

- | | |
|---|---|
| 1. 3.8×8.1 | 2. 5.1×2.8 |
| 3. 5.08×7.2 | 4. 2.24×3.13 |
| 5. 2.563×3.3 | 6. 0.024×8.3 |
| 7. 0.072×1.43 | 8. 0.0029×6.27 |
| 9. $\begin{array}{r} 0.8 \\ \times 0.3 \\ \hline \end{array}$ | 10. $\begin{array}{r} 0.07 \\ \times 0.2 \\ \hline \end{array}$ |
| 11. $\begin{array}{r} 0.006 \\ \times 0.04 \\ \hline \end{array}$ | 12. $\begin{array}{r} 0.0009 \\ \times 0.08 \\ \hline \end{array}$ |
| 13. $\begin{array}{r} 0.003 \\ \times 0.9 \\ \hline \end{array}$ | 14. $\begin{array}{r} 0.0007 \\ \times 0.005 \\ \hline \end{array}$ |
| 15. 2.25×4.46 | 16. 2.042×6.408 |

Evaluate the expression.

17. $3.1 \times 5.1 + 9$ 18. $8.2(2.3 + 1.7)$
19. $3.4 \times 3.3 + 7.645$ 20. $9.645 \times 3.1 \times 10$
21. You earn \$9.50 per hour cutting a lawn. It takes you 2.5 hours to cut the lawn. You cut the same lawn each week for 11 weeks. How much money, in dollars, do you earn in all?

Answers

O. 30.78	R. 0.24
N. 0.014	E. 0.00024
H. 0.000072	I. 0.0027
L. 298.995	H. 0.1992
V. 0.018183	U. 261.25
O. 0.0000035	T. 32.8
E. 24.81	A. 18.865
G. 14.28	E. 0.10296
H. 10.035	N. 36.576
R. 7.0112	E. 8.4579
L. 13.085136	

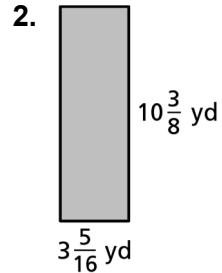
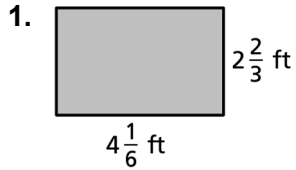
6	17		9	19	3		1	8	11	4		18	12	5		2	15	14	21	16		20	13	10	7
---	----	--	---	----	---	--	---	---	----	---	--	----	----	---	--	---	----	----	----	----	--	----	----	----	---

Lesson
3.8

Cumulative Practice

For use before Lesson 3.8

Find the perimeter.



Lesson
3.8

Vocabulary Practice

For use before Lesson 3.8

1. Write what you know about this word.

Preview: remainder

Lesson
3.8

Prerequisite Skills Practice

For use before Lesson 3.8

1. $24 \div 3$

2. $36 \div 9$

Lesson
3.8
Extra Practice

Divide. Check your answer.

1. $195 \div 15$

2. $640 \div 32$

3. $8534 \div 28$

4. $5429 \div 67$

5. $\frac{2340}{20}$

6. $\frac{698}{44}$

7. $537 \div 26$

8. $428 \div 13$

9. $\frac{7072}{136}$

10. $67,439 \div 52$

11. $\frac{2673}{189}$

12. $\frac{76,152}{456}$

13. Your friend evaluates the quotient. Is your friend correct? Explain your reasoning.

$ \begin{array}{r} 508 \text{ R}15 \\ 16 \overline{) 943} \\ \underline{-80} \\ 14 \\ \underline{-0} \\ 143 \\ \underline{-128} \\ 15 \end{array} $
--

14. Chantal has 458 pennies. She puts 26 pennies in each jar. How many jars does Chantal fill? How many pennies are left over?
15. A rectangle has an area of 1905 square inches. The length is 508 inches. What is the width of the rectangle?
16. Hector read a total of 735 pages in 28 days. Hector read about the same number of pages each day. How many pages did Hector read each day?
17. Karena's kitchen floor has an area of 45,000 square inches. There are 144 square inches in 1 square foot. How many square feet is Karena's floor?
18. A subway train can hold 792 people. On Tuesday, 56,941 people rode the subway. How many trains could 56,941 people fill? How many people would be left over?
19. Paulina wants to save a total of \$11,700. She saves \$325 per month. How many months does it take Paulina to reach her goal?

Lesson
3.8

Reteach

EXAMPLE Dividing Whole Numbers

a. Find $360 \div 5$.

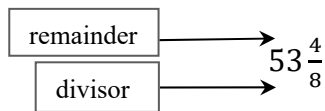
$5 \overline{)360}$	$= 5 \times 70$	Partial Quotients ↓ 70
$\underline{-350}$		
10		
$\underline{-10}$	$= 5 \times 2$	$+ 2$
0		$\underline{72}$

► So, $360 \div 5 = 72$.

b. Find $428 \div 8$.

$53 \text{ R}4$	
$8 \overline{)428}$	There are five groups of 8 in 42.
$\underline{-40}$	
28	There are three groups of 8 in 28.
$\underline{-24}$	
4	The remainder is 4.

The remainder can be written as a fraction using the divisor as the denominator.
The quotient becomes a mixed number.



► So, the quotient is $53 \frac{4}{8}$.

Lesson
3.8**Reteach (continued)**

Divide.

1. $88 \div 8$

3. $51 \div 17$

5. $\frac{250}{25}$

7. $\frac{240}{10}$

9. $231 \div 5$

11. $911 \div 8$

13. $563 \div 87$

15. $1856 \div 83$

17. $\frac{3159}{15}$

19. $\frac{3390}{72}$

21. $\frac{7275}{58}$

23. $\frac{6895}{93}$

25. $17,865 \div 38$

27. $\frac{28,636}{91}$

29. $\frac{56,400}{89}$

2. $99 \div 3$

4. $144 \div 12$

6. $44 \div 2$

8. $375 \div 50$

10. $389 \div 9$

12. $612 \div 72$

14. $9041 \div 86$

16. $737 \div 82$

18. $391 \div 21$

20. $21,393 \div 56$

22. $100,442 \div 580$

24. $11,670 \div 216$

26. $40,951 \div 470$

28. $\frac{25,925}{62}$

30. $36,654 \div 621$

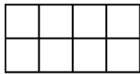
Lesson
3.8

Enrichment and Extension

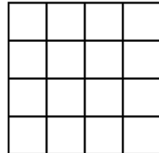
Pack and Ship

Jade works for a company that manufactures drinking glasses. She has 6120 glasses that she needs to pack into boxes for shipping. The box sizes are shown.

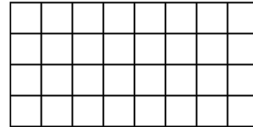
8-glass box



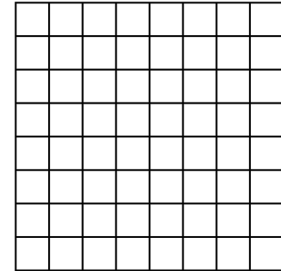
16-glass box



32-glass box



64-glass box



Jade’s goal is to use the least number of boxes to ship all the glasses.

1. How can Jade determine the least number of boxes she needs to pack all 6120 glasses?

2. How many of each box will Jade need to pack the glasses in the least number of boxes? Explain.

3. Find two other ways Jade could pack all the glasses into the given boxes.

4. Is it possible to use only one type of box to pack all the glasses? Why or why not? If it is possible, describe below.

3.8 Puzzle Time

What Happens When a Chimpanzee Sprains His Ankle?

Write the letter of each answer in the box containing the exercise number.

Divide.

- 1. $159 \div 12$
- 2. $139 \div 20$
- 3. $2084 \div 42$
- 4. $\frac{411}{79}$
- 5. $\frac{3708}{62}$
- 6. $3464 \div 77$
- 7. $1872 \div 98$
- 8. $19,260 \div 31$
- 9. $56,241 \div 94$
- 10. $\frac{17,865}{38}$
- 11. $363 \div 52$
- 12. $209 \div 42$
- 13. $\frac{6845}{47}$
- 14. $\frac{4239}{111}$
- 15. $2717 \div 210$
- 16. $5632 \div 402$
- 17. $12,488 \div 230$
- 18. $\frac{10,368}{472}$
- 19. The area of a rectangular mirror is 986 square centimeters. The width is 50 centimeters. What is the length in centimeters?

Answers

<p>M. $13\frac{1}{4}$</p> <p>E. $12\frac{197}{210}$</p> <p>S. $6\frac{19}{20}$</p> <p>C. $145\frac{30}{47}$</p> <p>Y. $59\frac{25}{31}$</p> <p>H. $4\frac{41}{42}$</p> <p>G. $598\frac{29}{94}$</p> <p>W. $38\frac{7}{37}$</p> <p>N. $470\frac{5}{38}$</p> <p>E. $49\frac{13}{21}$</p>	<p>A. $621\frac{9}{31}$</p> <p>T. $5\frac{16}{79}$</p> <p>R. $21\frac{57}{59}$</p> <p>E. $14\frac{2}{201}$</p> <p>N. $19\frac{5}{49}$</p> <p>E. $54\frac{34}{115}$</p> <p>H. $19\frac{18}{25}$</p> <p>O. $6\frac{51}{52}$</p> <p>K. $44\frac{76}{77}$</p>
--	---

12	3		9	15	4	2		8		1	11	10	6	16	5		14	18	17	7	13	19
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Lesson
3.9**Cumulative Practice**

For use before Lesson 3.9

Find the product.

1. $3.29 \times 25 = \underline{\hspace{2cm}}$

2. $101 \times 4.6 = \underline{\hspace{2cm}}$

Lesson
3.9**Vocabulary Practice**

For use before Lesson 3.9

1. Write what you know about this phrase.

Review: partial quotients**Lesson**
3.9**Prerequisite Skills Practice**

For use before Lesson 3.9

Find the quotient.

1. $504 \div 84$

2. $5913 \div 73$

Lesson
3.9
Extra Practice

Divide. Check your answer.

1. $7 \overline{)1.4}$

2. $5 \overline{)2.65}$

3. $6 \overline{)24.6}$

4. $21.6 \div 9$

5. $53.6 \div 8$

6. $0.256 \div 4$

7. $6.6 \div 6$

8. $8.551 \div 17$

9. $112.5 \div 25$

10. $5.125 \div 25$

11. $49.28 \div 16$

12. $657.04 \div 20$

13. Your friend evaluates the quotient. Is your friend correct? Explain your reasoning.

$\begin{array}{r} 2.7 \\ 5 \overline{)1.35} \\ - 10 \\ \hline 35 \\ - 35 \\ \hline 0 \end{array}$

14. A soccer team buys 18 new uniforms for \$580.32. How much does each uniform cost?
15. You spend \$406.28 to buy 4 new tires for your truck. How much does each tire cost?
16. You and three of your friends go parasailing for \$128.40. You split the cost evenly. How much does each person pay?
17. An MP3 player can hold 350 hours of music. Each song on an MP3 player is about 2.5 minutes in length. About how many songs can the MP3 player store?
18. Find the missing digits.

$$\begin{array}{r} \square .26 \\ 4 \overline{)33.0\square} \end{array}$$

Lesson
3.9

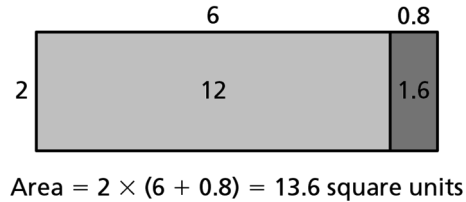
Reteach

EXAMPLE Using Partial Quotients to Divide

Find $13.6 \div 2$.

$$\begin{array}{r}
 2 \overline{)13.6} \\
 \underline{-12} \\
 1.6 \\
 \underline{-1.6} \\
 0
 \end{array}
 = 2 \times 6 + 2 \times 0.8$$

Partial Quotients
↓
6
+ 0.8
6.8

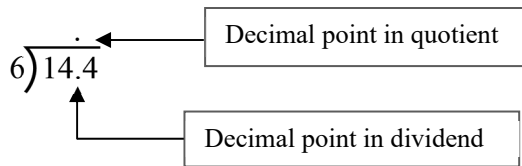


► So, $13.6 \div 2 = 6.8$.

EXAMPLE Dividing Decimals by Whole Numbers

Find $14.4 \div 6$.

When dividing a decimal by a whole number, first place the decimal point in the quotient directly above the decimal point in the dividend.



Then divide as you would with whole numbers, carefully aligning the digits. Continue dividing until there is no remainder.

$$\begin{array}{r}
 2.4 \\
 6 \overline{)14.4} \\
 \underline{-12} \\
 24 \\
 \underline{-24} \\
 0
 \end{array}$$

There are two groups of 6 in 14.
There are four groups of 6 in 24.
There is no remainder.

► So, the quotient is 2.4.

Lesson
3.9**Reteach** (continued)**Divide.**

1. $8 \overline{)4.8}$

2. $5 \overline{)34.5}$

3. $2 \overline{)11.8}$

4. $2 \overline{)8.2}$

5. $15.05 \div 5$

6. $24.08 \div 4$

7. $98.2 \div 2$

8. $65.03 \div 7$

9. $27.96 \div 3$

10. $184.8 \div 4$

11. $98.26 \div 2$

12. $335.75 \div 5$

13. $70.05 \div 15$

14. $297.6 \div 12$

15. $633.6 \div 18$

16. $333.6 \div 24$

17. $0.965 \div 5$

18. $0.256 \div 8$

19. $0.114 \div 3$

20. $8.464 \div 4$

21. $13.545 \div 7$

22. $25.428 \div 6$

23. $56.916 \div 9$

24. $94.248 \div 12$

Lesson
3.9

Enrichment and Extension

Find the Missing Digit

Find the missing digit in the expression.

$$1. \begin{array}{r} 8.1 \\ \square 9 \overline{)396.9} \end{array}$$

R

$$2. \begin{array}{r} 3.5 \\ 21\square \overline{)759.5} \end{array}$$

A

$$3. \begin{array}{r} 7.328 \\ \square 7 \overline{)710.816} \end{array}$$

H

$$4. \begin{array}{r} 6.42 \\ 1\square \overline{)115.56} \end{array}$$

Y

$$5. \begin{array}{r} 0.407 \\ 5\square 2 \overline{)224.664} \end{array}$$

T

$$6. \begin{array}{r} 2.01 \\ 7\square 6 \overline{)1459.26} \end{array}$$

B

$$7. \begin{array}{r} 9.56 \\ 10\square 1 \overline{)9856.36} \end{array}$$

E

$$8. \begin{array}{r} 37.14 \\ 2\square \overline{)779.94} \end{array}$$

N

$$9. \begin{array}{r} 0.048 \\ 3\square 75 \overline{)176.4} \end{array}$$

P

Use the values of the digits from Exercises 1–9 to find the answer to the riddle.

10. *I have a head and a tail, but no body. What am I?*

$\frac{\quad}{7}$ $\frac{\quad}{6}$ $\frac{\quad}{3}$ $\frac{\quad}{1}$ $\frac{\quad}{1}$ $\frac{\quad}{8}$

11. *I am light as a feather, but no one can hold me for long. What am I?*

$\frac{\quad}{7}$ $\frac{\quad}{2}$ $\frac{\quad}{4}$ $\frac{\quad}{3}$ $\frac{\quad}{7}$ $\frac{\quad}{5}$ $\frac{\quad}{9}$

Find the width of the rectangle.

12. $A = 12 \text{ m}^2$



4.8 m

13. $A = 11.25 \text{ m}^2$



3.75 m

3.9 Puzzle Time

Where Do Stinging Insects Go When They're Sick?

Write the letter of each answer in the box containing the exercise number.

Divide.

1. $3 \overline{)12.6}$

2. $5 \overline{)66.5}$

3. $8 \overline{)49.6}$

4. $2 \overline{)37.72}$

5. $10 \overline{)26.007}$

6. $9 \overline{)116.37}$

7. $3 \overline{)0.258}$

8. $22.32 \div 8$

9. $0.588 \div 6$

10. $78.44 \div 4$

11. $86.8 \div 7$

12. $7.2 \div 24$

13. $51.68 \div 20$

Answers	
H. 0.086	O. 13.3
W. 2.584	T. 2.79
T. 19.61	S. 0.098
T. 2.6007	I. 6.2
A. 12.93	L. 18.86
E. 0.3	P. 12.4
A. 4.2	

5	2		8	7	12		13	6	9	11	3	10	1	4
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**Lesson
3.10****Cumulative Practice**

For use before Lesson 3.10

Find the mean of the data.

1. 13, 10, 15, 7, 16, 13, 12, 15, 13, 16
2. 23, 14, 22, 31, 28, 20, 21, 25, 22, 24

**Lesson
3.10****Vocabulary Practice**

For use before Lesson 3.10

1. Write what you know about this word.

Review: estimate

**Lesson
3.10****Prerequisite Skills Practice**

For use before Lesson 3.10

Multiply.

1. 7.5×10
2. 8.34×100

Lesson
3.10**Extra Practice****Divide. Check your answer.**

1. $0.5 \overline{)13.5}$

2. $2.5 \overline{)45.5}$

3. $5.6 \overline{)16.8}$

4. $8.82 \div 0.6$

5. $75 \div 2.5$

6. $4.08 \div 1.2$

7. $2.94 \div 0.21$

8. $90.2 \div 0.22$

9. $357 \div 0.007$

10. $0.475 \div 0.05$

11. $9.674 \div 0.7$

12. $6.497 \div 8.9$

13. $2.299 \div 9.5$

14. $59.04 \div 1.5$

15. $6.7204 \div 0.16$

Divide. Round to the nearest hundredth.

16. $25.6 \div 0.7$

17. $19.43 \div 0.003$

18. $56.22 \div 72$

Evaluate the expression.

19. $12.24 \div 3.4 \times 3$

20. $10.56 \times 3.2 \div 0.15$

21. $18.6 \div 3.2 + 15.7$

22. $9.3 \div 3.1 + 4.6$

23. $36.39 \div 1.5 - 8.4$

24. $332.332 \div (12 + 3.4)$

25. A piece of paper is 0.0075 inch thick. How many sheets of paper will be in a stack that is 2.25 inches high?
26. You have 4.5 meters of floral wire. You use 0.25 meter of wire to make each floral arrangement. How many arrangements can you make?
27. A gardener has 162.5 pounds of sunflower seeds. The gardener repackages the seeds into 12.5-pound bags. How many 12.5-pound bags can the gardener fill?

Lesson
3.10
Reteach
EXAMPLE Dividing Decimals

a. Find $5.16 \div 1.72$.

When dividing a decimal by a decimal, multiply the divisor *and* the dividend by a power of 10 to make the divisor a whole number.

$$1.72 \times 100 = 172$$

$$1.72 \overline{) 5.16}$$

$$5.16 \times 100 = 516$$

Place the decimal point in the quotient above the decimal point in the dividend and divide as you would with whole numbers. Continue until there is no remainder.

$$\begin{array}{r} 3. \\ 172 \overline{) 516} \\ - 516 \\ \hline 0 \end{array}$$

There are three groups of 172 in 516.

There is no remainder.

► So, the quotient is 3.

b. Find $2.64 \div 1.2$.

Multiply the divisor *and* the dividend by a power of 10 to make the divisor a whole number.

$$1.2 \times 10 = 12$$

$$1.2 \overline{) 2.64}$$

$$2.64 \times 10 = 26.4$$

Place the decimal point in the quotient above the decimal point in the dividend and divide as you would with whole numbers. Continue until there is no remainder.

$$\begin{array}{r} 2.2 \\ 12 \overline{) 26.4} \\ - 24 \\ \hline 24 \\ - 24 \\ \hline 0 \end{array}$$

There are two groups of 12 in 26.

There are two groups of 12 in 24.

There is no remainder.

► So, the quotient is 2.2.

Lesson
3.10
Reteach (continued)

EXAMPLE Inserting Zeros in the Dividend and the Quotient

Find $56 \div 0.08$.

 Multiply the divisor *and* the dividend by a power of 10 to make the divisor a whole number.

$$0.08 \times 100 = 8 \qquad 0.08 \overline{)56.00}$$

$$56 \times 100 = 5600$$

Then divide as you would with whole numbers.

$$\begin{array}{r} 700 \\ 8 \overline{)5600} \\ \underline{-56} \\ 000 \end{array}$$

There are seven groups of 8 in 56.

 Because $0 \div 8 = 0$, insert a zero in the quotient. Repeat this step again for the other zero in the dividend.

► So, the quotient is 700.

Divide.

1. $1.8 \overline{)40.32}$

2. $8.1 \overline{)202.5}$

3. $9.52 \div 0.07$

4. $65.92 \div 6.4$

5. $0.208 \div 0.013$

6. $0.25 \overline{)27.4}$

7. $74.88 \div 0.036$

8. $279 \div 0.45$

9. $1.0656 \div 0.0018$

10. $0.16167 \div 0.0051$

11. $3.93042 \div 0.039$

12. $4.84738 \div 0.106$

Lesson
3.10
Enrichment and Extension
Planning an International Trip

You are planning an international trip to Canada, Norway, and England. The table shows how much each U.S. dollar is worth in Canadian dollars, Norwegian kroner, and British pounds.

Foreign Currency
1.33 Canadian dollar (CAD)
10.19 Norwegian krone (NOK)
0.88 British pound (GBP)

1. First, you plan to visit Niagara Falls, Canada.

- A hotel in Niagara Falls costs 168.91 Canadian dollars per night. You plan to stay at the hotel for 2 nights. Find the total cost to stay at the hotel in U.S. dollars.
- While in Niagara Falls, you and your family want to ride the Maid of the Mist boat tour. The table shows the price for each adult ticket and each child ticket. How much will 2 adult tickets and 3 child tickets cost in U.S. dollars? Round to the nearest hundredth.

Adult	Child
33.58 CAD	19.62 CAD

2. After Canada, you plan to visit Norway to see the Northern Lights. The total cost to stay at a hotel in Norway for 3 nights is 4340.94 Norwegian kroner. How much does each night at the hotel cost in U.S. dollars?

3. After Norway, you plan to visit London, England.

- You are comparing the costs for two different hotels in London. Hotel A costs 271.04 British pounds for each night you stay at the hotel. Hotel B costs 280.95 U.S. dollars for each night you stay at the hotel. Which hotel is cheaper? How many U.S. dollars will you save each night by staying at the cheaper hotel?
- You want to have a special dinner in London. The total cost for the dinner is 149.82 British pounds. How much will the dinner cost in Canadian dollars? Round to the nearest hundredth.

3.10 Puzzle Time

Why Did The Young Lady Go Buzz Buzz In The Hallway?

Write the letter of each answer in the box containing the exercise number.

Divide.

- | | |
|----------------------------|----------------------------|
| 1. $5 \overline{)39.5}$ | 2. $8 \overline{)33.6}$ |
| 3. $17 \overline{)19.618}$ | 4. $12 \overline{)52.8}$ |
| 5. $45.87 \div 6$ | 6. $51.288 \div 4$ |
| 7. $15.75 \div 18$ | 8. $3.2 \div 0.4$ |
| 9. $0.07 \overline{)0.84}$ | 10. $3.2 \overline{)41.6}$ |
| 11. $4.9 \overline{)68.6}$ | 12. $0.5 \overline{)17.7}$ |
| 13. $50.56 \div 0.8$ | 14. $22.4 \div 0.04$ |
| 15. $33.6 \div 0.3$ | 16. $0.861 \div 0.7$ |
17. The perimeter of each face of a Rubik’s cube is 22.2 centimeters. What is the length (in centimeters) of an edge of a Rubik’s cube?

Answers	
T. 7.645	A. 12
S. 13	S. 7.9
E. 4.2	H. 12.822
E. 560	A. 1.23
T. 5.55	E. 14
S. 63.2	U. 1.154
E. 0.875	D. 112
N. 35.4	B. 8
W. 4.4	

13	6	11		4	16	1		9		8	2	14		10	17	3	15	7	12	5
----	---	----	--	---	----	---	--	---	--	---	---	----	--	----	----	---	----	---	----	---