

# Eureka Math™

## Grade 5, Module 4

### Student File\_A

*Contains copy-ready classwork and homework  
as well as templates (including cut outs)*

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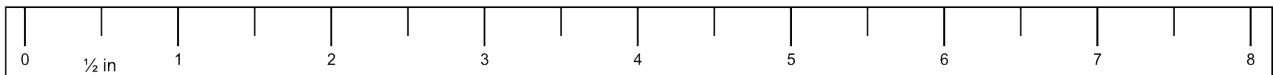
This book may be purchased from the publisher at [eureka-math.org](http://eureka-math.org)

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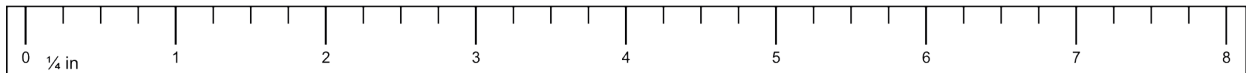
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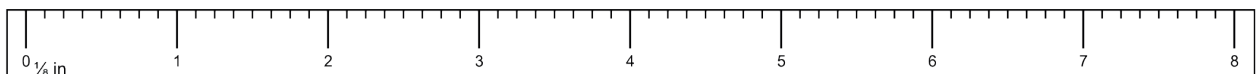
1. Estimate the length of your pencil to the nearest inch. \_\_\_\_\_
2. Using a ruler, measure your pencil strip to the nearest  $\frac{1}{2}$  inch, and mark the measurement with an X above the ruler below. Construct a line plot of your classmates' pencil measurements.



3. Using a ruler, measure your pencil strip to the nearest  $\frac{1}{4}$  inch, and mark the measurement with an X above the ruler below. Construct a line plot of your classmates' pencil measurements.



4. Using a ruler, measure your pencil strip to the nearest  $\frac{1}{8}$  inch, and mark the measurement with an X above the ruler below. Construct a line plot of your classmates' pencil measurements.



5. Use all three of your line plots to complete the following:
- Compare the three plots, and write one sentence that describes how the plots are alike and one sentence that describes how they are different.
  - What is the difference between the measurements of the longest and shortest pencils on each of the three line plots?
  - Write a sentence describing how you could create a more precise ruler to measure your pencil strip.

Name \_\_\_\_\_

Date \_\_\_\_\_

A meteorologist set up rain gauges at various locations around a city and recorded the rainfall amounts in the table below. Use the data in the table to create a line plot using  $\frac{1}{8}$  inches.



- Which location received the most rainfall?
- Which location received the least rainfall?
- Which rainfall measurement was the most frequent?
- What is the total rainfall in inches?

Location	Rainfall Amount (inches)
1	$\frac{1}{8}$
2	$\frac{3}{8}$
3	$\frac{3}{4}$
4	$\frac{3}{4}$
5	$\frac{1}{4}$
6	$1\frac{1}{4}$
7	$\frac{1}{8}$
8	$\frac{1}{4}$
9	1
10	$\frac{1}{8}$

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Draw a picture to show the division. Write a division expression using unit form. Then, express your answer as a fraction. The first one is partially done for you.

a.  $1 \div 5 = 5 \text{ fifths} \div 5 = 1 \text{ fifth} = \frac{1}{5}$

b.  $3 \div 4$

c.  $6 \div 4$

2. Draw to show how 2 children can equally share 3 cookies. Write an equation, and express your answer as a fraction.

3. Carly and Gina read the following problem in their math class:

*Seven cereal bars were shared equally by 3 children. How much did each child receive?*

Carly and Gina solve the problem differently. Carly gives each child 2 whole cereal bars and then divides the remaining cereal bar among the 3 children. Gina divides all the cereal bars into thirds and shares the thirds equally among the 3 children.

- a. Illustrate both girls' solutions.

- b. Explain why they are both right.

4. Fill in the blanks to make true number sentences.

a.  $2 \div 3 = \underline{\quad}$

b.  $15 \div 8 = \underline{\quad}$

c.  $11 \div 4 = \underline{\quad}$

d.  $\frac{3}{2} = \underline{\quad} \div \underline{\quad}$

e.  $\frac{9}{13} = \underline{\quad} \div \underline{\quad}$

f.  $1\frac{1}{3} = \underline{\quad} \div \underline{\quad}$

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Draw a picture to show the division. Express your answer as a fraction.

a.  $1 \div 4$

b.  $3 \div 5$

c.  $7 \div 4$

2. Using a picture, show how six people could share four sandwiches. Then, write an equation and solve.



3. Fill in the blanks to make true number sentences.

a.  $2 \div 7 = \underline{\quad}$

b.  $39 \div 5 = \underline{\quad}$

c.  $13 \div 3 = \underline{\quad}$

d.  $\frac{9}{5} = \underline{\quad} \div \underline{\quad}$

e.  $\frac{19}{28} = \underline{\quad} \div \underline{\quad}$

f.  $1\frac{3}{5} = \underline{\quad} \div \underline{\quad}$

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Fill in the chart. The first one is done for you.

Division Expression	Unit Forms	Improper Fraction	Mixed Numbers	Standard Algorithm (Write your answer in whole numbers and fractional units. Then check.)
a. $5 \div 4$	20 fourths $\div 4$ = 5 fourths	$\frac{5}{4}$	$1\frac{1}{4}$	$\begin{array}{r} 1\frac{1}{4} \\ 4 \overline{) 5} \\ \underline{-4} \\ 1 \end{array}$ Check $4 \times 1\frac{1}{4} = 1\frac{1}{4} + 1\frac{1}{4} + 1\frac{1}{4} + 1\frac{1}{4}$ $= 4 + \frac{4}{4}$ $= 4 + 1$ $= 5$
b. $3 \div 2$	___ halves $\div 2$ = ___ halves		$1\frac{1}{2}$	
c. ___ $\div$ ___	24 fourths $\div 4$ = 6 fourths			$4 \overline{) 6}$
d. $5 \div 2$		$\frac{5}{2}$	$2\frac{1}{2}$	

2. A principal evenly distributes 6 reams of copy paper to 8 fifth-grade teachers.
- How many reams of paper does each fifth-grade teacher receive? Explain how you know using pictures, words, or numbers.
  
  
  
  
  
  
  
  
  
  
  - If there were twice as many reams of paper and half as many teachers, how would the amount each teacher receives change? Explain how you know using pictures, words, or numbers.
3. A caterer has prepared 16 trays of hot food for an event. The trays are placed in warming boxes for delivery. Each box can hold 5 trays of food.
- How many warming boxes are necessary for delivery if the caterer wants to use as few boxes as possible? Explain how you know.
  
  
  
  
  
  
  
  
  
  
  - If the caterer fills a box completely before filling the next box, what fraction of the last box will be empty?

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Fill in the chart. The first one is done for you.

Division Expression	Unit Forms	Improper Fractions	Mixed Numbers	Standard Algorithm (Write your answer in whole numbers and fractional units. Then check.)
a. $4 \div 3$	12 thirds $\div 3$ = 4 thirds	$\frac{4}{3}$	$1\frac{1}{3}$	$\begin{array}{r} 1\frac{1}{3} \\ 3 \overline{) 4} \\ \underline{-3} \\ 1 \end{array}$ <p style="text-align: right;">Check</p> $3 \times 1\frac{1}{3} = 1\frac{1}{3} + 1\frac{1}{3} + 1\frac{1}{3}$ $= 3 + \frac{3}{3}$ $= 3 + 1$ $= 4$
b. $\underline{\quad} \div \underline{\quad}$	$\underline{\quad}$ fifths $\div 5$ = $\underline{\quad}$ fifths		$1\frac{2}{5}$	
c. $\underline{\quad} \div \underline{\quad}$	$\underline{\quad}$ halves $\div 2$ = $\underline{\quad}$ halves			$2 \overline{) 7}$
d. $7 \div 4$		$\frac{7}{4}$		

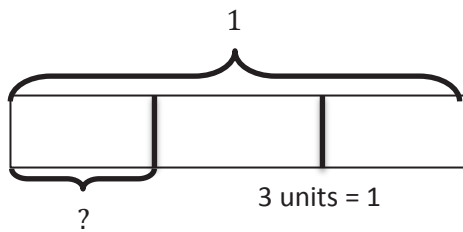


Name \_\_\_\_\_

Date \_\_\_\_\_

1. Draw a tape diagram to solve. Express your answer as a fraction. Show the multiplication sentence to check your answer. The first one is done for you.

a.  $1 \div 3 = \frac{1}{3}$



$$1 \text{ unit} = 1 \div 3$$

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

b.  $2 \div 3 = \underline{\quad}$

$$\begin{array}{r} 0 \frac{1}{3} \\ 3 \overline{) 1} \\ \underline{- 0} \\ 1 \end{array}$$

Check:  $3 \times \frac{1}{3}$

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

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

$$= 1$$

c.  $7 \div 5 = \underline{\quad}$

d.  $14 \div 5 = \underline{\quad}$

2. Fill in the chart. The first one is done for you.

Division Expression	Fraction	Between which two whole numbers is your answer?	Standard Algorithm
a. $13 \div 3$	$\frac{13}{3}$	4 and 5	$  \begin{array}{r}  4 \frac{1}{3} \\  3 \overline{) 13} \\  \underline{-12} \\  1  \end{array}  $
b. $6 \div 7$		0 and 1	$  \begin{array}{r}  7 \overline{) 6}  \end{array}  $
c. $\underline{\quad} \div \underline{\quad}$	$\frac{55}{10}$		$  \begin{array}{r}  \overline{\quad} \\  \underline{\quad}  \end{array}  $
d. $\underline{\quad} \div \underline{\quad}$	$\frac{32}{40}$		$  \begin{array}{r}  40 \overline{) 32}  \end{array}  $

3. Greg spent \$4 on 5 packs of sport cards.
- How much did Greg spend on each pack?
  
  
  
  
  
  
  
  
  
  
  - If Greg spent half as much money and bought twice as many packs of cards, how much did he spend on each pack? Explain your thinking.
4. Five pounds of birdseed is used to fill 4 identical bird feeders.
- What fraction of the birdseed will be needed to fill each feeder?
  
  
  
  
  
  
  
  
  
  
  - How many pounds of birdseed are used to fill each feeder? Draw a tape diagram to show your thinking.
  
  
  
  
  
  
  
  
  
  
  - How many ounces of birdseed are used to fill three bird feeders?

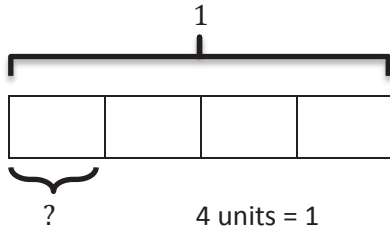


Name \_\_\_\_\_

Date \_\_\_\_\_

1. Draw a tape diagram to solve. Express your answer as a fraction. Show the addition sentence to support your answer. The first one is done for you.

a.  $1 \div 4 = \frac{1}{4}$



$$1 \text{ unit} = 1 \div 4$$

$$= \frac{1}{4}$$

Check:

$$\begin{array}{r} 0 \frac{1}{4} \\ 4 \overline{) 1} \\ \underline{- 0} \\ 1 \end{array}$$

$$\begin{aligned} & 4 \times \frac{1}{4} \\ &= \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} \\ &= \frac{4}{4} \\ &= 1 \end{aligned}$$

b.  $4 \div 5 = \underline{\quad}$

c.  $8 \div 5 = \underline{\quad}$

d.  $14 \div 3 = \underline{\quad}$

2. Fill in the chart. The first one is done for you.

Division Expression	Fraction	Between which two whole numbers is your answer?	Standard Algorithm
a. $16 \div 5$	$\frac{16}{5}$	3 and 4	$\begin{array}{r} 3 \frac{1}{5} \\ 5 \overline{) 16} \\ \underline{-15} \\ 1 \end{array}$
b. $\underline{\quad} \div \underline{\quad}$	$\frac{3}{4}$	0 and 1	$\begin{array}{r} \phantom{0} \\ \phantom{0} \overline{) \phantom{0}} \end{array}$
c. $\underline{\quad} \div \underline{\quad}$	$\frac{7}{2}$		$\begin{array}{r} \phantom{0} \\ 2 \overline{) 7} \end{array}$
d. $\underline{\quad} \div \underline{\quad}$	$\frac{81}{90}$		$\begin{array}{r} \phantom{0} \\ \phantom{0} \overline{) \phantom{0}} \end{array}$

3. Jackie cut a 2-yard spool into 5 equal lengths of ribbon.
- What is the length of each ribbon in yards? Draw a tape diagram to show your thinking.
  
  
  
  
  
  
  
  
  
  
  - What is the length of each ribbon in feet? Draw a tape diagram to show your thinking.
4. Baa Baa, the black sheep, had 7 pounds of wool. If he separated the wool equally into 3 bags, how much wool would be in 2 bags?
5. An adult sweater is made from 2 pounds of wool. This is 3 times as much wool as it takes to make a baby sweater. How much wool does it take to make a baby sweater? Use a tape diagram to solve.



4. Julian has to read 4 articles for school. He has 8 nights to read them. He decides to read the same number of articles each night.
- How many articles will he have to read per night?
  - What fraction of the reading assignment will he read each night?
5. 40 students shared 5 pizzas equally. How much pizza will each student receive? What fraction of the pizza did each student receive?
6. Lillian had 2 two-liter bottles of soda, which she distributed equally between 10 glasses.
- How much soda was in each glass? Express your answer as a fraction of a liter.

- b. Express your answer as a decimal number of liters.
- c. Express your answer as a whole number of milliliters.
7. The Calef family likes to paddle along the Susquehanna River.
- a. They paddled the same distance each day over the course of 3 days, traveling a total of 14 miles. How many miles did they travel each day? Show your thinking in a tape diagram.
- b. If the Calefs went half their daily distance each day but extended their trip to twice as many days, how far would they travel?

Name \_\_\_\_\_

Date \_\_\_\_\_

1. When someone donated 14 gallons of paint to Rosendale Elementary School, the fifth grade decided to use it to paint murals. They split the gallons equally among the four classes.
  - a. How much paint did each class have to paint their mural?
  
  
  
  
  
  
  
  
  
  
  - b. How much paint will three classes use? Show your thinking using words, numbers, or pictures.
  
  
  
  
  
  
  
  
  
  
  - c. If 4 students share a 30-square-foot wall equally, how many square feet of the wall will be painted by each student?
  
  
  
  
  
  
  
  
  
  
  - d. What fraction of the wall will each student paint?

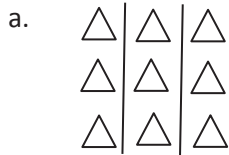
2. Craig bought a 3-foot-long baguette and then made 4 equally sized sandwiches with it.
- What portion of the baguette was used for each sandwich? Draw a visual model to help you solve this problem.
  
  
  
  
  
  
  
  
  
  
  - How long, in feet, is one of Craig's sandwiches?
  
  
  
  
  
  
  
  
  
  
  - How many inches long is one of Craig's sandwiches?
3. Scott has 6 days to save enough money for a \$45 concert ticket. If he saves the same amount each day, what is the minimum amount he must save each day in order to reach his goal? Express your answer in dollars.



Name \_\_\_\_\_

Date \_\_\_\_\_

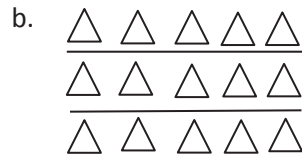
1. Find the value of each of the following.



$$\frac{1}{3} \text{ of } 9 =$$

$$\frac{2}{3} \text{ of } 9 =$$

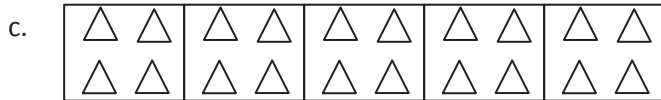
$$\frac{3}{3} \text{ of } 9 =$$



$$\frac{1}{3} \text{ of } 15 =$$

$$\frac{2}{3} \text{ of } 15 =$$

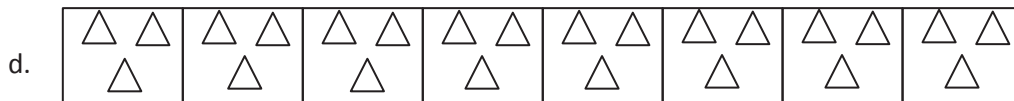
$$\frac{3}{3} \text{ of } 15 =$$



$$\frac{1}{5} \text{ of } 20 =$$

$$\frac{4}{5} \text{ of } 20 =$$

$$\frac{5}{5} \text{ of } 20 = 20$$



$$\frac{1}{8} \text{ of } 24 =$$

$$\frac{6}{8} \text{ of } 24 =$$

$$\frac{3}{8} \text{ of } 24 =$$

$$\frac{7}{8} \text{ of } 24 =$$

$$\frac{4}{8} \text{ of } 24 =$$

2. Find  $\frac{4}{7}$  of 14. Draw a set, and shade to show your thinking.
3. How does knowing  $\frac{1}{8}$  of 24 help you find three-eighths of 24? Draw a picture to explain your thinking.
4. There are 32 students in a class. Of the class,  $\frac{3}{8}$  of the students bring their own lunches. How many students bring their lunches?
5. Jack collected 18 ten-dollar bills while selling tickets for a show. He gave  $\frac{1}{6}$  of the bills to the theater and kept the rest. How much money did he keep?

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Find the value of each of the following.

a.

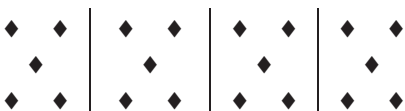


$$\frac{1}{3} \text{ of } 12 =$$

$$\frac{2}{3} \text{ of } 12 =$$

$$\frac{3}{3} \text{ of } 12 =$$

b.



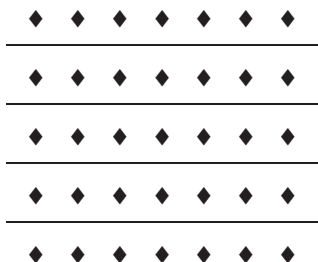
$$\frac{1}{4} \text{ of } 20 =$$

$$\frac{3}{4} \text{ of } 20 =$$

$$\frac{2}{4} \text{ of } 20 =$$

$$\frac{4}{4} \text{ of } 20 =$$

c.



$$\frac{1}{5} \text{ of } 35 =$$

$$\frac{3}{5} \text{ of } 35 =$$

$$\frac{5}{5} \text{ of } 35 =$$

$$\frac{2}{5} \text{ of } 35 =$$

$$\frac{4}{5} \text{ of } 35 =$$

$$\frac{6}{5} \text{ of } 35 =$$

2. Find  $\frac{2}{3}$  of 18. Draw a set and shade to show your thinking.
3. How does knowing  $\frac{1}{5}$  of 10 help you find  $\frac{3}{5}$  of 10? Draw a picture to explain your thinking.
4. Sara just turned 18 years old. She spent  $\frac{4}{9}$  of her life living in Rochester, NY. How many years did Sara live in Rochester?
5. A farmer collected 12 dozen eggs from her chickens. She sold  $\frac{5}{6}$  of the eggs at the farmers' market and gave the rest to friends and neighbors.
- a. How many dozen eggs did the farmer give away? How many eggs did she give away?
- b. She sold each dozen for \$4.50. How much did she earn from the eggs she sold?

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Solve using a tape diagram.

a.  $\frac{1}{3}$  of 18

b.  $\frac{1}{3}$  of 36

c.  $\frac{3}{4} \times 24$

d.  $\frac{3}{8} \times 24$

e.  $\frac{4}{5} \times 25$

f.  $\frac{1}{7} \times 140$

g.  $\frac{1}{4} \times 9$

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

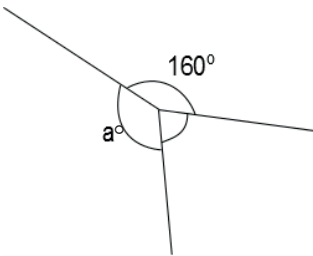
i.  $\frac{2}{3}$  of a number is 10. What's the number?

j.  $\frac{3}{4}$  of a number is 24. What's the number?

2. Solve using tape diagrams.

- a. There are 48 students going on a field trip. One-fourth are girls. How many boys are going on the trip?

- b. Three angles are labeled below with arcs. The smallest angle is  $\frac{3}{8}$  as large as the  $160^\circ$  angle. Find the value of angle  $a$ .



- c. Abbie spent  $\frac{5}{8}$  of her money and saved the rest. If she spent \$45, how much money did she have at first?
- d. Mrs. Harrison used 16 ounces of dark chocolate while baking. She used  $\frac{2}{5}$  of the chocolate to make some frosting and used the rest to make brownies. How much more chocolate did Mrs. Harrison use in the brownies than in the frosting?

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Solve using a tape diagram.

a.  $\frac{1}{4}$  of 24

b.  $\frac{1}{4}$  of 48

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

d.  $\frac{2}{6} \times 18$

e.  $\frac{3}{7} \times 49$

f.  $\frac{3}{10} \times 120$

g.  $\frac{1}{3} \times 31$

h.  $\frac{2}{5} \times 20$

i.  $\frac{1}{4} \times 25$

j.  $\frac{3}{4} \times 25$

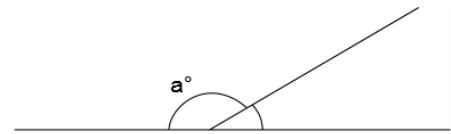
k.  $\frac{3}{4}$  of a number is 27. What's the number?

l.  $\frac{2}{5}$  of a number is 14. What's the number?

2. Solve using tape diagrams.

- a. A skating rink sold 66 tickets. Of these,  $\frac{2}{3}$  were children's tickets, and the rest were adult tickets. What total number of adult tickets were sold?

- b. A straight angle is split into two smaller angles as shown. The smaller angle's measure is  $\frac{1}{6}$  that of a straight angle. What is the value of angle  $a$ ?

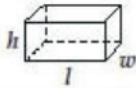


- c. Annabel and Eric made 17 ounces of pizza dough. They used  $\frac{5}{8}$  of the dough to make a pizza and used the rest to make calzones. What is the difference between the amount of dough they used to make pizza and the amount of dough they used to make calzones?

- d. The New York Rangers hockey team won  $\frac{3}{4}$  of their games last season. If they lost 21 games, how many games did they play in the entire season?



## Grade 5 Mathematics Reference Sheet

**FORMULAS**

Right Rectangular Prism

Volume =  $lwh$

Volume =  $Bh$

**CONVERSIONS**

1 centimeter = 10 millimeters

1 meter = 100 centimeters = 1,000 millimeters

1 kilometer = 1,000 meters

1 gram = 1,000 milligrams

1 kilogram = 1,000 grams

1 pound = 16 ounces

1 ton = 2,000 pounds

1 cup = 8 fluid ounces

1 pint = 2 cups

1 quart = 2 pints

1 gallon = 4 quarts

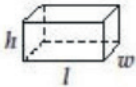
1 liter = 1,000 milliliters

1 kiloliter = 1,000 liters

1 mile = 5,280 feet

1 mile = 1,760 yards

## Grade 5 Mathematics Reference Sheet

**FORMULAS**

Right Rectangular Prism

Volume =  $lwh$

Volume =  $Bh$

**CONVERSIONS**

1 centimeter = 10 millimeters

1 meter = 100 centimeters = 1,000 millimeters

1 kilometer = 1,000 meters

1 gram = 1,000 milligrams

1 kilogram = 1,000 grams

1 pound = 16 ounces

1 ton = 2,000 pounds

1 cup = 8 fluid ounces

1 pint = 2 cups

1 quart = 2 pints

1 gallon = 4 quarts

1 liter = 1,000 milliliters

1 kiloliter = 1,000 liters

1 mile = 5,280 feet

1 mile = 1,760 yards

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Laura and Sean find the product of  $\frac{2}{3} \times 4$  using different methods.

*Laura:* It's 2 thirds of 4.

*Sean:* It's 4 groups of 2 thirds.

$$\frac{2}{3} \times 4 = \frac{4}{3} + \frac{4}{3} = 2 \times \frac{4}{3} = \frac{8}{3}$$

$$\frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} = 4 \times \frac{2}{3} = \frac{8}{3}$$

Use words, pictures, or numbers to compare their methods in the space below.

2. Rewrite the following addition expressions as fractions as shown in the example.

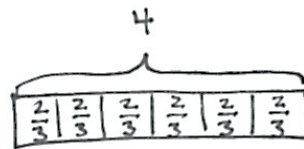
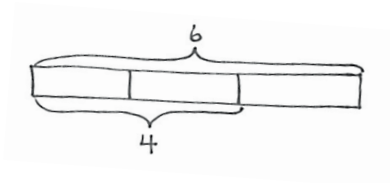
Example:  $\frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} = \frac{4 \times 2}{3} = \frac{8}{3}$

a.  $\frac{7}{4} + \frac{7}{4} + \frac{7}{4} =$

b.  $\frac{14}{5} + \frac{14}{5} =$

c.  $\frac{4}{7} + \frac{4}{7} + \frac{4}{7} =$

3. Solve and model each problem as a fraction of a set and as repeated addition.



Example:  $\frac{2}{3} \times 6 = 2 \times \frac{6}{3} = 2 \times 2 = 4$

$6 \times \frac{2}{3} = \frac{6 \times 2}{3} = 4$

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

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

b.  $\frac{3}{5} \times 10$

$10 \times \frac{3}{5}$

4. Solve each problem in two different ways as modeled in the example.

$$\text{Example: } 6 \times \frac{2}{3} = \frac{6 \times 2}{3} = \frac{3 \times 2 \times 2}{3} = \frac{3 \times 4}{3} = 4 \qquad 6 \times \frac{2}{3} = \frac{\overset{2}{\cancel{6}} \times 2}{\underset{1}{\cancel{3}}} = 4$$

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

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

b.  $\frac{3}{4} \times 36$

$\frac{3}{4} \times 36$

c.  $30 \times \frac{13}{10}$

$30 \times \frac{13}{10}$

d.  $\frac{9}{8} \times 32$

$\frac{9}{8} \times 32$

5. Solve each problem any way you choose.

a.  $\frac{1}{2} \times 60$

$\frac{1}{2} \text{ minute} = \underline{\hspace{2cm}} \text{ seconds}$

b.  $\frac{3}{4} \times 60$

$\frac{3}{4} \text{ hour} = \underline{\hspace{2cm}} \text{ minutes}$

c.  $\frac{3}{10} \times 1,000$

$\frac{3}{10} \text{ kilogram} = \underline{\hspace{2cm}} \text{ grams}$

d.  $\frac{4}{5} \times 100$

$\frac{4}{5} \text{ meter} = \underline{\hspace{2cm}} \text{ centimeters}$

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Rewrite the following expressions as shown in the example.

$$\text{Example: } \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} = \frac{4 \times 2}{3} = \frac{8}{3}$$

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

b.  $\frac{13}{5} + \frac{13}{5}$

c.  $\frac{9}{4} + \frac{9}{4} + \frac{9}{4}$

2. Solve each problem in two different ways as modeled in the example.

$$\text{Example: } \frac{2}{3} \times 6 = \frac{2 \times 6}{3} = \frac{12}{3} = 4 \quad \frac{2}{3} \times 6 = \frac{2 \times \cancel{6}^2}{\cancel{3}_1} = 4$$

a.  $\frac{3}{4} \times 16$

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

b.  $\frac{4}{3} \times 12$

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

c.  $40 \times \frac{11}{10}$

$40 \times \frac{11}{10}$

d.  $\frac{7}{6} \times 36$

$\frac{7}{6} \times 36$

e.  $24 \times \frac{5}{8}$

$24 \times \frac{5}{8}$

f.  $18 \times \frac{5}{12}$

$18 \times \frac{5}{12}$

g.  $\frac{10}{9} \times 21$

$\frac{10}{9} \times 21$

3. Solve each problem any way you choose.

a.  $\frac{1}{3} \times 60$

$\frac{1}{3}$  minute = \_\_\_\_\_ seconds

b.  $\frac{4}{5} \times 60$

$\frac{4}{5}$  hour = \_\_\_\_\_ minutes

c.  $\frac{7}{10} \times 1000$

$\frac{7}{10}$  kilogram = \_\_\_\_\_ grams

d.  $\frac{3}{5} \times 100$

$\frac{3}{5}$  meter = \_\_\_\_\_ centimeters

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Convert. Show your work using a tape diagram or an equation. The first one is done for you.

a.  $\frac{1}{2}$  yard =  $1\frac{1}{2}$  feet

$$\frac{1}{2} \text{ yard} = \frac{1}{2} \times 1 \text{ yard}$$

$$= \frac{1}{2} \times 3 \text{ feet}$$

$$= \frac{3}{2} \text{ feet}$$

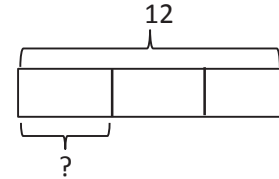
$$= 1\frac{1}{2} \text{ feet}$$

b.  $\frac{1}{3}$  foot = \_\_\_\_\_ inches

$$\frac{1}{3} \text{ foot} = \frac{1}{3} \times 1 \text{ foot}$$

$$= \frac{1}{3} \times 12 \text{ inches}$$

$$=$$



c.  $\frac{5}{6}$  year = \_\_\_\_\_ months

d.  $\frac{4}{5}$  meter = \_\_\_\_\_ centimeters

e.  $\frac{2}{3}$  hour = \_\_\_\_\_ minutes

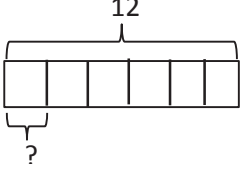
f.  $\frac{3}{4}$  yard = \_\_\_\_\_ inches

2. Mrs. Lang told her class that the class's pet hamster is  $\frac{1}{4}$  ft in length. How long is the hamster in inches?
3. At the market, Mr. Paul bought  $\frac{7}{8}$  lb of cashews and  $\frac{3}{4}$  lb of walnuts.
- How many ounces of cashews did Mr. Paul buy?
  - How many ounces of walnuts did Mr. Paul buy?
  - How many more ounces of cashews than walnuts did Mr. Paul buy?
  - If Mrs. Toombs bought  $1\frac{1}{2}$  pounds of pistachios, who bought more nuts, Mr. Paul or Mrs. Toombs? How many ounces more?
4. A jewelry maker purchased 20 inches of gold chain. She used  $\frac{3}{8}$  of the chain for a bracelet. How many inches of gold chain did she have left?

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Convert. Show your work using a tape diagram or an equation. The first one is done for you.

<p>a. <math>\frac{1}{4}</math> yard = <u>9</u> inches</p> $\frac{1}{4} \text{ yard} = \frac{1}{4} \times 1 \text{ yard}$ $= \frac{1}{4} \times 36 \text{ inches}$ $= \frac{36}{4} \text{ inches}$ $= 9 \text{ inches}$	<p>b. <math>\frac{1}{6}</math> foot = _____ inches</p> $\frac{1}{6} \text{ foot} = \frac{1}{6} \times 1 \text{ foot}$ $= \frac{1}{6} \times 12 \text{ inches}$ $=$ 
<p>c. <math>\frac{3}{4}</math> year = _____ months</p>	<p>d. <math>\frac{3}{5}</math> meter = _____ centimeters</p>
<p>e. <math>\frac{5}{12}</math> hour = _____ minutes</p>	<p>f. <math>\frac{2}{3}</math> yard = _____ inches</p>

2. Michelle measured the length of her forearm. It was  $\frac{3}{4}$  of a foot. How long is her forearm in inches?

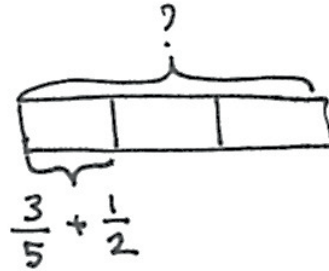
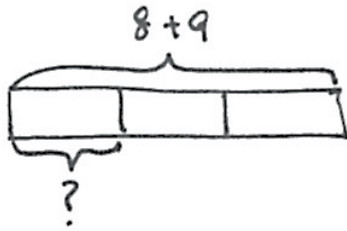


3. At the market, Ms. Winn bought  $\frac{3}{4}$  lb of grapes and  $\frac{5}{8}$  lb of cherries.
- How many ounces of grapes did Ms. Winn buy?
  - How many ounces of cherries did Ms. Winn buy?
  - How many more ounces of grapes than cherries did Ms. Winn buy?
  - If Mr. Phillips bought  $1\frac{3}{4}$  pounds of raspberries, who bought more fruit, Ms. Winn or Mr. Phillips? How many ounces more?
4. A gardener has 10 pounds of soil. He used  $\frac{5}{8}$  of the soil for his garden. How many pounds of soil did he use in the garden? How many pounds did he have left?

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Write expressions to match the diagrams. Then, evaluate.



2. Write an expression to match, and then evaluate.

a.  $\frac{1}{6}$  the sum of 16 and 20

b. Subtract 5 from  $\frac{1}{3}$  of 23.

c. 3 times as much as the sum of  $\frac{3}{4}$  and  $\frac{2}{6}$

d.  $\frac{2}{5}$  of the product of  $\frac{5}{6}$  and 42

e. 8 copies of the sum of 4 thirds and 2 more

f. 4 times as much as 1 third of 8

3. Circle the expression(s) that give the same product as  $\frac{4}{5} \times 7$ . Explain how you know.

$$4 \div (7 \times 5) \quad 7 \div 5 \times 4 \quad (4 \times 7) \div 5 \quad 4 \div (5 \times 7) \quad 4 \times \frac{7}{5} \quad 7 \times \frac{4}{5}$$

4. Use  $<$ ,  $>$ , or  $=$  to make true number sentences without calculating. Explain your thinking.

a.  $4 \times 2 + 4 \times \frac{2}{3}$    $3 \times \frac{2}{3}$

b.  $(5 \times \frac{3}{4}) \times \frac{2}{5}$    $(5 \times \frac{3}{4}) \times \frac{2}{7}$

c.  $3 \times (3 + \frac{15}{12})$    $(3 \times 3) + \frac{15}{12}$

5. Collette bought milk for herself each month and recorded the amount in the table below. For (a)–(c), write an expression that records the calculation described. Then, solve to find the missing data in the table.

a. She bought  $\frac{1}{4}$  of July's total in June.

b. She bought  $\frac{3}{4}$  as much in September as she did in January and July combined.

c. In April, she bought  $\frac{1}{2}$  gallon less than twice as much as she bought in August.

Month	Amount (in gallons)
January	3
February	2
March	$1\frac{1}{4}$
April	
May	$\frac{7}{4}$
June	
July	2
August	1
September	
October	$\frac{1}{4}$

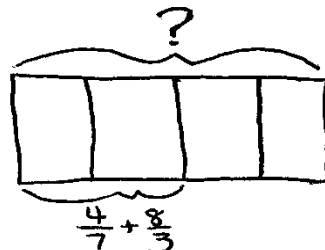
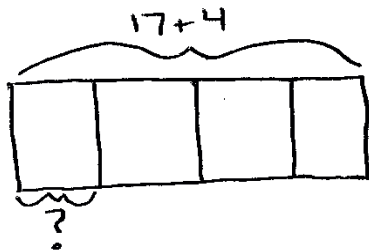
d. Display the data from the table in a line plot.

e. How many gallons of milk did Collette buy from January to October?

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Write expressions to match the diagrams. Then, evaluate.



2. Circle the expression(s) that give the same product as  $6 \times \frac{3}{8}$ . Explain how you know.

$8 \div (3 \times 6)$

$3 \div 8 \times 6$

$(6 \times 3) \div 8$

$(8 \div 6) \times 3$

$6 \times \frac{8}{3}$

$\frac{3}{8} \times 6$

3. Write an expression to match, and then evaluate.

a.  $\frac{1}{8}$  the sum of 23 and 17

b. Subtract 4 from  $\frac{1}{6}$  of 42.

c. 7 times as much as the sum of  $\frac{1}{3}$  and  $\frac{4}{5}$

d.  $\frac{2}{3}$  of the product of  $\frac{3}{8}$  and 16

e. 7 copies of the sum of 8 fifths and 4

f. 15 times as much as 1 fifth of 12

4. Use  $<$ ,  $>$ , or  $=$  to make true number sentences without calculating. Explain your thinking.

a.  $\frac{2}{3} \times (9 + 12)$    $15 \times \frac{2}{3}$

b.  $(3 \times \frac{5}{4}) \times \frac{3}{5}$    $(3 \times \frac{5}{4}) \times \frac{3}{8}$

b.  $6 \times (2 + \frac{32}{16})$    $(6 \times 2) + \frac{32}{16}$

5. Fantine bought flour for her bakery each month and recorded the amount in the table to the right. For (a)–(c), write an expression that records the calculation described. Then, solve to find the missing data in the table.

- a. She bought  $\frac{3}{4}$  of January's total in August.
- b. She bought  $\frac{7}{8}$  as much in April as she did in October and July combined.

Month	Amount (in pounds)
January	3
February	2
March	$1\frac{1}{4}$
April	
May	$\frac{9}{8}$
June	
July	$1\frac{1}{4}$
August	
September	$\frac{11}{4}$
October	$\frac{3}{4}$

- c. In June, she bought  $\frac{1}{8}$  pound less than three times as much as she bought in May.
- d. Display the data from the table in a line plot.
- e. How many pounds of flour did Fantine buy from January to October?

Name \_\_\_\_\_

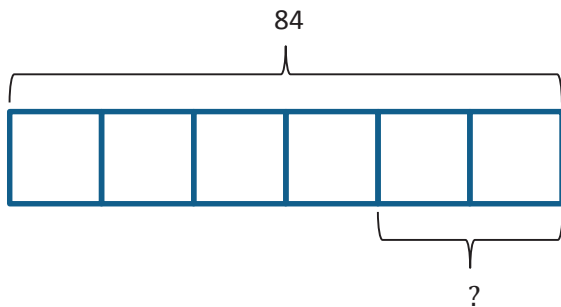
Date \_\_\_\_\_

1. Kim and Courtney share a 16-ounce box of cereal. By the end of the week, Kim has eaten  $\frac{3}{8}$  of the box, and Courtney has eaten  $\frac{1}{4}$  of the box of cereal. What fraction of the box is left?

2. Mathilde has 20 pints of green paint. She uses  $\frac{2}{5}$  of it to paint a landscape and  $\frac{3}{10}$  of it while painting a clover. She decides that, for her next painting, she will need 14 pints of green paint. How much more paint will she need to buy?



3. Jack, Jill, and Bill each carried a 48-ounce bucket full of water down the hill. By the time they reached the bottom, Jack's bucket was only  $\frac{3}{4}$  full, Jill's was  $\frac{2}{3}$  full, and Bill's was  $\frac{1}{6}$  full. How much water did they spill altogether on their way down the hill?
4. Mrs. Diaz makes 5 dozen cookies for her class. One-ninth of her 27 students are absent the day she brings the cookies. If she shares the cookies equally among the students who are present, how many cookies will each student get?
5. Create a story problem about a fish tank for the tape diagram below. Your story must include a fraction.



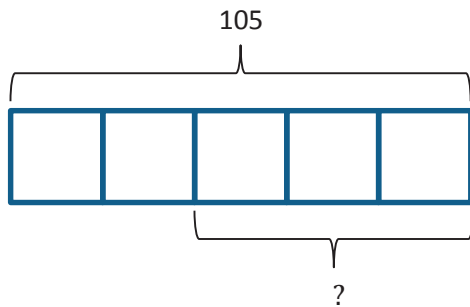
Name \_\_\_\_\_

Date \_\_\_\_\_

1. Jenny's mom says she has an hour before it's bedtime. Jenny spends  $\frac{1}{3}$  of the hour texting a friend and  $\frac{1}{4}$  of the time brushing her teeth and putting on her pajamas. She spends the rest of the time reading her book. How many minutes did Jenny read?
  
  
  
  
  
  
  
  
  
  
2. A-Plus Auto Body is painting designs on a customer's car. They had 18 pints of blue paint on hand. They used  $\frac{1}{2}$  of it for the flames and  $\frac{1}{3}$  of it for the sparks. They need  $7\frac{3}{4}$  pints of blue paint to paint the next design. How many more pints of blue paint will they need to buy?
  
  
  
  
  
  
  
  
  
  
3. Giovanna, Frances, and their dad each carried a 10-pound bag of soil into the backyard. After putting soil in the first flower bed, Giovanna's bag was  $\frac{5}{8}$  full, Frances's bag was  $\frac{2}{5}$  full, and their dad's was  $\frac{3}{4}$  full. How many pounds of soil did they put in the first flower bed altogether?

4. Mr. Chan made 252 cookies for the Annual Fifth Grade Class Bake Sale. They sold  $\frac{3}{4}$  of them, and  $\frac{3}{9}$  of the remaining cookies were given to PTA. members. Mr. Chan allowed the 12 student helpers to divide the cookies that were left equally. How many cookies will each student get?

5. Using the tape diagram below, create a story problem about a farm. Your story must include a fraction.



Name \_\_\_\_\_ Date \_\_\_\_\_

1. A baseball team played 32 games and lost 8. Katy was the catcher in  $\frac{5}{8}$  of the winning games and  $\frac{1}{4}$  of the losing games.

a. What fraction of the games did the team win?

b. In how many games did Katy play catcher?

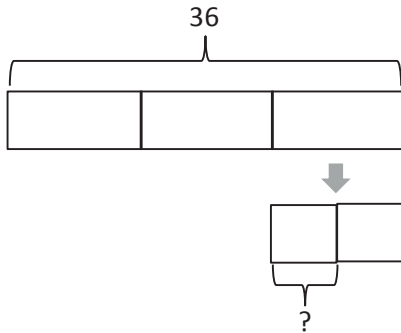
2. In Mrs. Elliott's garden,  $\frac{1}{8}$  of the flowers are red,  $\frac{1}{4}$  of them are purple, and  $\frac{1}{5}$  of the remaining flowers are pink. If there are 128 flowers, how many flowers are pink?

3. Lillian and Darlene plan to get their homework finished within one hour. Darlene completes her math homework in  $\frac{3}{5}$  hour. Lillian completes her math homework with  $\frac{5}{6}$  hour remaining. Who completes her homework faster, and by how many minutes?

Bonus: Give the answer as a fraction of an hour.

4. Create and solve a story problem about a baker and some flour whose solution is given by the expression  $\frac{1}{4} \times (3 + 5)$ .

5. Create and solve a story problem about a baker and 36 kilograms of an ingredient that is modeled by the following tape diagram. Include at least one fraction in your story.



6. Of the students in Mr. Smith's fifth-grade class,  $\frac{1}{3}$  were absent on Monday. Of the students in Mrs. Jacobs' class,  $\frac{2}{5}$  were absent on Monday. If there were 4 students absent in each class on Monday, how many students are in each class?

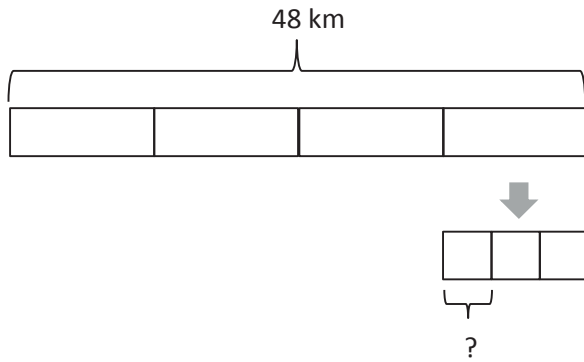


3. In an auditorium,  $\frac{1}{6}$  of the students are fifth graders,  $\frac{1}{3}$  are fourth graders, and  $\frac{1}{4}$  of the remaining students are second graders. If there are 96 students in the auditorium, how many second graders are there?
4. At a track meet, Jacob and Daniel compete in the 220 m hurdles. Daniel finishes in  $\frac{3}{4}$  of a minute. Jacob finishes with  $\frac{5}{12}$  of a minute remaining. Who ran the race in the faster time?

Bonus: Express the difference in their times as a fraction of a minute.



5. Create and solve a story problem about a runner who is training for a race. Include at least one fraction in your story.



6. Create and solve a story problem about two friends and their weekly allowance whose solution is given by the expression  $\frac{1}{5} \times (12 + 8)$ .

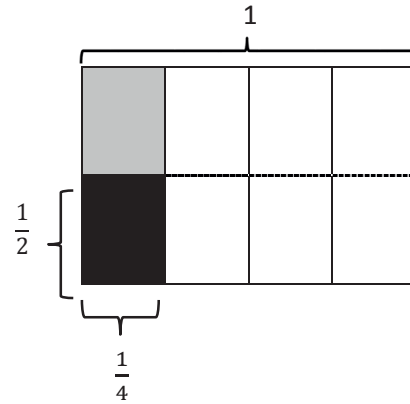
Name \_\_\_\_\_

Date \_\_\_\_\_

1. Solve. Draw a rectangular fraction model to show your thinking. Then, write a multiplication sentence. The first one has been done for you.

- a. Half of  $\frac{1}{4}$  pan of brownies =  $\frac{1}{8}$  pan of brownies.

$$\frac{1}{2} \times \frac{1}{4} = \frac{1}{8}$$



- b. Half of  $\frac{1}{3}$  pan of brownies = \_\_\_\_\_ pan of brownies.

- c. A fourth of  $\frac{1}{3}$  pan of brownies = \_\_\_\_\_ pan of brownies.

- d.  $\frac{1}{4}$  of  $\frac{1}{4}$

- e.  $\frac{1}{2}$  of  $\frac{1}{6}$

2. Draw rectangular fraction models of  $3 \times \frac{1}{4}$  and  $\frac{1}{3} \times \frac{1}{4}$ . Compare multiplying a number by 3 and by 1 third.
3.  $\frac{1}{2}$  of Ila's workspace is covered in paper.  $\frac{1}{3}$  of the paper is covered in yellow sticky notes. What fraction of Ila's workspace is covered in yellow sticky notes? Draw a picture to support your answer.
4. A marching band is rehearsing in rectangular formation.  $\frac{1}{5}$  of the marching band members play percussion instruments.  $\frac{1}{2}$  of the percussionists play the snare drum. What fraction of all the band members play the snare drum?
5. Marie is designing a bedspread for her grandson's new bedroom.  $\frac{2}{3}$  of the bedspread is covered in race cars, and the rest is striped.  $\frac{1}{4}$  of the stripes are red. What fraction of the bedspread is covered in red stripes?

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Solve. Draw a rectangular fraction model to show your thinking.

a. Half of  $\frac{1}{2}$  cake = \_\_\_\_\_ cake.

b. One-third of  $\frac{1}{2}$  cake = \_\_\_\_\_ cake.

c.  $\frac{1}{4}$  of  $\frac{1}{2}$

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

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

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

2. Noah mows  $\frac{1}{2}$  of his property and leaves the rest wild. He decides to use  $\frac{1}{5}$  of the wild area for a vegetable garden. What fraction of the property is used for the garden? Draw a picture to support your answer.
3. Fawn plants  $\frac{2}{3}$  of the garden with vegetables. Her son plants the remainder of the garden. He decides to use  $\frac{1}{2}$  of his space to plant flowers, and in the rest, he plants herbs. What fraction of the entire garden is planted in flowers? Draw a picture to support your answer.
4. Diego eats  $\frac{1}{5}$  of a loaf of bread each day. On Tuesday, Diego eats  $\frac{1}{4}$  of the day's portion before lunch. What fraction of the whole loaf does Diego eat before lunch on Tuesday? Draw a rectangular fraction model to support your thinking.

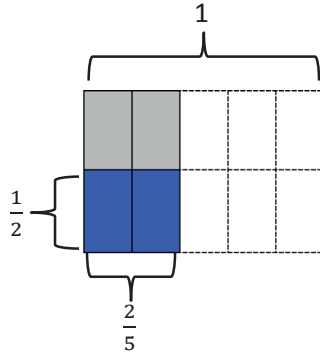
Name \_\_\_\_\_

Date \_\_\_\_\_

1. Solve. Draw a rectangular fraction model to explain your thinking. Then, write a number sentence. An example has been done for you.

Example:

$$\frac{1}{2} \text{ of } \frac{2}{5} = \frac{1}{2} \text{ of 2 fifths} = 1 \text{ fifth(s)}$$



$$\frac{1}{2} \times \frac{2}{5} = \frac{2}{10} = \frac{1}{5}$$

a.  $\frac{1}{3}$  of  $\frac{3}{4} = \frac{1}{3}$  of \_\_\_\_ fourth(s) = \_\_\_\_ fourth(s)

b.  $\frac{1}{2}$  of  $\frac{4}{5} = \frac{1}{2}$  of \_\_\_\_ fifth(s) = \_\_\_\_ fifth(s)

c.  $\frac{1}{2}$  of  $\frac{2}{2} =$

d.  $\frac{2}{3}$  of  $\frac{1}{2} =$

e.  $\frac{1}{2} \times \frac{3}{5} =$

f.  $\frac{2}{3} \times \frac{1}{4} =$

2.  $\frac{5}{8}$  of the songs on Harrison’s music player are hip-hop.  $\frac{1}{3}$  of the remaining songs are rhythm and blues. What fraction of all the songs are rhythm and blues? Use a tape diagram to solve.
3. Three-fifths of the students in a room are girls. One-third of the girls have blond hair. One-half of the boys have brown hair.
- a. What fraction of all the students are girls with blond hair?
- b. What fraction of all the students are boys without brown hair?
4. Cody and Sam mowed the yard on Saturday. Dad told Cody to mow  $\frac{1}{4}$  of the yard. He told Sam to mow  $\frac{1}{3}$  of the remainder of the yard. Dad paid each of the boys an equal amount. Sam said, “Dad, that’s not fair! I had to mow one-third, and Cody only mowed one-fourth!” Explain to Sam the error in his thinking. Draw a picture to support your reasoning.

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Solve. Draw a rectangular fraction model to explain your thinking.

a.  $\frac{1}{2}$  of  $\frac{2}{3} = \frac{1}{2}$  of \_\_\_\_\_ third(s) = \_\_\_\_\_ third(s)

b.  $\frac{1}{2}$  of  $\frac{4}{3} = \frac{1}{2}$  of \_\_\_\_\_ third(s) = \_\_\_\_\_ third(s)

c.  $\frac{1}{3}$  of  $\frac{3}{5} =$

d.  $\frac{1}{2}$  of  $\frac{6}{8} =$

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

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

2. Sarah has a photography blog.  $\frac{3}{7}$  of her photos are of nature.  $\frac{1}{4}$  of the rest are of her friends. What fraction of all of Sarah's photos is of her friends? Support your answer with a model.



3. At Laurita's Bakery,  $\frac{3}{5}$  of the baked goods are pies, and the rest are cakes.  $\frac{1}{3}$  of the pies are coconut.  $\frac{1}{6}$  of the cakes are angel food.
- a. What fraction of all of the baked goods at Laurita's Bakery are coconut pies?
- b. What fraction of all of the baked goods at Laurita's Bakery are angel food cakes?
4. Grandpa Mick opened a pint of ice cream. He gave his youngest grandchild  $\frac{1}{5}$  of the ice cream and his middle grandchild  $\frac{1}{4}$  of the remaining ice cream. Then, he gave his oldest grandchild  $\frac{1}{3}$  of the ice cream that was left after serving the others.
- a. Who got the most ice cream? How do you know? Draw a picture to support your reasoning.
- b. What fraction of the pint of ice cream will be left if Grandpa Mick serves himself the same amount as the second grandchild?

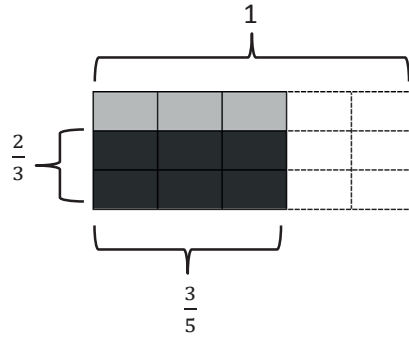
Name \_\_\_\_\_

Date \_\_\_\_\_

1. Solve. Draw a rectangular fraction model to explain your thinking. Then, write a multiplication sentence. The first one is done for you.

a.  $\frac{2}{3}$  of  $\frac{3}{5}$

$$\frac{2}{3} \times \frac{3}{5} = \frac{6}{15} = \frac{2}{5}$$



b.  $\frac{3}{4}$  of  $\frac{4}{5} =$

c.  $\frac{2}{5}$  of  $\frac{2}{3} =$

d.  $\frac{4}{5} \times \frac{2}{3} =$

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

2. Multiply. Draw a rectangular fraction model if it helps you, or use the method in the example.

Example:  $\frac{6}{7} \times \frac{5}{8} = \frac{\overset{3}{\cancel{6}} \times 5}{7 \times \underset{4}{\cancel{8}}} = \frac{15}{28}$

a.  $\frac{3}{4} \times \frac{5}{6}$

b.  $\frac{4}{5} \times \frac{5}{8}$

c.  $\frac{2}{3} \times \frac{6}{7}$

d.  $\frac{4}{9} \times \frac{3}{10}$

3. Phillip's family traveled  $\frac{3}{10}$  of the distance to his grandmother's house on Saturday. They traveled  $\frac{4}{7}$  of the remaining distance on Sunday. What fraction of the total distance to his grandmother's house was traveled on Sunday?
4. Santino bought a  $\frac{3}{4}$ -pound bag of chocolate chips. He used  $\frac{2}{3}$  of the bag while baking. How many pounds of chocolate chips did he use while baking?
5. Farmer Dave harvested his corn. He stored  $\frac{5}{9}$  of his corn in one large silo and  $\frac{3}{4}$  of the remaining corn in a small silo. The rest was taken to market to be sold.
- What fraction of the corn was stored in the small silo?
  - If he harvested 18 tons of corn, how many tons did he take to market?

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Solve. Draw a rectangular fraction model to explain your thinking. Then, write a multiplication sentence.

a.  $\frac{2}{3}$  of  $\frac{3}{4} =$

b.  $\frac{2}{5}$  of  $\frac{3}{4} =$

c.  $\frac{2}{5}$  of  $\frac{4}{5} =$

d.  $\frac{4}{5}$  of  $\frac{3}{4} =$

2. Multiply. Draw a rectangular fraction model if it helps you.

a.  $\frac{5}{6} \times \frac{3}{10}$

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

c.  $\frac{5}{6} \times \frac{5}{8}$

d.  $\frac{3}{4} \times \frac{5}{12}$

e.  $\frac{8}{9} \times \frac{2}{3}$

f.  $\frac{3}{7} \times \frac{2}{9}$

3. Every morning, Halle goes to school with a 1-liter bottle of water. She drinks  $\frac{1}{4}$  of the bottle before school starts and  $\frac{2}{3}$  of the rest before lunch.
- What fraction of the bottle does Halle drink after school starts but before lunch?
  - How many milliliters are left in the bottle at lunch?
4. Moussa delivered  $\frac{3}{8}$  of the newspapers on his route in the first hour and  $\frac{4}{5}$  of the rest in the second hour. What fraction of the newspapers did Moussa deliver in the second hour?
5. Rose bought some spinach. She used  $\frac{3}{5}$  of the spinach on a pan of spinach pie for a party and  $\frac{3}{4}$  of the remaining spinach for a pan for her family. She used the rest of the spinach to make a salad.
- What fraction of the spinach did she use to make the salad?
  - If Rose used 3 pounds of spinach to make the pan of spinach pie for the party, how many pounds of spinach did Rose use to make the salad?

Name \_\_\_\_\_

Date \_\_\_\_\_

Solve and show your thinking with a tape diagram.

1. Mrs. Onusko made 60 cookies for a bake sale. She sold  $\frac{2}{3}$  of them and gave  $\frac{3}{4}$  of the remaining cookies to the students working at the sale. How many cookies did she have left?
  
2. Joakim is icing 30 cupcakes. He spreads mint icing on  $\frac{1}{5}$  of the cupcakes and chocolate on  $\frac{1}{2}$  of the remaining cupcakes. The rest will get vanilla icing. How many cupcakes have vanilla icing?
  
3. The Booster Club sells 240 cheeseburgers.  $\frac{1}{4}$  of the cheeseburgers had pickles,  $\frac{1}{2}$  of the remaining burgers had onions, and the rest had tomato. How many cheeseburgers had tomato?

4. DeSean is sorting his rock collection.  $\frac{2}{3}$  of the rocks are metamorphic, and  $\frac{3}{4}$  of the remainder are igneous rocks. If the 3 rocks left over are sedimentary, how many rocks does DeSean have?
5. Milan puts  $\frac{1}{4}$  of her lawn-mowing money in savings and uses  $\frac{1}{2}$  of the remaining money to pay back her sister. If she has \$15 left, how much did she have at first?
6. Parks is wearing several rubber bracelets.  $\frac{1}{3}$  of the bracelets are tie-dye,  $\frac{1}{6}$  are blue, and  $\frac{1}{3}$  of the remainder are camouflage. If Parks wears 2 camouflage bracelets, how many bracelets does he have on?
7. Ahmed spent  $\frac{1}{3}$  of his money on a burrito and a water bottle. The burrito cost 2 times as much as the water. The burrito cost \$4. How much money does Ahmed have left?

Name \_\_\_\_\_

Date \_\_\_\_\_

Solve and show your thinking with a tape diagram.

1. Anthony bought an 8-foot board. He cut off  $\frac{3}{4}$  of the board to build a shelf and gave  $\frac{1}{3}$  of the rest to his brother for an art project. How many inches long was the piece Anthony gave to his brother?

2. Riverside Elementary School is holding a school-wide election to choose a school color. Five-eighths of the votes were for blue,  $\frac{5}{9}$  of the remaining votes were for green, and the remaining 48 votes were for red.

a. How many votes were for blue?

b. How many votes were for green?



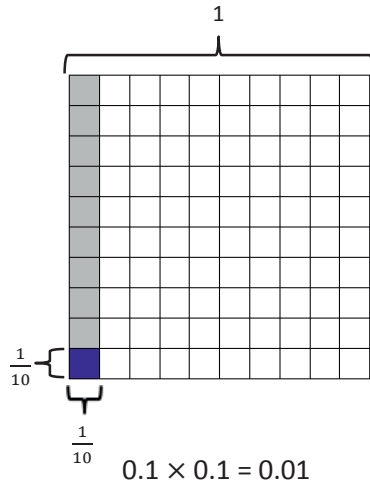
- c. If every student got one vote, but there were 25 students absent on the day of the vote, how many students are there at Riverside Elementary School?
- d. Seven-tenths of the votes for blue were made by girls. Did girls who voted for blue make up more than or less than half of all votes? Support your reasoning with a picture.
- e. How many girls voted for blue?

Name \_\_\_\_\_

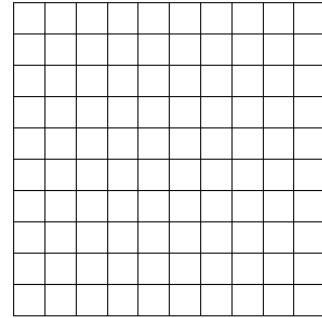
Date \_\_\_\_\_

1. Multiply and model. Rewrite each expression as a multiplication sentence with decimal factors. The first one is done for you.

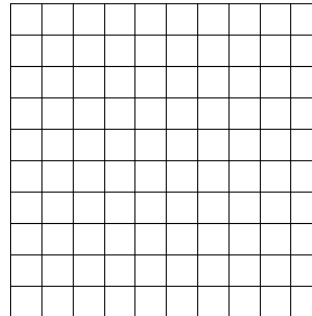
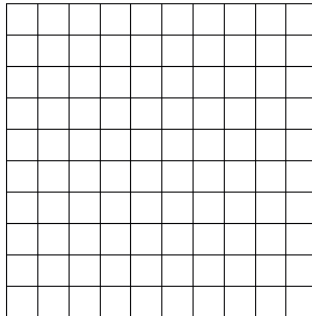
a.  $\frac{1}{10} \times \frac{1}{10}$   
 $= \frac{1 \times 1}{10 \times 10}$   
 $= \frac{1}{100}$



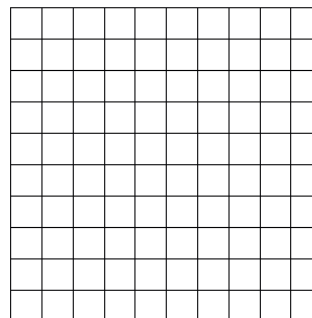
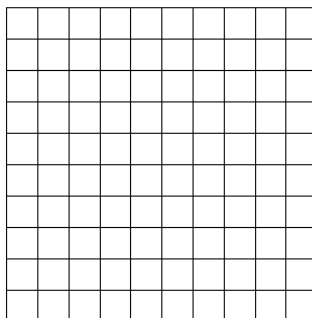
b.  $\frac{4}{10} \times \frac{3}{10}$



c.  $\frac{1}{10} \times 1.4$



d.  $\frac{6}{10} \times 1.7$



2. Multiply. The first few are started for you.

$$\begin{aligned} \text{a. } 5 \times 0.7 &= \underline{\hspace{2cm}} \\ &= 5 \times \frac{7}{10} \\ &= \frac{5 \times 7}{10} \\ &= \frac{35}{10} \\ &= 3.5 \end{aligned}$$

$$\begin{aligned} \text{b. } 0.5 \times 0.7 &= \underline{\hspace{2cm}} \\ &= \frac{5}{10} \times \frac{7}{10} \\ &= \frac{5 \times 7}{10 \times 10} \\ &= \end{aligned}$$

$$\begin{aligned} \text{c. } 0.05 \times 0.7 &= \underline{\hspace{2cm}} \\ &= \frac{5}{100} \times \frac{7}{10} \\ &= \frac{\_ \times \_}{100 \times 10} \\ &= \end{aligned}$$

$$\text{d. } 6 \times 0.3 = \underline{\hspace{2cm}}$$

$$\text{e. } 0.6 \times 0.3 = \underline{\hspace{2cm}}$$

$$\text{f. } 0.06 \times 0.3 = \underline{\hspace{2cm}}$$

$$\text{g. } 1.2 \times 4 = \underline{\hspace{2cm}}$$

$$\text{h. } 1.2 \times 0.4 = \underline{\hspace{2cm}}$$

$$\text{i. } 0.12 \times 0.4 = \underline{\hspace{2cm}}$$

3. A Boy Scout has a length of rope measuring 0.7 meter. He uses 2 tenths of the rope to tie a knot at one end. How many meters of rope are in the knot?

4. After just 4 tenths of a 2.5-mile race was completed, Lenox took the lead and remained there until the end of the race.

a. How many miles did Lenox lead the race?

b. Reid, the second-place finisher, developed a cramp with 3 tenths of the race remaining. How many miles did Reid run without a cramp?

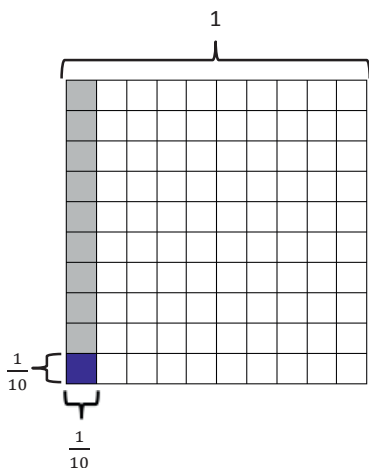
Name \_\_\_\_\_

Date \_\_\_\_\_

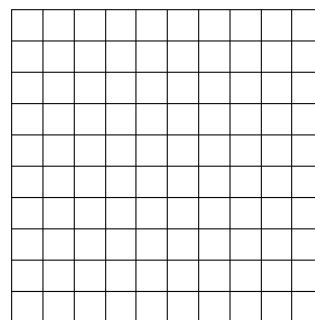
1. Multiply and model. Rewrite each expression as a number sentence with decimal factors. The first one is done for you.

a.  $\frac{1}{10} \times \frac{1}{10}$   
 $= \frac{1 \times 1}{10 \times 10}$   
 $= \frac{1}{100}$

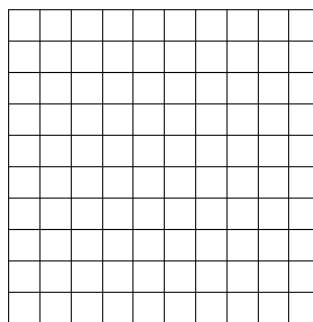
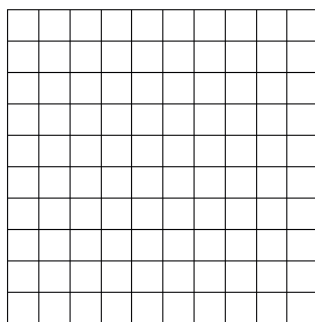
$0.1 \times 0.1 = 0.01$



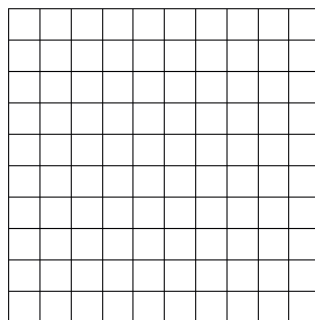
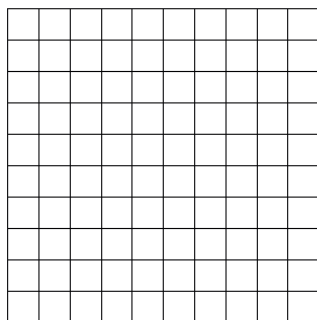
b.  $\frac{6}{10} \times \frac{2}{10}$



c.  $\frac{1}{10} \times 1.6$



d.  $\frac{6}{10} \times 1.9$



2. Multiply. The first few are started for you.

$$\begin{aligned} \text{a. } 4 \times 0.6 &= \underline{\hspace{2cm}} \\ &= 4 \times \frac{6}{10} \\ &= \frac{4 \times 6}{10} \\ &= \frac{24}{10} \\ &= 2.4 \end{aligned}$$

$$\begin{aligned} \text{b. } 0.4 \times 0.6 &= \underline{\hspace{2cm}} \\ &= \frac{4}{10} \times \frac{6}{10} \\ &= \frac{4 \times 6}{10 \times 10} \\ &= \end{aligned}$$

$$\begin{aligned} \text{c. } 0.04 \times 0.6 &= \underline{\hspace{2cm}} \\ &= \frac{4}{100} \times \frac{6}{10} \\ &= \frac{\_\_ \times \_\_}{100 \times 10} \\ &= \end{aligned}$$

$$\text{d. } 7 \times 0.3 = \underline{\hspace{2cm}}$$

$$\text{e. } 0.7 \times 0.3 = \underline{\hspace{2cm}}$$

$$\text{f. } 0.07 \times 0.3 = \underline{\hspace{2cm}}$$

$$\text{g. } 1.3 \times 5 = \underline{\hspace{2cm}}$$

$$\text{h. } 1.3 \times 0.5 = \underline{\hspace{2cm}}$$

$$\text{i. } 0.13 \times 0.5 = \underline{\hspace{2cm}}$$

3. Jennifer makes 1.7 liters of lemonade. If she pours 3 tenths of the lemonade in the glass, how many liters of lemonade are in the glass?

4. Cassius walked 6 tenths of a 3.6-mile trail.

a. How many miles did Cassius have left to hike?

b. Cameron was 1.3 miles ahead of Cassius. How many miles did Cameron hike already?

1,000,000	100,000	10,000	1,000	100	10	1	.	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1,000}$
Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones	.	Tenths	Hundredths	Thousandths
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\_\_\_\_\_ millions through thousandths place value chart

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Multiply using both fraction form and unit form. Check your answer by counting the decimal places. The first one is done for you.

$$\begin{aligned} \text{a. } 2.3 \times 1.8 &= \frac{23}{10} \times \frac{18}{10} \\ &= \frac{23 \times 18}{100} \\ &= \frac{414}{100} \\ &= 4.14 \end{aligned}$$

$$\begin{array}{r} \phantom{2} \text{ 3 tenths} \\ \times \phantom{2} \text{ 1 8 tenths} \\ \hline \phantom{2} \text{ 1 8 4} \\ + \phantom{2} \text{ 2 3 0} \\ \hline \phantom{2} \text{ 4 1 4 hundredths} \end{array}$$

$$\text{b. } 2.3 \times 0.9 = \phantom{2} \text{ 3 tenths} \times \phantom{2} \text{ 9 tenths}$$

$$\text{c. } 6.6 \times 2.8 =$$

$$\text{d. } 3.3 \times 1.4 =$$

2. Multiply using fraction form and unit form. Check your answer by counting the decimal places. The first one is done for you.

$$\begin{aligned} \text{a. } 2.38 \times 1.8 &= \frac{238}{100} \times \frac{18}{10} \\ &= \frac{238 \times 18}{1,000} \\ &= \frac{4,284}{1,000} \\ &= 4.284 \end{aligned}$$

$$\begin{array}{r} \phantom{2} \text{ 3 8 hundredths} \\ \times \phantom{2} \text{ 1 8 tenths} \\ \hline \phantom{2} \text{ 1 9 0 4} \\ + \phantom{2} \text{ 2 3 8 0} \\ \hline \phantom{2} \text{ 4, 2 8 4 thousandths} \end{array}$$

$$\text{b. } 2.37 \times 0.9 = \phantom{2} \text{ 3 7 hundredths} \times \phantom{2} \text{ 9 tenths}$$

$$\text{c. } 6.06 \times 2.8 =$$

$$\text{d. } 3.3 \times 0.14 =$$

3. Solve using the standard algorithm. Show your thinking about the units of your product. The first one is done for you.

a.  $3.2 \times 0.6 = 1.92$

b.  $3.2 \times 1.2 = \underline{\hspace{2cm}}$

$$\begin{array}{r} 3 \text{ 2 tenths} \\ \times \underline{6 \text{ tenths}} \\ \hline 1 \text{ 9 2 hundredths} \end{array}$$

$$\frac{32}{10} \times \frac{6}{10} = \frac{32 \times 6}{100}$$

$$\begin{array}{r} 3 \text{ 2 tenths} \\ \times \underline{1 \text{ 2 tenths}} \end{array}$$

c.  $8.31 \times 2.4 = \underline{\hspace{2cm}}$

d.  $7.50 \times 3.5 = \underline{\hspace{2cm}}$

4. Carolyn buys 1.2 pounds of chicken breast. If each pound of chicken breast costs \$3.70, how much will she pay for the chicken breast?

5. A kitchen measures 3.75 meters by 4.2 meters.

- a. Find the area of the kitchen.

- b. The area of the living room is one and a half times that of the kitchen. Find the total area of the living room and the kitchen.



Name \_\_\_\_\_

Date \_\_\_\_\_

1. Multiply using fraction form and unit form. Check your answer by counting the decimal places.  
The first one is done for you.

a.  $3.3 \times 1.6 = \frac{33}{10} \times \frac{16}{10}$

$$= \frac{33 \times 16}{100}$$

$$= \frac{528}{100}$$

$$= 5.28$$

$$\begin{array}{r} 33 \text{ tenths} \\ \times 16 \text{ tenths} \\ \hline 198 \\ + 330 \\ \hline 528 \text{ hundredths} \end{array}$$

b.  $3.3 \times 0.8 =$

$$\begin{array}{r} 33 \text{ tenths} \\ \times 8 \text{ tenths} \\ \hline \end{array}$$

c.  $4.4 \times 3.2 =$

d.  $2.2 \times 1.6 =$

2. Multiply using fraction form and unit form. The first one is partially done for you.

a.  $3.36 \times 1.4 = \frac{336}{100} \times \frac{14}{10}$

$$= \frac{336 \times 14}{1,000}$$

$$= \frac{4,704}{1,000}$$

$$= 4.704$$

$$\begin{array}{r} 336 \text{ hundredths} \\ \times 14 \text{ tenths} \\ \hline \end{array}$$

b.  $3.35 \times 0.7 =$

$$\begin{array}{r} 335 \text{ hundredths} \\ \times 7 \text{ tenths} \\ \hline \end{array}$$

c.  $4.04 \times 3.2 =$

d.  $4.4 \times 0.16 =$

3. Solve using the standard algorithm. Show your thinking about the units of your product. The first one is done for you.

a.  $3.2 \times 0.6 = 1.92$

$$\begin{array}{r} 3 \text{ 2 tenths} \\ \times \underline{6 \text{ tenths}} \\ 1 \text{ 9 2 hundredths} \end{array}$$

$$\frac{32}{10} \times \frac{6}{10} = \frac{32 \times 6}{100}$$

b.  $2.3 \times 2.1 = \underline{\hspace{2cm}}$

$$\begin{array}{r} 2 \text{ 3 tenths} \\ \times \underline{2 \text{ 1 tenths}} \end{array}$$

c.  $7.41 \times 3.4 = \underline{\hspace{2cm}}$

d.  $6.50 \times 4.5 = \underline{\hspace{2cm}}$

4. Erik buys 2.5 pounds of cashews. If each pound of cashews costs \$7.70, how much will he pay for the cashews?

5. A swimming pool at a park measures 9.75 meters by 7.2 meters.

a. Find the area of the swimming pool.

b. The area of the playground is one and a half times that of the swimming pool. Find the total area of the swimming pool and the playground.

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Convert. Express your answer as a mixed number, if possible. The first one is done for you.

<p>a. <math>2 \text{ ft} = \frac{2}{3} \text{ yd}</math></p> <p><math>2 \text{ ft} = 2 \times 1 \text{ ft}</math></p> <p><math>= 2 \times \frac{1}{3} \text{ yd}</math></p> <p><math>= \frac{2}{3} \text{ yd}</math></p>	<p>b. <math>4 \text{ ft} = \text{_____} \text{ yd}</math></p> <p><math>4 \text{ ft} = 4 \times 1 \text{ ft}</math></p> <p><math>= 4 \times \text{_____} \text{ yd}</math></p> <p><math>= \text{_____} \text{ yd}</math></p> <p><math>=</math></p>
<p>c. <math>7 \text{ in} = \text{_____} \text{ ft}</math></p>	<p>d. <math>13 \text{ in} = \text{_____} \text{ ft}</math></p>
<p>e. <math>5 \text{ oz} = \text{_____} \text{ lb}</math></p>	<p>f. <math>18 \text{ oz} = \text{_____} \text{ lb}</math></p>

2. Regina buys 24 inches of trim for a craft project.
  - a. What fraction of a yard does Regina buy?
  
  
  
  
  
  
  
  
  
  
  - b. If a whole yard of trim costs \$6, how much did Regina pay?
  
  
  
  
  
  
  
  
  
  
3. At Yo-Yo Yogurt, the scale says that Sara has 8 ounces of vanilla yogurt in her cup. Her father's yogurt weighs 11 ounces. How many pounds of frozen yogurt did they buy altogether? Express your answer as a mixed number.
  
  
  
  
  
  
  
  
  
  
4. Pheng-Xu drinks 1 cup of milk every day for lunch. How many gallons of milk does he drink in 2 weeks?

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Convert. Express your answer as a mixed number, if possible.

a. $2 \text{ ft} = \frac{2}{3} \text{ yd}$  $2 \text{ ft} = 2 \times 1 \text{ ft}$  $= 2 \times \frac{1}{3} \text{ yd}$  $= \frac{2}{3} \text{ yd}$	b. $6 \text{ ft} = \text{_____ yd}$  $6 \text{ ft} = 6 \times 1 \text{ ft}$  $= 6 \times \text{_____ yd}$  $= \text{_____ yd}$
c. $5 \text{ in} = \text{_____ ft}$	d. $14 \text{ in} = \text{_____ ft}$
e. $7 \text{ oz} = \text{_____ lb}$	f. $20 \text{ oz} = \text{_____ lb}$
g. $1 \text{ pt} = \text{_____ qt}$	h. $4 \text{ pt} = \text{_____ qt}$

2. Marty buys 12 ounces of granola.
  - a. What fraction of a pound of granola did Marty buy?
  
  
  
  
  
  
  
  
  
  
  - b. If a whole pound of granola costs \$4, how much did Marty pay?
  
  
  
  
  
  
  
  
  
  
3. Sara and her dad visit Yo-Yo Yogurt again. This time, the scale says that Sara has 14 ounces of vanilla yogurt in her cup. Her father's yogurt weighs half as much. How many pounds of frozen yogurt did they buy altogether on this visit? Express your answer as a mixed number.
  
  
  
  
  
  
  
  
  
  
4. An art teacher uses 1 quart of blue paint each month. In one year, how many gallons of paint will she use?

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Convert. Show your work. Express your answer as a mixed number. (Draw a tape diagram if it helps you.) The first one is done for you.

<p>a. <math>2\frac{2}{3}</math> yd = <u>8</u> ft</p> $2\frac{2}{3} \text{ yd} = 2\frac{2}{3} \times 1 \text{ yd}$ $= 2\frac{2}{3} \times 3 \text{ ft}$ $= \frac{8}{3} \times 3 \text{ ft}$ $= \frac{24}{3} \text{ ft}$ $= 8 \text{ ft}$	<p>b. <math>1\frac{1}{2}</math> qt = _____ gal</p> $1\frac{1}{2} \text{ qt} = 1\frac{1}{2} \times 1 \text{ qt}$ $= 1\frac{1}{2} \times \frac{1}{4} \text{ gal}$ $= \frac{3}{2} \times \frac{1}{4} \text{ gal}$ $=$
<p>c. <math>4\frac{2}{3}</math> ft = _____ in</p>	<p>d. <math>9\frac{1}{2}</math> pt = _____ qt</p>
<p>e. <math>3\frac{3}{5}</math> hr = _____ min</p>	<p>f. <math>3\frac{2}{3}</math> ft = _____ yd</p>

2. Three dump trucks are carrying topsoil to a construction site. Truck A carries 3,545 lb, Truck B carries 1,758 lb, and Truck C carries 3,697 lb. How many tons of topsoil are the 3 trucks carrying altogether?
3. Melissa buys  $3\frac{3}{4}$  gallons of iced tea. Denita buys 7 quarts more than Melissa. How much tea do they buy altogether? Express your answer in quarts.
4. Marvin buys a hose that is  $27\frac{3}{4}$  feet long. He already owns a hose at home that is  $\frac{2}{3}$  the length of the new hose. How many total yards of hose does Marvin have now?



Name \_\_\_\_\_

Date \_\_\_\_\_

1. Convert. Show your work. Express your answer as a mixed number. The first one is done for you.

<p>a. <math>2\frac{2}{3}</math> yd = <u>8</u> ft</p> $2\frac{2}{3}$ yd = $2\frac{2}{3} \times 1$ yd $= 2\frac{2}{3} \times 3$ ft $= \frac{8}{3} \times 3$ ft $= \frac{24}{3}$ ft $= 8$ ft	<p>b. <math>1\frac{1}{4}</math> ft = _____ yd</p> $1\frac{1}{4}$ ft = $1\frac{1}{4} \times 1$ ft $= 1\frac{1}{4} \times \frac{1}{3}$ yd $= \frac{5}{4} \times \frac{1}{3}$ yd $=$
<p>c. <math>3\frac{5}{6}</math> ft = _____ in</p>	<p>d. <math>7\frac{1}{2}</math> pt = _____ qt</p>
<p>e. <math>4\frac{3}{10}</math> hr = _____ min</p>	<p>f. 33 months = _____ years</p>

2. Four members of a track team run a relay race in 165 seconds. How many minutes did it take them to run the race?
3. Horace buys  $2\frac{3}{4}$  pounds of blueberries for a pie. He needs 48 ounces of blueberries for the pie. How many more pounds of blueberries does he need to buy?
4. Tiffany is sending a package that may not exceed 16 pounds. The package contains books that weigh a total of  $9\frac{3}{8}$  pounds. The other items to be sent weigh  $\frac{3}{5}$  the weight of the books. Will Tiffany be able to send the package?

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Fill in the blanks. The first one has been done for you.

a.  $\frac{1}{4} \times 1 = \frac{1}{4} \times \frac{3}{3} = \frac{3}{12}$

b.  $\frac{3}{4} \times 1 = \frac{3}{4} \times \text{---} = \frac{21}{28}$

c.  $\frac{7}{4} \times 1 = \frac{7}{4} \times \text{---} = \frac{35}{20}$

d. Use words to compare the size of the product to the size of the first factor.

2. Express each fraction as an equivalent decimal.

a.  $\frac{1}{4} \times \frac{25}{25} =$

b.  $\frac{3}{4} \times \frac{25}{25} =$

c.  $\frac{1}{5} \times \text{---} =$

d.  $\frac{4}{5} \times \text{---} =$

e.  $\frac{1}{20}$

f.  $\frac{27}{20}$

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

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

i.  $\frac{24}{25}$

j.  $\frac{93}{50}$

k.  $2\frac{6}{25}$

l.  $3\frac{31}{50}$

3. Jack said that if you take a number and multiply it by a fraction, the product will always be smaller than what you started with. Is he correct? Why or why not? Explain your answer, and give at least two examples to support your thinking.
4. There is an infinite number of ways to represent 1 on the number line. In the space below, write at least four expressions multiplying by 1. Represent *one* differently in each expression.
5. Maria multiplied by 1 to rename  $\frac{1}{4}$  as hundredths. She made factor pairs equal to 10. Use her method to change one-eighth to an equivalent decimal.

$$\text{Maria's way: } \frac{1}{4} = \frac{1}{2 \times 2} \times \frac{5 \times 5}{5 \times 5} = \frac{5 \times 5}{(2 \times 5) \times (2 \times 5)} = \frac{25}{100} = 0.25$$

$$\frac{1}{8} =$$

Paulo renamed  $\frac{1}{8}$  as a decimal, too. He knows the decimal equal to  $\frac{1}{4}$ , and he knows that  $\frac{1}{8}$  is half as much as  $\frac{1}{4}$ . Can you use his ideas to show another way to find the decimal equal to  $\frac{1}{8}$ ?

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Fill in the blanks.

a.  $\frac{1}{3} \times 1 = \frac{1}{3} \times \frac{3}{3} = \frac{\quad}{9}$

b.  $\frac{2}{3} \times 1 = \frac{2}{3} \times \frac{\quad}{\quad} = \frac{14}{21}$

c.  $\frac{5}{2} \times 1 = \frac{5}{2} \times \frac{\quad}{\quad} = \frac{25}{\quad}$

d. Compare the first factor to the value of the product.

2. Express each fraction as an equivalent decimal. The first one is partially done for you.

a.  $\frac{3}{4} \times \frac{25}{25} = \frac{3 \times 25}{4 \times 25} = \frac{\quad}{100} =$

b.  $\frac{1}{4} \times \frac{25}{25} =$

c.  $\frac{2}{5} \times \frac{\quad}{\quad} =$

d.  $\frac{3}{5} \times \frac{\quad}{\quad} =$

e.  $\frac{3}{20}$

f.  $\frac{25}{20}$

g.  $\frac{23}{25}$

h.  $\frac{89}{50}$

i.  $3\frac{11}{25}$

j.  $5\frac{41}{50}$

3.  $\frac{6}{8}$  is equivalent to  $\frac{3}{4}$ . How can you use this to help you write  $\frac{6}{8}$  as a decimal? Show your thinking to solve.
4. A number multiplied by a fraction is not always smaller than the original number. Explain this and give at least two examples to support your thinking.
5. Elise has  $\frac{3}{4}$  of a dollar. She buys a stamp that costs 44 cents. Change both numbers into decimals, and tell how much money Elise has after paying for the stamp.

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Solve for the unknown. Rewrite each phrase as a multiplication sentence. Circle the scaling factor and put a box around the number of meters.

a.  $\frac{1}{2}$  as long as 8 meters = \_\_\_\_\_ meter(s)

b. 8 times as long as  $\frac{1}{2}$  meter = \_\_\_\_\_ meter(s)

2. Draw a tape diagram to model each situation in Problem 1, and describe what happened to the number of meters when it was multiplied by the scaling factor.

a.

b.

3. Fill in the blank with a numerator or denominator to make the number sentence true.

a.  $7 \times \frac{\quad}{4} < 7$

b.  $\frac{7}{\quad} \times 15 > 15$

c.  $3 \times \frac{\quad}{5} = 3$

4. Look at the inequalities in each box. Choose a single fraction to write in all three blanks that would make all three number sentences true. Explain how you know.

a.

$\frac{3}{4} \times \underline{\quad} > \frac{3}{4}$	$2 \times \underline{\quad} > 2$	$\frac{7}{5} \times \underline{\quad} > \frac{7}{5}$
--	----------------------------------	--

b.

$\frac{3}{4} \times \underline{\quad} < \frac{3}{4}$	$2 \times \underline{\quad} < 2$	$\frac{7}{5} \times \underline{\quad} < \frac{7}{5}$
--	----------------------------------	--

5. Johnny says multiplication always makes numbers bigger. Explain to Johnny why this isn't true. Give more than one example to help him understand.
6. A company uses a sketch to plan an advertisement on the side of a building. The lettering on the sketch is  $\frac{3}{4}$  inch tall. In the actual advertisement, the letters must be 34 times as tall. How tall will the letters be on the building?
7. Jason is drawing the floor plan of his bedroom. He is drawing everything with dimensions that are  $\frac{1}{12}$  of the actual size. His bed measures 6 ft by 3 ft, and the room measures 14 ft by 16 ft. What are the dimensions of his bed and room in his drawing?



Name \_\_\_\_\_

Date \_\_\_\_\_

1. Solve for the unknown. Rewrite each phrase as a multiplication sentence. Circle the scaling factor and put a box around the number of meters.

a.  $\frac{1}{3}$  as long as 6 meters = \_\_\_\_\_ meter(s)

b. 6 times as long as  $\frac{1}{3}$  meter = \_\_\_\_\_ meter(s)

2. Draw a tape diagram to model each situation in Problem 1, and describe what happened to the number of meters when it was multiplied by the scaling factor.

a.

b.

3. Fill in the blank with a numerator or denominator to make the number sentence true.

a.  $5 \times \frac{\quad}{3} > 5$

b.  $\frac{6}{\quad} \times 12 < 12$

c.  $4 \times \frac{\quad}{5} = 4$

4. Look at the inequalities in each box. Choose a single fraction to write in all three blanks that would make all three number sentences true. Explain how you know.

a.

$\frac{2}{3} \times \underline{\quad} > \frac{2}{3}$

$4 \times \underline{\quad} > 4$

$\frac{5}{3} \times \underline{\quad} > \frac{5}{3}$

b.

$\frac{2}{3} \times \underline{\quad} < \frac{2}{3}$

$4 \times \underline{\quad} < 4$

$\frac{5}{3} \times \underline{\quad} < \frac{5}{3}$

5. Write a number in the blank that will make the number sentence true.
- a.  $3 \times \underline{\hspace{1cm}} < 1$
- b. Explain how multiplying by a whole number can result in a product less than 1.
6. In a sketch, a fountain is drawn  $\frac{1}{4}$  yard tall. The actual fountain will be 68 times as tall. How tall will the fountain be?
7. In blueprints, an architect's firm drew everything  $\frac{1}{24}$  of the actual size. The windows will actually measure 4 ft by 6 ft and doors measure 12 ft by 8 ft. What are the dimensions of the windows and the doors in the drawing?

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Fill in the blank using one of the following scaling factors to make each number sentence true.

1.021	0.989	1.00
-------	-------	------

- a.  $3.4 \times \underline{\hspace{1cm}} = 3.4$       b.  $\underline{\hspace{1cm}} \times 0.21 > 0.21$       c.  $8.04 \times \underline{\hspace{1cm}} < 8.04$

2.

- a. Sort the following expressions by rewriting them in the table.

The product is less than the boxed number:	The product is greater than the boxed number:

$$\boxed{13.89} \times 1.004$$

$$\boxed{602} \times 0.489$$

$$\boxed{102.03} \times 4.015$$

$$\boxed{0.3} \times 0.069$$

$$\boxed{0.72} \times 1.24$$

$$\boxed{0.2} \times 0.1$$

- b. Explain your sorting by writing a sentence that tells what the expressions in each column of the table have in common.

3. Write a statement using one of the following phrases to compare the value of the expressions. Then, explain how you know.

*is slightly more than*    *is a lot more than*    *is slightly less than*    *is a lot less than*

a.  $4 \times 0.988$  \_\_\_\_\_ 4

b.  $1.05 \times 0.8$  \_\_\_\_\_ 0.8

c.  $1,725 \times 0.013$  \_\_\_\_\_ 1,725

d.  $989.001 \times 1.003$  \_\_\_\_\_ 1.003

e.  $0.002 \times 0.911$  \_\_\_\_\_ 0.002

4. During science class, Teo, Carson, and Dhakir measure the length of their bean sprouts. Carson's sprout is 0.9 times the length of Teo's, and Dhakir's is 1.08 times the length of Teo's. Whose bean sprout is the longest? The shortest? Explain your reasoning.

5. Complete the following statements; then use decimals to give an example of each.

- $a \times b > a$  will always be true when  $b$  is...
  
  
- $a \times b < a$  will always be true when  $b$  is...

Name \_\_\_\_\_

Date \_\_\_\_\_

1.

- a. Sort the following expressions by rewriting them in the table.

The product is less than the boxed number:	The product is greater than the boxed number:

$\boxed{12.5} \times 1.989$

$\boxed{828} \times 0.921$

$\boxed{321.46} \times 1.26$

$\boxed{0.007} \times 1.02$

$\boxed{2.16} \times 1.11$

$\boxed{0.05} \times 0.1$

- b. What do the expressions in each column have in common?

2. Write a statement using one of the following phrases to compare the value of the expressions. Then, explain how you know.

*is slightly more than**is a lot more than**is slightly less than**is a lot less than*

a.  $14 \times 0.999$  \_\_\_\_\_ 14

b.  $1.01 \times 2.06$  \_\_\_\_\_ 2.06

c.  $1,955 \times 0.019$  \_\_\_\_\_ 1,955

- d. Two thousand  $\times$  1.0001 \_\_\_\_\_ two thousand
- e. Two-thousandths  $\times$  0.911 \_\_\_\_\_ two-thousandths

3. Rachel is 1.5 times as heavy as her cousin, Kayla. Another cousin, Jonathan, weighs 1.25 times as much as Kayla. List the cousins, from lightest to heaviest, and explain your thinking.

4. Circle your choice.

a.  $a \times b > a$

For this statement to be true,  $b$  must be **greater than 1** **less than 1**

Write two expressions that support your answer. Be sure to include one decimal example.

b.  $a \times b < a$

For this statement to be true,  $b$  must be **greater than 1** **less than 1**

Write two expressions that support your answer. Be sure to include one decimal example.

Name \_\_\_\_\_

Date \_\_\_\_\_

1. A vial contains 20 mL of medicine. If each dose is  $\frac{1}{8}$  of the vial, how many mL is each dose? Express your answer as a decimal.

2. A container holds 0.7 liters of oil and vinegar.  $\frac{3}{4}$  of the mixture is vinegar. How many liters of vinegar are in the container? Express your answer as both a fraction and a decimal.



3. Andres completed a 5-km race in 13.5 minutes. His sister's time was  $1\frac{1}{2}$  times longer than his time. How long, in minutes, did it take his sister to run the race?
4. A clothing factory uses 1,275.2 meters of cloth a week to make shirts. How much cloth is needed to make  $3\frac{3}{5}$  times as many shirts?

5. There are  $\frac{3}{4}$  as many boys as girls in a class of fifth-graders. If there are 35 students in the class, how many are girls?
6. Ciro purchased a concert ticket for \$56. The cost of the ticket was  $\frac{4}{5}$  the cost of his dinner. The cost of his hotel was  $2\frac{1}{2}$  times as much as his ticket. How much did Ciro spend altogether for the concert ticket, hotel, and dinner?



3. A community bike ride offers a short 5.7-mile ride for children and families. The short ride is followed by a long ride,  $5\frac{2}{3}$  times as long as the short ride, for adults. If a woman bikes the short ride with her children and then the long ride with her friends, how many miles does she ride altogether?
4. Sal bought a house for \$78,524.60. Twelve years later he sold the house for  $2\frac{3}{4}$  times as much. What was the sale price of the house?

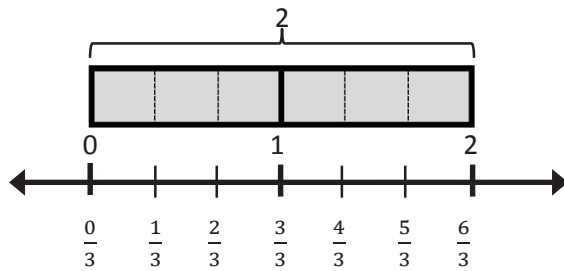
5. In the fifth grade at Lenape Elementary School, there are  $\frac{4}{5}$  as many students who do not wear glasses as those who do wear glasses. If there are 60 students who wear glasses, how many students are in the fifth grade?
6. At a factory, a mechanic earns \$17.25 an hour. The president of the company earns  $6\frac{2}{3}$  times as much for each hour he works. The janitor at the same company earns  $\frac{3}{5}$  as much as the mechanic. How much does the company pay for all three employees' wages for one hour of work?

Name \_\_\_\_\_

Date \_\_\_\_\_

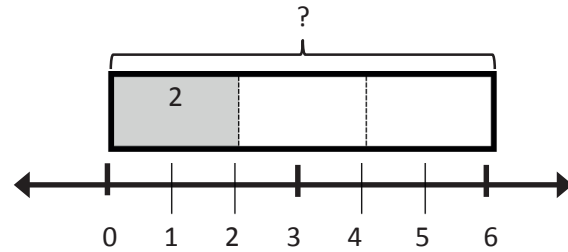
1. Draw a tape diagram and a number line to solve. You may draw the model that makes the most sense to you. Fill in the blanks that follow. Use the example to help you.

Example:  $2 \div \frac{1}{3} = \underline{6}$



There are 3 thirds in 1 whole.

There are 6 thirds in 2 wholes.



If 2 is  $\frac{1}{3}$ , what is the whole? 6

a.  $4 \div \frac{1}{2} = \underline{\hspace{2cm}}$

There are      halves in 1 whole.

If 4 is  $\frac{1}{2}$ , what is the whole?           

There are      halves in 4 wholes.

b.  $2 \div \frac{1}{4} = \underline{\hspace{2cm}}$

There are      fourths in 1 whole.

If 2 is  $\frac{1}{4}$ , what is the whole?           

There are      fourths in 2 wholes.

c.  $5 \div \frac{1}{3} =$  \_\_\_\_\_

There are \_\_\_\_\_ thirds in 1 whole.

There are \_\_\_\_\_ thirds in 5 wholes.

If 5 is  $\frac{1}{3}$ , what is the whole? \_\_\_\_\_

d.  $3 \div \frac{1}{5} =$  \_\_\_\_\_

There are \_\_\_\_\_ fifths in 1 whole.

There are \_\_\_\_\_ fifths in 3 wholes.

If 3 is  $\frac{1}{5}$ , what is the whole? \_\_\_\_\_

2. Divide. Then, multiply to check.

a. $5 \div \frac{1}{2}$	b. $3 \div \frac{1}{2}$	c. $4 \div \frac{1}{5}$	d. $1 \div \frac{1}{6}$
e. $2 \div \frac{1}{8}$	f. $7 \div \frac{1}{6}$	g. $8 \div \frac{1}{3}$	h. $9 \div \frac{1}{4}$

3. For an art project, Mrs. Williams is dividing construction paper into fourths. How many fourths can she make from 5 pieces of construction paper?

4. Use the chart below to answer the following questions.

**Donnie's Diner Lunch Menu**

Food	Serving Size
Hamburger	$\frac{1}{3}$ lb
Pickles	$\frac{1}{4}$ pickle
Potato chips	$\frac{1}{8}$ bag
Chocolate milk	$\frac{1}{2}$ cup

- a. How many hamburgers can Donnie make with 6 pounds of hamburger meat?

- b. How many pickle servings can be made from a jar of 15 pickles?



- c. How many servings of chocolate milk can he serve from a gallon of milk?
5. Three gallons of water fill  $\frac{1}{4}$  of the elephant's pail at the zoo. How much water does the pail hold?

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Draw a tape diagram and a number line to solve. Fill in the blanks that follow.

a.  $3 \div \frac{1}{3} =$  \_\_\_\_\_

There are \_\_\_\_ thirds in 1 whole.

There are \_\_\_\_ thirds in 3 wholes.

If 3 is  $\frac{1}{3}$ , what is the whole? \_\_\_\_\_

b.  $3 \div \frac{1}{4} =$  \_\_\_\_\_

There are \_\_\_\_ fourths in 1 whole.

There are \_\_\_\_ fourths in \_\_ wholes.

If 3 is  $\frac{1}{4}$ , what is the whole? \_\_\_\_\_

c.  $4 \div \frac{1}{3} =$  \_\_\_\_\_

There are \_\_\_\_ thirds in 1 whole.

There are \_\_\_\_ thirds in \_\_ wholes.

If 4 is  $\frac{1}{3}$ , what is the whole? \_\_\_\_\_

d.  $5 \div \frac{1}{4} =$  \_\_\_\_\_

There are \_\_\_\_ fourths in 1 whole.

There are \_\_\_\_ fourths in \_\_ wholes.

If 5 is  $\frac{1}{4}$ , what is the whole? \_\_\_\_\_

2. Divide. Then, multiply to check.

a. $2 \div \frac{1}{4}$	b. $6 \div \frac{1}{2}$	c. $5 \div \frac{1}{4}$	d. $5 \div \frac{1}{8}$
e. $6 \div \frac{1}{3}$	f. $3 \div \frac{1}{6}$	g. $6 \div \frac{1}{5}$	h. $6 \div \frac{1}{10}$

3. A principal orders 8 sub sandwiches for a teachers' meeting. She cuts the subs into thirds and puts the mini-subs onto a tray. How many mini-subs are on the tray?

4. Some students prepare 3 different snacks. They make  $\frac{1}{8}$  pound bags of nut mix,  $\frac{1}{4}$  pound bags of cherries, and  $\frac{1}{6}$  pound bags of dried fruit. If they buy 3 pounds of nut mix, 5 pounds of cherries, and 4 pounds of dried fruit, how many of each type of snack bag will they be able to make?

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Draw a model or tape diagram to solve. Use the thought bubble to show your thinking. Write your quotient in the blank. Use the example to help you.

Example:  $\frac{1}{2} \div 3$

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

1 half  $\div$  3  
= 3 sixths  $\div$  3  
= 1 sixth

a.  $\frac{1}{3} \div 2 =$  \_\_\_\_\_

b.  $\frac{1}{3} \div 4 =$  \_\_\_\_\_

c.  $\frac{1}{4} \div 2 =$  \_\_\_\_\_

d.  $\frac{1}{4} \div 3 =$  \_\_\_\_\_

2. Divide. Then, multiply to check.

a. $\frac{1}{2} \div 7$	b. $\frac{1}{3} \div 6$	c. $\frac{1}{4} \div 5$	d. $\frac{1}{5} \div 4$
e. $\frac{1}{5} \div 2$	f. $\frac{1}{6} \div 3$	g. $\frac{1}{8} \div 2$	h. $\frac{1}{10} \div 10$

3. Tasha eats half her snack and gives the other half to her two best friends for them to share equally. What portion of the whole snack does each friend get? Draw a picture to support your response.
4. Mrs. Appler used  $\frac{1}{2}$  gallon of olive oil to make 8 identical batches of salad dressing.
- How many gallons of olive oil did she use in each batch of salad dressing?
  - How many cups of olive oil did she use in each batch of salad dressing?

5. Mariano delivers newspapers. He always puts  $\frac{3}{4}$  of his weekly earnings in his savings account and then divides the rest equally into 3 piggy banks for spending at the snack shop, the arcade, and the subway.
- a. What fraction of his earnings does Mariano put into each piggy bank?
- b. If Mariano adds \$2.40 to each piggy bank every week, how much does Mariano earn per week delivering papers?

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Solve and support your answer with a model or tape diagram. Write your quotient in the blank.

a.  $\frac{1}{2} \div 4 =$  \_\_\_\_\_

b.  $\frac{1}{3} \div 6 =$  \_\_\_\_\_

c.  $\frac{1}{4} \div 3 =$  \_\_\_\_\_

d.  $\frac{1}{5} \div 2 =$  \_\_\_\_\_

2. Divide. Then, multiply to check.

a. $\frac{1}{2} \div 10$	b. $\frac{1}{4} \div 10$	c. $\frac{1}{3} \div 5$	d. $\frac{1}{5} \div 3$
e. $\frac{1}{8} \div 4$	f. $\frac{1}{7} \div 3$	g. $\frac{1}{10} \div 5$	h. $\frac{1}{5} \div 20$



3. Teams of four are competing in a quarter-mile relay race. Each runner must run the same exact distance. What is the distance each teammate runs?
4. Solomon has read  $\frac{1}{3}$  of his book. He finishes the book by reading the same amount each night for 5 nights.
- a. What fraction of the book does he read each of the 5 nights?
- b. If he reads 14 pages on each of the 5 nights, how long is the book?

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Mrs. Silverstein bought 3 mini cakes for a birthday party. She cuts each cake into quarters and plans to serve each guest 1 quarter of a cake. How many guests can she serve with all her cakes? Draw a picture to support your response.

2. Mr. Pham has  $\frac{1}{4}$  pan of lasagna left in the refrigerator. He wants to cut the lasagna into equal slices so he can have it for dinner for 3 nights. How much lasagna will he eat each night? Draw a picture to support your response.

3. The perimeter of a square is  $\frac{1}{5}$  of a meter.
- Find the length of each side in meters. Draw a picture to support your response.
  
  
  
  
  
  
  
  
  
  
  - How long is each side in centimeters?
4. A pallet holding 5 identical crates weighs  $\frac{1}{4}$  of a ton.
- How many tons does each crate weigh? Draw a picture to support your response.

- b. How many pounds does each crate weigh?
5. Faye has 5 pieces of ribbon, each 1 yard long. She cuts each ribbon into sixths.
- a. How many sixths will she have after cutting all the ribbons?
- b. How long will each of the sixths be in inches?

6. A glass pitcher is filled with water.  $\frac{1}{8}$  of the water is poured equally into 2 glasses.
- What fraction of the water is in each glass?
  - If each glass has 3 fluid ounces of water in it, how many fluid ounces of water were in the full pitcher?
  - If  $\frac{1}{4}$  of the remaining water is poured out of the pitcher to water a plant, how many cups of water are left in the pitcher?

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Kelvin ordered four pizzas for a birthday party. The pizzas were cut in eighths. How many slices were there? Draw a picture to support your response.

2. Virgil has  $\frac{1}{6}$  of a birthday cake left over. He wants to share the leftover cake with 3 friends. What fraction of the original cake will each of the 4 people receive? Draw a picture to support your response.

3. A pitcher of water contains  $\frac{1}{4}$  liters of water. The water is poured equally into 5 glasses.  
a. How many liters of water are in each glass? Draw a picture to support your response.

- b. Write the amount of water in each glass in milliliters.
4. Drew has 4 pieces of rope 1 meter long each. He cuts each rope into fifths.
- a. How many fifths will he have after cutting all the ropes?
- b. How long will each of the fifths be in centimeters?

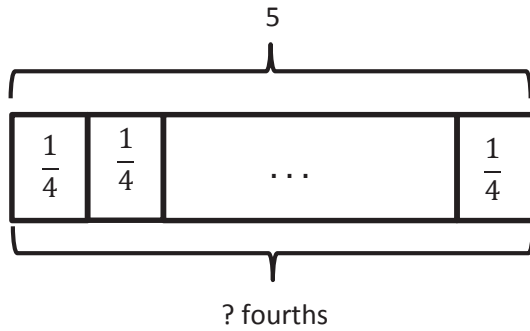
5. A container is filled with blueberries.  $\frac{1}{6}$  of the blueberries is poured equally into two bowls.
- What fraction of the blueberries is in each bowl?
  - If each bowl has 6 ounces of blueberries in it, how many ounces of blueberries were in the full container?
  - If  $\frac{1}{5}$  of the remaining blueberries is used to make muffins, how many pounds of blueberries are left in the container?



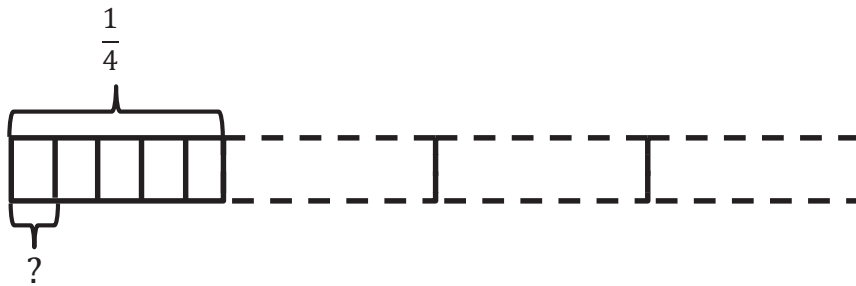
Name \_\_\_\_\_

Date \_\_\_\_\_

1. Create and solve a division story problem about 5 meters of rope that is modeled by the tape diagram below.



2. Create and solve a story problem about  $\frac{1}{4}$  pound of almonds that is modeled by the tape diagram below.



3. Draw a tape diagram and create a word problem for the following expressions, and then solve.

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

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

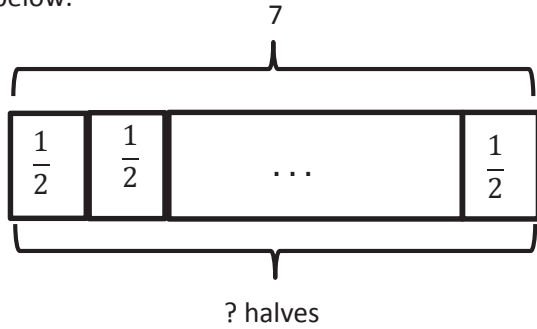
c.  $\frac{1}{4} \div 3$

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

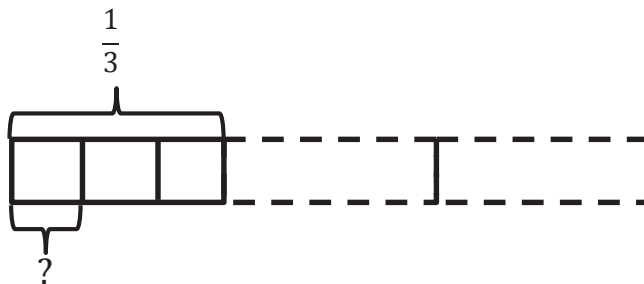
Name \_\_\_\_\_

Date \_\_\_\_\_

1. Create and solve a division story problem about 7 feet of rope that is modeled by the tape diagram below.



2. Create and solve a story problem about  $\frac{1}{3}$  pound of flour that is modeled by the tape diagram below.



3. Draw a tape diagram and create a word problem for the following expressions. Then, solve and check.

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

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

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

d.  $3 \div \frac{1}{10}$

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Divide. Rewrite each expression as a division sentence with a fraction divisor, and fill in the blanks. The first one is done for you.

Example:  $2 \div 0.1 = 2 \div \frac{1}{10} = 20$

There are 10 tenths in 1 whole.

There are 20 tenths in 2 wholes.

a.  $5 \div 0.1$

There are \_\_\_\_\_ tenths in 1 whole.

There are \_\_\_\_\_ tenths in 5 wholes.

b.  $8 \div 0.1$

There are \_\_\_\_\_ tenths in 1 whole.

There are \_\_\_\_\_ tenths in 8 wholes.

c.  $5.2 \div 0.1$

There are \_\_\_\_\_ tenths in 5 wholes.

There are \_\_\_\_\_ tenths in 2 tenths.

There are \_\_\_\_\_ tenths in 5.2.

d.  $8.7 \div 0.1$

There are \_\_\_\_\_ tenths in 8 wholes.

There are \_\_\_\_\_ tenths in 7 tenths.

There are \_\_\_\_\_ tenths in 8.7.

e.  $5 \div 0.01$

There are \_\_\_\_\_ hundredths in 1 whole.

There are \_\_\_\_\_ hundredths in 5 wholes.

f.  $8 \div 0.01$

There are \_\_\_\_\_ hundredths in 1 whole.

There are \_\_\_\_\_ hundredths in 8 wholes.

g.  $5.2 \div 0.01$

There are \_\_\_\_\_ hundredths in 5 wholes.

There are \_\_\_\_\_ hundredths in 2 tenths.

There are \_\_\_\_\_ hundredths in 5.2.

h.  $8.7 \div 0.01$

There are \_\_\_\_\_ hundredths in 8 wholes.

There are \_\_\_\_\_ hundredths in 7 tenths.

There are \_\_\_\_\_ hundredths in 8.7.

2. Divide.

a. $6 \div 0.1$	b. $18 \div 0.1$	c. $6 \div 0.01$
d. $1.7 \div 0.1$	e. $31 \div 0.01$	f. $11 \div 0.01$
g. $125 \div 0.1$	h. $3.74 \div 0.01$	i. $12.5 \div 0.01$

3. Yung bought \$4.60 worth of bubble gum. Each piece of gum cost \$0.10. How many pieces of bubble gum did Yung buy?

4. Cheryl solved a problem:  $84 \div 0.01 = 8,400$ .

Jane said, "Your answer is wrong because when you divide, the quotient is always smaller than the whole amount you start with, for example,  $6 \div 2 = 3$  and  $100 \div 4 = 25$ ." Who is correct? Explain your thinking.

5. The U.S. Mint sells 2 ounces of American Eagle gold coins to a collector. Each coin weighs one-tenth of an ounce. How many gold coins were sold to the collector?

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Divide. Rewrite each expression as a division sentence with a fraction divisor, and fill in the blanks. The first one is done for you.

Example:  $4 \div 0.1 = 4 \div \frac{1}{10} = 40$

There are 10 tenths in 1 whole.

There are 40 tenths in 4 wholes.

a.  $9 \div 0.1$

There are \_\_\_\_\_ tenths in 1 whole.

There are \_\_\_\_\_ tenths in 9 wholes.

b.  $6 \div 0.1$

There are \_\_\_\_\_ tenths in 1 whole.

There are \_\_\_\_\_ tenths in 6 wholes.

c.  $3.6 \div 0.1$

There are \_\_\_\_\_ tenths in 3 wholes.

There are \_\_\_\_\_ tenths in 6 tenths.

There are \_\_\_\_\_ tenths in 3.6.

d.  $12.8 \div 0.1$

There are \_\_\_\_\_ tenths in 12 wholes.

There are \_\_\_\_\_ tenths in 8 tenths.

There are \_\_\_\_\_ tenths in 12.8.

e.  $3 \div 0.01$

There are \_\_\_\_\_ hundredths in 1 whole.

There are \_\_\_\_\_ hundredths in 3 wholes.

f.  $7 \div 0.01$

There are \_\_\_\_\_ hundredths in 1 whole.

There are \_\_\_\_\_ hundredths in 7 wholes.

g.  $4.7 \div 0.01$

There are \_\_\_\_\_ hundredths in 4 wholes.

There are \_\_\_\_\_ hundredths in 7 tenths.

There are \_\_\_\_\_ hundredths in 4.7.

h.  $11.3 \div 0.01$

There are \_\_\_\_\_ hundredths in 11 wholes.

There are \_\_\_\_\_ hundredths in 3 tenths.

There are \_\_\_\_\_ hundredths in 11.3.

2. Divide.

a. $2 \div 0.1$	b. $23 \div 0.1$	c. $5 \div 0.01$
d. $7.2 \div 0.1$	e. $51 \div 0.01$	f. $31 \div 0.1$
g. $231 \div 0.1$	h. $4.37 \div 0.01$	i. $24.5 \div 0.01$

3. Giovanna is charged \$0.01 for each text message she sends. Last month, her cell phone bill included a \$12.60 charge for text messages. How many text messages did Giovanna send?

4. Geraldine solved a problem:  $68.5 \div 0.01 = 6,850$ .

Ralph said, "This is wrong because a quotient can't be greater than the whole you start with. For example,  $8 \div 2 = 4$  and  $250 \div 5 = 50$ ." Who is correct? Explain your thinking.

5. The price for an ounce of gold on September 23, 2013, was \$1,326.40. A group of 10 friends decide to equally share the cost of 1 ounce of gold. How much money will each friend pay?



Name \_\_\_\_\_

Date \_\_\_\_\_

1. Rewrite the division expression as a fraction and divide. The first two have been started for you.

a. $2.7 \div 0.3 = \frac{2.7}{0.3}$ $= \frac{2.7 \times 10}{0.3 \times 10}$ $= \frac{27}{3}$ $= 9$	b. $2.7 \div 0.03 = \frac{2.7}{0.03}$ $= \frac{2.7 \times 100}{0.03 \times 100}$ $= \frac{270}{3}$ $=$
c. $3.5 \div 0.5$	d. $3.5 \div 0.05$
e. $4.2 \div 0.7$	f. $0.42 \div 0.07$

g. $10.8 \div 0.9$	h. $1.08 \div 0.09$
i. $3.6 \div 1.2$	j. $0.36 \div 0.12$
k. $17.5 \div 2.5$	l. $1.75 \div 0.25$

2.  $15 \div 3 = 5$ . Explain why it is true that  $1.5 \div 0.3$  and  $0.15 \div 0.03$  have the same quotient.

3. Mr. Volok buys 2.4 kg of sugar for his bakery.
- If he pours 0.2 kg of sugar into separate bags, how many bags of sugar can he make?
  
  
  
  
  
  
  
  
  
  
  - If he pours 0.4 kg of sugar into separate bags, how many bags of sugar can he make?
4. Two wires, one 17.4 meters long and one 7.5 meters long, were cut into pieces 0.3 meters long. How many such pieces can be made from both wires?
5. Mr. Smith has 15.6 pounds of oranges to pack for shipment. He can ship 2.4 pounds of oranges in a large box and 1.2 pounds in a small box. If he ships 5 large boxes, what is the minimum number of small boxes required to ship the rest of the oranges?

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Rewrite the division expression as a fraction and divide. The first two have been started for you.

a. $2.4 \div 0.8 = \frac{2.4}{0.8}$ $= \frac{2.4 \times 10}{0.8 \times 10}$ $= \frac{24}{8}$ $=$	b. $2.4 \div 0.08 = \frac{2.4}{0.08}$ $= \frac{2.4 \times 100}{0.08 \times 100}$ $= \frac{240}{8}$ $=$
c. $4.8 \div 0.6$	d. $0.48 \div 0.06$
e. $8.4 \div 0.7$	f. $0.84 \div 0.07$

g.  $4.5 \div 1.5$

h.  $0.45 \div 0.15$

i.  $14.4 \div 1.2$

j.  $1.44 \div 0.12$

2. Leann says  $18 \div 6 = 3$ , so  $1.8 \div 0.6 = 0.3$  and  $0.18 \div 0.06 = 0.03$ . Is Leann correct? Explain how to solve these division problems.

3. Denise is making bean bags. She has 6.4 pounds of beans.
- If she makes each bean bag 0.8 pounds, how many bean bags will she be able to make?
  
  
  
  
  
  
  
  
  
  
  - If she decides instead to make mini bean bags that are half as heavy, how many can she make?
4. A restaurant's small salt shakers contain 0.6 ounces of salt. Its large shakers hold twice as much. The shakers are filled from a container that has 18.6 ounces of salt. If 8 large shakers are filled, how many small shakers can be filled with the remaining salt?

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Estimate and then divide. An example has been done for you.

$$78.4 \div 0.7 \approx 770 \div 7 = 110$$

$$= \frac{78.4}{0.7}$$

$$= \frac{78.4 \times 10}{0.7 \times 10}$$

$$= \frac{784}{7}$$

$$= 112$$

$$7 \overline{) 784}$$

$$\underline{-7}$$

$$8$$

$$\underline{-7}$$

$$14$$

$$\underline{-14}$$

$$0$$

a.  $53.2 \div 0.4 \approx$

b.  $1.52 \div 0.8 \approx$

2. Estimate and then divide. The first one has been done for you.

$$7.32 \div 0.06 \approx 720 \div 6 = 120$$

$$= \frac{7.32}{0.06}$$

$$= \frac{7.32 \times 100}{0.06 \times 100}$$

$$= \frac{732}{6}$$

$$= 122$$

$$6 \overline{) 732}$$

$$\underline{-6}$$

$$13$$

$$\underline{-12}$$

$$12$$

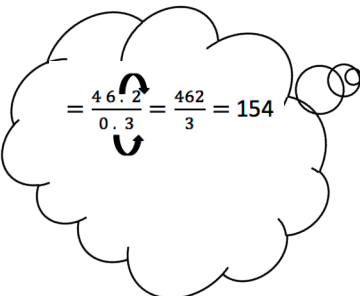
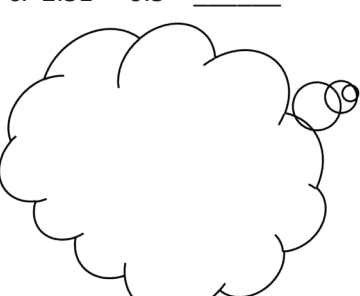
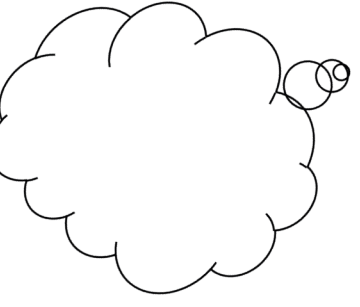
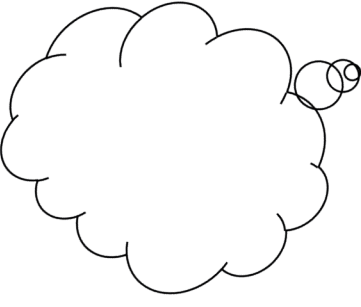
$$\underline{-12}$$

$$0$$

a.  $9.42 \div 0.03 \approx$

b.  $39.36 \div 0.96 \approx$

3. Solve using the standard algorithm. Use the thought bubble to show your thinking as you rename the divisor as a whole number.

<p>a. <math>46.2 \div 0.3 = \underline{\quad}</math></p> <div style="display: flex; align-items: center;"> <div style="flex: 1;">  </div> <div style="flex: 1; text-align: center;"> <math display="block">3 \overline{) 462}</math> </div> </div>	<p>b. <math>3.16 \div 0.04 = \underline{\quad}</math></p> 
<p>c. <math>2.31 \div 0.3 = \underline{\quad}</math></p> 	<p>d. <math>15.6 \div 0.24 = \underline{\quad}</math></p> 

4. The total distance of a race is 18.9 km.
- If volunteers set up a water station every 0.7 km, including one at the finish line, how many stations will they have?
  - If volunteers set up a first aid station every 0.9 km, including one at the finish line, how many stations will they have?
5. In a laboratory, a technician combines a salt solution contained in 27 test tubes. Each test tube contains 0.06 liter of the solution. If he divides the total amount into test tubes that hold 0.3 liter each, how many test tubes will he need?



Name \_\_\_\_\_

Date \_\_\_\_\_

1. Estimate and then divide. An example has been done for you.

$$78.4 \div 0.7 \approx 770 \div 7 = 110$$

$$= \frac{78.4}{0.7}$$

$$= \frac{78.4 \times 10}{0.7 \times 10}$$

$$= \frac{784}{7}$$

$$= 112$$

$$7 \overline{) 784}$$

$$\underline{-7} \phantom{0}$$

$$8 \phantom{0}$$

$$\underline{-7} \phantom{0}$$

$$14$$

$$\underline{-14}$$

$$0$$

a.  $61.6 \div 0.8 \approx$

b.  $5.74 \div 0.7 \approx$

2. Estimate and then divide. An example has been done for you.

$$7.32 \div 0.06 \approx 720 \div 6 = 120$$

$$= \frac{7.32}{0.06}$$

$$= \frac{7.32 \times 100}{0.06 \times 100}$$

$$= \frac{732}{6}$$

$$= 122$$

$$6 \overline{) 732}$$

$$\underline{-6} \phantom{0}$$

$$13$$

$$\underline{-12}$$

$$12$$

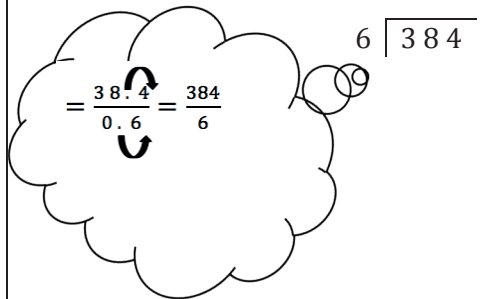
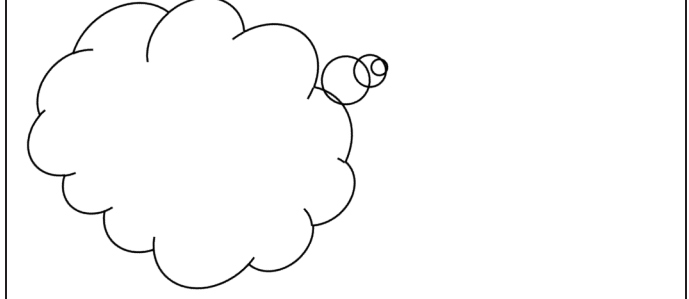
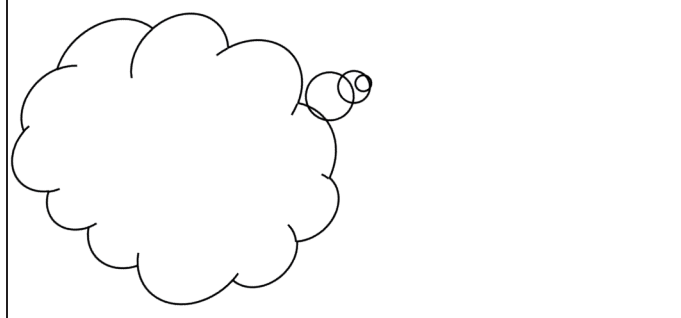
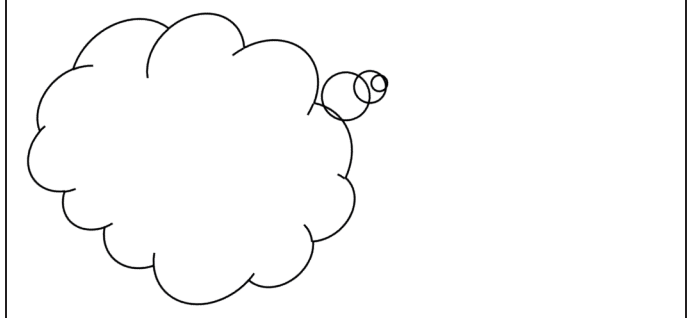
$$\underline{-12}$$

$$0$$

a.  $4.74 \div 0.06 \approx$

b.  $19.44 \div 0.54 \approx$

3. Solve using the standard algorithm. Use the thought bubble to show your thinking as you rename the divisor as a whole number.

<p>a. <math>38.4 \div 0.6 = \underline{\hspace{2cm}}</math></p> 	<p>b. <math>7.52 \div 0.08 = \underline{\hspace{2cm}}</math></p> 
<p>c. <math>12.45 \div 0.5 = \underline{\hspace{2cm}}</math></p> 	<p>d. <math>5.6 \div 0.16 = \underline{\hspace{2cm}}</math></p> 

4. Lucia is making a 21.6 centimeter beaded string to hang in the window. She decides to put a green bead every 0.4 centimeters and a purple bead every 0.6 centimeters. How many green beads and how many purple beads will she need?
5. A group of 14 friends collects 0.7 pound of blueberries and decides to make blueberry muffins. They put 0.05 pound of berries in each muffin. How many muffins can they make if they use all the blueberries they collected?

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Circle the expression equivalent to *the sum of 3 and 2 divided by  $\frac{1}{3}$* .

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

$$3 + (2 \div \frac{1}{3})$$

$$(3 + 2) \div \frac{1}{3}$$

$$\frac{1}{3} \div (3 + 2)$$

2. Circle the expression(s) equivalent to *28 divided by the difference between  $\frac{4}{5}$  and  $\frac{7}{10}$* .

$$28 \div \left(\frac{4}{5} - \frac{7}{10}\right)$$

$$\frac{28}{\frac{4}{5} - \frac{7}{10}}$$

$$\left(\frac{4}{5} - \frac{7}{10}\right) \div 28$$

$$28 \div \left(\frac{7}{10} - \frac{4}{5}\right)$$

3. Fill in the chart by writing an equivalent numerical expression.

a.	Half as much as the difference between $2\frac{1}{4}$ and $\frac{3}{8}$ .	
b.	The difference between $2\frac{1}{4}$ and $\frac{3}{8}$ divided by 4.	
c.	A third of the sum of $\frac{7}{8}$ and 22 tenths.	
d.	Add 2.2 and $\frac{7}{8}$ , and then triple the sum.	

4. Compare expressions 3(a) and 3(b). Without evaluating, identify the expression that is greater. Explain how you know.

5. Fill in the chart by writing an equivalent expression in word form.

a.		$\frac{3}{4} \times (1.75 + \frac{3}{5})$
b.		$\frac{7}{9} - (\frac{1}{8} \times 0.2)$
c.		$(1.75 + \frac{3}{5}) \times \frac{4}{3}$
d.		$2 \div (\frac{1}{2} \times \frac{4}{5})$

6. Compare the expressions in 5(a) and 5(c). Without evaluating, identify the expression that is less. Explain how you know.

7. Evaluate the following expressions.

a.  $(9 - 5) \div \frac{1}{3}$

b.  $\frac{5}{3} \times (2 \times \frac{1}{4})$

c.  $\frac{1}{3} \div (1 \div \frac{1}{4})$

d.  $\frac{1}{2} \times \frac{3}{5} \times \frac{5}{3}$

e. Half as much as  $(\frac{3}{4} \times 0.2)$

f. 3 times as much as the quotient of 2.4 and 0.6

8. Choose an expression below that matches the story problem, and write it in the blank.

$\frac{2}{3} \times (20 - 5)$

$(\frac{2}{3} \times 20) - (\frac{2}{3} \times 5)$

$\frac{2}{3} \times 20 - 5$

$(20 - \frac{2}{3}) - 5$

a. Farmer Green picked 20 carrots. He cooked  $\frac{2}{3}$  of them, and then gave 5 to his rabbits. Write the expression that tells how many carrots he had left.

Expression: \_\_\_\_\_

b. Farmer Green picked 20 carrots. He cooked 5 of them, and then gave  $\frac{2}{3}$  of the remaining carrots to his rabbits. Write the expression that tells how many carrots the rabbits will get.

Expression: \_\_\_\_\_

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Circle the expression equivalent to *the difference between 7 and 4, divided by a fifth*.

$7 + (4 \div \frac{1}{5})$

$\frac{7-4}{5}$

$(7-4) \div \frac{1}{5}$

$\frac{1}{5} \div (7-4)$

2. Circle the expression(s) equivalent to *42 divided by the sum of  $\frac{2}{3}$  and  $\frac{3}{4}$* .

$(\frac{2}{3} + \frac{3}{4}) \div 42$

$(42 \div \frac{2}{3}) + \frac{3}{4}$

$42 \div (\frac{2}{3} + \frac{3}{4})$

$\frac{42}{\frac{2}{3} + \frac{3}{4}}$

3. Fill in the chart by writing the equivalent numerical expression or expression in word form.

	Expression in word form	Numerical expression
a.	A fourth as much as the sum of $3\frac{1}{8}$ and 4.5	
b.		$(3\frac{1}{8} + 4.5) \div 5$
c.	Multiply $\frac{3}{5}$ by 5.8; then halve the product	
d.		$\frac{1}{6} \times (4.8 - \frac{1}{2})$
e.		$8 - (\frac{1}{2} \div 9)$

4. Compare the expressions in 3(a) and 3(b). Without evaluating, identify the expression that is greater. Explain how you know.

5. Evaluate the following expressions.

a.  $(11 - 6) \div \frac{1}{6}$

b.  $\frac{9}{5} \times (4 \times \frac{1}{6})$

c.  $\frac{1}{10} \div (5 \div \frac{1}{2})$

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

e. 50 divided by the difference between  $\frac{3}{4}$  and  $\frac{5}{8}$

6. Lee is sending out 32 birthday party invitations. She gives 5 invitations to her mom to give to family members. Lee mails a third of the rest, and then she takes a break to walk her dog.

a. Write a numerical expression to describe how many invitations Lee has already mailed.

b. Which expression matches how many invitations still need to be sent out?

$$32 - 5 - \frac{1}{3}(32 - 5)$$

$$\frac{2}{3} \times 32 - 5$$

$$(32 - 5) \div \frac{1}{3}$$

$$\frac{1}{3} \times (32 - 5)$$

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Ms. Hayes has  $\frac{1}{2}$  liter of juice. She distributes it equally to 6 students in her tutoring group.
  - a. How many liters of juice does each student get?
  
  
  
  
  
  
  
  
  
  
  - b. How many more liters of juice will Ms. Hayes need if she wants to give each of the 24 students in her class the same amount of juice found in Part (a)?
  
  
  
  
  
  
  
  
  
  
2. Lucia has 3.5 hours left in her workday as a car mechanic. Lucia needs  $\frac{1}{2}$  of an hour to complete one oil change.
  - a. How many oil changes can Lucia complete during the rest of her workday?
  
  
  
  
  
  
  
  
  
  
  - b. Lucia can complete two car inspections in the same amount of time it takes her to complete one oil change. How long does it take her to complete one car inspection?
  
  
  
  
  
  
  
  
  
  
- c. How many inspections can she complete in the rest of her workday?

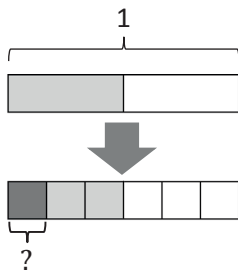


3. Carlo buys \$14.40 worth of grapefruit. Each grapefruit costs \$0.80.
- How many grapefruits does Carlo buy?
  
  
  
  
  
  
  
  
  
  
  - At the same store, Kahri spends one-third as much money on grapefruits as Carlo. How many grapefruits does she buy?
4. Studies show that a typical giant hummingbird can flap its wings once in 0.08 of a second.
- While flying for 7.2 seconds, how many times will a typical giant hummingbird flap its wings?
  
  
  
  
  
  
  
  
  
  
  - A ruby-throated hummingbird can flap its wings 4 times faster than a giant hummingbird. How many times will a ruby-throated hummingbird flap its wings in the same amount of time?

5. Create a story context for the following expression.

$$\frac{1}{3} \times (\$20 - \$3.20)$$

6. Create a story context about painting a wall for the following tape diagram.



Name \_\_\_\_\_

Date \_\_\_\_\_

1. Chase volunteers at an animal shelter after school, feeding and playing with the cats.
  - a. If he can make 5 servings of cat food from a third of a kilogram of food, how much does one serving weigh?
  
  
  
  
  
  
  
  
  
  
  - b. If Chase wants to give this same serving size to each of 20 cats, how many kilograms of food will he need?
  
  
  
  
  
  
  
  
  
  
2. Anouk has 4.75 pounds of meat. She uses a quarter pound of meat to make one hamburger.
  - a. How many hamburgers can Anouk make with the meat she has?
  
  
  
  
  
  
  
  
  
  
  - b. Sometimes Anouk makes sliders. Each slider is half as much meat as is used for a regular hamburger. How many sliders could Anouk make with the 4.75 pounds?

3. Ms. Geronimo has a \$10 gift certificate to her local bakery.
- If she buys a slice of pie for \$2.20 and uses the rest of the gift certificate to buy chocolate macaroons that cost \$0.60 each, how many macaroons can Ms. Geronimo buy?
  - If she changes her mind and instead buys a loaf of bread for \$4.60 and uses the rest to buy cookies that cost  $1\frac{1}{2}$  times as much as the macaroons, how many cookies can she buy?

4. Create a story context for the following expressions.

a.  $(5\frac{1}{4} - 2\frac{1}{8}) \div 4$

b.  $4 \times (\frac{4.8}{0.8})$

5. Create a story context for the following tape diagram.

