

MSP

Grade 5 Module 4

Lesson Refreshers

&

Homework Starters

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.

Remember:

- Label the measurement units.
- Use an X for each location.

The first location is done for you.



- 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?

↓
appears the most times on the data table

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

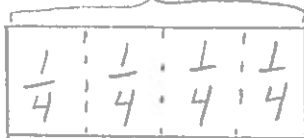
* Convert to eighths (See directions)

Name _____

Date _____

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

a. $1 \div 4$



$\frac{1}{4}$

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.

Name _____

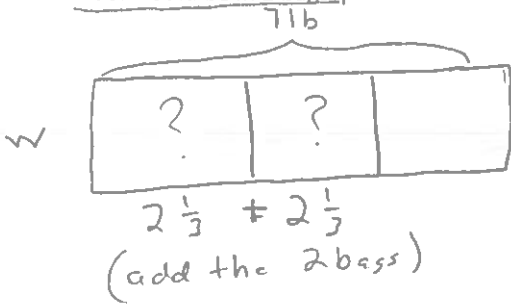
Date _____

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.)
$12 \overline{)4} \rightarrow 12$ $\frac{4}{3}$ a. $4 \div 3$ ↓ divisor	$12 \text{ thirds} \div 3$ $= 4 \text{ thirds}$	$\frac{4}{3}$ $(\frac{3}{3}) (\frac{1}{3})$	$1\frac{1}{3}$	$3 \overline{)4}$ $\underline{-3}$ 1 $\frac{1}{3} \frac{1}{3} \frac{1}{3}$ $1\frac{1}{3}$ Check $3 \times 1\frac{1}{3} = 1\frac{1}{3} + 1\frac{1}{3} + 1\frac{1}{3}$ $= 3 + \frac{3}{3}$ $= 3 + 1$ $= 4$
b. $__ \div __$	$__ \text{ fifths} \div 5$ $= __ \text{ fifths}$		$1\frac{2}{5}$	
c. $__ \div __$	$__ \text{ halves} \div 2$ $= __ \text{ halves}$			$2 \overline{)7}$
d. $7 \div 4$		$\frac{7}{4}$		

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 lb of wool. If he separated the wool equally into 3 bags, how much wool would be in 2 bags?



$$\begin{aligned}
 3 \text{ units} &= 7 \text{ lb} \\
 1 \text{ unit} &= 7 \text{ lb} \div 3 \\
 &= \frac{7}{3} \\
 &= 2\frac{1}{3}
 \end{aligned}$$

$$\begin{array}{r}
 2\frac{1}{3} \\
 + 2\frac{1}{3} \\
 \hline
 4\frac{2}{3}
 \end{array}$$

There would be $4\frac{2}{3}$ lbs of wool in 2 bags. PK.

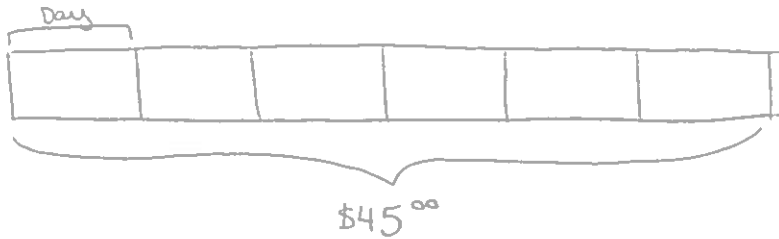
5. An adult sweater is made from 2 pounds of wool. This is 3 times as much wool as it takes to make a baby sweater. How much wool does it take to make a baby sweater? Use a tape diagram to solve.

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.

Think: $\$45 \div 6 \text{ days}$

$$\frac{45}{6}$$



$$\begin{array}{r} 07.5 \\ 6 \overline{) 45.0} \\ \underline{-0} \downarrow \\ 45 \\ \underline{-42} \\ 30 \\ \underline{-30} \\ 00 \end{array}$$

$$\begin{array}{r} \$7.50 \\ \times \quad 6 \\ \hline \$45.00 \\ \checkmark \end{array}$$

The minimum amount Scott must save is \$7.50.

Name _____

Date _____

1. Find the value of each of the following.

a.

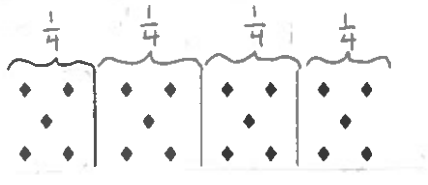


$$\frac{1}{3} \text{ of } 12 =$$

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

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

b.



$$\frac{1}{4} \text{ of } 20 = 5$$

$$\frac{3}{4} \text{ of } 20 = 15$$

$$\frac{2}{4} \text{ of } 20 = 10$$

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

There are 20 diamonds.
 $20 \div 4 = 5 \rightarrow \frac{20}{4} = 5$
 Partitioning a set into equal size groups is also showing fractions of a set.
 $\frac{1}{4}$ of 20 is $\frac{20}{4}$

KAP

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?

* Draw a set of 18
 * Partition into 9 equal size groups
 * Find $\frac{1}{9}$ of 18
 * Count $\frac{4}{9}$ of 18



$\frac{1}{9}$ of 18 = 2
 $\frac{4}{9}$ of 18 = 8

Sara lived in Rochester, NY for 8 years.

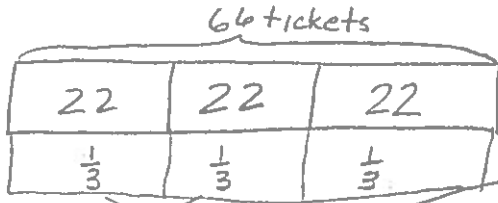
KP

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?

- 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?



Make a tape diagram separate into 3 sections, each representing $\frac{1}{3}$.

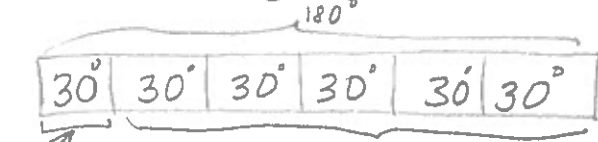
Divide:
$$\begin{array}{r} 22 \\ 3 \overline{) 66} \\ \underline{66} \\ 0 \end{array}$$

Therefore

$\frac{1}{3}$ of 66 = 22 tickets

- 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?

A straight angle = 180°
 smaller angle = $\frac{1}{6}$ of $180^\circ = 30^\circ$



larger angle = angle a = $30^\circ \times 5 = 150^\circ$

- 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?

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

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

3. Solve each problem any way you choose.

a. $\frac{1}{3} \times 60 = \frac{1 \times 60}{3} = \frac{60}{3} = 20$ $\frac{1}{3}$ minute = 20 seconds

b. $\frac{4}{5} \times 60 = \frac{4 \times \overset{12}{\cancel{60}}}{5 \cancel{1}} = 48$ $\frac{4}{5}$ hour = 48 minutes

P.K.

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

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

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

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

3. At the market, Ms. Winn bought $\frac{3}{4}$ lb of grapes and $\frac{5}{8}$ lb of cherries.

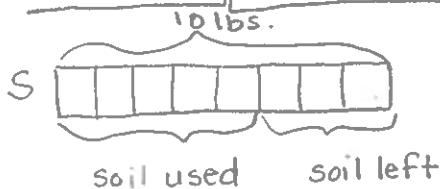
a. How many ounces of grapes did Ms. Winn buy?

b. How many ounces of cherries did Ms. Winn buy?

c. How many more ounces of grapes than cherries did Ms. Winn buy?

d. 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?



8 units = 10

1 unit = $10 \div 8 = \frac{10}{8} = 1\frac{2}{8}$

5 units = $1\frac{2}{8} + 1\frac{2}{8} + 1\frac{2}{8} + 1\frac{2}{8} + 1\frac{2}{8} = 5\frac{10}{8}$

$5\frac{10}{8} = 5 + \frac{10}{8} = 5 + 1\frac{2}{8} = 6\frac{2}{8}$

3 units = $1\frac{2}{8} + 1\frac{2}{8} + 1\frac{2}{8}$

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

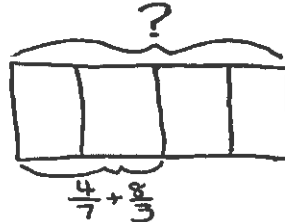
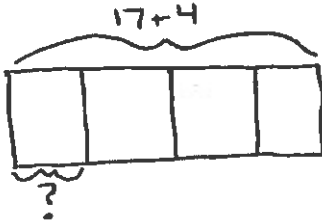
- * C.U.B.E
- * draw a tape diagram to show total
- * partition the total into eighths
- * divide the total by parts ($\frac{10}{8}$) to find value of each eighth ($1\frac{2}{8}$)
- * combine the value of each eighth 5 times to find $\frac{5}{8}$ of 10
- * combine the value of each eighth 3 times to find $\frac{3}{8}$ of 10.

The gardener used $6\frac{2}{8}$ pounds of soil in his garden. He had $3\frac{6}{8}$ pounds left.

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.

- ~~$8 \div (3 \times 6)$~~
 $3 \div 8 \times 6$
 $(6 \times 3) \div 8$
 ~~$(8 \div 6) \times 3$~~
 ~~$6 \times \frac{8}{3}$~~
 $\frac{3}{8} \times 6$

I can prove what expressions have the same product by solving them.

$6 \times \frac{3}{8}$ $\frac{6}{1} \times \frac{3}{8}$ $\frac{18}{8}$ $2 \frac{1}{4}$	$8 \div (3 \times 6)$ $8 \div 18$ $\frac{8}{18}$ NO	$3 \div 8 \times 6$ $\frac{3}{8} \times 6$ $\frac{3}{8} \times \frac{6}{1}$ $\frac{18}{8}$ YES	$(6 \times 3) \div 8$ $18 \div 8$ $\frac{18}{8}$ YES	$(8 \div 6) \times 3$ $\frac{8}{6} \times 3$ $\frac{100}{6} \times 3$ $\frac{24}{6}$ 4 NO	$6 \times \frac{8}{3}$ $\frac{6}{1} \times \frac{8}{3}$ $\frac{48}{3}$ 16 NO	$\frac{3}{8} \times 6$ $\frac{3}{8} \times \frac{6}{1}$ $\frac{18}{8}$ YES
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3. Write an expression to match, and then evaluate.

- a. $\frac{1}{8}$ the sum of 23 and 17 $\frac{18}{8}$ $2 \frac{1}{4}$ YES
- b. Subtract 4 from $\frac{1}{6}$ of 42. 4 NO

- 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

RK

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?

1 hour = 60 minutes
 Text: $\frac{1}{3}$ 20 minutes
 bath: $\frac{1}{4}$ 15 minutes
 Reading: X

$$\frac{1}{3} \times 60 = \frac{60}{3} = 20 \text{ minutes}$$

$$\frac{1}{4} \times 60 = \frac{60}{4} = 15 \text{ minutes}$$

$$\begin{array}{r} 20 \\ 15 \\ \hline 35 \end{array} \text{ minutes}$$

$$\begin{array}{r} 51 \\ 60 \\ - 35 \\ \hline 25 \end{array}$$

Jenny spent 25 minutes reading.

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?

• Create the tape diagram.

• There are 60 minutes in an hour.

• multiply $\frac{1}{3} \times 60$ to get $\frac{60}{3}$ then divide

multiply $\frac{1}{4} \times 60$ to get $\frac{60}{4}$ then divide.

• add those times up

• subtract it from the hour to get time spent reading.

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?

Name _____

Date _____

1. Terrence finished a word search in $\frac{3}{4}$ the time it took Frank. Charlotte finished the word search in $\frac{2}{3}$ the time it took Terrence. Frank finished the word search in 32 minutes. How long did it take Charlotte to finish the word search?

• Read/circle important info/rewrite question

• create tape diagram

F 32 minutes

$$\frac{32}{1} \times \frac{3}{4} = 24 \text{ minutes}$$

T 24 minutes = $\frac{3}{4}$ Frank

• multiply Frank's time by Terrence's $\frac{3}{4}$; Reduce/multiply

C 16 minutes = $\frac{2}{3}$ of Terrence

$$\frac{24}{1} \times \frac{2}{3} = 16 \text{ minutes}$$

• multiply Terrence's time by $\frac{2}{3}$; Reduce/multiply

Charlotte finished in 16 minutes

2. Ms. Phillips ordered 56 pizzas for a school fundraiser. Of the pizzas ordered, $\frac{2}{7}$ of them were pepperoni, 19 were cheese, and the rest were veggie pizzas. What fraction of the pizzas was veggie?

• Record Charlotte's minutes

Beggers

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?

Name _____

Date _____

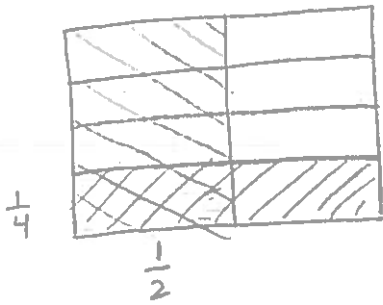
1. Solve. Draw a rectangular fraction model to show your thinking.

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



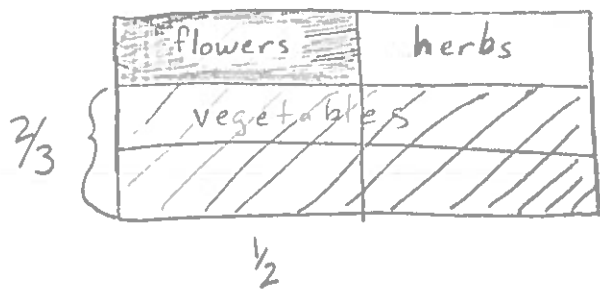
$$\begin{aligned} & \frac{1}{4} \text{ of } \frac{1}{2} \\ &= \frac{1}{4} \times \frac{1}{2} \\ &= \frac{1}{8} \end{aligned}$$

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.



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

The remainder the son plants of the $\frac{2}{6}$, $\frac{1}{2}$ was flowers.

Therefore 1 out of 6 sections,

$\frac{1}{6}$ was flowers

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.

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)

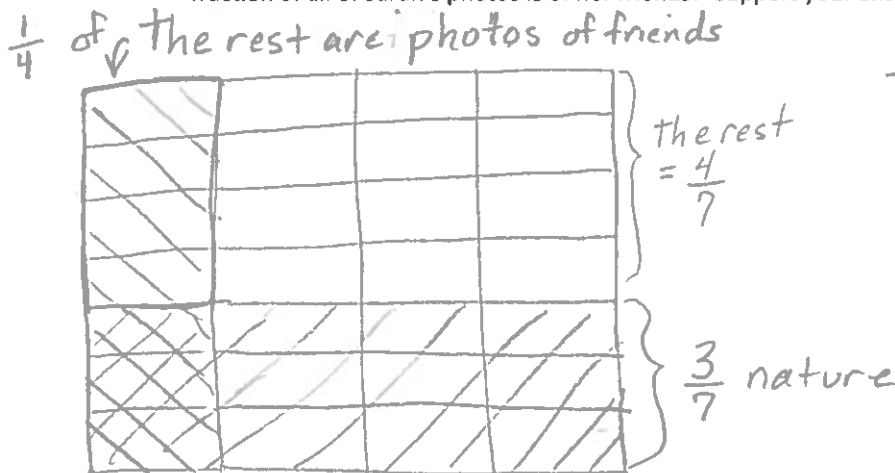
c. $\frac{1}{3}$ of $\frac{3}{5} =$

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.

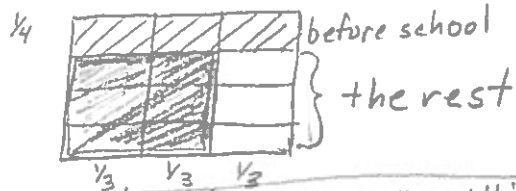


There are 28 sections,
4 out of 28 are photos
of her friends.

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

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.
- a. What fraction of the bottle does Halle drink after school starts but before lunch?

Halle drinks $\frac{6}{12}$ before lunch. $\frac{2}{3} \times \frac{3}{4} = \frac{6}{12} \div 6 = \frac{1}{2}$



1 liter = 1000 milliliters

- b. How many milliliters are left in the bottle at lunch?

$$\frac{1}{4} + \frac{6}{12} = \frac{3}{12} + \frac{6}{12} = \frac{9}{12}$$

$$1 - \frac{9}{12} = \frac{12}{12} - \frac{9}{12} = \frac{3}{12} \div 3 = \frac{1}{4}$$

$$\frac{1}{4} \text{ of } 1000 = \frac{1}{4} \times \frac{1000}{1} = \frac{1000}{4} = 250_{mL}$$

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.
- a. What fraction of the spinach did she use to make the salad?

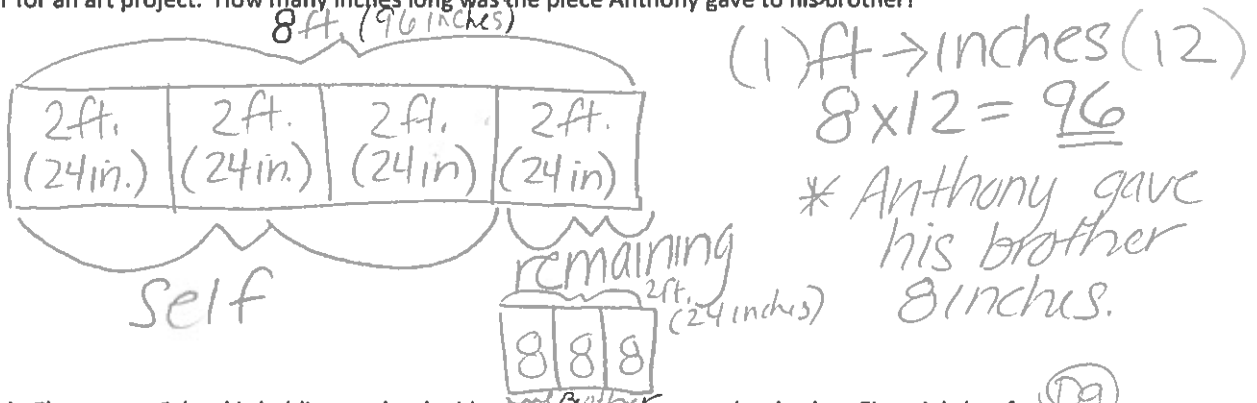
- b. If Rose used 3 pounds of spinach to make the pan of spinach pie for the party, how many pounds of spinach did Rose use to make the salad?

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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. (D9)

a. How many votes were for blue?

b. How many votes were for green?

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

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

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

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

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

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

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

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

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

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

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?

$$\begin{array}{l} 0.3 \text{ of } 1.7 \\ \frac{3}{10} \text{ of } \frac{17}{10} \\ \frac{3}{10} \times \frac{17}{10} \end{array} \qquad \begin{array}{r} 3 \times 17 \\ \hline 10 \times 10 \\ \hline 51 \\ \hline 100 \end{array}$$

Jennifer has 0.51 Liters of lemonade in 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?

RK

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

a. $3.2 \times 0.6 = 1.92$

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

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

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

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.

$A = l \cdot w$

$= 9.75 \times 7.2$
 $= 70.2 \text{ m}^2$

$$\begin{array}{r} 9.75 \\ \times 7.2 \\ \hline 1950 \\ + 68250 \\ \hline 70200 \end{array}$$

The area of the swimming pool is 70.2 m^2 .

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.

$1\frac{1}{2} = 1.5$

$1\frac{1}{2}$ area of swimming pool = playground

$1\frac{1}{2}$ of $70\frac{2}{10}$

1.5 of 70.2

1.5×70.2

$$\begin{array}{r} 70.2 \\ \times 1.5 \\ \hline 3510 \\ + 7020 \\ \hline 10530 \end{array}$$

$$\begin{array}{r} 105.3 \text{ area of playground} \\ + 70.2 \text{ area of pool} \\ \hline 175.5 \text{ total area} \\ \text{of playground} \\ \text{and swimming} \\ \text{pool} \end{array}$$

Playground Area = 105.30 m^2

85

175.5 m^2 is total area of playground and swimming pool. RK

2. Marty buys 12 ounces of granola.

a. What fraction of a pound of granola did Marty buy?

$$\begin{aligned}
 12 \text{ oz} &= 12 \times 1 \text{ oz} \\
 &= 12 \times \frac{1}{16} \text{ lb.} \\
 &= \frac{12}{16} \text{ lb.} \\
 &= \frac{3}{4} \text{ lb.}
 \end{aligned}$$

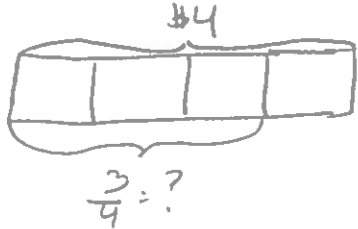
Marty bought $\frac{3}{4}$ lb. of granola.

• Remember the conversion $16 \text{ oz} = 1 \text{ lb.}$

• Each ounce is $\frac{1}{16}$ of a pound.

• Write your answer as a statement.

b. If a whole pound of granola costs \$4, how much did Marty pay?



$$\begin{aligned}
 &\frac{3}{4} \text{ of } 4 \\
 &= \frac{3}{4} \times \frac{4}{1} \\
 &= 3
 \end{aligned}$$

Marty paid \$3.00

• Draw a picture of what you know

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?

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?

165 seconds = ? minutes

$$165 \text{ sec.} = 165 \times \frac{1}{60} \text{ min}$$

$$= \frac{165}{60} \text{ min}$$

$$= 2 \frac{45}{60} \text{ min.}$$

$$= 2 \frac{3}{4} \text{ min.}$$

• Remember the conversion!
60 seconds = 1 minute
• Each second is $\frac{1}{60}$ of a minute

It took them $2 \frac{3}{4}$ minutes to run the race.

• Write your answer as a statement

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.

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. $\frac{3}{20} \times \frac{5}{5} = \frac{3 \times 5}{20 \times 5} = \frac{15}{100} = 0.15$

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.

Since $\frac{6}{8} \div \frac{2}{2} = \frac{3}{4}$ Note that $\frac{3}{4} \times \frac{?}{?} = \frac{?}{100}$
 $\frac{3}{4} \times \frac{25}{25} = \frac{75}{100} = 0.75$

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.

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?

$1 \text{ yard} = 3 \text{ feet}$

$\frac{1}{4}$ of a yard = $\frac{1}{4} \times 3 \text{ ft} = \frac{3}{4} \text{ ft}$ ← sketch of fountain's height

actual fountain = $68 \times \frac{3}{4} \text{ ft} = \frac{68}{1} \times \frac{3}{4} = \frac{17 \times 3}{1} = 51 \text{ feet}$

OR $\frac{1}{4} \times 1 \text{ yd} = \frac{1}{4} \text{ yd}$ ← sketch of fountain
 $68 \times \frac{1}{4} \text{ yd} = \frac{68}{1} \times \frac{1}{4} = \frac{68}{4} = 17 \text{ yards}$

Note: Reduced 68 by dividing it by 4
 or $\frac{68}{1} \times \frac{3}{4} = \frac{204}{4} = 51 \text{ feet} = 17 \text{ yards}$

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?

d. Two thousand \times 1.0001 is slightly more than two thousand *because 1.0001 is slightly more than 1*

e. Two-thousandths \times 0.911 _____ two-thousandths

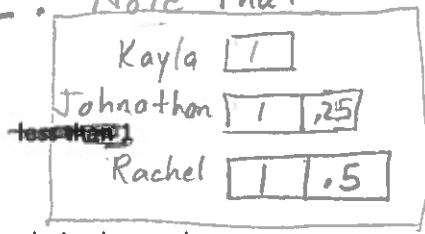
3. Rachel is ⁶1.5 times as heavy as her cousin, Kayla. Another cousin, Jonathan, weighs ⁴1.25 times as much as Kayla. List the cousins, from lightest to heaviest, and explain your thinking.

Kayla, Johnathan, Rachel
¹1 ^{1.25} ^{1.5}
 Johnathan weighs only 1.25 times as much as Kayla, and Rachel is 1.5 times as much as Kayla. 1.5 is greater than 1.25 which is greater than 1. Note that

4. Circle your choice.

a. $a \times b > a$

For this statement to be true, b must be **greater 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. Jesse takes his dog and cat for their annual vet visit. Jesse's dog weighs 23 pounds. The vet tells him his cat's weight is $\frac{5}{8}$ as much as his dog's weight. How much does his cat weigh?

2. An image of a snowflake is 1.8 centimeters wide. If the actual snowflake is $\frac{1}{8}$ the size of the image, what is the width of the actual snowflake? Express your answer as a decimal.

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?

Short ride + long ride
 $5.7 + 32.3$
 $= 38$ miles

*She rides 38 miles altogether

$$\begin{array}{r} 32.3 \\ + 5.7 \\ \hline 38.0 \end{array}$$

*5.7 can be broken into 2.7 + 3

$5.7 \times 5 = 28.5$

$5.7 \times 5\frac{2}{3} = 2 + 1.8 = 3.8$

$28.5 + 3.8 = 32.3$

(D)

2. Divide. Then, multiply to check.

<p>a. $2 \div \frac{1}{4}$</p> <p>$2 \div \frac{1}{4} = 2 \times 4 = 8$</p> <p>$\frac{1}{4} \times 8 = \frac{8}{4} = 2 \checkmark$</p>	<p>b. $6 \div \frac{1}{2}$</p> <p>$6 \div \frac{1}{2} = 6 \times 2 = 12$</p> <p>$\frac{1}{2} \times 12 = \frac{12}{2} = 6 \checkmark$</p>	<p>c. $5 \div \frac{1}{4}$</p> <p>$5 \div \frac{1}{4} = 5 \times 4 = 20$</p> <p>$\frac{1}{4} \times 20 = \frac{20}{4} = 5 \checkmark$</p>	<p>d. $5 \div \frac{1}{8}$</p> <p>$5 \div \frac{1}{8} = 5 \times 8 = 40$</p> <p>$40 \times \frac{1}{8} = \frac{40}{8} = 5 \checkmark$</p>
<p>e. $6 \div \frac{1}{3}$</p> <p>$6 \div \frac{1}{3} = 6 \times 3 = 18$</p> <p>$18 \times \frac{1}{3} = \frac{18}{3} = 6 \checkmark$</p>	<p>f. $3 \div \frac{1}{6}$</p> <p>$3 \div \frac{1}{6} = 3 \times 6 = 18$</p> <p>$18 \times \frac{1}{6} = \frac{18}{6} = 3 \checkmark$</p>	<p>g. $6 \div \frac{1}{5}$</p> <p>$6 \div \frac{1}{5} = 6 \times 5 = 30$</p> <p>$30 \times \frac{1}{5} = \frac{30}{5} = 6 \checkmark$</p>	<p>h. $6 \div \frac{1}{10}$</p> <p>$6 \div \frac{1}{10} = 6 \times 10 = 60$</p> <p>$60 \div \frac{1}{10} = \frac{60}{10} = 6 \checkmark$</p>

• to divide you reciprocate the fraction to make the multiplication problem

• multiply to solve

To check multiply whole number by fraction with unit fraction it put whole number over denominator then divide

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?

Beginners

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?

$$\begin{array}{r}
 1 - \frac{1}{3} \\
 \frac{1}{1} - \frac{1}{3} \\
 \frac{1}{1} = \frac{3}{3} \\
 - \frac{1}{3} = \frac{1}{3} \\
 \hline
 \frac{2}{3} \text{ left to read}
 \end{array}$$

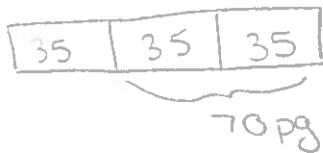
Solomon reads $\frac{2}{15}$ pages of the book in 5 nights.

$$\begin{array}{l}
 \frac{2}{3} \div 5 \\
 \frac{2}{3} \div \frac{5}{1} \\
 \frac{2}{3} \times \frac{1}{5} \\
 \frac{2}{15}
 \end{array}$$

b. If he reads 14 pages on each of the 5 nights, how long is the book?

$$\begin{array}{r}
 14 \\
 \times 5 \\
 \hline
 70
 \end{array}$$

70 pages = $\frac{2}{3}$ of the book



$$\begin{array}{r}
 35 \\
 \times 3 \\
 \hline
 105 \text{ total}
 \end{array}$$

$$\begin{array}{r}
 35 \\
 2 \overline{) 70} \\
 \underline{- 70} \\
 00
 \end{array}$$

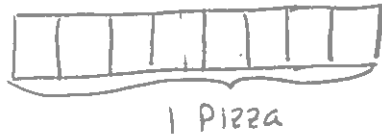
each

105 total pages in Solomon's book.

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.



$1 \div \frac{1}{8} = 8$ so there are 8 pieces of pizza in one pizza
 $8 \text{ eighths} \times 4 = 32 \text{ eighths in 4 pizzas}$

There were 32 slices of pizza in 4 pizzas.

- Read carefully
- Draw the picture
- Write your answer as a statement.

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.

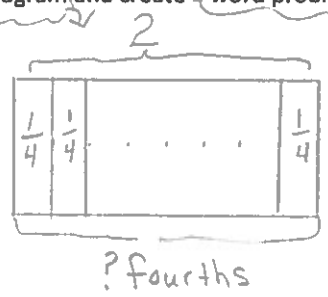
3. A pitcher of water contains $\frac{1}{4}$ liters of water. The water is poured equally into 5 glasses.
- a. How many liters of water are in each glass? Draw a picture to support your response.

- b. Write the amount of water in each glass in milliliters.

Benton

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

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



(dividend)
Jeanne bought 2 pizzas. Each pizza was cut into fourths (divisor). How many slices of pizza does Jeanne have?

Solve: $\frac{2}{1} \times \frac{4}{1} = \frac{8}{1} = 8$ Check: $8 \times \frac{1}{4} = \frac{8}{4} = 2$

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

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 30 tenths in 3 wholes.

There are 6 tenths in 6 tenths.

There are 36 tenths in 3.6. PK

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.

10 tenths = 1 whole
 30 tenths in 3 wholes.

2. Divide.

<p>a. $2 \div 0.1$ $= 2 \div \frac{1}{10}$ $= 20$ PK</p>	<p>b. $23 \div 0.1$</p>	<p>c. $5 \div 0.01$</p>
<p>d. $7.2 \div 0.1$</p>	<p>e. $51 \div 0.01$ $= 51 \div \frac{1}{100}$ $= 5,100$ PK</p>	<p>f. $31 \div 0.1$</p>
<p>g. $231 \div 0.1$</p>	<p>h. $4.37 \div 0.01$</p>	<p>i. $24.5 \div 0.01$</p>

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.

<p>a. $2.4 \div 0.8 = \frac{2.4}{0.8}$</p> $= \frac{2.4 \times 10}{0.8 \times 10}$ $= \frac{24}{8}$ $= 3$	<p>b. $2.4 \div 0.08 = \frac{2.4}{0.08}$</p> $= \frac{2.4 \times 100}{0.08 \times 100}$ $= \frac{240}{8}$ $= 30$
<p>c. $4.8 \div 0.6$</p> $\frac{4.8}{0.6} \times \frac{10}{10} =$ $\frac{48}{6} =$ 8	<p>d. $0.48 \div 0.06$</p> $\frac{4.8}{.06} \times \frac{100}{100} =$ $\frac{48}{6} = 8$
<p>e. $8.4 \div 0.7$</p> $\frac{8.4}{0.7} \times \frac{10}{10} =$ $\frac{84}{7} = 12$	<p>f. $0.84 \div 0.07$</p> $\frac{.84}{.07} \times \frac{100}{100} = \frac{84}{7} =$ 12

Name _____

Date _____

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

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

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

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

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

$$= 112$$

$$\begin{array}{r} 11 \\ 7 \overline{) 78} \\ \underline{-7} \\ 8 \\ \underline{-7} \\ 14 \\ \underline{-14} \\ 0 \end{array}$$

a. $61.6 \div 0.8 \approx$

$$= \frac{61.6}{0.8}$$

$$= \frac{61.6 \times 10}{0.8 \times 10}$$

$$= \frac{616}{8} = 77$$

$$\begin{array}{r} 77 \\ 8 \overline{) 616} \\ \underline{-56} \\ 56 \\ \underline{-56} \\ 0 \end{array}$$

b. $5.74 \div 0.7 \approx$

$$= \frac{5.74}{0.7}$$

$$= \frac{5.74 \times 100}{0.7 \times 100}$$

$$= \frac{574}{70} = 8.2$$

$$\begin{array}{r} 8.2 \\ 70 \overline{) 574} \\ \underline{-560} \\ 140 \\ \underline{-140} \\ 0 \end{array}$$

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

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

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

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

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

$$= 122$$

$$\begin{array}{r} 12 \\ 6 \overline{) 73} \\ \underline{-6} \\ 13 \\ \underline{-12} \\ 12 \\ \underline{-12} \\ 0 \end{array}$$

a. $4.74 \div 0.06 \approx$

b. $19.44 \div 0.54 \approx$

PG/RF

5. Evaluate the following expressions.

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

$$= 5 \div \frac{1}{6}$$

$$= 30 \quad PK$$

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 $\frac{5}{8}$

$$50 \div (\frac{3}{4} - \frac{5}{8})$$

$$50 \div (\frac{6}{8} - \frac{5}{8})$$

$$50 \div \frac{1}{8}$$

$$50 \div \frac{1}{8} = 400$$

PK

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?

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

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

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

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

