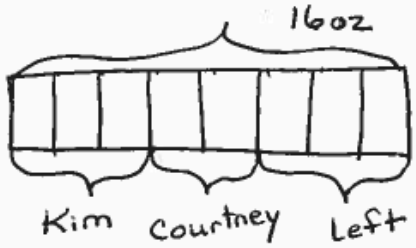
Name _____ Date _____

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?



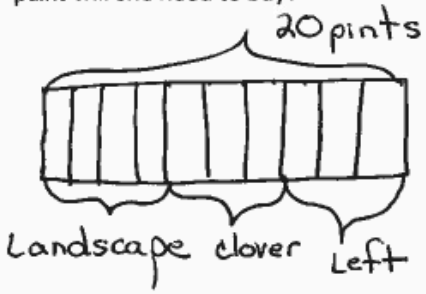
$\frac{1}{4} \times \frac{2}{2} = \frac{2}{8}$ courtney

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

$-\frac{5}{8} = -\frac{5}{8}$

$\frac{3}{8}$ 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?



$\frac{2}{5} \times \frac{2}{2} = \frac{4}{10}$ Landscape

10 units = 20 pints

1 unit = $\frac{20}{10}$ = 2 pints

3 units Left = 3 × 2 = 6 pints left

6 + __ = 14

= 14 − 6 = 8 pints more

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?

Jack $\frac{4}{4} - \frac{3}{4} = \frac{1}{4}$ $\frac{1}{4} \times 48 = \frac{48}{4} = 12$ oz

Jill $\frac{3}{3} - \frac{2}{3} = \frac{1}{3}$ $\frac{1}{3} \times 48 = \frac{48}{3} = 16$ oz

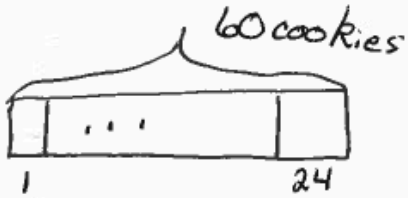
Bill $\frac{6}{6} - \frac{1}{6} = \frac{5}{6}$ $\frac{5}{6} \times 48 = \frac{240}{6} = 40$ oz

$\begin{array}{r} 4 \\ 48 \\ \times 5 \\ \hline 240 \end{array}$

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?

$\frac{1}{9}$ of 27 $= \frac{1}{9} \times 27 = \frac{27}{9} = 3$ students absent 24 are present

$\begin{array}{r} 12 \\ \times 5 \\ \hline 60 \text{ cookies} \end{array}$



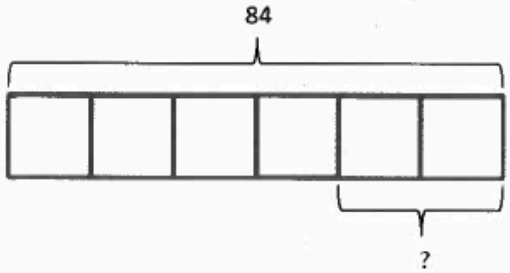
24 units = 60 cookies

1 unit $= \frac{60}{24} = \frac{5}{2} = 2\frac{1}{2}$

$\left(\frac{60}{24} \overset{\div 12}{=} \frac{5}{2}\right)$

Each student gets $2\frac{1}{2}$ cookies

5. Create a story problem about a fish tank for the tape diagram below. Your story must include a fraction.



There are two ways to do #1

Name Look on next page 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?

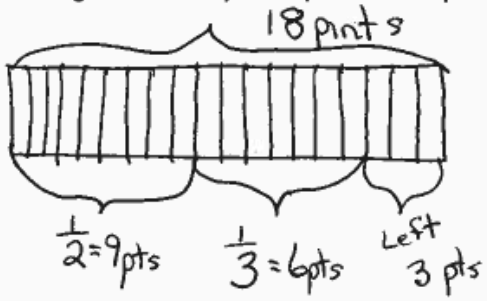
$\frac{1}{3}$ of 60 = $\frac{60}{3}$ = 20 minutes texting

$\frac{1}{4}$ of 60 = $\frac{60}{4}$ = 15 minutes teeth and pajamas

20 + 15 = 35 minutes

60 - 35 = 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?



$\frac{1}{2}$ of 18 = $\frac{18}{2}$ = 9 pints

$\frac{1}{3}$ of 18 = $\frac{18}{3}$ = 6 pints

3 pts Left

$7\frac{3}{4}$ need

$-\ 3$ have

$4\frac{3}{4}$ will 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?

Giovanna $\frac{5}{8} \times \frac{10}{1} = \frac{25}{4} = 6\frac{1}{4}$

Frances $\frac{2}{8} \times \frac{10}{1} = 4$

dad $\frac{3}{4} \times \frac{10}{1} = \frac{15}{2} = 7\frac{1}{2}$

$6\frac{1}{4} \longrightarrow 6\frac{1}{4}$

$4 \longrightarrow 4$

$+\ 7\frac{1}{2} \times \frac{2}{2} = +\ 7\frac{2}{4}$

$17\frac{3}{4}$ pounds

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?

$\frac{3}{4} \times \frac{252}{1} = 189$ sold

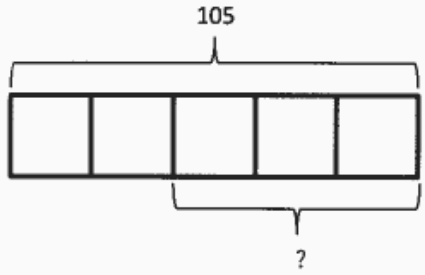
$252 - 189 = 63$ Left

$\frac{3}{9} \times \frac{63}{1} = 21$ given to PTA

$63 - 21 = 42$ cookies for students

$\frac{42}{12} = 3\frac{6}{12} = 3\frac{1}{2}$ cookies for each student

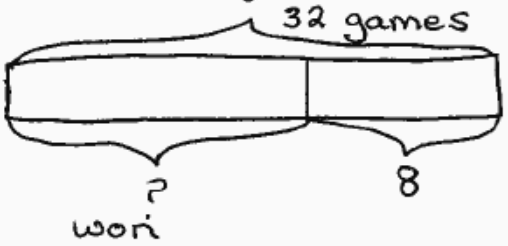
5. Using the tape diagram below, create a story problem about a farm. Your story must include a fraction.



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?



$32 - 8 = 24$

$\frac{24}{32} = \frac{3}{4}$ They won $\frac{3}{4}$ of the games they played.

   b. In how many games did Katy play catcher?

$\frac{5}{\cancel{8}_{1}} \times \frac{\cancel{24}^{3}}{1} = 15$ games - winning games

$\frac{1}{\cancel{4}_{1}} \times \frac{\cancel{8}^{2}}{1} = +\ 2$ games - losing games

Katy played 17 games

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?

$\frac{1}{8} + \frac{1}{4}$

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

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

$\frac{3}{8}$ are red and purple

$\frac{3}{\cancel{8}_{1}} \times \frac{\cancel{128}^{16}}{1} = 48$ flowers are red and purple

$128 - 48 = 80$ remaining flowers

$\frac{1}{5} \times \frac{80}{1} = \frac{80}{5} = 16$ 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.

Darlene $\frac{3}{5} \times 60\text{min} = \frac{3}{\cancel{5}_{1}} \times \frac{\cancel{60}^{12}}{1} = 36$ minutes

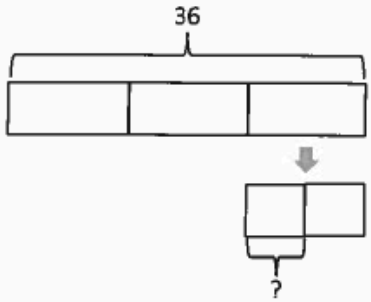
Lillian $\frac{6}{6} - \frac{5}{6} = \frac{1}{6}$ $\frac{1}{\cancel{6}_{1}} \times \frac{\cancel{60}^{10}}{1} = 10$ minutes

$36 - 10 = 26$ minutes

Lillian completed homework 26 minutes faster

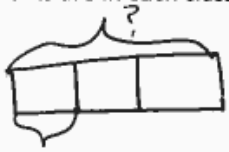
4. Create and solve a story problem about a baker and some flour whose solution is given by the expression $\frac{1}{4} \times (3 + 5)$.

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?

Mr. Smith



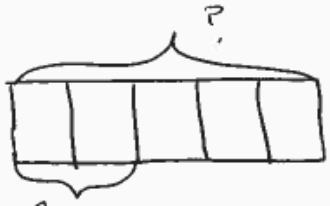
$\frac{1}{3}$ = 4 students

1 unit = 4 students

3 units = 12 students

In Mr. Smith's class

Mrs. Jacob



$\frac{2}{5}$ = 4 students

2 units = 4 students

1 unit = 2 students

5 units x 2 students = 10 students in Mrs Jacob's class

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?

Terrence = $\frac{3}{4}$ of Frank = $\frac{3}{\cancel{4}_1} \times \frac{\overset{8}{\cancel{32}}}{1}$ = 24 Terrence

Charlotte = $\frac{2}{3}$ of Terrence $\frac{\cancel{2}_1}{\cancel{3}_1} \times \frac{\overset{8}{\cancel{24}}}{1}$ = 16 Charlotte

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?

$\frac{2}{\cancel{7}_1} \times \frac{\overset{8}{\cancel{56}}}{1}$ = 16 pepperoni

+ 19 cheese

35 pepperoni and cheese

56
− 35
21 veggie

$\frac{21}{56} = \frac{3}{8}$ veggie

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?

5th Graders $\frac{1}{\cancel{6}_1} \times \frac{\overset{16}{\cancel{96}}}{1} = 16$

4th Graders $\frac{1}{\cancel{3}_1} \times \frac{\overset{32}{\cancel{96}}}{1} = 32$

48 4th + 5th grade students

2nd Grade $\frac{1}{4} \times \frac{\overset{12}{\cancel{48}}}{1} = 12$ students in 2nd grade

$\overset{8}{\cancel{9}}\overset{1}{\cancel{6}}$
$-\ 48$
48 students not 4th or 5th grade

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? Jacob ran faster.

$\frac{3}{\cancel{4}_1} \times \frac{\overset{15}{\cancel{60}}}{1} = 45$ seconds, Daniel ran in 45 sec with 15 sec left in the minute

$\frac{5}{\cancel{12}_1} \times \frac{5}{\cancel{60}_1} = 25$ seconds, Jacob had 25 seconds left in the minute. (60-25=35 seconds he ran it in)

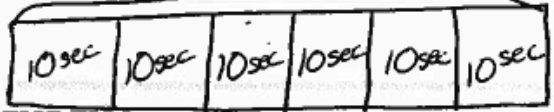
Bonus: Express the difference in their times as a fraction of a minute.

Jacob ran the race in 35 seconds

Daniel ran the race in 25 seconds

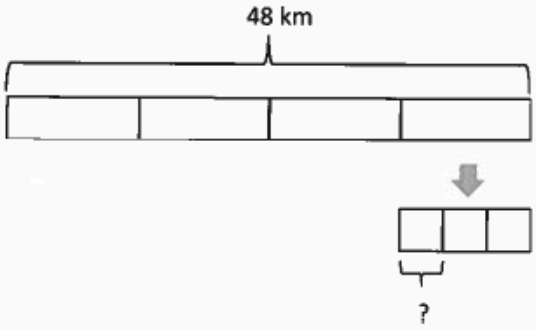
The difference is 10 seconds

1 minute = 60 seconds



The difference in fraction of a minute is $\frac{1}{6}$

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



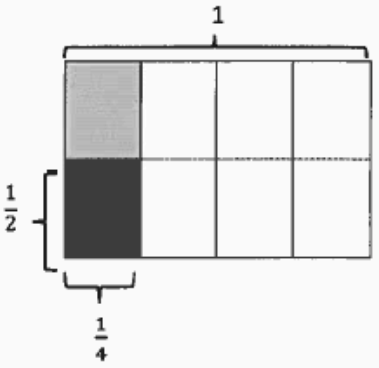
6. Create and solve a story problem about two friends and their weekly allowance whose solution is given by the expression $\frac{1}{5} \times (12 + 8)$.

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.

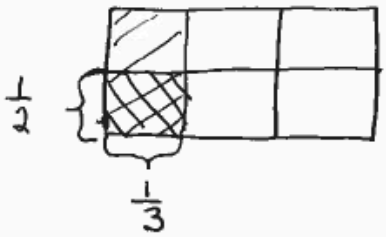
a. Half of $\frac{1}{4}$ pan of brownies = $\frac{1}{8}$ pan of brownies.

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



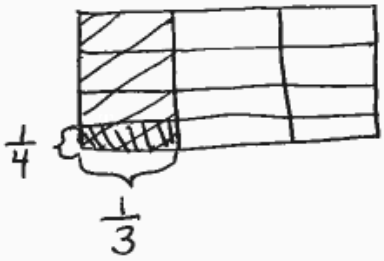
b. Half of $\frac{1}{3}$ pan of brownies = $\frac{1}{6}$ pan of brownies.

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



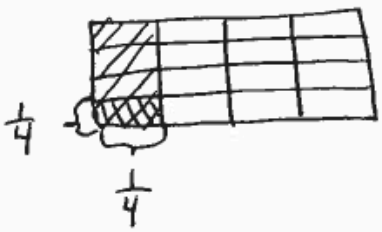
c. A fourth of $\frac{1}{3}$ pan of brownies = $\frac{1}{12}$ pan of brownies.

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



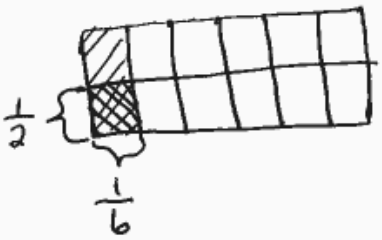
d. $\frac{1}{4}$ of $\frac{1}{4}$

$\frac{1}{4} \times \frac{1}{4} = \frac{1}{16}$

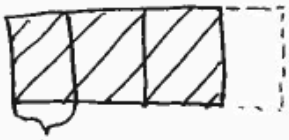


e. $\frac{1}{2}$ of $\frac{1}{6}$

$\frac{1}{2} \times \frac{1}{6} = \frac{1}{12}$

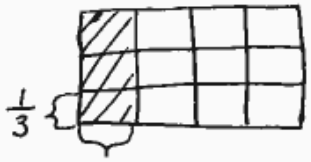


2. Draw rectangular fraction models of $3 \times \frac{1}{4}$ and $\frac{1}{3} \times \frac{1}{4}$. Compare multiplying a number by 3 and by 1 third.



$\frac{1}{4}$

$3 \times \frac{1}{4} = \frac{3}{4}$



$\frac{1}{3}$

$\frac{1}{4}$

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

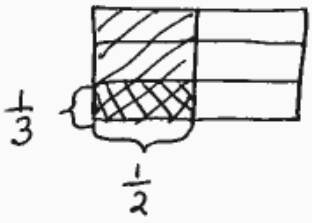
$3 \times \frac{1}{4} > \frac{1}{3} \times \frac{1}{4}$

$3 \times \frac{1}{4} =$

$\frac{3}{4} \times \frac{3}{3} = \frac{9}{12}$

$\frac{9}{12} > \frac{1}{12}$

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.



$\frac{1}{3}$

$\frac{1}{2}$

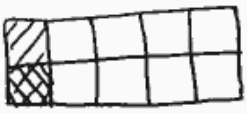
$\frac{1}{3} \times \frac{1}{2} = \frac{1}{6}$

$\frac{1}{6}$ of Ila's workplace is covered in sticky notes.

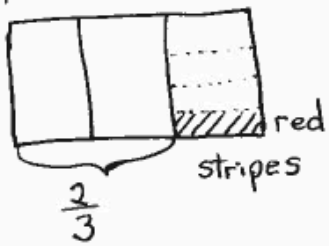
4. A marching band is rehearsing in rectangular formation. $\frac{1}{5}$ of the marching band members play percussion instruments. $\frac{1}{2}$ of the percussionists play the snare drum. What fraction of all the band members play the snare drum?

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

$\frac{1}{10}$ of all board 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?



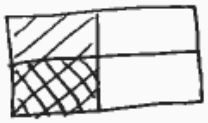
$\frac{2}{3}$

$\frac{1}{12}$ of the bedspread is covered in red stripes

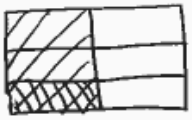
Name _____ Date _____

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

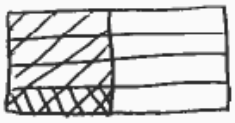
a. Half of $\frac{1}{2}$ cake = $\frac{1}{4}$ cake.



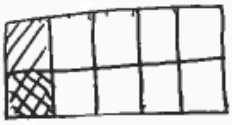
b. One-third of $\frac{1}{2}$ cake = $\frac{1}{6}$ cake.



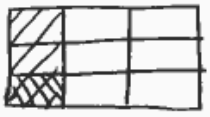
c. $\frac{1}{4}$ of $\frac{1}{2}$ = $\frac{1}{8}$



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

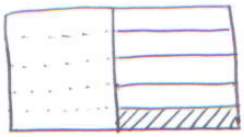


e. $\frac{1}{3} \times \frac{1}{3}$ = $\frac{1}{9}$



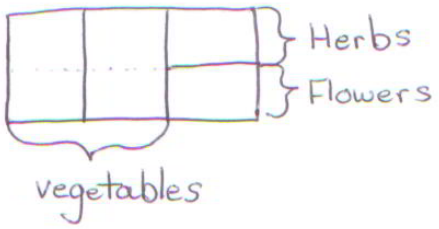
f. $\frac{1}{4} \times \frac{1}{3}$ = $\frac{1}{12}$

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.



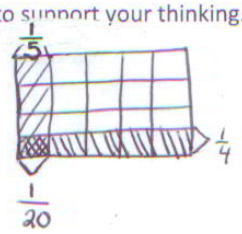
$\frac{1}{10}$ of the property is garden

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.



$\frac{1}{6}$ of entire garden is 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.



$\frac{1}{20}$ Diego eats before Lunch on Tuesday

Lesson 14

Sprint

Side A[1]

1.	2 fifths	12.	2	23.	60 sixths	34.	90 sixths
2.	3 fifths	13.	4 halves	24.	15 thirds	35.	24 fourths
3.	4 fifths	14.	2	25.	30 thirds	36.	72 fourths
4.	4 fifths	15.	6 thirds	26.	30 thirds	37.	32 eighths
5.	3 eighths	16.	2	27.	15 fifths	38.	96 eighths
6.	5 eighths	17.	10 fifths	28.	30 fifths	39.	160 eighths
7.	7 eighths	18.	9 thirds	29.	60 fifths	40.	224 eighths
8.	7 eighths	19.	18 thirds	30.	45 fifths	41.	270 ninths
9.	3 tenths	20.	8 fourths	31.	45 fifths	42.	441 ninths
10.	7 tenths	21.	24 fourths	32.	18 sixths	43.	168 sevenths
11.	7 tenths	22.	12 sixths	33.	90 sixths	44.	294 sevenths

Side B[1]

1.	2 sevenths	12.	2	23.	24 fourths	34.	120 sixths
2.	3 sevenths	13.	10 fifths	24.	15 fifths	35.	20 fourths
3.	4 sevenths	14.	3	25.	30 fifths	36.	60 fourths
4.	4 sevenths	15.	9 thirds	26.	60 fifths	37.	24 eighths
5.	3 tenths	16.	5	27.	45 fifths	38.	72 eighths
6.	7 tenths	17.	10 halves	28.	45 fifths	39.	120 eighths
7.	9 tenths	18.	6 thirds	29.	15 thirds	40.	168 eighths
8.	9 tenths	19.	12 thirds	30.	30 thirds	41.	315 ninths
9.	3 eighths	20.	12 sixths	31.	30 thirds	42.	378 ninths
10.	5 eighths	21.	60 sixths	32.	24 sixths	43.	147 sevenths
11.	5 eighths	22.	8 fourths	33.	120 sixths	44.	336 sevenths

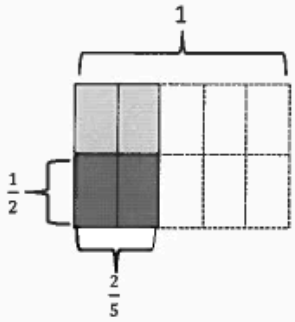
[1] Note: Answers are given here in unit form for ease of reading. Students may answer in standard form.

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:

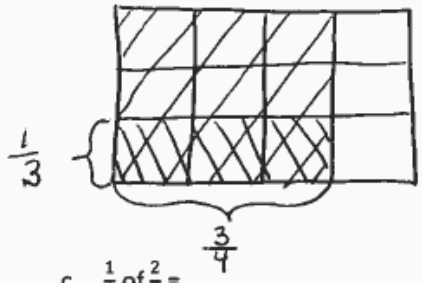
$\frac{1}{2}$ of $\frac{2}{5}$ = $\frac{1}{2}$ of 2 fifths = 1 fifth(s)



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

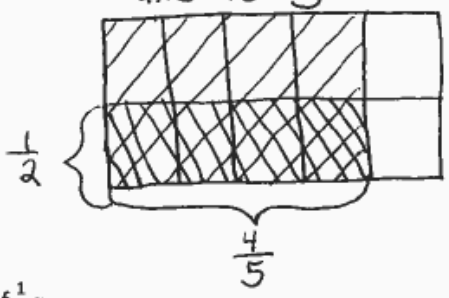
a. $\frac{1}{3}$ of $\frac{3}{4}$ = $\frac{1}{3}$ of 3 fourth(s) = 1 fourth(s)

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



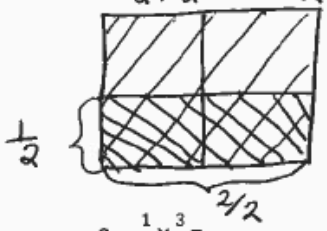
b. $\frac{1}{2}$ of $\frac{4}{5}$ = $\frac{1}{2}$ of 4 fifth(s) = 2 fifth(s)

$\frac{1}{2} \times \frac{4}{5} = \frac{4}{10} = \frac{2}{5}$



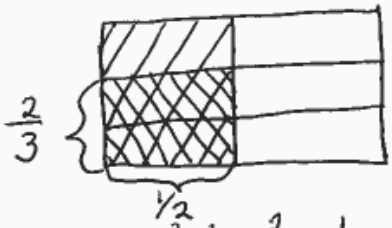
c. $\frac{1}{2}$ of $\frac{2}{2}$ =

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

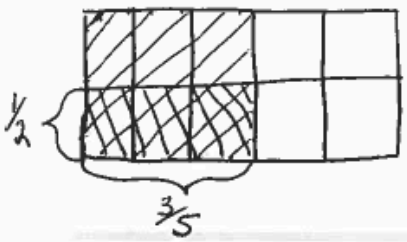


d. $\frac{2}{3}$ of $\frac{1}{2}$ =

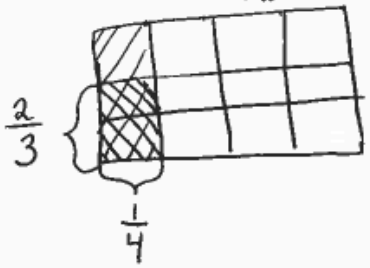
$\frac{2}{3} \times \frac{1}{2} = \frac{2}{6} = \frac{1}{3}$



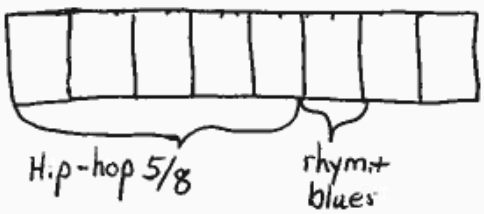
e. $\frac{1}{2} \times \frac{3}{5}$ = $\frac{3}{10}$



f. $\frac{2}{3} \times \frac{1}{4}$ = $\frac{2}{12} = \frac{1}{6}$



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.

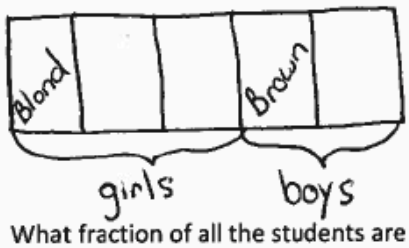


$\frac{1}{3}$ of $\frac{3}{8}$

$\frac{1}{3} \times \frac{3}{8} = \frac{3}{24} = \frac{1}{8}$ of songs are rhythm + blues

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? $\frac{1}{3}$ of $\frac{3}{5}$



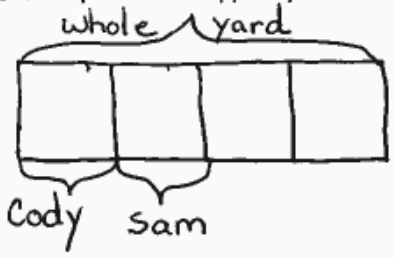
$\frac{1}{3} \times \frac{3}{5} = \frac{3}{15} = \frac{1}{5}$ of all students have blond hair

   b. What fraction of all the students are boys without brown hair?

$\frac{1}{2}$ of $\frac{2}{5}$

$\frac{2}{10} = \frac{1}{5}$ of all 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.



Sam mowed $\frac{1}{3}$ of $\frac{3}{4}$ which is $\frac{1}{3} \times \frac{3}{4} = \frac{3}{12} = \frac{1}{4}$

So Sam and Cody mowed the same.

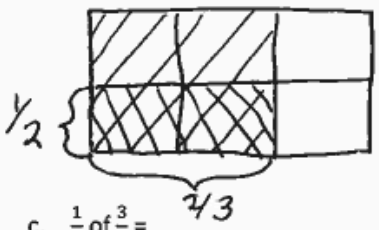
It would have been unfair if Sam had mowed $\frac{1}{3}$ of the whole yard.

Name _____ Date _____

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

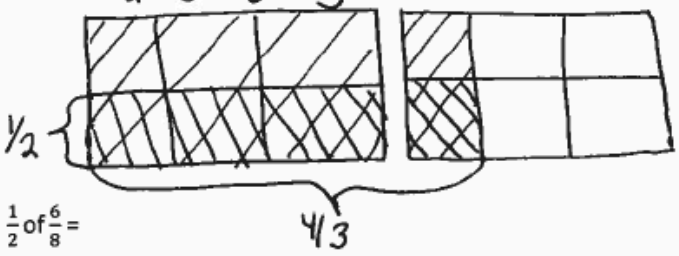
a. $\frac{1}{2}$ of $\frac{2}{3} = \frac{1}{2}$ of $\underline{2}$ third(s) = $\underline{1}$ third(s)

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



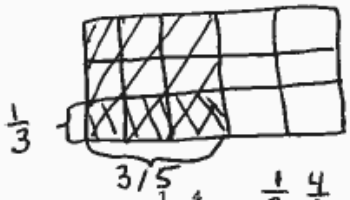
b. $\frac{1}{2}$ of $\frac{4}{3} = \frac{1}{2}$ of $\underline{4}$ third(s) = $\underline{2}$ third(s)

$\frac{1}{2} \times \frac{4}{3} = \frac{4}{6} = \frac{2}{3}$



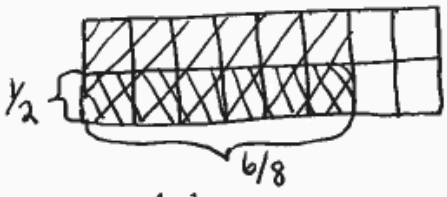
c. $\frac{1}{3}$ of $\frac{3}{5} =$

$\frac{1}{3} \times \frac{3}{5} = \frac{3}{15} = \frac{1}{5}$

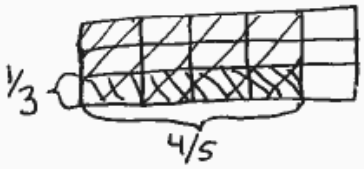


d. $\frac{1}{2}$ of $\frac{6}{8} =$

$\frac{1}{2} \times \frac{6}{8} = \frac{6}{16} = \frac{3}{8}$

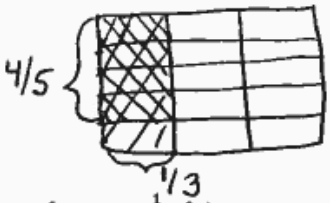


e. $\frac{1}{3} \times \frac{4}{5} =$ $\frac{1}{3} \times \frac{4}{5} = \frac{4}{15}$

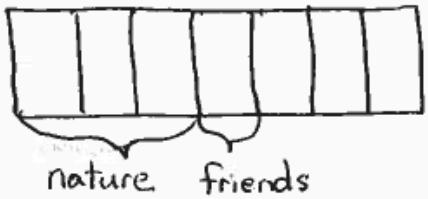


f. $\frac{4}{5} \times \frac{1}{3} =$

$\frac{4}{5} \times \frac{1}{3} = \frac{4}{15}$



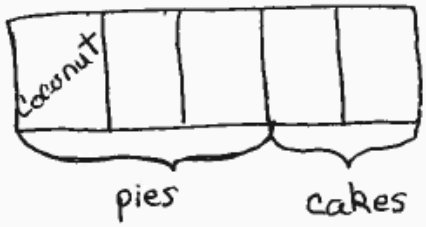
2. Sarah has a photography blog. $\frac{3}{7}$ of her photos are of nature. $\frac{1}{4}$ of the rest are of her friends. What fraction of all of Sarah's photos is of her friends? Support your answer with a model.



$\frac{1}{7}$ of all photos are friends

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.

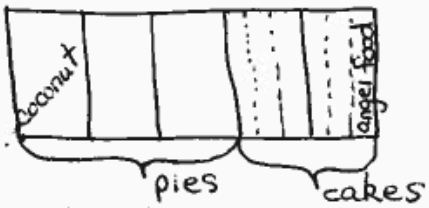
   a. What fraction of all of the baked goods at Laurita's Bakery are coconut pies?



$\frac{1}{5}$ of baked goods are coconut pies.

   b. What fraction of all of the baked goods at Laurita's Bakery are angel food cakes?

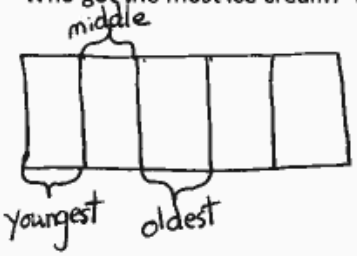
$\frac{1}{6}$ of $\frac{3}{5} = \frac{3}{30} = \frac{1}{15}$



$\frac{1}{15}$ of all goods are angel food

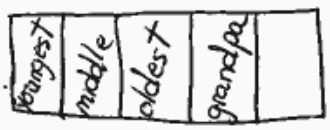
4. Grandpa Mick opened a pint of ice cream. He gave his youngest grandchild $\frac{1}{5}$ of the ice cream and his middle grandchild $\frac{1}{4}$ of the remaining ice cream. Then, he gave his oldest grandchild $\frac{1}{3}$ of the ice cream that was left after serving the others.

   a. Who got the most ice cream? How do you know? Draw a picture to support your reasoning.



All three children received $\frac{1}{5}$ of a pint

   b. What fraction of the pint of ice cream will be left if Grandpa Mick serves himself the same amount as the second grandchild?



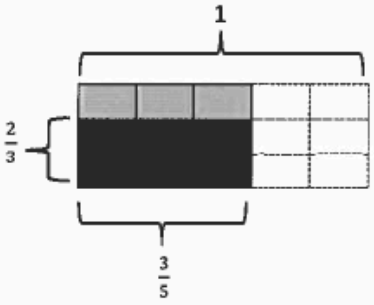
$\frac{1}{5}$ of a pint of ice cream will be left.

Name _____ Date _____

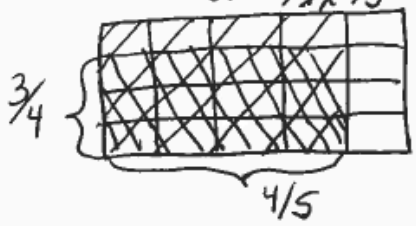
1. Solve. Draw a rectangular fraction model to explain your thinking. Then, write a multiplication sentence. The first one is done for you.

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

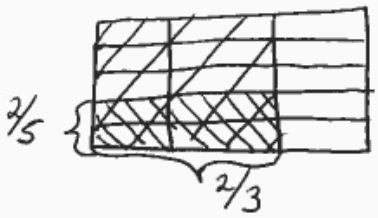
$\frac{2}{3} \times \frac{3}{5} = \frac{6}{15} = \frac{2}{5}$



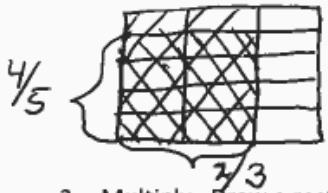
b. $\frac{3}{4}$ of $\frac{4}{5}$ = $\frac{3}{4} \times \frac{4}{5} = \frac{12}{20}$ or $\frac{3}{4} \times \frac{4}{5} = \frac{3}{5}$



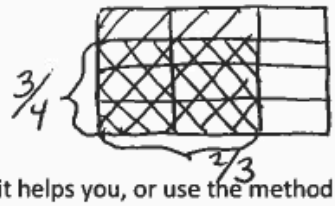
c. $\frac{2}{5}$ of $\frac{2}{3}$ = $\frac{2}{5} \times \frac{2}{3} = \frac{4}{15}$



d. $\frac{4}{5} \times \frac{2}{3}$ = $\frac{4}{5} \times \frac{2}{3} = \frac{8}{15}$



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



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

$\frac{3}{4} \times \frac{5}{6} = \frac{5}{8}$

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

$\frac{4}{5} \times \frac{5}{8} = \frac{4}{8} = \frac{1}{2}$

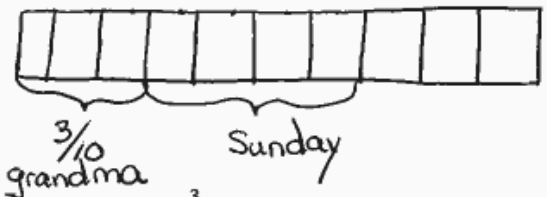
c. $\frac{2}{3} \times \frac{6}{7}$

$\frac{2}{3} \times \frac{6}{7} = \frac{4}{7}$

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

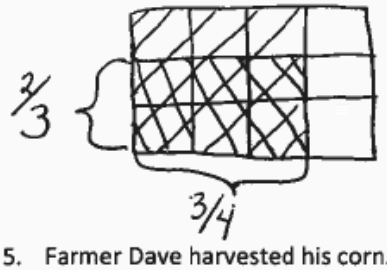
$2\ \frac{4}{9} \times \frac{3}{10} = \frac{2}{15}$

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?



$\frac{4}{10}$ of total distance 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?

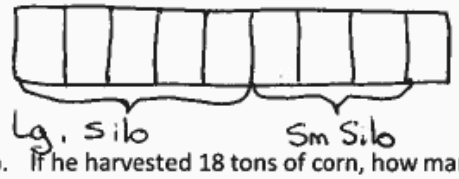


$\frac{2}{3}$ of $\frac{3}{4}$

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

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.

   a. What fraction of the corn was stored in the small silo?



$\frac{3}{9} = \frac{1}{3}$ of corn stored in small silo

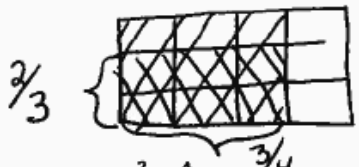
   b. If he harvested 18 tons of corn, how many tons did he take to market?

$\frac{1}{9}$ of 18 tons $= \frac{1}{9} \times \frac{18}{1} = 2$ tons of corn went to market

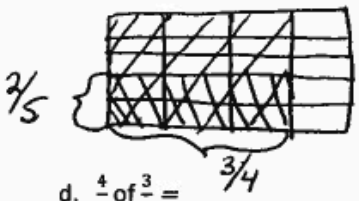
Name _____ Date _____

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

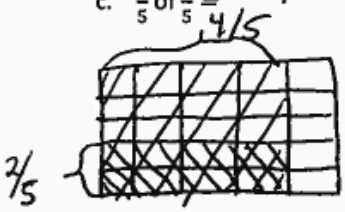
a. $\frac{2}{3}$ of $\frac{3}{4}$ = $1\ \frac{2}{3} \times \frac{3}{4} = \frac{1}{2}$



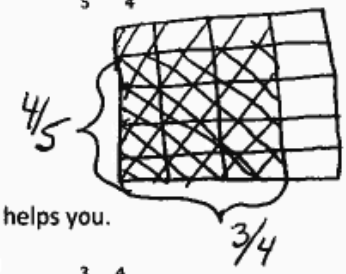
b. $\frac{2}{5}$ of $\frac{3}{4}$ = $1\ \frac{2}{5} \times \frac{3}{4} = \frac{3}{10}$



c. $\frac{2}{5}$ of $\frac{4}{5}$ = $\frac{2}{5} \times \frac{4}{5} = \frac{8}{25}$



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



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

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

$\frac{5}{6} \times \frac{3}{10} = \frac{1}{4}$

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

$\frac{3}{4} \times \frac{4}{5} = \frac{3}{5}$

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

$\frac{5}{6} \times \frac{5}{8} = \frac{25}{48}$

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

$1\ \frac{3}{4} \times \frac{5}{12} = \frac{5}{16}$

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

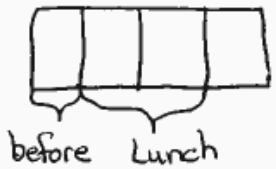
$\frac{8}{9} \times \frac{2}{3} = \frac{16}{27}$

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

$\frac{3}{7} \times \frac{2}{9} = \frac{6}{63} = \frac{2}{21}$

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?

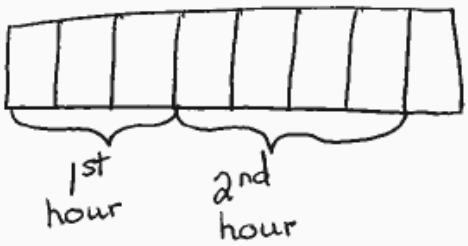


$\frac{3}{4}$ or $\frac{1}{2}$

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

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

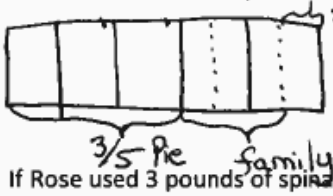
4. Moussa delivered $\frac{3}{8}$ of the newspapers on his route in the first hour and $\frac{4}{5}$ of the rest in the second hour. What fraction of the newspapers did Moussa deliver in the second hour?



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

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?



$\frac{1}{10}$ of spinach to make salad

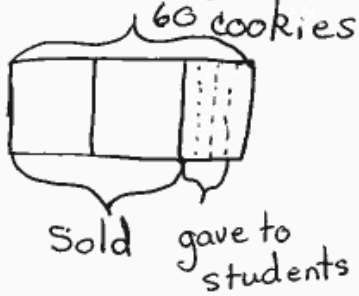
   b. If Rose used 3 pounds of spinach to make the pan of spinach pie for the party, how many pounds of spinach did Rose use to make the salad?

$\frac{1}{2}$ lb

Name _____ Date _____

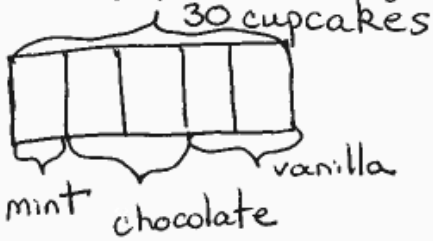
Solve and show your thinking with a tape diagram.

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?



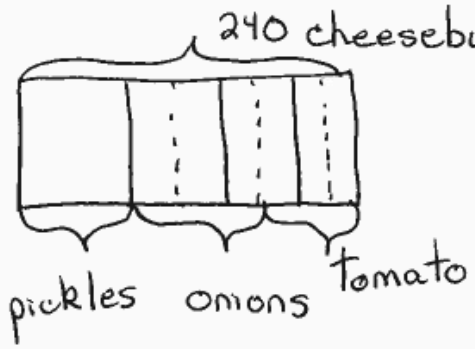
3 units = 60 cookies
1 unit = 20 cookies
20 ÷ 4 = 5 cookies
Mrs. Onusko had 5 cookies left.

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?



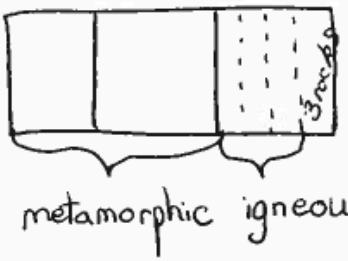
5 units = 30 cupcakes
1 unit = 6 cupcakes
2 units are vanilla, so 6 × 2 = 12 cupcakes have vanilla icing.

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?



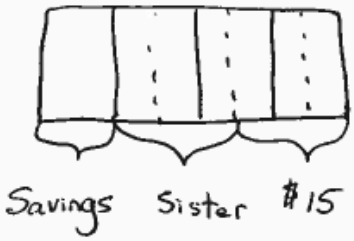
4 units = 240 cheeseburgers
1 unit = 60 cheeseburgers
3 units = 180 cheeseburgers
180 ÷ 2 = 90 cheeseburgers had tomato.

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?



1 unit = 12 rocks
3 units = 36 rocks

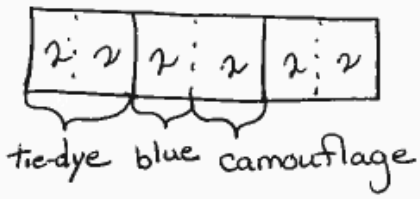
5. Milan puts $\frac{1}{4}$ of her lawn-mowing money in savings and uses $\frac{1}{2}$ of the remaining money to pay back her sister. If she has $15 left, how much did she have at first?



3 units = $30
1 unit = $10
4 units = $40

Milan had $40 at first

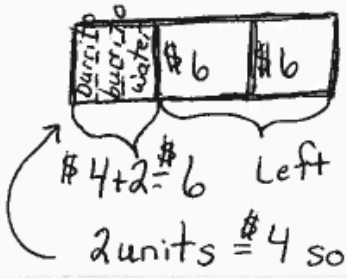
6. Parks is wearing several rubber bracelets. $\frac{1}{3}$ of the bracelets are tie-dye, $\frac{1}{6}$ are blue, and $\frac{1}{3}$ of the remainder are camouflage. If Parks wears 2 camouflage bracelets, how many bracelets does he have on?



3 units = 6 bracelets
1 unit = 2 bracelets
6 units = 12 bracelets

Parks has on 12 bracelets

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?



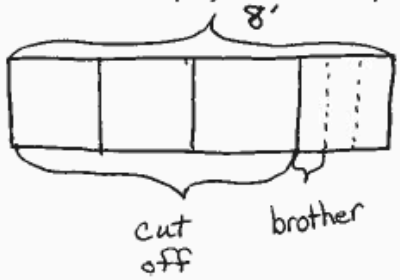
x 2 = $12

2 units = $4 so 1 unit = $2

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?



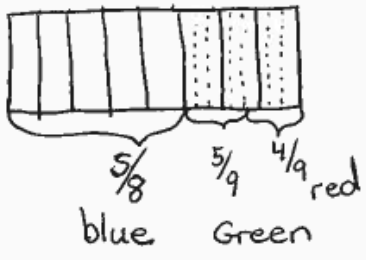
4 units = 8'
1 unit = 2'
2' = 24"

1/3 of 24" =
$\frac{1}{3} \times \frac{8}{1} \frac{24}{1} = 8$"

Anthony gave his brother an 8" piece

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?



red = 4 units = 48
1 unit = 12
12 x 3 = 36 in each 1/8 section
5 sections of 36 = 180
180 votes were blue

   b. How many votes were for green?

5 sections are green
1 section is 12
5 x 12 = 60
60 votes were 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?

red votes = 48

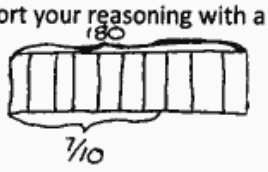
green votes = 60

blue votes = 180

48
60
+180
288 students voted
+25 students absent
313 total students at Riverside Elementary

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.

$\frac{7}{10}$ of 180 =

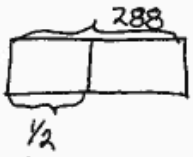


10 units = 180
1 unit = 18
7 units = 18 × 7 = 126

$\frac{7}{10} \times \frac{\overset{18}{\cancel{180}}}{1} = 126$ girls who voted for blue

$\frac{1}{2}$ of 288 =

$\frac{1}{2} \times \frac{\cancel{288}}{1} 144 =$



2 units = 288
1 unit = 144

126 < 144

The girls who voted for blue are less than $\frac{1}{2}$ of all votes

e. How many girls voted for blue?

126 girls voted for blue

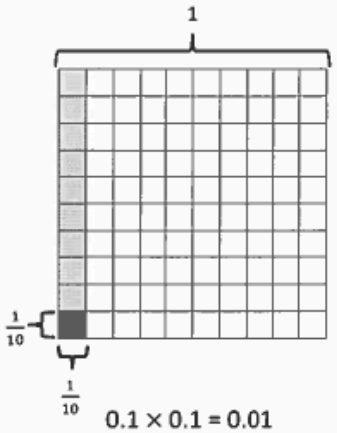
Name _____ Date _____

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

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

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

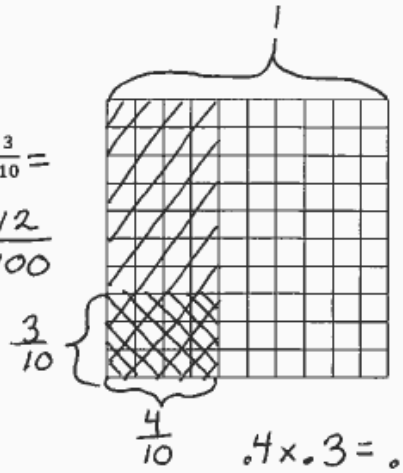
$= \frac{1}{100}$



$0.1 \times 0.1 = 0.01$

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

$\frac{4 \times 3}{10 \times 10} = \frac{12}{100}$

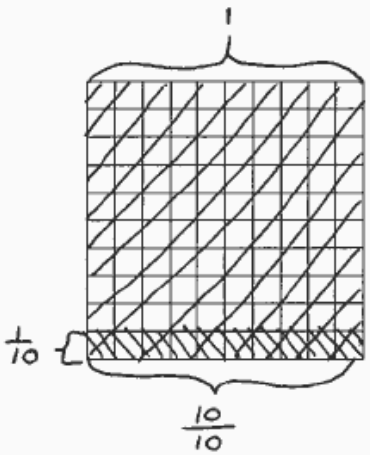


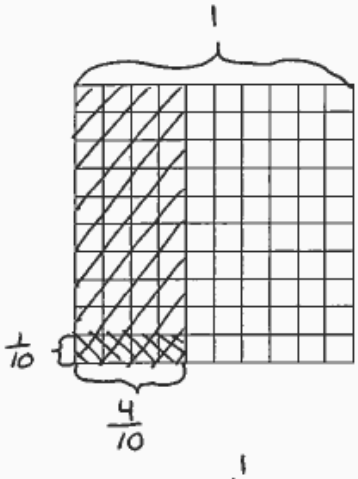
$.4 \times .3 = .12$

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

$\frac{1}{10} \times \frac{14}{10} =$

$\frac{14}{100}$





$.1 \times 1.4 =$

$.14$

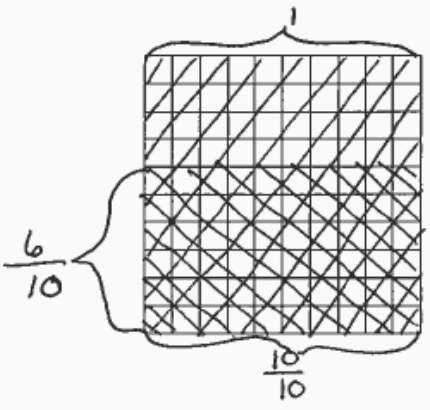
d. $\frac{6}{10} \times 1.7$

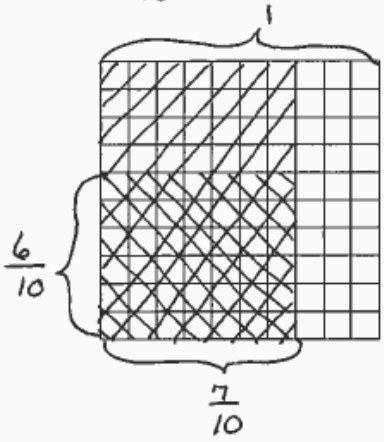
$\frac{6}{10} \times \frac{17}{10} =$

$\frac{6 \times 17}{10 \times 10} =$

$\frac{102}{100} =$

$1\frac{2}{100}$





$.6 \times 1.7 = 1.02$

$\begin{array}{r} 1.7 \\ \times .6 \\ \hline 1.02 \end{array}$

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

a. $5 \times 0.7 = 3.5$

$= 5 \times \frac{7}{10}$

$= \frac{5 \times 7}{10}$

$= \frac{35}{10}$

$= 3.5$

b. $0.5 \times 0.7 = .35$

$= \frac{5}{10} \times \frac{7}{10}$

$= \frac{5 \times 7}{10 \times 10}$

$= \frac{35}{100}$

$= .35$

c. $0.05 \times 0.7 = .035$

$= \frac{5}{100} \times \frac{7}{10}$

$= \frac{5 \times 7}{100 \times 10}$

$= \frac{35}{1000}$

$= .035$

d. $6 \times 0.3 = 1.8$

$= 6 \times \frac{3}{10}$

$= \frac{18}{10}$

$= 1.8$

e. $0.6 \times 0.3 = .18$

$= \frac{6}{10} \times \frac{3}{10}$

$= \frac{6 \times 3}{100}$

$= \frac{18}{100} = .18$

f. $0.06 \times 0.3 = .018$

$= \frac{6}{100} \times \frac{3}{10}$

$= \frac{18}{1000}$

$= .018$

g. $1.2 \times 4 = 4.8$

$= \frac{12}{10} \times 4$

$= \frac{12 \times 4}{10}$

$= \frac{48}{10} = 4.8$

h. $1.2 \times 0.4 = .48$

$= \frac{12}{10} \times \frac{4}{10}$

$= \frac{12 \times 4}{100}$

$= \frac{48}{100} = .48$

i. $0.12 \times 0.4 = .048$

$= \frac{12}{100} \times \frac{4}{10}$

$= \frac{12 \times 4}{1000}$

$= \frac{48}{1000} = .048$

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?

2 tenths of .7 =

$\frac{2}{10} \times \frac{7}{10} = \frac{14}{100}$ or .14 meter 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?

4 tenths of 2.5 miles

$\frac{4}{10} \times \frac{25}{10} = \frac{100}{100}$ or 1 mile he took the lead

$2.5 - 1.0 = 1.5$

Lenox led for 1.5 miles

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?

3 tenths of 2.5 miles

$\frac{3}{10} \times \frac{25}{10} = \frac{75}{100} = .75$ mi. he developed cramp.

$2.50 - .75 = 1.75$ miles without a cramp

Name _____ Date _____

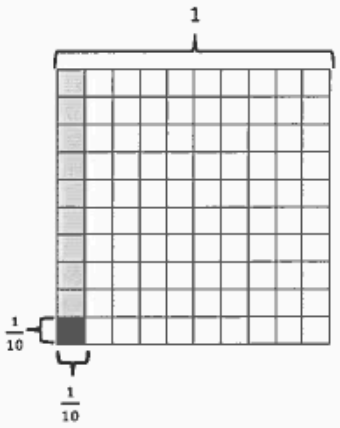
1. Multiply and model. Rewrite each expression as a number sentence with decimal factors. The first one is done for you.

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

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

$= \frac{1}{100}$

$0.1 \times 0.1 = 0.01$



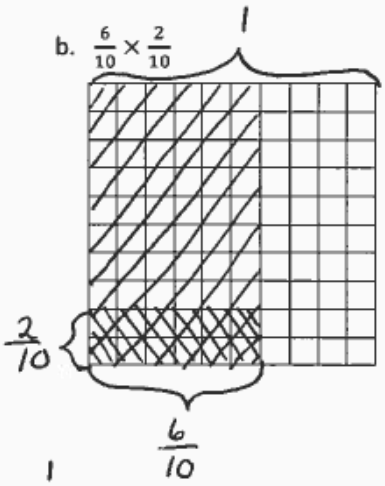
$= \frac{6 \times 2}{10 \times 10}$

$= \frac{12}{100}$

$.6 \times .2 =$

$.12$

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



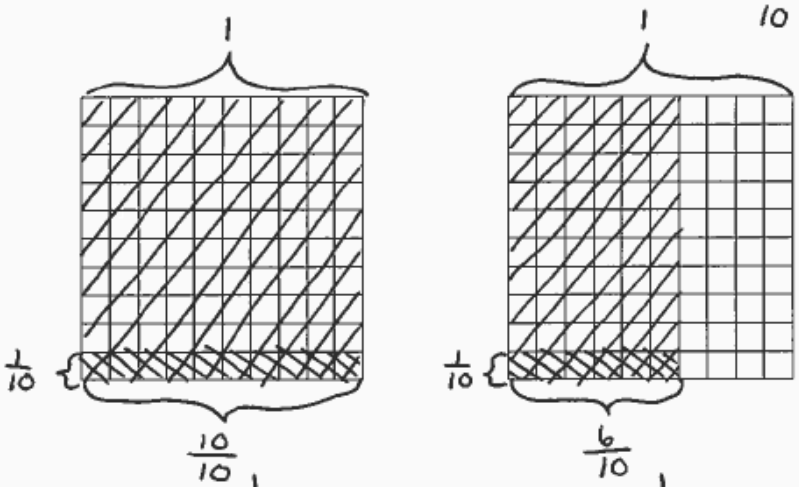
c. $\frac{1}{10} \times 1.6$

$\frac{1}{10} \times \frac{16}{10} =$

$\frac{1 \times 16}{100} = \frac{16}{100}$

$.1 \times 1.6 =$

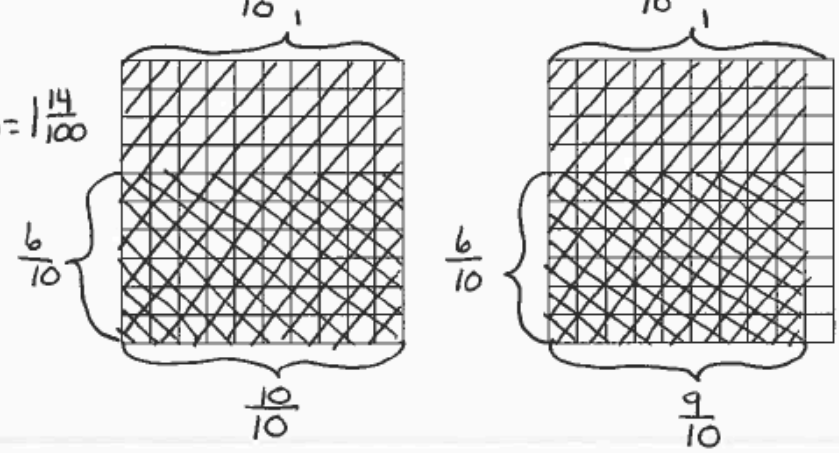
$.16$



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

$= \frac{6}{10} \times \frac{19}{10} = \frac{114}{100} = 1\frac{14}{100}$

$.6 \times 1.9 = 1.14$



$\begin{array}{r} 1.9 \\ \times .6 \\ \hline 1.14 \end{array}$

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

a. $4 \times 0.6 = 2.4$

$= 4 \times \frac{6}{10}$

$= \frac{4 \times 6}{10}$

$= \frac{24}{10}$

$= 2.4$

b. $0.4 \times 0.6 = .24$

$= \frac{4}{10} \times \frac{6}{10}$

$= \frac{4 \times 6}{10 \times 10}$

$= \frac{24}{100}$

$= .24$

c. $0.04 \times 0.6 = .024$

$= \frac{4}{100} \times \frac{6}{10}$

$= \frac{4 \times 6}{100 \times 10}$

$= \frac{24}{1000}$

$= .024$

d. $7 \times 0.3 = 2.1$

$= 7 \times \frac{3}{10}$

$= \frac{7 \times 3}{10}$

$= \frac{21}{10} = 2.1$

e. $0.7 \times 0.3 = .21$

$= \frac{7}{10} \times \frac{3}{10}$

$= \frac{21}{100}$

$= .21$

f. $0.07 \times 0.3 = .021$

$= \frac{7}{100} \times \frac{3}{10}$

$= \frac{21}{1000}$

$= .021$

g. $1.3 \times 5 = 6.5$

$= \frac{13}{10} \times \frac{5}{1} = \frac{65}{10}$

$= 6.5$

h. $1.3 \times 0.5 = .65$

$= \frac{13}{10} \times \frac{5}{10}$

$= \frac{65}{100}$

$= .65$

i. $0.13 \times 0.5 = .065$

$= \frac{13}{100} \times \frac{5}{10}$

$= \frac{65}{1000}$

$= .065$

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?

3 tenths of 1.7 Liters

$= \frac{3}{10} \times \frac{17}{10}$

$= \frac{51}{100} = .51$ Liter are in the glass

$^{2}17$
$\times 3$
51

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

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

6 tenths of 3.6 mile

$= \frac{6}{10} \times \frac{36}{10} = \frac{216}{10} = 2.16$ mile hiked

$^{3}36$
$\times 6$
216

$3.\overset{5}{6}\overset{1}{0}$
$- 2.16$
1.44 mile left to hike

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

Cassius hiked 2.16 mi

$+ 1.30$ mi

Cameron hiked 3.46 mile

Lesson 18

Sprint

Side A[1]

1.	1 fourth	12.	4 fifteenths	23.	10 fifteenths	34.	15 twentieths
2.	1 sixth	13.	1 twelfth	24.	15 tenths	35.	18 twentieths
3.	1 eighth	14.	2 twelfths	25.	1 ninth	36.	6 twentieths
4.	1 fourteenth	15.	6 twelfths	26.	2 ninths	37.	1 forty-ninth
5.	1 fourteenth	16.	1 eighteenth	27.	4 ninths	38.	3 fortieths
6.	1 sixth	17.	5 eighteenths	28.	6 sixths	39.	5 twenty-fourths
7.	1 ninth	18.	10 eighteenths	29.	8 ninths	40.	9 sixteenths
8.	1 eighteenth	19.	10 twelfths	30.	10 ninths	41.	12 eighteenths
9.	1 fifteenth	20.	1 twenty-fifth	31.	9 tenths	42.	18 eighths
10.	1 fifteenth	21.	4 twenty-fifths	32.	3 twentieths	43.	49 seventy-seconds
11.	2 fifteenths	22.	6 twenty-fifths	33.	12 twentieths	44.	63 ninety-sixths

Side B[1]

1.	1 sixth	12.	4 fifteenths	23.	15 twentieths	34.	10 fifteenths
2.	1 eighth	13.	1 twelfth	24.	20 fifteenths	35.	12 fifteenths
3.	1 tenth	14.	3 twelfths	25.	1 sixteenth	36.	6 fifteenths
4.	1 eighteenth	15.	6 twelfths	26.	3 sixteenths	37.	1 eighty-first
5.	1 eighteenth	16.	1 eighteenth	27.	9 sixteenths	38.	3 fortieths
6.	1 tenth	17.	2 eighteenths	28.	12 twelfths	39.	3 twenty-fourths
7.	1 fifteenth	18.	10 eighteenths	29.	15 sixteenths	40.	4 ninths
8.	1 thirty-fifth	19.	9 eighths	30.	18 sixteenths	41.	24 thirty-seconds
9.	1 fifteenth	20.	1 twenty-fifth	31.	16 eighteenths	42.	12 ninths
10.	1 fifteenth	21.	9 twenty-fifths	32.	2 fifteenths	43.	48 sixty-thirds
11.	2 fifteenths	22.	12 twenty-fifths	33.	8 fifteenths	44.	56 eighty-fourths

[1]Note: Answers written in unit form for ease of reading, but students may express answers in standard form.

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.

a. $2.3 \times 1.8 = \frac{23}{10} \times \frac{18}{10}$

$= \frac{23 \times 18}{100}$

$= \frac{414}{100}$

$= 4.14$

2 3 tenths
× 1 8 tenths
1 8 4
+ 2 3 0
4 1 4 hundredths

b. $2.3 \times 0.9 =$

$\frac{23}{10} \times \frac{9}{10}$

$= \frac{23 \times 9}{100}$

$= \frac{207}{100}$

$= 2.07$

2
2 3 tenths
× 9 tenths
20 7 hundredths

c. $6.6 \times 2.8 =$

$\frac{66}{10} \times \frac{28}{10}$

$= \frac{66 \times 28}{100}$

$= \frac{1848}{100} = 18.48$

4 1
66 tenths
× 28 tenths
528
+1320
1848 hundredths

d. $3.3 \times 1.4 =$

$\frac{33}{10} \times \frac{14}{10} =$

$\frac{33 \times 14}{100}$

$= \frac{462}{100} = 4.62$

1
33 tenths
× 14 tenths
132
+330
462 hundredths

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

a. $2.38 \times 1.8 = \frac{238}{100} \times \frac{18}{10}$

$= \frac{238 \times 18}{1,000}$

$= \frac{4,284}{1,000}$

$= 4.284$

2 3 8 hundredths
× 1 8 tenths
1 9 0 4
+ 2 3 8 0
4, 2 8 4 thousandths

b. $2.37 \times 0.9 =$

$\frac{237}{100} \times \frac{9}{10}$

$= \frac{237 \times 9}{1000}$

$= \frac{2133}{1000} = 2.133$

3 6
2 3 7 hundredths
× 9 tenths
21 3 3 thousandths

c. $6.06 \times 2.8 =$

$\frac{606}{100} \times \frac{28}{10}$

$= \frac{606 \times 28}{1000} = \frac{16968}{1000}$

$= 16.968$

4 1
606 hundredths
× 28 tenths
4848
+12120
16968 thousandths

d. $3.3 \times 0.14 =$

$\frac{33}{10} \times \frac{14}{100}$

$= \frac{33 \times 14}{1000}$

$= \frac{462}{1000}$

$= .462$

1
33 tenths
× 14 hundredths
132
+330
462 thousandth

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

a. $3.2 \times 0.6 = 1.92$

3 2 tenths
× 6 tenths
1 9 2 hundredths

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

b. $3.2 \times 1.2 =$ 3.84

3 2 tenths
× 1 2 tenths
6 4
+ 3 2 0
3 8 4 hundredths

$\frac{32}{10} \times \frac{12}{10}$
$= \frac{32 \times 12}{100}$
$= \frac{384}{100} = 3.84$

c. $8.31 \times 2.4 =$ 19.944

831 hundredths
× 24 tenths
24
+ 620
9944 thousandths

$= \frac{831}{100} \times \frac{24}{10}$
$= \frac{831 \times 24}{1000}$
$= \frac{19944}{1000} = 19.944$

d. $7.50 \times 3.5 =$ 26.250

$\frac{750}{100} \times \frac{35}{10} =$
$\frac{750 \times 35}{1000} =$
$\frac{26250}{1000} = 26.250$

750 hundredths
× 35 tenths
3750
+ 22500
26250 thousandths

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?

$3.70 × 1.2 =$
3.70
× 1.2
740
+ 3700
4440

or

370 hundredths
× 12 tenths
1740
+ 3700
4440 thousandths = 4.440

She will pay $4.44 for the chicken

5. A kitchen measures 3.75 meters by 4.2 meters.

a. Find the area of the kitchen.

3.75
× 4.2
750
+ 15000
15.750

or

Area = Length × width
375 hundredths
× 42 tenths
750
+ 15000
15750 thousandths = 15.750

The area of the kitchen is $15.750 m^2$

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.

$1\frac{1}{2} = 1.5$
$1.5 \times 15.75 =$
15.750
× 1.5
78750
+ 157500
23.6250

or

1575 hundredths
× 15 tenths
7875
+ 15750
23625 thousandths
= 23.625

23.625 Livingroom
+ 15.750 kitchen
39.375 total

area = $39.375 m^2$

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

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

$= \frac{528}{100}$

$= 5.28$

33 tenths
× 16 tenths
198
+ 330
528 hundredths

b. $3.3 \times 0.8 = 2.64$

$\frac{33}{10} \times \frac{8}{10} =$

$\frac{33 \times 8}{100} =$

$\frac{264}{100} = 2.64$

33 tenths
× 8 tenths
264 hundredths

c. $4.4 \times 3.2 = 14.08$

$\frac{44}{10} \times \frac{32}{10} =$

$\frac{44 \times 32}{100} =$

$\frac{1408}{100} =$

14.08

44 tenths
× 32 tenths
88
+1320
1408 hundredths

d. $2.2 \times 1.6 = 3.52$

$\frac{22}{10} \times \frac{16}{10} =$

$\frac{22 \times 16}{100} =$

$\frac{352}{100} = 3.52$

22 tenths
× 16 tenths
132
+220
352 hundredths

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

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

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

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

$= 4.704$

336 hundredths
× 14 tenths
1344
+3360
4704 thousandths

b. $3.35 \times 0.7 = 2.345$

$\frac{335}{100} \times \frac{7}{10} =$

$\frac{335 \times 7}{1000} =$

$\frac{2345}{1000} = 2.345$

335 hundredths
× 7 tenths
2345 thousandths

c. $4.04 \times 3.2 = 12.928$

$\frac{404}{100} \times \frac{32}{10} =$

$\frac{404 \times 32}{1000} =$

$\frac{12928}{1000} = 12.928$

404 hundredths
× 32 tenths
808
+12120
12928 thousandths

d. $4.4 \times 0.16 = .704$

$= \frac{44}{10} \times \frac{16}{100}$

$= \frac{44 \times 16}{1000}$

$= \frac{704}{1000} = .704$

44 tenths
× 16 hundredths
264
+440
704 thousandth

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

a. $3.2 \times 0.6 = 1.92$

3 2 tenths
× 6 tenths
1 9 2 hundredths

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

b. $2.3 \times 2.1 = 4.83$

2 3 tenths
× 2 1 tenths
23
+460
483 hundredths

$\frac{23}{10} \times \frac{21}{10} = \frac{23 \times 21}{100} = \frac{483}{100} = 4.83$

c. $7.41 \times 3.4 = 25.194$

741 hundredths
× 34 tenths
2964
22230
25194 thousandths

$\frac{741}{100} \times \frac{34}{10} = \frac{741 \times 34}{1000} = \frac{25194}{1000}$

d. $6.50 \times 4.5 = 29.25$

650 hundredths
× 45 tenths
3250
+26000
29250 thousandths

$\frac{650}{100} \times \frac{45}{10} = \frac{650 \times 45}{1000} = \frac{29250}{1000} = 29.250$

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

770 hundredths
× 25 tenths
350
+15400
19250 thousandths

$\frac{770}{100} \times \frac{25}{10}$ or $= \frac{770 \times 25}{1000} = \frac{19250}{1000} = 19.250$

Erik will pay $19.25 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.

Area = Length × Width

975 hundredths
× 72 tenths
1950
+68250
70200 thousandths

$\frac{975}{100} \times \frac{72}{10}$ or $= \frac{975 \times 72}{1000} = \frac{70200}{1000} = 70.200$

The area of the swimming pool is 70.2 sq. m

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.

782 tenths
× 15 tenths
3910
+7820
10530 hundredths

$\frac{702}{10} \times \frac{15}{10}$ or $= \frac{702 \times 15}{100} = \frac{10530}{100} = 105.30$ Area of playground

70.2 area of swimming pool
+105.3 area of playground
175.5 total area

Name _____ Date _____

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

a. 2 ft = $\frac{2}{3}$ yd

2 ft = 2 × 1 ft

= 2 × $\frac{1}{3}$ yd

= $\frac{2}{3}$ yd

b. 4 ft = $1\frac{1}{3}$ yd

4 ft = 4 × 1 ft

= 4 × $\frac{1}{3}$ yd

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

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

c. 7 in = $\frac{7}{12}$ ft

= 7 × 1 in

= 7 × $\frac{1}{12}$ ft

= $\frac{7}{12}$ ft

d. 13 in = $1\frac{1}{12}$ ft

= 13 × 1 in

= 13 × $\frac{1}{12}$ ft

= $\frac{13}{12}$ ft

= $1\frac{1}{12}$ ft

e. 5 oz = $\frac{5}{16}$ lb

= 5 × 1 oz

= 5 × $\frac{1}{16}$ lb

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

f. 18 oz = $1\frac{1}{8}$ lb

= 18 × 1 oz

= 18 × $\frac{1}{16}$ lb

= $\frac{18}{16}$ lb

= $1\frac{2}{16}$ lb = $1\frac{1}{8}$ lb

2. Regina buys 24 inches of trim for a craft project.

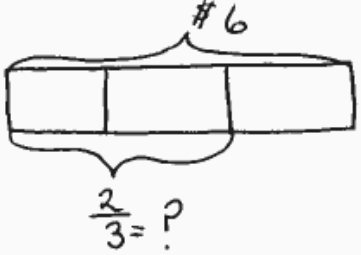
   a. What fraction of a yard does Regina buy?

   24 in = ___ yd

   24 in = 24 × 1 in
   = 24 × $\frac{1}{36}$ yd
   = $\frac{24}{36}$ yd
   = $\frac{2}{3}$ yd

   Regina buys $\frac{2}{3}$ yard

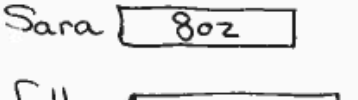
   b. If a whole yard of trim costs $6, how much did Regina pay?



   $\frac{2}{3}$ of #6
   = $\frac{2}{3} \times \frac{6^{2}}{1}$
   = 4

   Regina paid #4

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.



   19 oz total

   19 oz = ___ lb
   = 19 × 1 oz
   = 19 × $\frac{1}{16}$ lb
   = $\frac{19}{16}$ lb
   = $1\frac{3}{16}$ lb

   They bought $1\frac{3}{16}$ lb of yogurt altogether

4. Pheng-Xu drinks 1 cup of milk every day for lunch. How many gallons of milk does he drink in 2 weeks?

   1 week = 7 days
   2 weeks = 14 days
   14 days @ 1 cup per day = 14 cups

   Pheng-Xu drank $\frac{7}{8}$ gallon of milk in 2 weeks

   14 cups = ___ gallons
   = 14 × 1 cup
   = 14 × $\frac{1}{16}$ gallons
   = $\frac{14}{16}$ gallons
   = $\frac{7}{8}$ gallon

Name _____ Date _____

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

a. 2 ft = $\frac{2}{3}$ yd

2 ft = 2 × 1 ft

= 2 × $\frac{1}{3}$ yd

= $\frac{2}{3}$ yd

b. 6 ft = 2 yd

6 ft = 6 × 1 ft

= 6 × $\frac{1}{3}$ yd

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

c. 5 in = $\frac{5}{12}$ ft

5 in = 5 × 1 in

= 5 × $\frac{1}{12}$ ft

= $\frac{5}{12}$ ft

d. 14 in = $1\frac{1}{6}$ ft

= 14 in = 14 × 1 in

= 14 × $\frac{1}{12}$ ft

= $\frac{14}{12}$ ft

= $1\frac{2}{12} = 1\frac{1}{6}$ ft

e. 7 oz = $\frac{7}{16}$ lb

7 oz = 7 × 1 oz

= 7 × $\frac{1}{16}$ lb

= $\frac{7}{16}$ lb

f. 20 oz = $1\frac{1}{4}$ lb

20 oz = 20 × 1 oz

= 20 × $\frac{1}{16}$ lb

= $\frac{20}{16}$ lb

= $1\frac{4}{16} = 1\frac{1}{4}$ lb

g. 1 pt = $\frac{1}{2}$ qt

1 pt = 1 × 1 pt

= 1 × $\frac{1}{2}$ qt

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

h. 4 pt = 2 qt

4 pt = 4 × 1 pt

= 4 × $\frac{1}{2}$ qt

= $\frac{4}{2}$ qt

= 2 qt

2. Marty buys 12 ounces of granola.

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

   12oz = ___ lb
   12oz = 12 x 1oz
   = 12 x $\frac{1}{16}$ lb
   = $\frac{12}{16}$ lb = $\frac{3}{4}$ lb

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

   $\frac{3}{4}$ lb x $4 =
   $\frac{3}{\cancel{4}_{1}} \times \frac{\cancel{4}^{1}}{1} = 3$

   Marty paid $3 for $\frac{3}{4}$ lb of granola

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.

   Sara [14oz]
   father [7oz]

   21oz total

   21oz = ___ lb
   21oz = 21 x 1oz
   = 21 x $\frac{1}{16}$ lb
   = $\frac{21}{16}$ lb = $1\frac{5}{16}$ lbs yogurt altogether

4. An art teacher uses 1 quart of blue paint each month. In one year, how many gallons of paint will she use?

   1qt x 12 months = 12qt per year

   12qt = ___ gal
   12qt = 12 x 1qt
   = 12 x $\frac{1}{4}$ gal = $\frac{12}{4}$ gal = 3 gallons in one year

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.

a. $2\frac{2}{3}$ yd = 8 ft

$2\frac{2}{3}$ 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

b. $1\frac{1}{2}$ qt = $\frac{3}{8}$ gal

$1\frac{1}{2}$ qt $= 1\frac{1}{2} \times 1$ qt

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

$= \frac{3}{2} \times \frac{1}{4}$ gal

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

c. $4\frac{2}{3}$ ft = 56 in

$4\frac{2}{3}$ ft $= 4\frac{2}{3} \times 1$ ft

$= 4\frac{2}{3} \times 12$ in

$= \frac{14}{3} \times \frac{12^{4}}{1}$ in

$= 56$ in

d. $9\frac{1}{2}$ pt = $4\frac{3}{4}$ qt

$9\frac{1}{2}$ pt $= 9\frac{1}{2} \times 1$ pt

$= 9\frac{1}{2} \times \frac{1}{2}$ qt

$= \frac{19}{2} \times \frac{1}{2}$ qt

$= \frac{19}{4}$ qt

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

e. $3\frac{3}{5}$ hr = 216 min

$3\frac{3}{5}$ hr $= 3\frac{3}{5} \times 1$ hr

$= 3\frac{3}{5} \times 60$ min

$= \frac{18}{5} \times \frac{60^{12}}{1}$ min

$= 216$ min

f. $3\frac{2}{3}$ ft = $1\frac{2}{9}$ yd

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

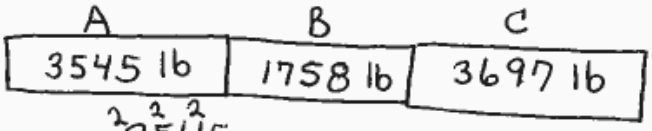
$= 3\frac{2}{3} \times \frac{1}{3}$ yd

$= \frac{11}{3} \times \frac{1}{3}$ yd

$= \frac{11}{9}$ yd

$= 1\frac{2}{9}$ yd

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?



$$\begin{array}{r} {}^{2}3^{2}5^{2}5 \\ 1758 \\ +\,3697 \\ \hline 9000\text{ lb} \end{array}$$

$9000\text{ lb} = \_\_\_\text{ tons}$

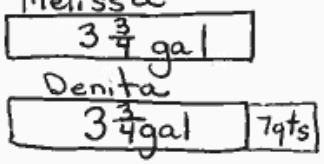
$9000\text{ lb} = 9000 \times 1\text{ lb}$

$= 9000 \times \frac{1}{2000}\text{ tons}$

$= \frac{9000}{2000}\text{ tons}$

$= 4\frac{1000}{2000} = 4\frac{1}{2}\text{ tons}$

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.



$3\frac{3}{4}\text{ gal} = \_\_\_\text{ qts}$

$3\frac{3}{4}\text{ gal} = 3\frac{3}{4} \times 1\text{ gal}$

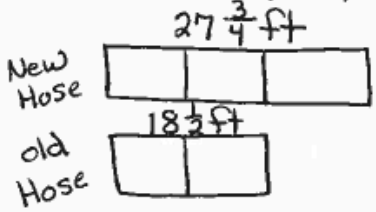
$= 3\frac{3}{4} \times 4\text{ qt}$

$= \frac{15}{\cancel{4}} \times \frac{\cancel{4}^{1}}{1}\text{ qt}$

$3\frac{3}{4}\text{ gal} = 15\text{ qt}$

$$\begin{array}{r} 15\text{ qt} \\ 15\text{qt} \\ +\,7\text{qt} \\ \hline 37\text{qt altogether} \end{array}$$

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?



$$\begin{array}{r} 27\frac{3}{4} = 27\frac{3}{4} \\ +\,18\frac{1}{2} = 18\frac{2}{4} \\ \hline 45\frac{5}{4} = 46\frac{1}{4}\text{ ft total} \end{array}$$

$\frac{2}{3}$ of $27\frac{3}{4}\text{ ft}$

$= \frac{\cancel{2}^{1}}{\cancel{3}_{1}} \times \frac{111}{\cancel{4}_{2}}^{37}\text{ ft}$

$= \frac{37}{2} = 18\frac{1}{2}\text{ ft}$

$$\begin{array}{r} 18\frac{1}{2} \\ 2\overline{)37} \\ -2 \\ \hline 17 \\ -16 \\ \hline 1 \end{array}$$

$46\frac{1}{4}\text{ ft} = \_\_\text{ yd}$

$46\frac{1}{4}\text{ ft} = 46\frac{1}{4} \times 1\text{ ft}$

$= 46\frac{1}{4} \times \frac{1}{3}\text{ yd}$

$= \frac{185}{4} \times \frac{1}{3}\text{ yd} = 15\frac{5}{12}\text{ yd}$

Name _____ Date _____

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

a. $2\frac{2}{3}$ yd = 8 ft

$2\frac{2}{3}$ 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

b. $1\frac{1}{4}$ ft = $\frac{5}{12}$ yd

$1\frac{1}{4}$ 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
$= \frac{5}{12}$

c. $3\frac{5}{6}$ ft = 46 in

$3\frac{5}{6}$ ft $= 3\frac{5}{6} \times 1$ ft
$= 3\frac{5}{6} \times 12$ in
$= \frac{23}{6} \times \frac{12}{1}$ in
$= 46$ in

d. $7\frac{1}{2}$ pt = $3\frac{3}{4}$ qt

$7\frac{1}{2}$ pt $= 7\frac{1}{2} \times 1$ pt
$= 7\frac{1}{2} \times \frac{1}{2}$ qt
$= \frac{15}{2} \times \frac{1}{2}$ qt
$= \frac{15}{4}$ qt
$= 3\frac{3}{4}$ qt

e. $4\frac{3}{10}$ hr = 258 min

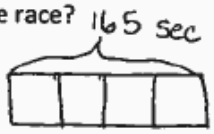
$4\frac{3}{10}$ hr $= 4\frac{3}{10} \times 1$ hr
$= 4\frac{3}{10} \times 60$ min
$= \frac{43}{10} \times \frac{60}{1}$ min
$= 258$ min

$43 \times 6 = 258$

f. 33 months = $2\frac{3}{4}$ years

33 months $= 33 \times 1$ month
$= 33 \times \frac{1}{12}$ yr
$= \frac{11}{4}$ yr
$= 2\frac{3}{4}$ yr

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 sec = ____ min

$165 \text{ sec} = 165 \times 1 \text{ sec}$

$= \frac{165}{1} \times \frac{1}{60} \text{ min}$ (÷5: 33/12; ÷5: 12)

$= \frac{33}{12} \text{ min}$

$= 2\frac{9}{12} \text{ min} = 2\frac{3}{4} \text{ minutes}$

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?

$2\frac{3}{4} \text{ lb} = \_\_ \text{ oz}$

$2\frac{3}{4} \text{ lb} = 2\frac{3}{4} \times 1 \text{ oz}$

$= 2\frac{3}{4} \times 16 \text{ oz}$

$= \frac{11}{4} \times \frac{16^4}{1} \text{ oz}$

$= 44 \text{ oz}$ of blueberries

48
−44
4 oz more

4 oz = ___ lb

$4 \text{ oz} = 4 \times 1 \text{ oz}$

$= \frac{1}{4} \times \frac{1}{16} \text{ lb}$ (÷4: 16/4)

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

Horace needs $\frac{1}{4}$ lb more blueberries

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?

$\frac{3}{5}$ of $9\frac{3}{8}$ =

$\frac{3}{5} \times \frac{75}{8}$ (÷5: 15)

$= \frac{45}{8} = 5\frac{5}{8}$ lb other items

$9\frac{3}{8}$ lb books
$+ 5\frac{5}{8}$ lb items
$14\frac{8}{8} = 15$ lbs

Yes, Tiffany's package weighs 15 lbs.