

Succeed

Eureka Math[®]

Grade 5

Modules 1 & 2

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Learn ♦ Practice ♦ Succeed

Eureka Math® student materials for *A Story of Units*® (K–5) are available in the *Learn, Practice, Succeed* trio. This series supports differentiation and remediation while keeping student materials organized and accessible. Educators will find that the *Learn, Practice*, and *Succeed* series also offers coherent—and therefore, more effective—resources for Response to Intervention (RTI), extra practice, and summer learning.

Learn

Eureka Math Learn serves as a student's in-class companion where they show their thinking, share what they know, and watch their knowledge build every day. *Learn* assembles the daily classwork—Application Problems, Exit Tickets, Problem Sets, templates—in an easily stored and navigated volume.

Practice

Each *Eureka Math* lesson begins with a series of energetic, joyous fluency activities, including those found in *Eureka Math Practice*. Students who are fluent in their math facts can master more material more deeply. With *Practice*, students build competence in newly acquired skills and reinforce previous learning in preparation for the next lesson.

Together, *Learn* and *Practice* provide all the print materials students will use for their core math instruction.

Succeed

Eureka Math Succeed enables students to work individually toward mastery. These additional problem sets align lesson by lesson with classroom instruction, making them ideal for use as homework or extra practice. Each problem set is accompanied by a Homework Helper, a set of worked examples that illustrate how to solve similar problems.

Teachers and tutors can use *Succeed* books from prior grade levels as curriculum-consistent tools for filling gaps in foundational knowledge. Students will thrive and progress more quickly as familiar models facilitate connections to their current grade-level content.

Students, families, and educators:

Thank you for being part of the *Eureka Math*® community, where we celebrate the joy, wonder, and thrill of mathematics.

Nothing beats the satisfaction of success—the more competent students become, the greater their motivation and engagement. The *Eureka Math Succeed* book provides the guidance and extra practice students need to shore up foundational knowledge and build mastery with new material.

What is in the Succeed book?

Eureka Math Succeed books deliver supported practice sets that parallel the lessons of *A Story of Units*®. Each *Succeed* lesson begins with a set of worked examples, called *Homework Helpers*, that illustrate the modeling and reasoning the curriculum uses to build understanding. Next, students receive scaffolded practice through a series of problems carefully sequenced to begin from a place of confidence and add incremental complexity.

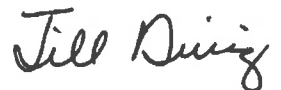
How should Succeed be used?

The collection of *Succeed* books can be used as differentiated instruction, practice, homework, or intervention. When coupled with *Affirm*®, *Eureka Math*'s digital assessment system, *Succeed* lessons enable educators to give targeted practice and to assess student progress. *Succeed*'s perfect alignment with the mathematical models and language used across *A Story of Units* ensures that students feel the connections and relevance to their daily instruction, whether they are working on foundational skills or getting extra practice on the current topic.

Where can I learn more about Eureka Math resources?

The Great Minds® team is committed to supporting students, families, and educators with an ever-growing library of resources, available at eureka-math.org. The website also offers inspiring stories of success in the *Eureka Math* community. Share your insights and accomplishments with fellow users by becoming a *Eureka Math* Champion.

Best wishes for a year filled with Eureka moments!



Jill Diniz
Director of Mathematics
Great Minds

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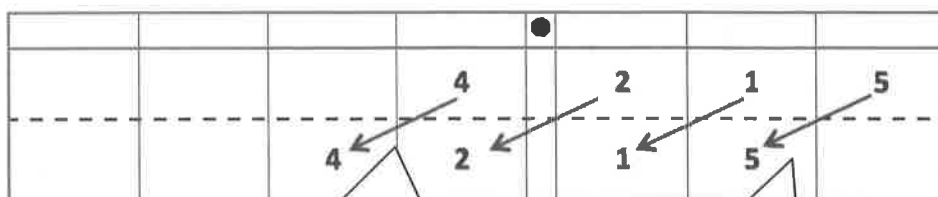
Grade 5

Module 1

Note: It is common to encourage students to simply “move the decimal point” a number of places when multiplying or dividing by powers of 10. Instead, encourage students to understand that the decimal point lives between the ones place and the tenths place. The decimal point does not move. Rather, the digits shift along the place value chart when multiplying and dividing by powers of ten.

Use the place value chart and arrows to show how the value of the each digit changes.

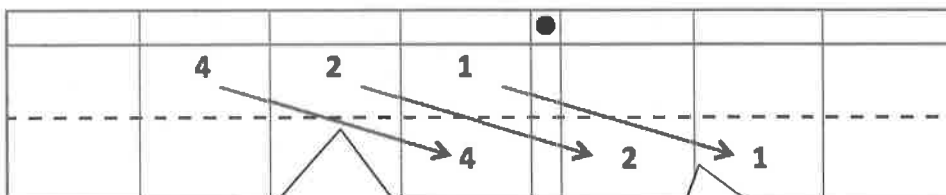
1. $4.215 \times 10 = 42.15$



4 ones times 10 is 4 tens. Since I'm multiplying by 10, the value of each digit becomes 10 times greater.

When multiplying by 10, each digit shifts 1 place to the *left* on the place value chart.

2. $421 \div 100 = 4.21$



4 hundreds divided by 100 is 4 ones. Since I'm dividing by 100, the value of each digit becomes 100 times smaller.

When dividing by 100, each digit shifts 2 places to the *right* on the place value chart.

3. A student used his place value chart to show a number. After the teacher instructed him to multiply his number by 10, the chart showed 3,200.4. Draw a picture of what the place value chart looked like at first.

3 hundreds times 10 is 3 thousands. The original number must have had a 3 in the hundreds place.

thousands	hundreds	tens	ones	.	tenths	hundredths	thousandths
	3	2	0	.	0	4	

I used the place value chart to help me visualize what the original number was. When multiplying by 10, each digit must have shifted 1 place to the left, so I shifted each digit 1 place back to the right to show the original number.

4. A microscope has a setting that magnifies an object so that it appears 100 times as large when viewed through the eyepiece. If a small bug is 0.183 cm long, how long will the insect appear in centimeters through the microscope? Explain how you know.

When multiplying by 100, each digit shifts 2 places to the *left* on the place value chart.

The bug will appear to be 18.3 cm long through the microscope.

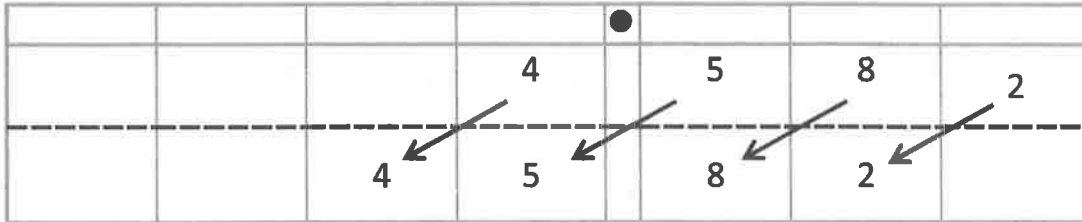
Since the microscope magnifies objects 100 times, the bug will appear to be 100 times larger. I used a place value chart to show what happens to the value of each digit when it is multiplied by 100. Each digit shifts 2 places to the left.

Name _____

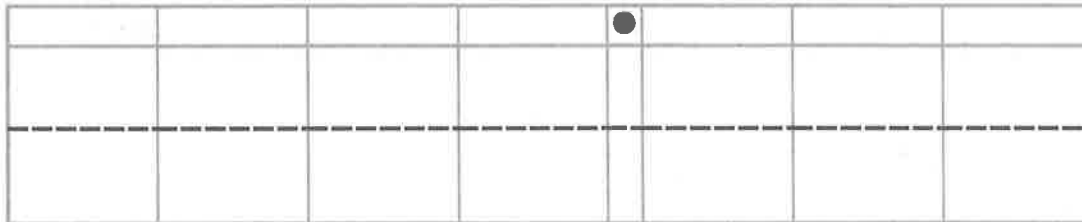
Date _____

1. Use the place value chart and arrows to show how the value of each digit changes. The first one has **been** done for you.

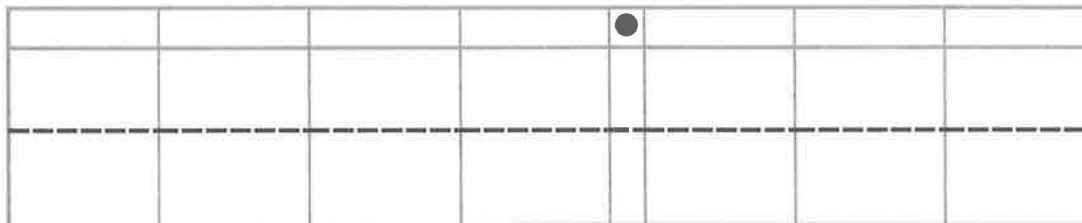
a. $4.582 \times 10 =$ 45.82



b. $7.281 \times 100 =$ _____



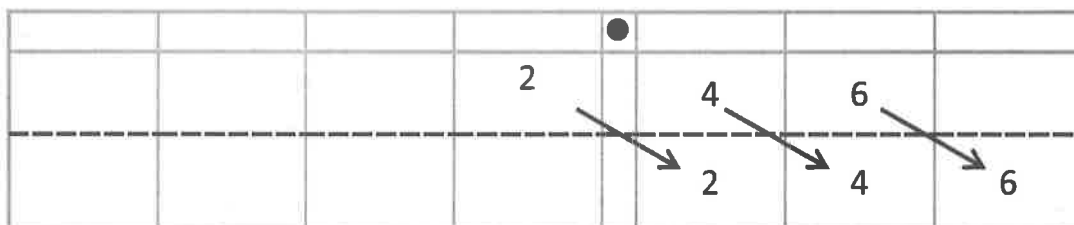
c. $9.254 \times 1,000 =$ _____



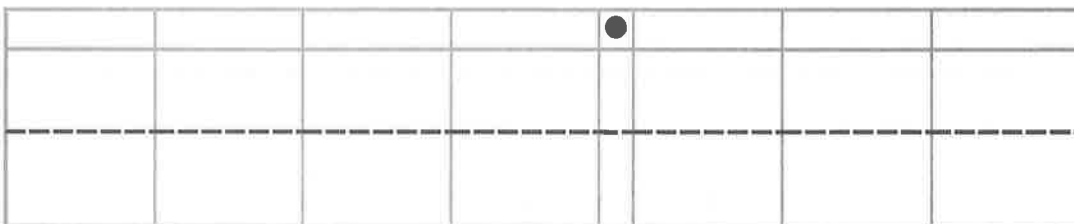
- d. Explain how and why the value of the 2 changed in (a), (b), and (c).

2. Use the place value chart and arrows to show how the value of each digit changes. The first one has been done for you.

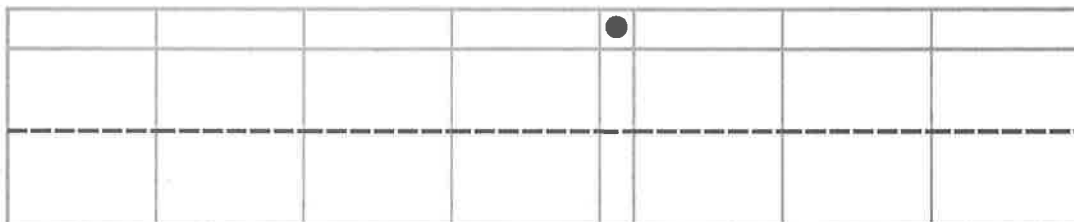
a. $2.46 \div 10 =$ 0.246



b. $678 \div 100 =$ _____



c. $67 \div 1,000 =$ _____



- d. Explain how and why the value of the 6 changed in the quotients in (a), (b), and (c).

3. Researchers counted 8,912 monarch butterflies on one branch of a tree at a site in Mexico. They estimated that the total number of butterflies at the site was 1,000 times as large. About how many butterflies were at the site in all? Explain your thinking, and include a statement of the solution.
4. A student used his place value chart to show a number. After the teacher instructed him to divide his number by 100, the chart showed 28.003. Draw a picture of what the place value chart looked like at first.

Explain how you decided what to draw on your place value chart. Be sure to include reasoning about how the value of each digit was affected by the division.

5. On a map, the perimeter of a park is 0.251 meters. The actual perimeter of the park is 1,000 times as large. What is the actual perimeter of the park? Explain how you know using a place value chart.

1. Solve.

a. $4,258 \times 10 = \underline{42,580}$

I visualized a place value chart. 8 ones times 10 is 8 tens. When multiplying by 10, each digit shifts 1 place to the *left*.

c. $3.9 \times 100 = \underline{390}$

The factor 100, has 2 zeros, so I can visualize each digit shifting 2 places to the *left*.

b. $4,258 \div 10 = \underline{425.8}$

When dividing by 10, each digit shifts 1 place to the *right*.

d. $3.9 \div 100 = \underline{0.039}$

The divisor, 100, has 2 zeros, so each digit shifts 2 places to the *right*.

2. Solve.

a. $9,647 \times 100 = \underline{964,700}$

$7 \times 1 \text{ hundred} = 7 \text{ hundreds} = 700$

b. $9,647 \div 1,000 = \underline{9.647}$

$7 \div 1 \text{ thousand} = 7 \text{ thousandths} = 0.007$

c. Explain how you decided on the number of zeros in the product for part (a).

I visualized a place value chart. Multiplying by 100 shifts each digit in the factor 9, 647 two places to the left, so there were 2 additional zeros in the product.

d. Explain how you decided where to place the decimal in the quotient for part (b).

The divisor, 1, 000, has 3 zeros, so each digit in 9, 647 shifts 3 places to the right. When the digit 9 shifts 3 places to the right, it moves to the ones places, so I knew the decimal point needed to go between the ones place and the tenths place. I put the decimal between the 9 and the 6.

3. Jasmine says that 7 hundredths multiplied by 1,000 equals 7 thousands. Is she correct? Use a place value chart to explain your answer.

Jasmine is not correct. 7 ones \times 1,000 would be 7 thousands.

But $0.07 \times 1,000 = 70$. Look at my place value chart.



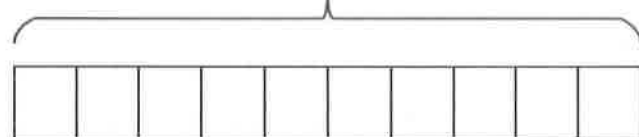
The factor 1,000 has 3 zeros, so the digit 7 shifts 3 places to the left on the place value chart.

4. Nino's class earned \$750 selling candy bars for a fundraiser. $\frac{1}{10}$ of all the money collected was from sales made by Nino. How much money did Nino raise?

The whole tape represents all of the money earned by Nino's class.

Nino collected $\frac{1}{10}$ of all the money, so I partition the tape diagram into 10 equal units.

\$750



Nino's sales

The value of this 1 unit will tell me how much money Nino earned for his class.

$$10 \text{ units} = \$750$$

$$1 \text{ unit} = \$750 \div 10$$

$$1 \text{ unit} = \$75$$

Nino raised \$75.

Name _____

Date _____

1. Solve.

a. $36,000 \times 10 =$ _____

e. $2.4 \times 100 =$ _____

b. $36,000 \div 10 =$ _____

f. $24 \div 1,000 =$ _____

c. $4.3 \times 10 =$ _____

g. $4.54 \times 1,000 =$ _____

d. $4.3 \div 10 =$ _____

h. $3,045.4 \div 100 =$ _____

2. Find the products.

a. $14,560 \times 10 =$ _____

b. $14,560 \times 100 =$ _____

c. $14,560 \times 1,000 =$ _____

Explain how you decided on the number of zeros in the products for (a), (b), and (c).

3. Find the quotients.

a. $16.5 \div 10 =$ _____

b. $16.5 \div 100 =$ _____

c. Explain how you decided where to place the decimal in the quotients for (a) and (b).

4. Ted says that 3 tenths multiplied by 100 equals 300 thousandths. Is he correct? Use a place value chart to explain your answer.

5. Alaska has a land area of about 1,700,000 square kilometers. Florida has a land area $\frac{1}{10}$ the size of Alaska. What is the land area of Florida? Explain how you found your answer.

1. Write the following in exponential form.

a. $10 \times 10 \times 10 = \underline{10^3}$

10 is a factor 3 times, so the exponent is 3. I can read this as, "ten to the third power."

c. $100,000 = \underline{10^5}$

b. $1,000 \times 10 = \underline{10^4}$

1,000 = $10 \times 10 \times 10$, so this expression uses 10 as a factor 4 times. The exponent is 4.

d. $100 = \underline{10^2}$

I recognize a pattern. 100 has 2 zeros. Therefore, the exponent is 2. One hundred equals 10 to the 2nd power.

2. Write the following in standard form.

a. $6 \times 10^3 = \underline{6,000}$

10^3 is equal to 1,000. 6 times 1 thousand is 6 thousand.

c. $643 \div 10^3 = \underline{0.643}$

b. $60.43 \times 10^4 = \underline{604,300}$

The exponent 4 tells me how many places each digit will shift to the left.

d. $6.4 \div 10^2 = \underline{0.064}$

The exponent 2 tells me how many places each digit will shift to the right.

3. Complete the patterns.

a. 0.06 0.6 6 60 600 6,000

6 tenths is larger than 6 hundredths. Each number in the pattern is 10 times larger than the previous number.

b. 92,100 9,210 921 92.1 9.21 0.921

The numbers are getting smaller in this pattern.

The digits have each shifted 1 place to the right. The pattern in this sequence is "divide by 10^1 ."

Name _____

Date _____

1. Write the following in exponential form (e.g., $100 = 10^2$).

a. $1000 =$ _____

d. $100 \times 10 =$ _____

b. $10 \times 10 =$ _____

e. $1,000,000 =$ _____

c. $100,000 =$ _____

f. $10,000 \times 10 =$ _____

2. Write the following in standard form (e.g., $4 \times 10^2 = 400$).

a. $4 \times 10^3 =$ _____

e. $6.072 \times 10^3 =$ _____

b. $64 \times 10^4 =$ _____

f. $60.72 \times 10^4 =$ _____

c. $5,300 \div 10^2 =$ _____

g. $948 \div 10^3 =$ _____

d. $5,300,000 \div 10^3 =$ _____

h. $9.4 \div 10^2 =$ _____

3. Complete the patterns.

a. 0.02 0.2 _____ 20 _____ _____

b. 3,400,000 34,000 _____ 3.4 _____

c. _____ 8,570 _____ 85.7 8.57 _____

d. 444 4440 44,400 _____ _____ _____

e. _____ 9.5 950 95,000 _____ _____

4. After a lesson on exponents, Tia went home and said to her mom, "I learned that 10^4 is the same as 40,000." She has made a mistake in her thinking. Use words, numbers, or a place value chart to help Tia correct her mistake.
5. Solve $247 \div 10^2$ and 247×10^2 .
- a. What is different about the two answers? Use words, numbers, or pictures to explain how the digits shift.
- b. Based on the answers from the pair of expressions above, solve $247 \div 10^3$ and 247×10^3 .

1. Convert and write an equation with an exponent.

1 meter is equal to 100 centimeters.

a. 4 meters to centimeters $\underline{4}$ m = $\underline{400}$ cm

$4 \times 10^2 = 400$

1 meter is equal to 1,000 millimeters.

b. 2.8 meters to millimeters $\underline{2.8}$ m = $\underline{2,800}$ mm

$2.8 \times 10^3 = 2,800$

In the first 2 problems, I am converting a *larger* unit to a *smaller* unit. Therefore, I need to multiply to find the equivalent length.

2. Convert using an equation with an exponent.

There are 100 centimeters in 1 meter.

a. 87 centimeters to meters $\underline{87}$ cm = $\underline{0.87}$ m

$87 \div 10^2 = 0.87$

There are 1,000 millimeters in 1 meter.

b. 9 millimeters to meters $\underline{9}$ mm = $\underline{0.009}$ m

$9 \div 10^3 = 0.009$

In these 2 problems, I am converting a *smaller* unit to a *larger* unit. Therefore, I need to divide to find the equivalent length.

3. The height of a cellphone is 13 cm. Express this measurement in meters. Explain your thinking. Include an equation with an exponent in your explanation.

$13 \text{ cm} = 0.13 \text{ m}$

In order to rename smaller units as larger units, I'll need to divide.

Since 1 meter is equal to 100 centimeters, I divided the number of centimeters by 100.

$13 \div 10^2 = 0.13$

I need to include an equation with an exponent, so I'll express 100 as 10^2 .

Name _____

Date _____

1. Convert and write an equation with an exponent. Use your meter strip when it helps you.

a. 2 meters to centimeters $2\text{m} = 200\text{ cm}$ $2 \times 10^2 = 200$

b. 108 centimeters to meters $108\text{ cm} = \underline{\hspace{2cm}}\text{ m}$ _____

c. 2.49 meters to centimeters $\underline{\hspace{2cm}}\text{ m} = \underline{\hspace{2cm}}\text{ cm}$ _____

d. 50 centimeters to meters $\underline{\hspace{2cm}}\text{ cm} = \underline{\hspace{2cm}}\text{ m}$ _____

e. 6.3 meters to centimeters $\underline{\hspace{2cm}}\text{ m} = \underline{\hspace{2cm}}\text{ cm}$ _____

f. 7 centimeters to meters $\underline{\hspace{2cm}}\text{ cm} = \underline{\hspace{2cm}}\text{ m}$ _____

g. In the space below, list the letters of the problems where smaller units are converted to larger units.

2. Convert using an equation with an exponent. Use your meter strip when it helps you.

a. 4 meters to millimeters $\underline{\hspace{2cm}}\text{ m} = \underline{\hspace{2cm}}\text{ mm}$ _____

b. 1.7 meters to millimeters $\underline{\hspace{2cm}}\text{ m} = \underline{\hspace{2cm}}\text{ mm}$ _____

c. 1,050 millimeters to meters $\underline{\hspace{2cm}}\text{ mm} = \underline{\hspace{2cm}}\text{ m}$ _____

d. 65 millimeters to meters $\underline{\hspace{2cm}}\text{ mm} = \underline{\hspace{2cm}}\text{ m}$ _____

e. 4.92 meters to millimeters $\underline{\hspace{2cm}}\text{ m} = \underline{\hspace{2cm}}\text{ mm}$ _____

f. 3 millimeters to meters $\underline{\hspace{2cm}}\text{ mm} = \underline{\hspace{2cm}}\text{ m}$ _____

g. In the space below, list the letters of the problems where larger units are converted to smaller units.

3. Read each aloud as you write the equivalent measures. Write an equation with an exponent you might use to convert.

a. 2.638 m = _____ mm $2.638 \times 10^3 = 2,638$

b. 7 cm = _____ m _____

c. 39 mm = _____ m _____

d. 0.08 m = _____ mm _____

e. 0.005 m = _____ cm _____

4. Yi Ting's height is 1.49 m. Express this measurement in millimeters. Explain your thinking. Include an equation with an exponent in your explanation.

5. A ladybug's length measures 2 cm. Express this measurement in meters. Explain your thinking. Include an equation with an exponent in your explanation.

6. The length of a sticky note measures 77 millimeters. Express this length in meters. Explain your thinking. Include an equation with an exponent in your explanation.

1. Express as decimal numerals.

- a. Eight and three hundred fifty-two thousandths

8.352

The word *and* separates the whole numbers from the decimal numbers.

- b. $\frac{6}{100}$

0.06

- c. $5\frac{132}{1000}$

5.132

I can rewrite this fraction as a decimal. There are zero ones and zero tenths in the fraction 6 *hundredths*.

2. Express in words.

- a. 0.034

Thirty-four thousandths

The word *and* separates the whole numbers from the decimal numbers.

- b. 73.29

Seventy-three and twenty-nine hundredths

3. Write the number in expanded form using decimals and fractions.

303.084

$3 \times 100 + 3 \times 1 + 8 \times 0.01 + 4 \times 0.001$

$3 \times 100 + 3 \times 1 + 8 \times \frac{1}{100} + 4 \times \frac{1}{1000}$

This expanded form uses decimals. 8 hundredths is the same as 8 units of 1 hundredth or (8×0.01).

This expanded form uses fractions.

$$\frac{1}{1000} = 0.001$$

Both are read as one thousandths.

4. Write a decimal for each of the following.

a. $4 \times 100 + 5 \times 1 + 2 \times \frac{1}{10} + 8 \times \frac{1}{1000}$

405.208

b. $9 \times 1 + 9 \times 0.1 + 3 \times 0.01 + 6 \times 0.001$

9.936

There are 0 tens and 0 hundredths in expanded form, so I wrote 0 tens and 0 hundredths in standard form too.

3×0.01 is 3 units of 1 hundredth, which I can write as a 3 in the hundredths place.

Name _____

Date _____

1. Express as decimal numerals. The first one is done for you.

a. Five thousandths	0.005
b. Thirty-five thousandths	
c. Nine and two hundred thirty-five thousandths	
d. Eight hundred and five thousandths	
e. $\frac{8}{1000}$	
f. $\frac{28}{1000}$	
g. $7\frac{528}{1000}$	
h. $300\frac{502}{1000}$	

2. Express each of the following values in words.

a. 0.008 _____

b. 15.062 _____

c. 607.409 _____

3. Write the number on a place value chart. Then, write it in expanded form using fractions or decimals to express the decimal place value units. The first one is done for you.

a. 27.346

Tens	Ones		Tenths	Hundredths	Thousandths
2	7	●	3	4	6

$$27.346 = 2 \times 10 + 7 \times 1 + 3 \times \left(\frac{1}{10}\right) + 4 \times \left(\frac{1}{100}\right) + 6 \times \left(\frac{1}{1000}\right) \text{ or}$$

$$27.346 = 2 \times 10 + 7 \times 1 + 3 \times 0.1 + 4 \times 0.01 + 6 \times 0.001$$

b. 0.362

c. 49.564

4. Write a decimal for each of the following. Use a place value chart to help, if necessary.

a. $3 \times 10 + 5 \times 1 + 2 \times \left(\frac{1}{10}\right) + 7 \times \left(\frac{1}{100}\right) + 6 \times \left(\frac{1}{1000}\right)$

b. $9 \times 100 + 2 \times 10 + 3 \times 0.1 + 7 \times 0.001$

c. $5 \times 1000 + 4 \times 100 + 8 \times 1 + 6 \times \left(\frac{1}{100}\right) + 5 \times \left(\frac{1}{1000}\right)$

5. At the beginning of a lesson, a piece of chalk is 4.875 inches long. At the end of the lesson, it is 3.125 inches long. Write the two amounts in expanded form using fractions.

a. At the beginning of the lesson:

b. At the end of the lesson:

6. Mrs. Herman asked the class to write an expanded form for 412.638. Nancy wrote the expanded form using fractions, and Charles wrote the expanded form using decimals. Write their responses.

Thousands	
Hundreds	
Tens	
Ones	
Tenths	
Hundredths	
Thousandths	

thousands through thousandths place value chart

1. Show the numbers on the place value chart using digits. Use $>$, $<$, or $=$ to compare.

$$43.554 \geq 43.545$$

	4	3	.	5	5	4
	4	3	.	5	4	5

5 hundredths is greater than 4 hundredths. Therefore,
 $43.554 > 43.545$.

I put each digit of both numbers in the place value chart. Now I can easily compare the values.

2. Use the $>$, $<$, or $=$ to compare the following.

a. $7.4 = 74$ tenths

10 tenths = 1 one 20 tenths = 2 ones 70 tenths = 7 ones
 Therefore, 74 tenths = 7 ones and 4 tenths.

b. $2.7 \geq$ Twenty-seven hundredths

1 one = 10 tenths 2 ones = 20 tenths $2.7 = 27$ tenths
 Tenths are a larger unit than hundredths, therefore 27 tenths is *greater* than 27 hundredths.

c. $3.12 \leq 312$ tenths

I can think of both numbers in unit form: 312 hundredths $<$ 312 tenths.
 Hundredths are a smaller unit than tenths.
 I can also think of both numbers in decimal notation: $3.12 < 31.2$.

d. $1.17 > 1.165$

Both of these numbers have 1 one and 1 tenth. But
 7 hundredths is *greater* than 6 hundredths. I know that 1.17 is *greater* than 1.165.

I need to be careful!
 Although 1.165 has more digits than 1.17, it doesn't always mean it has a greater value.

I also know that $1.17 = 1.170$. When both numbers have the same number of digits, I can clearly see that
 $1.170 > 1.165$.

3. Arrange the numbers in *increasing* order.

8.719 8.79 8.7 8.179

8.179, 8.7, 8.719, 8.79

Increasing order means I need to list the numbers from *least* to *greatest*.

8	7	1	9
8	7	9	
8	7		
8	1	7	9

To make comparing easier, I'm going to use a place value chart.

The 9 hundredths is greater than all of the other digits in the hundredths place. 8.79 is the largest number.

All of the numbers have 8 ones. 1 tenth is less than 7 tenths, so 8.179 is the smallest number.

Decreasing order means I need to list the numbers from *greatest* to *least*.

4. Arrange the numbers in *decreasing* order.

56.128 56.12 56.19 56.182

This time I'll just visualize the place value chart in my head.

56.19, 56.182, 56.128, 56.12

I'll begin by comparing the largest units, tens, first. All of the numbers have 5 tens, 6 ones, and 1 tenth. I'll look to the hundredths place next to compare.

Even though this number has only 4 digits, it's actually the largest number. The 9 in the hundredths place is the largest of all the digits in the hundredths places.

When I compare 56.12 and 56.128 to the other numbers, I see that they both have the fewest number of hundredths. However, I know that 56.128 is larger because it has 8 thousandths more than 56.12.

Name _____

Date _____

1. Use
- $>$
- ,
- $<$
- , or
- $=$
- to compare the following.

a. 16.45	<input type="text"/>	16.454
b. 0.83	<input type="text"/>	$\frac{83}{100}$
c. $\frac{205}{1000}$	<input type="text"/>	0.205
d. 95.045	<input type="text"/>	95.545
e. 419.10	<input type="text"/>	419.099
f. Five ones and eight tenths	<input type="text"/>	Fifty-eight tenths
g. Thirty-six and nine thousandths	<input type="text"/>	Four tens
h. One hundred four and twelve hundredths	<input type="text"/>	One hundred four and two thousandths
i. One hundred fifty-eight thousandths	<input type="text"/>	0.58
j. 703.005	<input type="text"/>	Seven hundred three and five hundredths

2. Arrange the numbers in increasing order.

a. 8.08 8.081 8.09 8.008

b. 14.204 14.200 14.240 14.210

3. Arrange the numbers in decreasing order.

a. 8.508 8.58 7.5 7.058

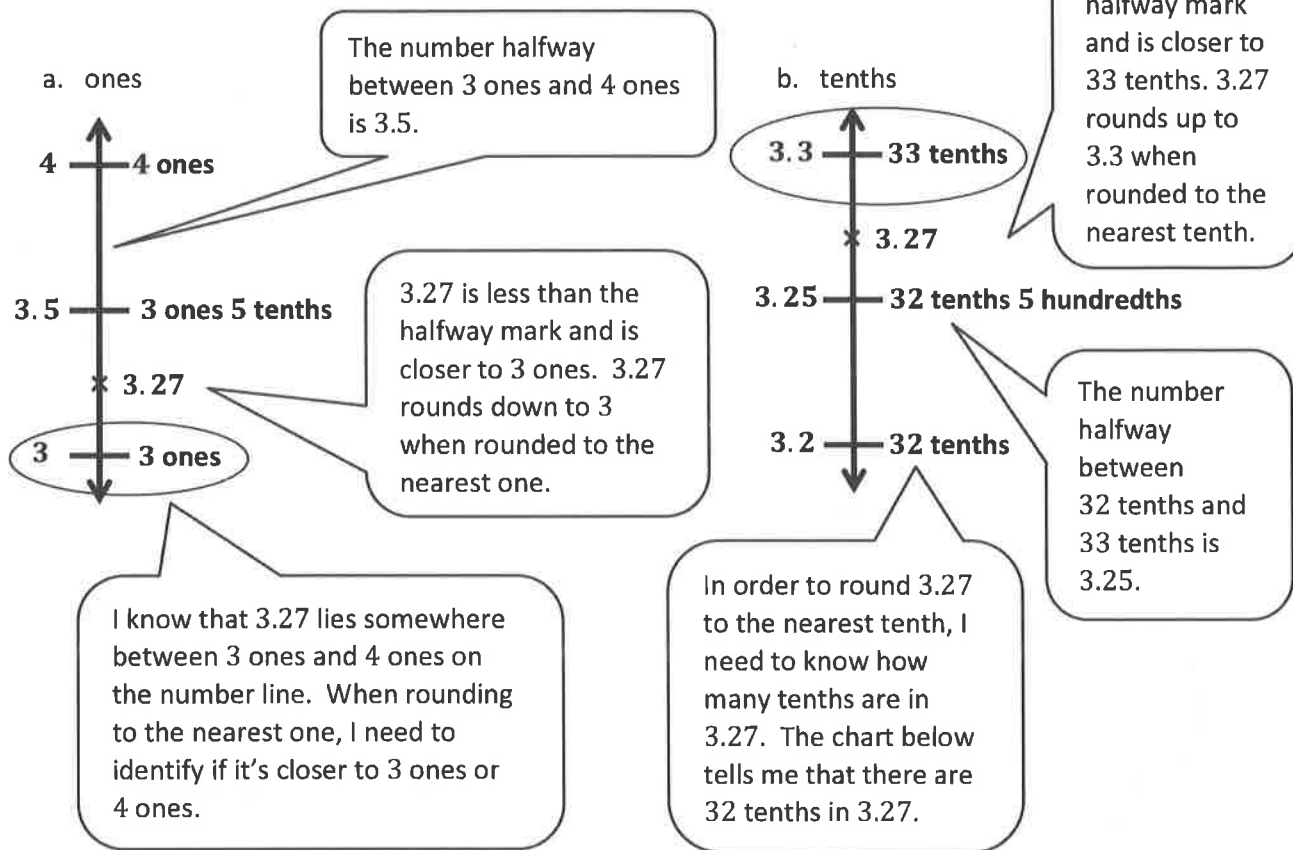
b. 439.216 439.126 439.612 439.261

4. James measured his hand. It was 0.17 meter. Jennifer measured her hand. It was 0.165 meter. Whose hand is bigger? How do you know?

5. In a paper airplane contest, Marcel's plane travels 3.345 meters. Salvador's plane travels 3.35 meters. Jennifer's plane travels 3.3 meters. Based on the measurements, whose plane traveled the farthest distance? Whose plane traveled the shortest distance? Explain your reasoning using a place value chart.

Round to the given place value. Label the number lines to show your work. Circle the rounded number. Use a place value chart to show your decompositions for each.

1. 3.27



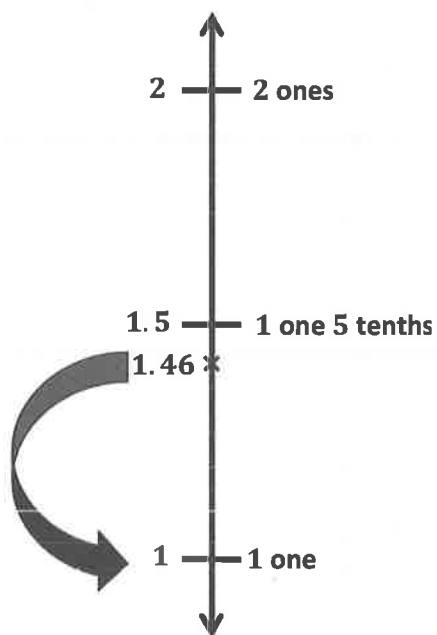
<i>ones</i>	<i>tenths</i>	<i>hundredths</i>
3	2	7
	32	7
		327

I can think of 3.27 in several ways. I can say it is 3 ones + 2 tenths + 7 hundredths. I can also think of it as 32 tenths + 7 hundredths or 327 hundredths.

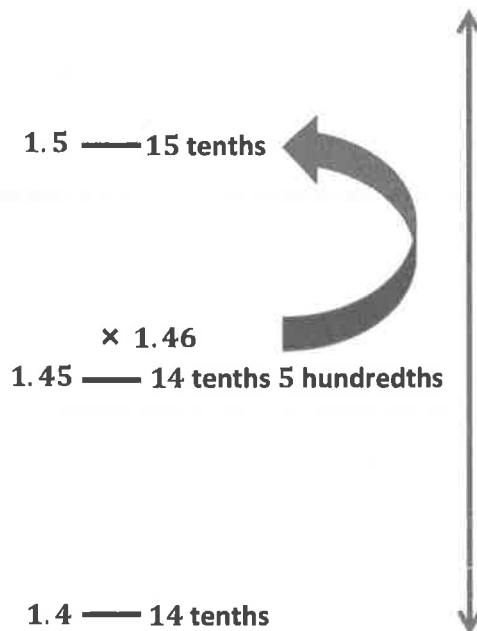
2. Rosie's pedometer said she walked 1.46 miles. She rounded her distance to 1 mile, and her brother, Isaac, rounded her distance to 1.5 miles. They are both right. Why?

Rosie rounded the distance to the nearest mile, and Isaac rounded the distance to the nearest tenth of a mile.

1. 46 rounded to the nearest one is 1.



1. 46 rounded to the nearest tenth is 15 tenths or 1.5.



Name _____

Date _____

Fill in the table, and then round to the given place. Label the number lines to show your work. Circle the rounded number.

1. 4.3

- a. Hundredths b. Tenths c. Ones



Tens	Ones	Tenths	Hundredths	Thousandths

2. 225.286

- a. Hundredths b. Ones c. Tens



Tens	Ones	Tenths	Hundredths	Thousandths

3. 8.984

Tens	Ones	Tenths	Hundredths	Thousandths

a. Hundredths



b. Tenths



c. Ones



d. Tens



4. On a Major League Baseball diamond, the distance from the pitcher's mound to home plate is 18.386 meters.

a. Round this number to the nearest hundredth of a meter. Use a number line to show your work.

b. How many centimeters is it from the pitcher's mound to home plate?

5. Jules reads that 1 pint is equivalent to 0.473 liters. He asks his teacher how many liters there are in a pint. His teacher responds that there are about 0.47 liters in a pint. He asks his parents, and they say there are about 0.5 liters in a pint. Jules says they are both correct. How can that be true? Explain your answer.

1. Round the quantity to the given place value. Draw number lines to explain your thinking. Circle the rounded value on the number line.

Round 23.245 to the nearest tenth and hundredth.

2 tens = 200 tenths

3 ones = 30 tenths

There are 232 tenths

4 hundredths 5 thousandths in the number 23.245.

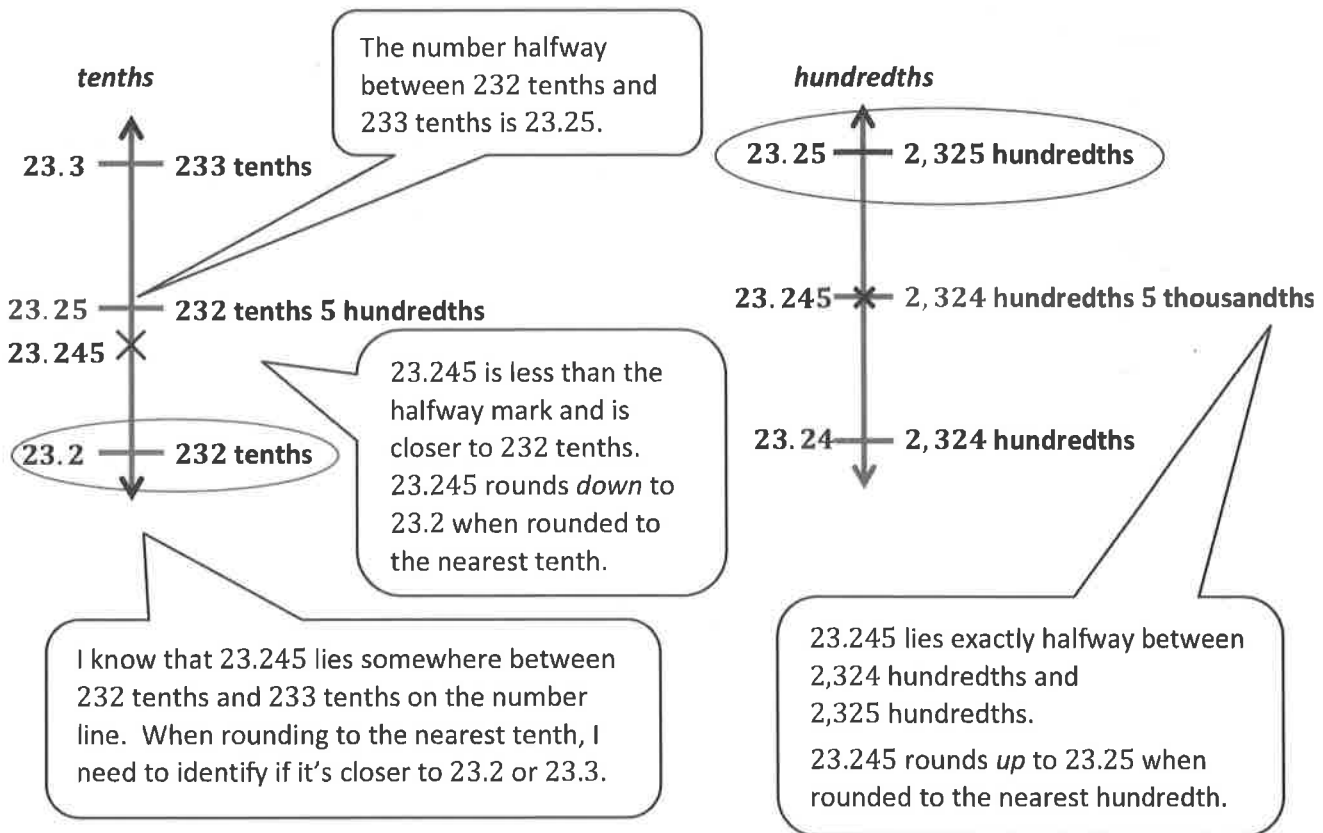
2 tens = 2,000 hundredths

3 ones = 300 hundredths

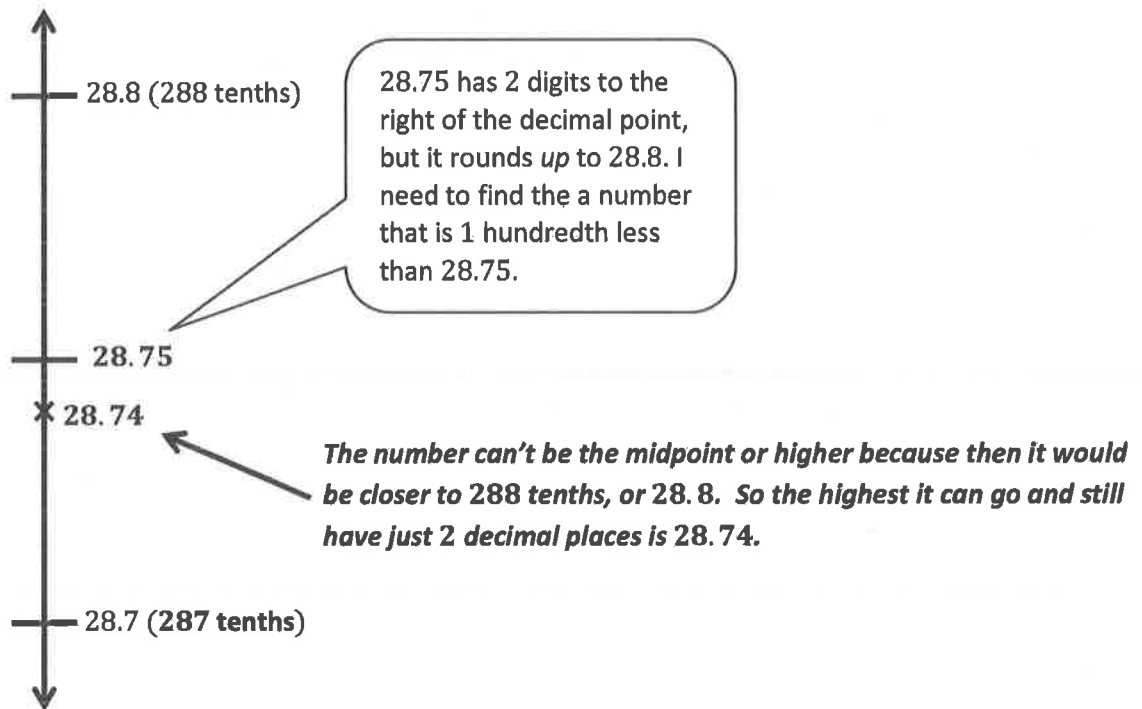
2 tenths = 20 hundredths

There are 2,324 hundredths

5 thousandths in the number 23.245.



2. A decimal number has two digits to the right of its decimal point. If we round it to the nearest tenth, the result is 28.7. What is the maximum possible value of this decimal? Use words and the number line to explain your reasoning.



Name _____

Date _____

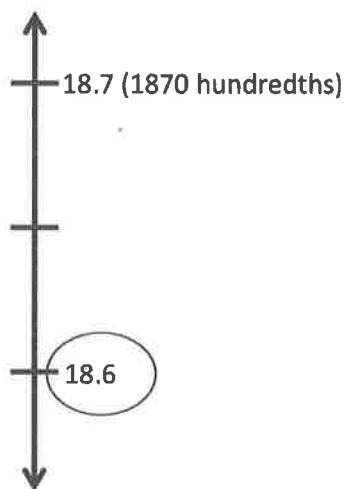
1. Write the decomposition that helps you, and then round to the given place value. Draw number lines to explain your thinking. Circle the rounded value on each number line.

a. 43.586 to the nearest tenth, hundredth, and one.

b. 243.875 to nearest tenth, hundredth, ten, and hundred.

2. A trip from New York City to Seattle is 2,852.1 miles. A family wants to make the drive in 10 days, driving the same number of miles each day. About how many miles will they drive each day? Round your answer to the nearest tenth of a mile.

3. A decimal number has two digits to the right of its decimal point. If we round it to the nearest tenth, the result is 18.6.
- a. What is the maximum possible value of this number? Use words and the number line to explain your reasoning. Include the midpoint on your number line.



- b. What is the minimum possible value of this decimal? Use words, pictures, or numbers to explain your reasoning.



Note: Adding decimals is just like adding whole numbers—combine like units. Study the examples below:

$$2 \text{ apples} + 3 \text{ apples} = 5 \text{ apples}$$

$$2 \text{ ones} + 3 \text{ ones} = 5 \text{ ones}$$

$$2 \text{ tens} + 3 \text{ tens} = 5 \text{ tens} = 50$$

$$2 \text{ hundredths} + 3 \text{ hundredths} = 5 \text{ hundredths} = 0.05$$

1. Solve.

a. $2 \text{ tenths} + 3 \text{ tenths} = \underline{5} \text{ tenths}$

I'll combine the like units, tenths, to get 5 tenths.

The standard form is $0.2 + 0.3 = 0.5$.

b. $26 \text{ hundredths} + 5 \text{ hundredths} = \underline{31} \text{ hundredths} = \underline{3} \text{ tenths} \underline{1} \text{ hundredths}$

I'll combine the like units, hundredths, and get 31 hundredths.

The standard form is $0.26 + 0.05 = 0.31$.

10 hundredths = 1 tenth
20 hundredths = 2 tenths
30 hundredths = 3 tenths

c. $5 \text{ ones } 2 \text{ tenths} + 4 \text{ tenths} = \underline{56} \text{ tenths}$

I'll combine the like units and get 5 ones 6 tenths, which is the same as 56 tenths.

1 one = 10 tenths
5 ones = 50 tenths

The standard form is $5.2 + 0.4 = 5.6$.

2. Solve using the standard algorithm.

a. $0.3 + 0.91 = \underline{1.21}$

3 tenths + 9 tenths is 12 tenths. I'll record 12 tenths as 1 one and 2 tenths.

b. $75.604 + 12.087 = \underline{87.691}$

$$\begin{array}{r} 75.604 \\ + 12.087 \\ \hline 87.691 \end{array}$$

When setting up the algorithm, I need to be sure to add like units. Therefore I'll line up the tens with the tens, the ones with the ones et cetera.

4 thousandths + 7 thousandths is 11 thousandths. I'll record 11 thousandths as 1 hundredth 1 thousandth.

3. Anthony spends \$6.49 on a book. He also buys a pencil for \$2.87 and an eraser for \$1.15. How much money does he spend altogether?

$\$6.49 + \$2.87 + \$1.15 = \underline{\$10.51}$

I'll add all three items together to find the total price.

$$\begin{array}{r} 6.49 \\ 2.87 \\ + 1.15 \\ \hline 10.51 \end{array}$$

9 hundredths + 7 hundredths + 5 hundredths is 21 hundredths. I'll record 21 hundredths as 2 tenths 1 hundredth.

4 tenths + 8 tenths + 1 tenth + 2 tenths is 15 tenths. I'll record 15 tenths as 1 one and 5 tenths.

Anthony spends \$10.51.

Name _____

Date _____

1. Solve.

a. 3 tenths + 4 tenths = _____ tenths

b. 12 tenths + 9 tenths = _____ tenths = _____ one(s) _____ tenth(s)

c. 3 hundredths + 4 hundredths = _____ hundredths

d. 27 hundredths + 7 hundredths = _____ hundredths = _____ tenths _____ hundredths

e. 4 thousandths + 3 thousandths = _____ thousandths

f. 39 thousandths + 5 thousandths = _____ thousandths = _____ hundredths _____ thousandths

g. 5 tenths + 7 thousandths = _____ thousandths

h. 4 ones 4 tenths + 4 tenths = _____ tenths

i. 8 thousandths + 6 ones 8 thousandths = _____ thousandths

2. Solve using the standard algorithm.

a. $0.4 + 0.7 =$ _____

b. $2.04 + 0.07 =$ _____

c. $6.4 + 3.7 =$ _____

d. $56.04 + 3.07 =$ _____

e. $72.564 + 5.137 =$ _____

f. $75.604 + 22.296 =$ _____

3. Walkway Over the Hudson, a bridge that crosses the Hudson River in Poughkeepsie, is 2.063 kilometers long. Anping Bridge, which was built in China 850 years ago, is 2.07 kilometers long.
- a. What is the total span of both bridges? Show your thinking.
- b. Leah likes to walk her dog on the Walkway Over the Hudson. If she walks across and back, how far will she and her dog walk?
4. For his parents' anniversary, Danny spends \$5.87 on a photo. He also buys a balloon for \$2.49 and a box of strawberries for \$4.50. How much money does he spend all together?

Note: Subtracting decimals is just like subtracting whole numbers—subtract like units. Study the examples below.

5 apples – 1 apple = 4 apples

5 ones – 1 one = 4 ones

5 tens – 1 ten = 4 tens

5 hundredths – 1 hundredth = 4 hundredths

1. Subtract.

a. 7 tenths – 4 tenths = 3 tenths

I'll subtract the like units, tenths, to get 3 tenths.

The standard form is $0.7 - 0.4 = 0.3$.

I'll look at the units carefully.

A *hundred* is different than a *hundredth*.

I'll subtract 3 hundredths from 8 hundredths, and get 5 hundredths.

b. 4 hundreds 8 hundredths – 3 hundredths = 4 hundreds 5 hundredths

The standard form is $400.08 - 0.03 = 400.05$.

1.7 is the same as 1.70.

2. Solve $1.7 - 0.09$ using the standard algorithm.

When setting up the algorithm, I need to be sure to subtract like units. Therefore, I'll line up the ones with the ones, the tenths with the tenths, etc.

$$\begin{array}{r} \overset{6}{1} \overset{10}{0} \\ - \overset{0}{0} \overset{0}{0} \overset{9}{9} \\ \hline \overset{1}{1} \overset{6}{6} \overset{1}{1} \end{array}$$

There are 0 hundredths, so I can't subtract 9 hundredths. I'll rename 7 tenths as 6 tenths 10 hundredths.

10 hundredths minus 9 hundredths is equal to 1 hundredth.

6 ones 3 tenths = 6.3 = 6.30
58 hundredths = 0.58

3. Solve 6 ones 3 tenths – 58 hundredths.

I'll rename 6 ones as 5 ones 10 tenths. 10 tenths, plus the 2 tenths already there, makes 12 tenths.

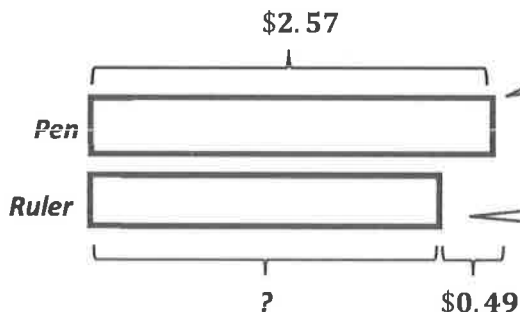
$$\begin{array}{r} 5 \quad 12 \quad 10 \\ \cancel{6} \quad \cancel{3} \quad \cancel{0} \\ - 0 \quad 5 \quad 8 \\ \hline 5 \quad 7 \quad 2 \end{array}$$

There are 0 hundredths, so I can't subtract 8 hundredths. I'll rename 3 tenths as 2 tenths 10 hundredths.

10 hundredths minus 8 hundredths is equal to 2 hundredths.

Students can solve using a variety of methods. This problem may not require the standard algorithm as some students can compute mentally.

4. A pen costs \$2.57. It costs \$0.49 more than a ruler. Kayla bought two pens and one ruler. She paid with a ten-dollar bill. How much change does Kayla get? Use a tape diagram to show your thinking.



I'll draw a tape diagram to represent the pen and label it \$2.57.

Since the pen costs more than the ruler, I'll draw a shorter tape for the ruler.

The difference between the pen and the ruler is \$0.49.

I'll find the price of the ruler. It's \$2.08.

$$\begin{array}{r} 0 \quad 9 \quad 9 \quad 10 \\ \$1 \quad \cancel{0} \quad \cancel{0} \quad \cancel{0} \\ - \quad \$7 \quad 2 \quad 2 \\ \hline \$2 \quad 7 \quad 8 \end{array}$$

$$\begin{array}{r} 4 \quad 17 \\ \$2 \quad \cancel{5} \quad \cancel{7} \\ - \$0 \quad 4 \quad 9 \\ \hline \$2 \quad 0 \quad 8 \end{array}$$

$$\$2.57 + \$2.57 + \$2.08 = \$7.22$$

$$\begin{array}{r} \$2 \quad 5 \quad 7 \\ \$2 \quad 5 \quad 7 \\ + \$2 \quad 0 \quad 8 \\ \hline \$7 \quad 2 \quad 2 \end{array}$$

$$\begin{array}{r} \$2 \quad 5 \quad 7 \\ \$2 \quad 5 \quad 7 \\ + \$2 \quad 0 \quad 8 \\ \hline \$7 \quad 2 \quad 2 \end{array}$$

$$\begin{array}{r} \$2 \quad 5 \quad 7 \\ \$2 \quad 5 \quad 7 \\ + \$2 \quad 0 \quad 8 \\ \hline \$7 \quad 2 \quad 2 \end{array}$$

I'll add the price of two pens and one ruler together. It's \$7.22.

Kayla's change is \$2.78.

I'll subtract the total cost from \$10. Kayla's change will be \$2.78.

Note: Encourage your child to use a variety of strategies when solving. The standard algorithm may not always be necessary for some students. Ask them about different ways to solve the problem. Below you'll find some alternate solution strategies that could be applied.

$$\$2.57 + \$2.57 + \$2.08 = \$7.22$$

When finding the total cost of the 3 items, I can think of adding $\$2.50 + \$2.50 + \$2$, which is equal to $\$7$. Then I'll add the remaining $7\text{¢} + 7\text{¢} + 8\text{¢}$, which is 22¢ . The total then, is $\$7 + \$0.22 = \$7.22$. I can do all of this mentally!

Then when finding the amount of change Kayla gets, I can use another strategy to solve.

Instead of finding the difference of $\$10$ and $\$7.22$ using the subtraction algorithm, I can count up from $\$7.22$.

$$\$7.22 \xrightarrow{+ 3\text{¢}} \$7.25 \xrightarrow{+ 75\text{¢}} \$8.00 \xrightarrow{+ \$2} \$10.00$$

3¢ more makes $\$7.25$.

3 quarters, or 75 cents, more makes $\$8$.

$\$2$ more makes $\$10$.

2 dollars, 3 quarters, and 3 pennies is $\$2.78$. That's what Kayla gets back.

Kayla gets $\$2.78$ back in change.

Name _____

Date _____

1. Subtract. You may use a place value chart.

a. 9 tenths $-$ 3 tenths = _____ tenths

b. 9 ones 2 thousandths $-$ 3 ones = _____ ones _____ thousandths

c. 4 hundreds 6 hundredths $-$ 3 hundredths = _____ hundreds _____ hundredths

d. 56 thousandths $-$ 23 thousandths = _____ thousandths = _____ hundredths _____ thousandths

2. Solve using the standard algorithm.

a. $1.8 - 0.9 =$ _____	b. $41.84 - 0.9 =$ _____	c. $341.84 - 21.92 =$ _____
d. $5.182 - 0.09 =$ _____	e. $50.416 - 4.25 =$ _____	f. $741 - 3.91 =$ _____

3. Solve.

a. 30 tens – 3 tens 3 tenths	b. 5 – 16 tenths	c. 24 tenths – 1 one 3 tenths
d. 6 ones 7 hundredths – 2.3	e. 8.246 – 5 hundredths	f. 5 ones 3 tenths – 0.53

4. Mr. House wrote *8 tenths minus 5 hundredths* on the board. Maggie said the answer is 3 hundredths because 8 minus 5 is 3. Is she correct? Explain.
5. A clipboard costs \$2.23. It costs \$0.58 more than a notebook. Lisa bought two clipboards and one notebook. She paid with a ten-dollar bill. How much change does Lisa get? Use a tape diagram to show your thinking.

Thousands					
Hundredths					
Tenths					
•					
Ones					
Tens					
Hundreds					

hundreds to thousandths place value chart (from Lesson 7)

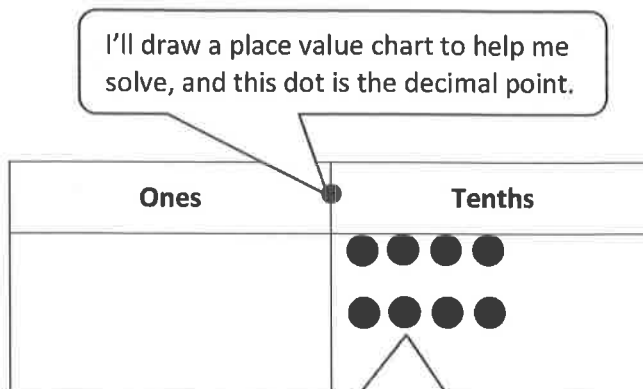
1. Solve by drawing disks on a place value chart. Write an equation, and express the product in standard form.

- a. 2 copies of 4 tenths

$$= 2 \times 0.4$$

$$= 0.8$$

2 copies means 2 groups. So, I'll multiply 2 times 4 tenths. The answer is 8 tenths, or 0.8.



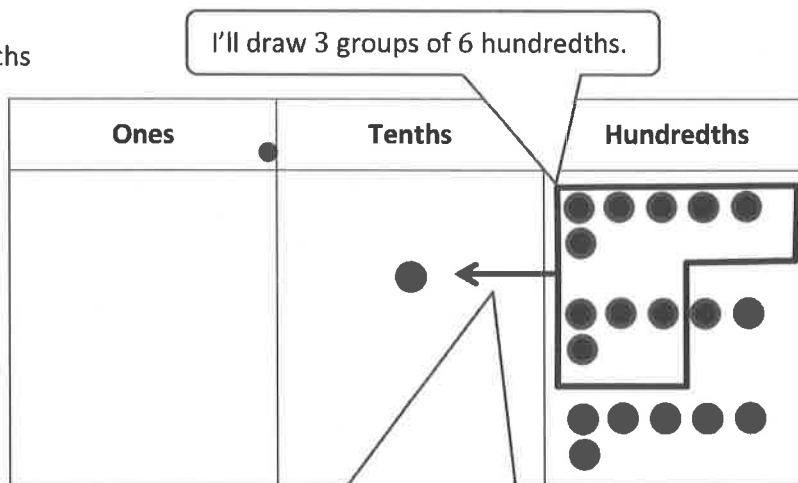
Each dot represents 1 tenth, so I'll draw 2 groups of 4 tenths.

- b. 3 times as much as 6 hundredths

$$= 3 \times 0.06$$

$$= 0.18$$

I'll multiply 3 times 6 hundredths. The answer is 18 hundredths, or 0.18.



I'll bundle 10 hundredths and exchange them for 1 tenth.

2. Draw an area model, and find the sum of the partial products to evaluate each expression.

a. 2×3.17

3.17 is the same as 3 ones 1 tenth 7 hundredths.

The factor 2 represents the width of the area model.

The factor 3.17 represents the length of the area model.

	3 ones	+ 1 tenth	+ 7 hundredths	
2	$2 \times 3 \text{ ones}$	$2 \times 1 \text{ tenth}$	$2 \times 7 \text{ hundredths}$	
	<u>6</u>	+ <u>0.2</u>	+ <u>0.14</u>	= <u>6.34</u>

I'll multiply 2 times each place value unit.

$$2 \times 3 \text{ ones} = 6 \text{ ones} = 6$$

$$2 \times 1 \text{ tenth} = 2 \text{ tenths} = 0.2$$

$$2 \times 7 \text{ hundredths} = 14 \text{ hundredths} = 0.14$$

The product of 2 and 3.17 is 6.34.

b. 4 times as much as 30.162

There are 0 ones in 30.162, so my area model does not include the ones.

	3 tens	+ 1 tenth	+ 6 hundredths	+ 2 thousandths	
4	$4 \times 3 \text{ tens}$	$4 \times 1 \text{ tenth}$	$4 \times 6 \text{ hundredths}$	$4 \times 2 \text{ thousandths}$	
	<u>120</u>	+ <u>0.4</u>	+ <u>0.24</u>	+ <u>0.008</u>	= <u>120.648</u>

I'll multiply 4 times each place value unit.

$$4 \times 3 \text{ tens} = 12 \text{ tens} = 120$$

$$4 \times 1 \text{ tenth} = 4 \text{ tenths} = 0.4$$

$$4 \times 2 \text{ thousandths} = 8 \text{ thousandths} = 0.008$$

The product of 4 and 30.162 is 120.648.

Name _____

Date _____

1. Solve by drawing disks on a place value chart. Write an equation, and express the product in standard form.

a. 2 copies of 4 tenths

b. 4 groups of 5 hundredths

c. 4 times 7 tenths

d. 3 times 5 hundredths

e. 9 times as much as 7 tenths

f. 6 thousandths times 8

2. Draw a model similar to the one pictured below. Find the sum of the partial products to evaluate each expression.

a. 4×6.79

6 ones

+

7 tenths

+

9 hundredths

4

$4 \times 6 \text{ ones}$	$4 \times 7 \text{ tenths}$	$4 \times 9 \text{ hundredths}$
---------------------------	-----------------------------	---------------------------------

_____ + _____ + _____ = _____

b. 6×7.49

c. 9 copies of 3.65

d. 3 times 20.175

3. Leanne multiplied 8×4.3 and got 32.24. Is Leanne correct? Use an area model to explain your answer.
4. Anna buys groceries for her family. Hamburger meat is \$3.38 per pound, sweet potatoes are \$0.79 each, and hamburger rolls are \$2.30 a bag. If Anna buys 3 pounds of meat, 5 sweet potatoes, and 1 bag of hamburger rolls, what will she pay in all for the groceries?

1. Choose the reasonable product for each expression. Explain your thinking in the spaces below using words, pictures, or numbers.

a. 3.1×3

930

93

9.3

0.93

3.1 is just a little more than 3. A reasonable product would be just a little more than 9.

$3 \times 3 = 9$. I looked for a product that was close to 9.

b. 8×7.036

5.6288

56.288

562.88

5,628.8

This product is not reasonable. How could 8×7.036 be less than both factors?

These 2 products are much too large.

$8 \times 7 = 56$. I looked for a product that was close to 56.

2. Lenox weighs 9.2 kg. Her older brother is 3 times as heavy as Lenox. How much does her older brother weigh in kilograms?

Lenox 9.2 kg

Brother

I'll draw 1 unit for Lenox and label it 9.2 kg. Then I'll draw 3 units for her brother.

I can visualize an area model to solve 3×9.2 .

$3 \times 9 \text{ ones} = 27 \text{ ones} = 27$

$3 \times 2 \text{ tenths} = 6 \text{ tenths} = 0.6$

$27 + 0.6 = 27.6$

1 unit = 9.2 kg

3 units = $3 \times 9.2 \text{ kg}$

= 27.6 kg

?

Lenox's older brother weighs 27.6 kilograms.

To find her brother's weight, I'll multiply Lenox's weight by 3. The answer is 27.6 kilograms.

Name _____

Date _____

1. Choose the reasonable product for each expression. Explain your thinking in the spaces below using words, pictures, or numbers.

a. 2.1×3 0.63 6.3 63 630

b. 4.27×6 2562 256.2 25.62 2.562

c. 7×6.053 4237.1 423.71 42.371 4.2371

d. 9×4.82 4.338 43.38 433.8 4338

Note: The use of unit language (e.g., 21 hundredths rather than 0.21) allows students to use knowledge of basic facts to compute easily with decimals.

1. Complete the sentence with the correct number of units, and then complete the equation.

$$0.21 = 21 \text{ hundredths}$$

3 groups of 7 hundredths is 0.21.

$$0.21 \div 3 = \underline{0.07}$$

I know the basic fact $3 \times 7 = 21$. This is similar.
 3×7 hundredths = 21 hundredths

Since $21 \div 3 = 7$, then
 21 hundredths $\div 3 = 7$ hundredths.

2. Complete the number sentence. Express the quotient in units and then in standard form.

Since the divisor is 4, I'll decompose 8.16 into 8 ones and 16 hundredths.
 Both 8 and 16 are multiples of 4.

$$\text{a. } 8.16 \div 4 = \underline{8} \text{ ones} \div 4 + \underline{16} \text{ hundredths} \div 4$$

$$= \underline{2} \text{ ones} + \underline{4} \text{ hundredths}$$

$$8 \text{ ones} \div 4 = 2 \text{ ones} = 2$$

$$= \underline{2.04}$$

$$16 \text{ hundredths} \div 4 = 4 \text{ hundredths} = 0.04$$

$$2 + 0.04 = 2.04$$

Since the divisor is 6, I'll decompose 1.242 into 12 tenths and 42 thousandths.
 Both 12 and 42 are multiples of 6.

$$\text{b. } 1.242 \div 6 = \underline{(12 \text{ tenths} \div 6) + (42 \text{ thousandths} \div 6)}$$

$$= \underline{2 \text{ tenths} + 7 \text{ thousandths}}$$

$$12 \text{ tenths} \div 6 = 2 \text{ tenths} = 0.2$$

$$= \underline{0.207}$$

$$42 \text{ thousandths} \div 6 = 7 \text{ thousandths} = 0.007$$

3. Find the quotients. Then, use words, numbers, or pictures to describe any relationships you notice between the pair of problems and their quotients.

a. $35 \div 5 = \underline{7}$

I know this basic fact!

b. $3.5 \div 5 = \underline{0.7}$

I can use that basic fact to help me solve this one.
 $35 \text{ tenths} \div 5 = 7 \text{ tenths} = 0.7$

Both problems are dividing by 5, but the quotient for part (a) is 10 times larger than the quotient for (b). That makes sense because the number we started with in part (a) is also 10 times larger than the number we started with in part (b).

4. Is the quotient below reasonable? Explain your answer.

a. $0.56 \div 7 = 8$

$56 \text{ hundredths} \div 7 = 8 \text{ hundredths}$

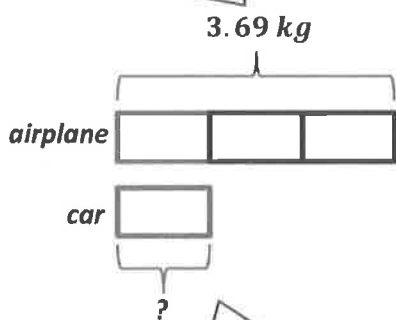
$0.56 = 56 \text{ hundredths}$

No, the quotient is not reasonable.

$56 \div 7 = 8$, so $56 \text{ hundredths} \div 7$ must be 8 hundredths .

5. A toy airplane weighs 3.69 kg. It weighs 3 times as much as a toy car. What is the weight of the toy car?

I draw 1 tape diagram to show the weight of the airplane.



The car is equal to the weight of 1 unit.

The airplane weighs 3 times as much as the car, so I partition the tape diagram, into 3 equal units.

I can use unit language and basic facts to solve.

$3 \text{ ones} \div 3 = 1 \text{ one}$

$6 \text{ tenths} \div 3 = 2 \text{ tenths} = 0.2$

$9 \text{ hundredths} \div 3 = 3 \text{ hundredths} = 0.03$

3 units = 3.69

1 unit = $3.69 \div 3$

1 unit = 1.23

The toy car weighs 1.23 kg.

Name _____

Date _____

1. Complete the sentences with the correct number of units, and then complete the equation.

a. 3 groups of _____ tenths is 1.5. $1.5 \div 3 =$ _____

b. 6 groups of _____ hundredths is 0.24. $0.24 \div 6 =$ _____

c. 5 groups of _____ thousandths is 0.045. $0.045 \div 5 =$ _____

2. Complete the number sentence. Express the quotient in units and then in standard form.

a. $9.36 \div 3 =$ _____ ones $\div 3 +$ _____ hundredths $\div 3$
 $=$ _____ ones $+$ _____ hundredths
 $=$ _____

b. $36.012 \div 3 =$ _____ ones $\div 3 +$ _____ thousandths $\div 3$
 $=$ _____ ones $+$ _____ thousandths
 $=$ _____

c. $3.55 \div 5 =$ _____ tenths $\div 5 +$ _____ hundredths $\div 5$
 $=$ _____
 $=$ _____

d. $3.545 \div 5 =$ _____
 $=$ _____
 $=$ _____

3. Find the quotients. Then, use words, numbers, or pictures to describe any relationships you notice between each pair of problems and quotients.

a. $21 \div 7 =$ _____ $2.1 \div 7 =$ _____

b. $48 \div 8 =$ _____ $0.048 \div 8 =$ _____

4. Are the quotients below reasonable? Explain your answers.

a. $0.54 \div 6 = 9$

b. $5.4 \div 6 = 0.9$

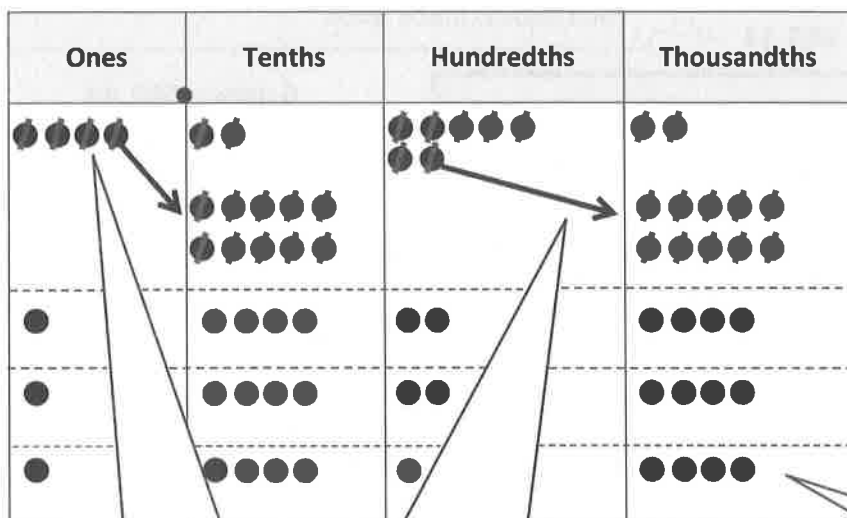
c. $54 \div 6 = 0.09$

5. A toy airplane costs \$4.84. It costs 4 times as much as a toy car. What is the cost of the toy car?
6. Julian bought 3.9 liters of cranberry juice, and Jay bought 8.74 liters of apple juice. They mixed the two juices together and then poured them equally into 2 bottles. How many liters of juice are in each bottle?

1. Draw place value disks on the place value chart to solve. Show each step using the standard algorithm.

$$4.272 \div 3 = \underline{1.424}$$

4.272 is divided into 3 equal groups. There is 1.424 in each group.



$$\begin{array}{r}
 1.424 \\
 3 \overline{) 4.272} \\
 \underline{- 3} \\
 12 \\
 \underline{- 12} \\
 07 \\
 \underline{- 6} \\
 12 \\
 \underline{- 12} \\
 0
 \end{array}$$

When I share 4 ones equally with 3 groups, there is 1 one in each group and 1 one remaining.

In order to continue sharing, or dividing, I'll exchange the 1 remaining hundredth for 10 thousandths.

In each group, there is 1 one 4 tenths 2 hundredths 4 thousandths, or 1.424.

2. Solve $15.704 \div 4$ using the standard algorithm.

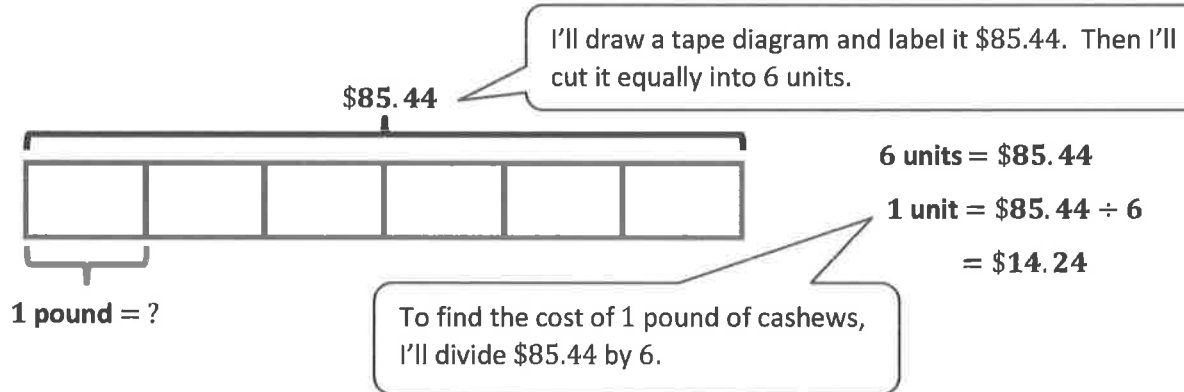
15.704 is divided into 4 equal groups. There is 3.926 in each group.

As I work, I'm visualizing the place value chart and thinking out loud. "We had 15 ones and shared 12 of them. 3 ones remain. I can change those 3 ones for 30 tenths, which combined with the 7 tenths in the whole, makes 37 tenths. Now I need to share 37 tenths equally with 4 groups. Each group gets 9 tenths."

$$\begin{array}{r}
 3.926 \\
 4 \overline{) 15.704} \\
 \underline{- 12} \\
 37 \\
 \underline{- 36} \\
 10 \\
 \underline{- 8} \\
 24 \\
 \underline{- 24} \\
 0
 \end{array}$$

When completing the division, I need to be sure to line up the place value units carefully—the tens with the tens, the ones with the ones, etc.

3. Mr. Huynh paid \$85.44 for 6 pounds of cashews. What's the cost of 1 pound of cashews?



$$\begin{array}{r}
 14.24 \\
 6 \overline{) 85.44} \\
 \underline{- 6} \\
 25 \\
 \underline{- 24} \\
 14 \\
 \underline{- 12} \\
 24 \\
 \underline{- 24} \\
 0
 \end{array}$$

I'll solve using the long division algorithm.

The cost of 1 pound of cashews is \$14.24.

Name _____

Date _____

1. Draw place value disks on the place value chart to solve. Show each step using the standard algorithm.

a. $5.241 \div 3 =$ _____

Ones	Tenths	Hundredths	Thousandths

$$3 \overline{) 5.241}$$

b. $5.372 \div 4 =$ _____

Ones	Tenths	Hundredths	Thousandths

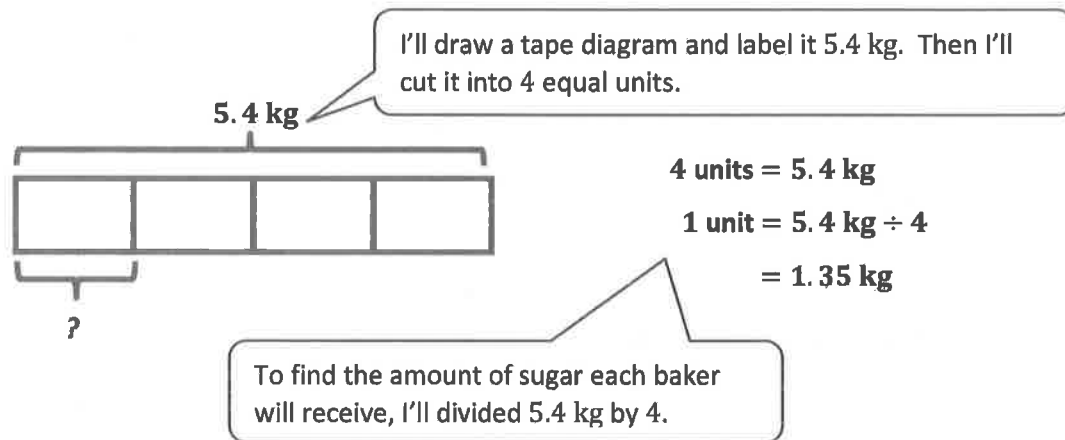
$$4 \overline{) 5.372}$$

2. Solve using the standard algorithm.

a. $0.64 \div 4 =$ _____	b. $6.45 \div 5 =$ _____	c. $16.404 \div 6 =$ _____
--------------------------	--------------------------	----------------------------

3. Mrs. Mayuko paid \$40.68 for 3 kg of shrimp. What's the cost of 1 kilogram of shrimp?
4. The total weight of 6 pieces of butter and a bag of sugar is 3.8 lb. If the weight of the bag of sugar is 1.4 lb, what is the weight of each piece of butter?

3. Four bakers shared 5.4 kilograms of sugar equally. How much sugar did they each receive?



I'll solve using the long division algorithm.

$$\begin{array}{r}
 1.35 \\
 4 \overline{) 5.40} \\
 \underline{4} \\
 14 \\
 \underline{12} \\
 20 \\
 \underline{20} \\
 0
 \end{array}$$

Each baker received 1.35 kilograms of sugar.

Name _____

Date _____

1. Draw place value disks on the place value chart to solve. Show each step in the standard algorithm.

a. $0.7 \div 4 =$ _____

Ones	•	Tenths	Hundredths	Thousandths

$$4 \overline{) 0.7}$$

b. $8.1 \div 5 =$ _____

Ones	•	Tenths	Hundredths	Thousandths

$$5 \overline{) 8.1}$$

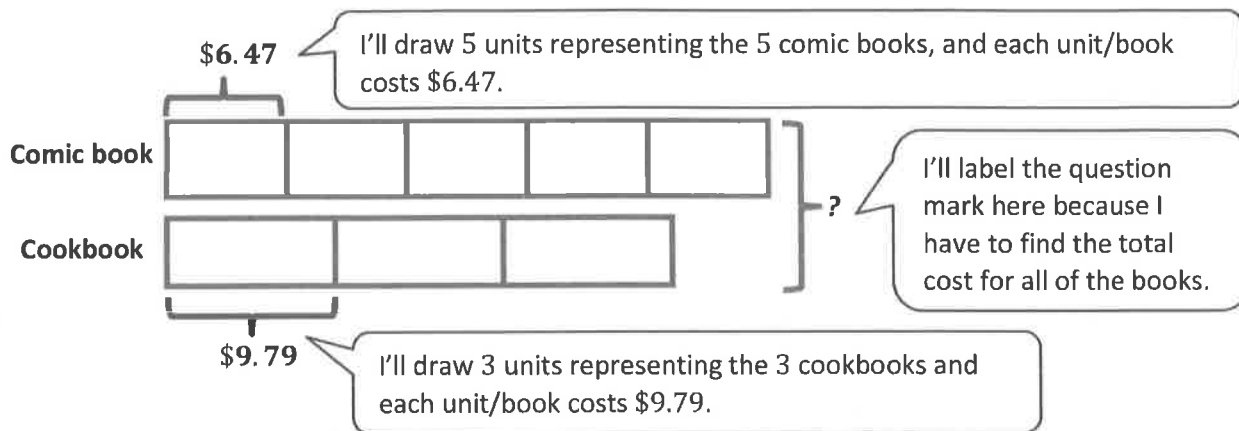
2. Solve using the standard algorithm.

a. $0.7 \div 2 =$	b. $3.9 \div 6 =$	c. $9 \div 4 =$
d. $0.92 \div 2 =$	e. $9.4 \div 4 =$	f. $91 \div 8 =$

3. A rope 8.7 meters long is cut into 5 equal pieces. How long is each piece?

4. Yasmine bought 6 gallons of apple juice. After filling up 4 bottles of the same size with apple juice, she had 0.3 gallon of apple juice left. How many gallons of apple juice are in each container?

1. A comic book costs \$6.47, and a cookbook costs \$9.79.
- a. Zion buys 5 comic books and 3 cookbooks. What is the total cost for all of the books?



Comic book:

$$1 \text{ unit} = \$6.47$$

$$5 \text{ units} = 5 \times \$6.47 = \$32.35$$

I'll find the total cost of the 5 comic books by multiplying 5 times \$6.47.

	6 ones	+ 4 tenths	+ 7 hundredths
5	$5 \times 6 \text{ ones}$	$5 \times 4 \text{ tenths}$	$5 \times 7 \text{ hundredths}$
	30 ones	+ 20 tenths	+ 35 hundredths

$$30 \text{ ones} + 20 \text{ tenths} + 35 \text{ hundredths} = 32.35$$

Cookbook:

$$1 \text{ unit} = \$9.79$$

$$3 \text{ units} = 3 \times \$9.79 = \$29.37$$

I'll find the total cost of the 3 cookbooks by multiplying 3 times \$9.79.

	9 ones	+ 7 tenths	+ 9 hundredths
3	$3 \times 9 \text{ ones}$	$3 \times 7 \text{ tenths}$	$3 \times 9 \text{ hundredths}$
	27 ones	+ 21 tenths	+ 27 hundredths

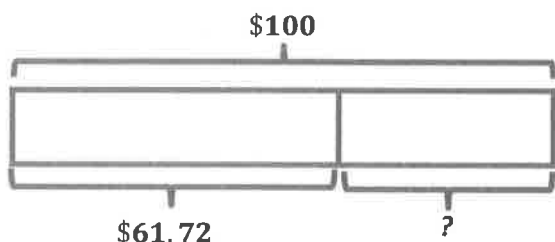
$$27 \text{ ones} + 21 \text{ tenths} + 27 \text{ hundredths} = 29.37$$

The total cost of all the books is \$61.72.

$$\begin{array}{r} 32.35 \\ + 29.37 \\ \hline 61.72 \end{array}$$

I'll add the total cost of 5 comic books and the total cost of 3 cookbooks together to find the total cost of all 8 books.

- b. Zion wants to pay for all the books with a \$100 bill. How much change will he get back?



$$\$100 - \$61.72 = \$38.28$$

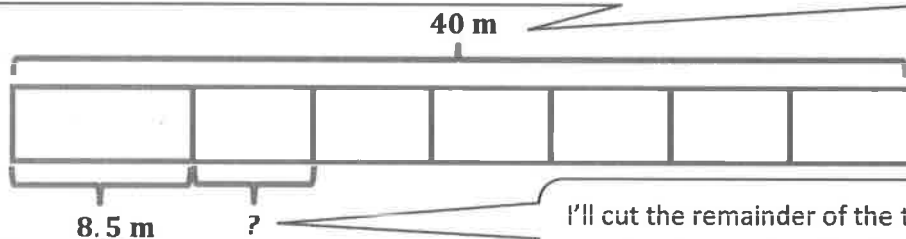
Zion will get \$38.28 back in change.

$$\begin{array}{r} 0\ 9\ 9\ 9\ 10 \\ \cancel{1}\ \cancel{0}\ \cancel{0}\ \cancel{0}\ \cancel{0} \\ -\quad 6\ 1\ 7\ 2 \\ \hline 3\ 8\ 2\ 8 \end{array}$$

I'll subtract \$61.72 from \$100 to find Zion's change.

2. Ms. Porter bought 40 meters of string. She used 8.5 meters to tie a package. Then she cuts the remainder into 6 equal pieces. Find the length of each piece. Give the answer in meters.

I'll draw a tape diagram to represent the string Ms. Porter bought and label the whole as 40 m.



I'll cut out a small part representing the string needed for tying the package and label it 8.5 m.

I'll cut the remainder of the tape into 6 equal units. The length of 1 unit represents the length of each piece of string.

$$40\text{ m} - 8.5\text{ m} = 31.5\text{ m}$$

$$\begin{array}{r} 3\ 9\ 10 \\ \cancel{4}\ \cancel{0}\ \cancel{0} \\ -\quad 8\ 5 \\ \hline 3\ 1\ 5 \end{array}$$

I can subtract 8.5 from 40 to find the length of the remaining string.

$$6\text{ units} = 31.5\text{ m}$$

$$1\text{ unit} = 31.5\text{ m} \div 6 = 5.25\text{ m}$$

I can divide 31.5 by 6 to find the length of each piece of string.

$$\begin{array}{r} 5\ 2\ 5 \\ 6 \overline{) 31.50} \\ -\quad 3\ 0 \\ \hline 1\ 5 \\ -\quad 1\ 2 \\ \hline 3\ 0 \\ \hline 0 \end{array}$$

Each piece of string is 5.25 meters.

3. A table and 8 chairs weigh 235.68 lb together. If the table weighs 157.84 lb, what is the weight of one chair in pounds?
4. Mrs. Cleaver mixes 1.24 liters of red paint with 3 times as much blue paint to make purple paint. She pours the paint equally into 5 containers. How much blue paint is in each container? Give your answer in liters.

Grade 5

Module 2

1. Fill in the blanks using your knowledge of place value units and basic facts.

a. 34×20

Think: $34 \text{ ones} \times 2 \text{ tens} = \underline{68 \text{ tens}}$

$34 \times 20 = \underline{680}$

$34 \text{ ones} \times 2 \text{ tens} = (34 \times 1) \times (2 \times 10)$.
First, I did the mental math: $34 \times 2 = 68$.
Then I thought about the units. *Ones times tens is tens.*
68 tens is the same as 680 ones or 680.

b. 420×20

Think: $42 \text{ tens} \times 2 \text{ tens} = \underline{84 \text{ hundreds}}$

$420 \times 20 = \underline{8,400}$

First, I'll multiply 42 times 2 in my head because that's a basic fact: 84.
Next, I have to think about the units. *Tens times tens is hundreds.*
Therefore, my answer is 84 hundreds or 8,400.

Another way to think about this is $42 \times 10 \times 2 \times 10$.

I can use the associative property to switch the order of the factors: $42 \times 2 \times 10 \times 10$.

c. 400×500

$4 \text{ hundreds} \times 5 \text{ hundreds} = \underline{20 \text{ ten thousands}}$

$400 \times 500 = \underline{200,000}$

I have to be careful because the basic fact, $4 \times 5 = 20$, ends in a zero.

Another way to think about this is $4 \times 100 \times 5 \times 100$
 $= 4 \times 5 \times 100 \times 100$
 $= 20 \times 100 \times 100$
 $= 20 \times 10,000$
 $= 200,000$

2. Determine if these equations are true or false. Defend your answer using knowledge of place value and the commutative, associate, and/or distributive properties.

a. $9 \text{ tens} = 3 \text{ tens} \times 3 \text{ tens}$

False. The basic fact is correct: $3 \times 3 = 9$.

However, the units are not correct: 10×10 is 100.

Correct answers could be $9 \text{ tens} = 3 \text{ tens} \times 3 \text{ ones}$, or $9 \text{ hundreds} = 3 \text{ tens} \times 3 \text{ tens}$.

b. $93 \times 7 \times 100 = 930 \times 7 \times 10$

True. I can rewrite the problem. $93 \times 7 \times (10 \times 10) = (93 \times 10) \times 7 \times 10$

The associative property tells me that I can group the factors in any order without changing the product.

3. Find the products. Show your thinking.

$$60 \times 5$$

$$= (6 \times 10) \times 5$$

$$= (6 \times 5) \times 10$$

$$= 30 \times 10$$

$$= 300$$

$$60 \times 50$$

$$= (6 \times 10) \times (5 \times 10)$$

$$= (6 \times 5) \times (10 \times 10)$$

$$= 30 \times 100$$

$$= 3,000$$

$$6,000 \times 5,000$$

$$= (6 \times 1,000) \times (5 \times 1,000)$$

$$= (6 \times 5) \times (1,000 \times 1,000)$$

$$= 30 \times 1,000,000$$

$$= 30,000,000$$

I use the distributive property to decompose the factors.

Then, I use the associative property to regroup the factors.

I multiply the basic fact first. Then I think about the units.

I have to be careful because the basic fact, 6×5 , has a zero in the product. I multiply the basic fact and then think about the units. 6 tens times 5 is 30 tens. 30 tens is the same as 300. I could get the wrong answer if I just counted zeros.

I can think of this in unit form: 6 thousands times 5 thousands. $6 \times 5 = 30$. The units are thousands times thousands. I can picture a place value chart in my head to solve a thousand times a thousand. A thousand times a thousand is a million. The answer is 30 million, or 30,000,000.

Name _____

Date _____

1. Fill in the blanks using your knowledge of place value units and basic facts.

a. 43×30

Think: 43 ones \times 3 tens = _____ tens

$43 \times 30 =$ _____

b. 430×30

Think: 43 tens \times 3 tens = _____ hundreds

$430 \times 30 =$ _____

c. 830×20

Think: 83 tens \times 2 tens = 166 _____

$830 \times 20 =$ _____

d. $4,400 \times 400$

_____ hundreds \times _____ hundreds = 176 _____

$4,400 \times 400 =$ _____

e. $80 \times 5,000$

_____ tens \times _____ thousands = 40 _____

$80 \times 5,000 =$ _____

2. Determine if these equations are true or false. Defend your answer using your knowledge of place value and the commutative, associative, and/or distributive properties.

a. 35 hundreds = 5 tens \times 7 tens

b. $770 \times 6 = 77 \times 6 \times 100$

c. 50 tens \times 4 hundreds = 40 tens \times 5 hundreds

d. $24 \times 10 \times 90 = 90 \times 2,400$

3. Find the products. Show your thinking. The first row gives some ideas for showing your thinking.

a. 5×5
 $= 25$

$$\begin{aligned} 5 \times 50 \\ = 25 \times 10 \\ = 250 \end{aligned}$$

$$\begin{aligned} 50 \times 50 \\ = (5 \times 10) \times (5 \times 10) \\ = (5 \times 5) \times 100 \\ = 2,500 \end{aligned}$$

$$\begin{aligned} 50 \times 500 \\ = (5 \times 5) \times (10 \times 100) \\ = 25,000 \end{aligned}$$

b. 80×5

80×50

800×500

$8,000 \times 50$

c. 637×3

$6,370 \times 30$

$6,370 \times 300$

$63,700 \times 300$

4. A concrete stepping-stone measures 20 square inches. What is the area of 30 such stones?

5. A number is 42,300 when multiplied by 10. Find the product of this number and 500.

1. Round the factors to estimate the products.

I round each factor to the largest unit.
For example, 387 rounds to 400.

The largest unit in 51 is tens. So, I round
51 to the nearest 10, which is 50.

a. $387 \times 51 \approx \underline{400} \times \underline{50} = \underline{20,000}$

Now that I have 2 rounded factors, I can use the
distributive property to decompose the
numbers. $400 \times 50 = (4 \times 100) \times (5 \times 10)$

I can use the associative property to regroup the
factors.

$$(4 \times 5) \times (100 \times 10) = 20 \times 1,000 = 20,000$$

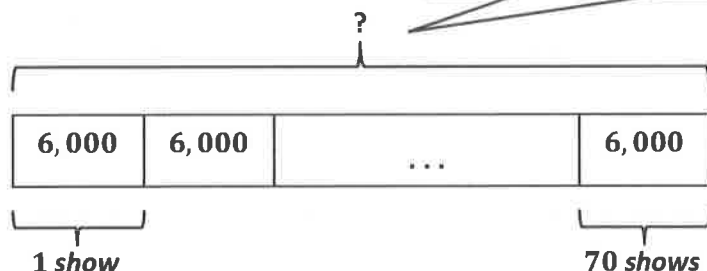
b. $6,286 \times 26 \approx \underline{6,000} \times \underline{25} = \underline{150,000}$

I could have chosen to round 25 to 30. However, multiplying by 25 is
mental math for me. If I round 26 to 25, I know my estimated product
will be closer to the actual product than if I round 26 to 30.

2. There are 6,015 seats available for each of the Radio City Rockettes Spring Spectacular dance shows. If there are a total of 68 shows, about how many tickets are available in all?

The problem says "about," so I know to estimate.

The unknown is the total number of tickets.



The long bar of the tape diagram indicates the total amount. There are about 70 shows and about 6,000 tickets for each show.

$$6,000 \times 70$$

$$= 6 \text{ thousands} \times 7 \text{ tens} = 42 \text{ ten thousands} = 420,000$$

$$= (6 \times 7) \times (1,000 \times 10) = 42 \times 10,000 = 420,000$$

About 420,000 tickets are available for the shows.

I can think about the problem in more than one way.

Name _____

Date _____

1. Round the factors to estimate the products.

a. $697 \times 82 \approx$ _____ \times _____ $=$ _____

A reasonable estimate for 697×82 is _____.

b. $5,897 \times 67 \approx$ _____ \times _____ $=$ _____

A reasonable estimate for $5,897 \times 67$ is _____.

c. $8,840 \times 45 \approx$ _____ \times _____ $=$ _____

A reasonable estimate for $8,840 \times 45$ is _____.

2. Complete the table using your understanding of place value and knowledge of rounding to estimate the product.

Expressions	Rounded Factors	Estimate
a. $3,409 \times 73$	$3,000 \times 70$	210,000
b. $82,290 \times 240$		
c. $9,832 \times 39$		
d. 98 tens \times 36 tens		
e. 893 hundreds \times 85 tens		

3. The estimated answer to a multiplication problem is 800,000. Which of the following expressions could result in this answer? Explain how you know.

$8,146 \times 12$

$81,467 \times 121$

$8,146 \times 121$

$81,477 \times 1,217$

4. Fill in the blank with the missing estimate.

a. $751 \times 34 \approx \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = 24,000$

b. $627 \times 674 \approx \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = 420,000$

c. $7,939 \times 541 \approx \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = 4,000,000$

5. In a single season, the New York Yankees sell an average of 42,362 tickets for each of their 81 home games. About how many tickets do they sell for an entire season of home games?

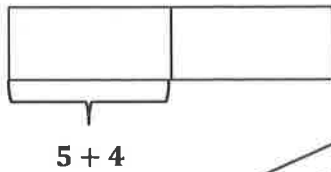
6. Raphael wants to buy a new car.

a. He needs a down payment of \$3,000. If he saves \$340 each month, about how many months will it take him to save the down payment?

b. His new car payment will be \$288 each month for five years. Estimate the total of these payments.

1. Draw a model. Then write the numerical expression.

- a. The sum of 5 and 4, doubled



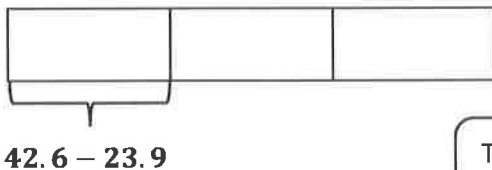
The directions don't ask me to solve, or evaluate, so I don't have to find the answers.

I can show doubling by multiplying by 2 or by adding the two sums together. The tape diagram represents both expressions.

$$(5 + 4) \times 2 \text{ or } (5 + 4) + (5 + 4)$$

"The sum of 5 and 4" means 5 and 4 are being added.

- b. 3 times the difference between 42.6 and 23.9



The word difference tells me the expression involves subtraction.

$$(42.6 - 23.9) \times 3$$

- c. The sum of 4 twelves and 3 sixes



Another way to say 4 *twelves* is to say 4 *groups of twelve*.

I can write the value of each unit inside the tape diagram.

$$(4 \times 12) + (3 \times 6) \text{ or } 12 + 12 + 12 + 12 + 6 + 6 + 6$$

2. Compare the two expressions using $>$, $<$, or $=$.

a. $(2 \times 3) + (5 \times 3)$ $=$ $3 \times (2 + 5)$

I can think of $(2 \times 3) + (5 \times 3)$ in unit form.
2 threes + 5 threes = 7 threes = 21.

Using the commutative property, I know that 7 threes is equal to 3 sevens.

b. $28 \times (3 + 50)$ $<$ $(3 + 50) \times 82$

82 units of fifty-three is more than 28 units of fifty-three.

Name _____

Date _____

1. Draw a model. Then, write the numerical expressions.

a. The sum of 21 and 4, doubled

b. 5 times the sum of 7 and 23

c. 2 times the difference between 49.5 and 37.5

d. The sum of 3 fifteens and 4 twos



e. The difference between 9 thirty-sevens and
8 thirty-sevens

f. Triple the sum of 45 and 55

2. Write the numerical expressions in words. Then, solve.

Expression	Words	The Value of the Expression
a. $10 \times (2.5 + 13.5)$		
b. $(98 - 78) \times 11$		
c. $(71 + 29) \times 26$		
d. $(50 \times 2) + (15 \times 2)$		

3. Compare the two expressions using $>$, $<$, or $=$. In the space beneath each pair of expressions, explain how you can compare without calculating. Draw a model if it helps you.

a. $93 \times (40 + 2)$		$(40 + 2) \times 39$
b. 61×25		60 twenty-fives minus 1 twenty-five

4. Larry claims that $(14 + 12) \times (8 + 12)$ and $(14 \times 12) + (8 \times 12)$ are equivalent because they have the same digits and the same operations.

a. Is Larry correct? Explain your thinking.

b. Which expression is greater? How much greater?

1. Circle each expression that is not equivalent to the expression in **bold**.

14×31

I think of this as 14 units of thirty-one.

It's like counting by 31's: 31, 62, 93, 124, ..., 434.

14 thirty-ones

31 fourteens

The commutative property says
 $14 \times 31 = 31 \times 14$, or
 14 thirty-ones = 31 fourteens.

$(13 - 1) \times 31$

This would be equivalent if it
 were $13 + 1$ instead.

$(10 \times 31) - (4 \times 31)$

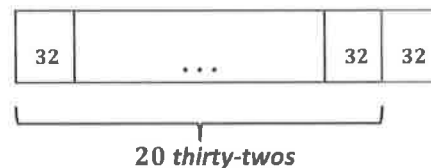
I think of this as 10
 thirty-ones minus 4
 thirty-ones. This
 expression is equal to
 6 thirty-ones not 14
 thirty-ones.

2. Solve using mental math. Draw a tape diagram and fill in the blanks to show your thinking.

a. $19 \times 25 =$ 19 twenty-fives



b. $21 \times 32 =$ 21 thirty-twos



Think: 20 twenty-fives – 1 twenty-five

$$= (\underline{20} \times 25) - (\underline{1} \times 25)$$

$$= \underline{500} - \underline{25} = \underline{475}$$

Think: 20 thirty-twos + 1 thirty-two

$$= (\underline{20} \times 32) + (\underline{1} \times 32)$$

$$= \underline{640} + \underline{32} = \underline{672}$$

3. The pet store has 99 fish tanks with 44 fish in each tank. How many fish does the pet store have? Use mental math to solve. Explain your thinking.

I need to find 99 forty-fours.

I know that 99 forty-fours is 1 unit of forty-four less than 100 forty-fours.

I multiplied 100×44 , which is 4,400.

I need to subtract one group of 44.

$4,400 - 44$. The pet store has 4,356 fish.

Name _____

Date _____

1. Circle each expression that is not equivalent to the expression in
- bold**
- .

a. **37×19**

37 nineteens

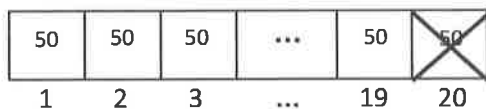
 $(30 \times 19) - (7 \times 29)$ $37 \times (20 - 1)$ $(40 - 2) \times 19$ b. **26×35**

35 twenty-sixes

 $(26 + 30) \times (26 + 5)$ $(26 \times 30) + (26 \times 5)$ $35 \times (20 + 60)$ c. **34×89** $34 \times (80 + 9)$ $(34 \times 8) + (34 \times 9)$ $34 \times (90 - 1)$

89 thirty-fours

2. Solve using mental math. Draw a tape diagram and fill in the blanks to show your thinking. The first one is partially done for you.

a. $19 \times 50 =$ _____ fifties

Think: 20 fifties – 1 fifty

$$= (\text{_____} \times 50) - (\text{_____} \times 50)$$

$$= \text{_____} - \text{_____}$$

$$= \text{_____}$$

b. $11 \times 26 =$ _____ twenty-sixes

Think: _____ twenty-sixes + _____ twenty-six

$$= (\text{_____} \times 26) + (\text{_____} \times 26)$$

$$= \text{_____} + \text{_____}$$

$$= \text{_____}$$

c. $49 \times 12 =$ _____ twelves

Think: _____ twelves – 1 twelve

$$= (\text{_____} \times 12) - (\text{_____} \times 12)$$

$$= \text{_____} - \text{_____}$$

$$= \text{_____}$$

d. $12 \times 25 =$ _____ twenty-fives

Think: _____ twenty-fives + _____ twenty-fives

$$= (\text{_____} \times 25) + (\text{_____} \times 25)$$

$$= \text{_____} + \text{_____}$$

$$= \text{_____}$$

3. Define the unit in word form and complete the sequence of problems as was done in the lesson.

a. $29 \times 12 = 29$ _____

Think: 30 _____ – 1 _____

$$= (30 \times \text{_____}) - (1 \times \text{_____})$$

$$= \text{_____} - \text{_____}$$

$$= \text{_____}$$

b. $11 \times 31 = 31$ _____

Think: 30 _____ + 1 _____

$$= (30 \times \text{_____}) + (1 \times \text{_____})$$

$$= \text{_____} + \text{_____}$$

$$= \text{_____}$$

c. $19 \times 11 = 19$ _____

Think: 20 _____ $- 1$ _____

$$= (20 \times \text{_____}) - (1 \times \text{_____})$$
$$= \text{_____} - \text{_____}$$
$$= \text{_____}$$

d. $50 \times 13 = 13$ _____

Think: 10 _____ $+ 3$ _____

$$= (10 \times \text{_____}) + (3 \times \text{_____})$$
$$= \text{_____} + \text{_____}$$
$$= \text{_____}$$

4. How can 12×50 help you find 12×49 ?

5. Solve mentally.

a. $16 \times 99 =$ _____

b. $20 \times 101 =$ _____

6. Joy is helping her father to build a rectangular deck that measures 14 ft by 19 ft. Find the area of the deck using a mental strategy. Explain your thinking.

7. The Lason School turns 101 years old in June. In order to celebrate, they ask each of the 23 classes to collect 101 items and make a collage. How many total items will be in the collage? Use mental math to solve. Explain your thinking.

Name _____

Date _____

1. Draw an area model, and then solve using the standard algorithm. Use arrows to match the partial products from the area model to the partial products in the algorithm.

a. $24 \times 21 =$ _____

$$\begin{array}{r} 24 \\ \times 21 \\ \hline \end{array}$$

b. $242 \times 21 =$ _____

$$\begin{array}{r} 242 \\ \times 21 \\ \hline \end{array}$$

2. Solve using the standard algorithm.

a. $314 \times 22 =$ _____

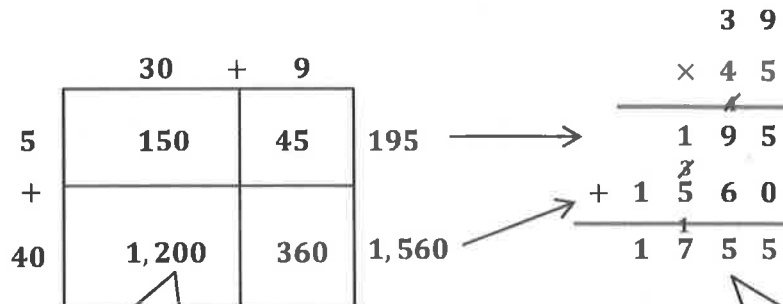
b. $413 \times 22 =$ _____

c. $213 \times 32 =$ _____

3. A young snake measures 0.23 meters long. During the course of his lifetime, he will grow to be 13 times his current length. What will his length be when he is full grown?
4. Zenin earns \$142 per shift at his new job. During a pay period, he works 12 shifts. What would his pay be for that period?

1. Draw an area model. Then, solve using the standard algorithm. Use arrows to match the partial products from your area model to the partial products in the algorithm.

a. 39×45

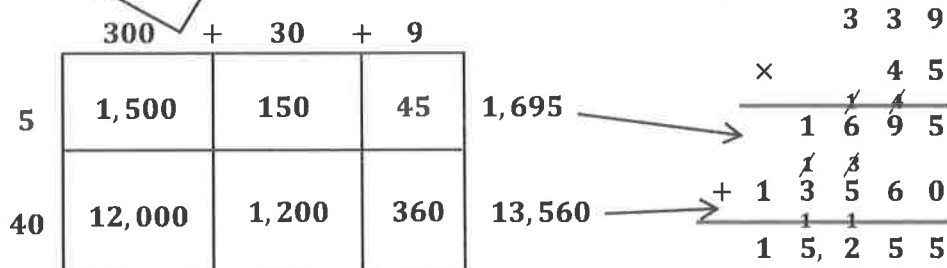


I can use unit form to find these partial products. For example, 3 tens \times 4 tens is 12 hundreds or 1,200.

There are 2 partial products in the standard algorithm because I multiplied by 45, a 2-digit factor.

b. 339×45

The area model shows the factors expanded. If I wanted to, I could put the + between the units.



2. Desmond bought a car and paid monthly installments. Each installment was \$452 per month. After 36 months, Desmond still owes \$1,567. What was the total price of the car?

I'll find out how much Desmond would pay in 36 months.

$$\begin{array}{r}
 452 \\
 \times 36 \\
 \hline
 2712 \\
 + 13560 \\
 \hline
 16,272
 \end{array}$$

$$\begin{array}{r}
 16,272 \\
 + 1,567 \\
 \hline
 17,839
 \end{array}$$

I'll add what he paid after 36 months to what Desmond still owes.

The total price of the car was \$17,839.

I remembered to write a sentence that answers the question.

Name _____

Date _____

1. Draw an area model. Then, solve using the standard algorithm. Use arrows to match the partial products from your area model to the partial products in the algorithm.

a. 27×36

$$\begin{array}{r} 27 \\ \times 36 \\ \hline \end{array}$$

b. 527×36

$$\begin{array}{r} 527 \\ \times 36 \\ \hline \end{array}$$

2. Solve using the standard algorithm.

a. 649×53

b. 496×53

c. 758×46

d. 529×48

3. Each of the 25 students in Mr. McDonald's class sold 16 raffle tickets. If each ticket costs \$15, how much money did Mr. McDonald's students raise?
4. Jayson buys a car and pays by installments. Each installment is \$567 per month. After 48 months, Jayson owes \$1,250. What was the total price of the vehicle?

1. Draw an area model. Then, solve using the standard algorithm. Use arrows to match the partial products from the area model to the partial products in the algorithm.

$$431 \times 246 = \underline{106,026}$$

I can decompose both factors:

$$431 = 400 + 30 + 1$$

$$246 = 200 + 40 + 6$$

Now I can multiply to find the partial products.

I can add to find 6×431 .

$$2,400 + 180 + 6 = 2,586$$

I'll line up the two factors vertically and multiply using the standard algorithm.

	400	+	30	+	1	
6	2,400		180		6	2,586
+						
40	16,000		1,200		40	17,240
+						
200	80,000		6,000		200	86,200

The partial products I found using the area model are the same as using the standard algorithm.

	4	3	1			
×	2	4	6			
	2	5	8	6		
	1	7	2	4	0	
+	8	6	2	0	0	
	1	0	6	0	2	6

The total product is 106,026.

2. Solve by drawing the area model and using the standard algorithm.

$$2,451 \times 107 = \underline{262,257}$$

I can decompose 2,451 and use it as the length.
 $2,451 = 2,000 + 400 + 50 + 1$

I multiply to find the partial products.

	2,000	+	400	+	50	+	1	
7	14,000		2,800		350		7	17,157
+								
100	200,000		40,000		5,000		100	245,100

I decompose the width, 107.
 $107 = 100 + 7$
 Since there's a 0 in the tens place, there are 0 tens in the width of the area model.

$$\begin{array}{r}
 2,451 \\
 \times 107 \\
 \hline
 17157 \\
 + 245100 \\
 \hline
 262257
 \end{array}$$

3. Solve using the standard algorithm.

$$7,302 \times 408 = \underline{2,979,216}$$

8 ones \times 3 hundreds = 24 hundreds = 2 thousands 4 hundreds. I'll record 2 in the thousands place and write 4 in the hundreds place.

4 hundreds \times 3 hundreds = 12 ten thousands. I'll record 1 in the hundred thousands place and write 2 in the ten thousands place.

8 ones \times 2 ones = 16 ones = 1 ten 6 ones. I'll record 1 in the tens place and write 6 in the ones place.

4 hundreds + 8 hundreds = 12 hundreds = 1 thousand 2 hundreds. I'll record 1 in the thousands place and write 2 in the hundreds place.

$$\begin{array}{r}
 7,302 \\
 \times 408 \\
 \hline
 58416 \\
 + 2920800 \\
 \hline
 2,979,216
 \end{array}$$

Name _____

Date _____

1. Draw an area model. Then, solve using the standard algorithm. Use arrows to match the partial products from your area model to the partial products in your algorithm.

a. 273×346

$$\begin{array}{r} 273 \\ \times 346 \\ \hline \end{array}$$

b. 273×306

$$\begin{array}{r} 273 \\ \times 306 \\ \hline \end{array}$$

- c. Both Parts (a) and (b) have three-digit multipliers. Why are there three partial products in Part (a) and only two partial products in Part (b)?

2. Solve by drawing the area model and using the standard algorithm.

a. $7,481 \times 290$

b. $7,018 \times 209$

3. Solve using the standard algorithm.

a. 426×357

b. $1,426 \times 357$

c. 426×307

d. $1,426 \times 307$

4. The Hudson Valley Renegades Stadium holds a maximum of 4,505 people. During the height of their popularity, they sold out 219 consecutive games. How many tickets were sold during this time?
5. One Saturday at the farmer's market, each of the 94 vendors made \$502 in profit. How much profit did all vendors make that Saturday?

1. Estimate the products first. Solve by using the standard algorithm. Use your estimate to check the reasonableness of the product.

a. 795×248
 $\approx 800 \times 200$
 $= 160,000$

I could have rounded 248 to 250 in order to have an estimate that is closer to the actual product. Another reasonable estimate is $800 \times 250 = 200,000$.

$$\begin{array}{r} 795 \\ \times 248 \\ \hline 6360 \\ 31800 \\ + 159000 \\ \hline 197160 \end{array}$$

$8 \times 5 = 40$, which I record as 4 tens 0 ones. 8×9 tens = 72 tens plus 4 tens, makes 76 tens. I record 76 tens as 7 hundreds 6 tens.

This product is reasonable because 197,160 is close to 160,000. My other estimate is also reasonable because 197,000 is very close to 200,000.

b. $4,308 \times 505$
 $\approx 4,000 \times 500$
 $= 2,000,000$

I have to be careful to estimate accurately. 4 thousands \times 5 hundreds is 20 hundred thousands. That's the same as 2 million. If I just count zeros I might get a wrong estimate.

$$\begin{array}{r} 4,308 \\ \times 505 \\ \hline 21540 \\ + 2154000 \\ \hline 2,175,540 \end{array}$$

This partial product is the result of $5 \times 4,308$.

This partial product is the result of $500 \times 4,308$. It makes sense that it is 100 times greater than the first partial product.

2. When multiplying 809 times 528, Isaac got a product of 42,715. Without calculating, does his product seem reasonable? Explain your thinking.

Isaac's product of about 40 thousands is not reasonable. A correct estimate is 8 hundreds times 5 hundreds, which is 40 ten thousands. That's the same as 400,000 not 40,000.

I think Isaac rounded 809 to 800 and 528 to 500. Then, I think he multiplied 8 times 5 to get 40. From there, I think he miscounted the zeros.

Name _____

Date _____

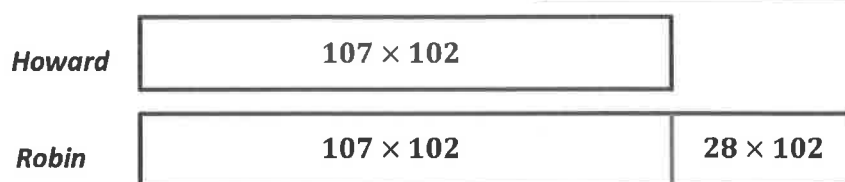
1. Estimate the product first. Solve by using the standard algorithm. Use your estimate to check the reasonableness of the product.

a. 312×149 $\approx 300 \times 100$ $= 30,000$ $\begin{array}{r} 312 \\ \times 149 \\ \hline \end{array}$	b. 743×295	c. 428×637
d. 691×305	e. $4,208 \times 606$	f. $3,068 \times 523$
g. $430 \times 3,064$	h. $3,007 \times 502$	i. $254 \times 6,104$

Solve.

1. Howard and Robin are both cabinet makers. Over the last year, Howard made 107 cabinets. Robin made 28 more cabinets than Howard. Each cabinet they make has exactly 102 nails in it. How many nails did they use altogether while making the cabinets?

Although there are several steps to calculate, the question mark goes here, because this is what the problem is asking.



Once I know how many cabinets Robin and Howard made, I can multiply by the number of nails that were used (102).

Howard:

$$\begin{array}{r}
 107 \\
 \times 102 \\
 \hline
 214 \\
 + 10700 \\
 \hline
 10,914
 \end{array}$$

Robin: $107 + 28 = 135$

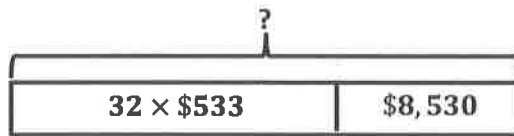
$$\begin{array}{r}
 135 \\
 \times 102 \\
 \hline
 270 \\
 + 13500 \\
 \hline
 13,770
 \end{array}$$

$$\begin{array}{r}
 10,914 \\
 + 13,770 \\
 \hline
 24,684
 \end{array}$$

9 hundreds plus 7 hundreds is equal to 16 hundreds. I'll record 1 in the thousands place and write 6 in the hundreds place.

Together they used 24,684 nails.

2. Mrs. Peterson made 32 car payments at \$533 each. She still owes \$8,530 on her car. How much did the car cost?



My tape diagram shows two parts: 32 payments at \$533 and the \$8,530 she still owes. All I have to do is find both parts and then add!

$$\begin{array}{r}
 533 \\
 \times 32 \\
 \hline
 1066 \\
 + 15990 \\
 \hline
 17,056
 \end{array}$$

$$\begin{array}{r}
 17,056 \\
 + 8,530 \\
 \hline
 25,586
 \end{array}$$

Mrs. Peterson's car cost \$25,586.

Date _____

1. Jeffery bought 203 sheets of stickers. Each sheet has a dozen stickers. He gave away 907 stickers to his family and friends on Valentine's Day. How many stickers does Jeffery have remaining?

2. During the 2011 season, a quarterback passed for 302 yards per game. He played in all 16 regular season games that year.

- a. For how many total yards did the quarterback pass?

- b. If he matches this passing total for each of the next 13 seasons, how many yards will he pass for in his career?

3. Bao saved \$179 a month. He saved \$145 less than Ada each month. How much would Ada save in three and a half years?
4. Mrs. Williams is knitting a blanket for her newborn granddaughter. The blanket is 2.25 meters long and 1.8 meters wide. What is the area of the blanket? Write the answer in centimeters.

5. Use the chart to solve.

Soccer Field Dimensions

	FIFA Regulation (in yards)	New York State High Schools (in yards)
Minimum Length	110	100
Maximum Length	120	120
Minimum Width	70	55
Maximum Width	80	80

- a. Write an expression to find the difference in the maximum area and minimum area of a NYS high school soccer field. Then, evaluate your expression.
- b. Would a field with a width of 75 yards and an area of 7,500 square yards be within FIFA regulation? Why or why not?
- c. It costs \$26 to fertilize, water, mow, and maintain each square yard of a full size FIFA field (with maximum dimensions) before each game. How much will it cost to prepare the field for next week's match?

1. Estimate the product. Solve using an area model and the standard algorithm. Remember to express your products in standard form.

I round 23 to the nearest ten, 2 tens, and 4.1 to the nearest one, 4 ones.

$$23 \times 4.1 \approx \underline{20} \times \underline{4} = \underline{80}$$

2 tens \times 4 ones = 8 tens, or 80. This is the estimated product.

I rename 4.1 as 41 tenths and then multiply.

$$\begin{array}{r} 23 \\ \times 41 \text{ (tenths)} \\ \hline 23 \\ + 920 \\ \hline 943 \text{ (tenths)} = 94.3 \end{array}$$

943 tenths, or 94.3, is the actual product, which is close to my estimated product of 80.

I decompose 23 to $20 + 3$, and 41 tenths to 40 tenths + 1 tenth.

	40	+	1 (tenths)	
3	120		3	123 tenths
+				
20	800		20	820 tenths

120 tenths + 3 tenths = 123 tenths.

800 tenths + 20 tenths = 820 tenths.

123 tenths + 820 tenths = 943 tenths, or 94.3.

2. Estimate. Then, use the standard algorithm to solve. Express your products in standard form.

I round 7.1 to the nearest one, 7 ones, and 29 to the nearest ten, 3 tens.

a. $7.1 \times 29 \approx \underline{7} \times \underline{30} = \underline{210}$

7 ones \times 3 tens = 21 tens, or 210.
This is the estimated product.

$$\begin{array}{r} 71 \text{ (tenths)} \\ \times 29 \\ \hline 639 \\ + 1420 \\ \hline 2,059 \text{ (tenths)} = 205.9 \end{array}$$

2,059 tenths, or 205.9, is the actual product, which is close to my estimated product of 210.

I round 182.4 to the nearest hundreds, 2 hundreds, and 32 to the nearest tens, 3 tens.

b. $182.4 \times 32 \approx \underline{200} \times \underline{30} = \underline{6,000}$

2 hundreds \times 3 tens = 6 thousandths, or 6,000. This is the estimated product.

$$\begin{array}{r} 1824 \text{ (tenths)} \\ \times 32 \\ \hline 3648 \\ + 54720 \\ \hline 58,368 \text{ (tenths)} = 5,836.8 \end{array}$$

58,368 tenths, or 5,836.8, is the actual product, which is close to my estimated product of 6,000.

Name _____

Date _____

1. Estimate the product. Solve using an area model and the standard algorithm. Remember to express your products in standard form.

a. $53 \times 1.2 \approx \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

1 2 (tenths)

$$\begin{array}{r} \times 53 \\ \hline \end{array}$$

b. $2.1 \times 82 \approx \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

2 1 (tenths)

$$\begin{array}{r} \times 82 \\ \hline \end{array}$$

2. Estimate. Then, use the standard algorithm to solve. Express your products in standard form.

a. $4.2 \times 34 \approx \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

4 2 (tenths)

$$\begin{array}{r} \times 34 \\ \hline \end{array}$$

b. $65 \times 5.8 \approx \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

5 8 (tenths)

$$\begin{array}{r} \times 65 \\ \hline \end{array}$$

c. $3.3 \times 16 \approx \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

d. $15.6 \times 17 \approx \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

e. $73 \times 2.4 \approx \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

f. $193.5 \times 57 \approx \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

3. Mr. Jansen is building an ice rink in his backyard that will measure 8.4 meters by 22 meters. What is the area of the rink?
4. Rachel runs 3.2 miles each weekday and 1.5 miles each day of the weekend. How many miles will she have run in 6 weeks?

1. Estimate the product. Solve using the standard algorithm. Use the thought bubbles to show your thinking.

$$1.24 \approx 1$$

$$32 \approx 30$$

The estimated product is 30.

$$1.24 \times 32 \approx \underline{1} \times \underline{30} = \underline{30}$$

Think!

$$1.24 \times 100 = 124.$$

$$\begin{array}{r} 124 \\ \times 32 \\ \hline 248 \\ + 3720 \\ \hline 3,968 \end{array}$$

If I multiply 1.24 times 100, I get 124.
Now, I can multiply whole numbers,
 124×32 .

The actual product is 39.68.

$$1.24 \times 32 = \underline{39.68}$$

Think!

3,968 is 100 times
too large. The real
product is

$$3,968 \div 100 = 39.68.$$

Since I multiplied the factor 1.24
times 100, then I have to divide the
product by 100. The answer is 39.68.

2. Solve using the standard algorithm.

$$2.46 \times 132$$

$$= 324.72$$

$$\begin{array}{r}
 246 \\
 \times 132 \\
 \hline
 492 \\
 7380 \\
 + 24600 \\
 \hline
 32472
 \end{array}$$

2.46 times 100 is equal to 246. Now, I can multiply 246 times 132.

I have to remember to divide the product by 100.
 $32,472 \div 100 = 324.72$

3. Use the whole number product and place value reasoning to place the decimal point in the second product. Explain how you know.

If $54 \times 736 = 39,744$, then $54 \times 7.36 = \underline{397.44}$.

7.36 is 736 hundredths, so I can just divide 39,744 by 100.

$$39,744 \div 100 = 397.44$$

I can compare the factors in both number sentences. Since $736 \div 100 = 7.36$, then I can divide the product by 100.

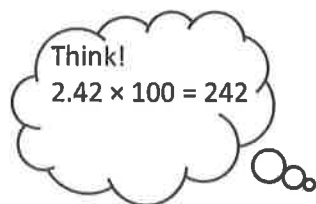
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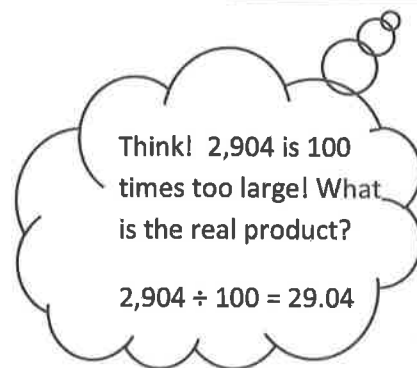
1. Estimate the product. Solve using the standard algorithm. Use the thought bubbles to show your thinking. (Draw an area model on a separate sheet if it helps you.)

a. $2.42 \times 12 \approx$ _____ \times _____ $=$ _____

$2.42 \times 12 =$ _____

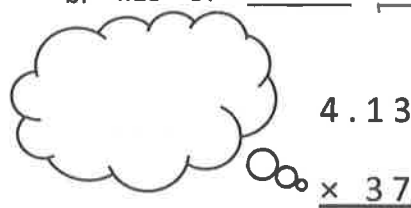


2.42

 $\times 12$ 

b. $4.13 \times 37 \approx$ _____ \times _____ $=$ _____

$4.13 \times 37 =$ _____



4.13

 $\times 37$ 

2. Solve using the standard algorithm.

a. 2.03×13

b. 53.16×34

c. 371.23×53

d. 1.57×432

3. Use the whole number product and place value reasoning to place the decimal point in the second product. Explain how you know.

a. If $36 \times 134 = 4,824$ then $36 \times 1.34 =$ _____

b. If $84 \times 2,674 = 224,616$ then $84 \times 26.74 =$ _____

c. $19 \times 3,211 = 61,009$ then $321.1 \times 19 =$ _____

4. A slice of pizza costs \$1.57. How much will 27 slices cost?
5. A spool of ribbon holds 6.75 meters. A craft club buys 21 spools.
- What is the total cost if the ribbon sells for \$2 per meter?
 - If the club uses 76.54 meters to complete a project, how much ribbon will be left?

1. Estimate. Then solve using the standard algorithm. You may draw an area model if it helps you.

$$14 \times 3.12 \approx \underline{10} \times \underline{3} = \underline{30}$$

$$14 \approx 10$$

$$3.12 \approx 3$$

The estimated product is 30.

$$\begin{array}{r} 3.12 \\ \times 14 \\ \hline 1248 \\ + 3120 \\ \hline 43.68 \end{array}$$

I have to remember to write the product as a number of hundredths.

I'll decompose 14 as $10 + 4$, and 312 hundredths as 300 hundredths + 10 hundredths + 2 hundredths.

	300	+	10	+	2	(hundredths)
4	1,200		40		8	
+						
10	3,000		100		20	

1,248 hundredths

1,200 hundredths + 40 hundredths + 8 hundredths = 1,248 hundredths.

3,120 hundredths

3,000 hundredths + 100 hundredths + 20 hundredths = 3,120 hundredths.

1,248 hundredths + 3,120 hundredths = 4,368 hundredths, or 43.68.

- 2 Estimate. Then solve using the standard algorithm.

a. $0.47 \times 32 \approx \underline{0.5} \times \underline{30} = \underline{15}$

I'll think of multiplying $0.47 \times 100 = 47$.
Now, I'll think of multiplying 47 times 32.

$$0.47 \approx 0.5$$

$$32 \approx 30$$

Multiplying 0.5 times 30 is the same as taking half of 30. The estimated product is 15.

$$\begin{array}{r} 0.47 \\ \times 32 \\ \hline 94 \\ + 1410 \\ \hline 15.04 \end{array}$$

I have to remember to write the product as a number of hundredths. $1,504 \div 100 = 15.04$.

b. $6.04 \times 307 \approx \underline{6} \times \underline{300} = \underline{1,800}$

$$\begin{array}{r} 6.04 \\ \times 307 \\ \hline 4228 \\ + 181200 \\ \hline 1,854.28 \end{array}$$

$$6.04 \approx 6$$

$$307 \approx 300$$

6 ones times 3 hundreds is equal to 18 hundreds, or 1,800.

The actual product is 1,854.28, which is very close to my estimated product of 1,800.

3. Tatiana walks to the park every afternoon. In the month of August, she walked 2.35 miles each day. How far did Tatiana walk during the month of August?

There are 31 days in August.

Tatiana walked 72.85 miles in August.

I'll multiply 2.35 times 31 days to find the total distance Tatiana walks during the month of August.

$$\begin{array}{r} 2.35 \\ \times 31 \\ \hline 235 \\ + 7050 \\ \hline 72.85 \end{array}$$

Name _____

Date _____

1. Estimate. Then, solve using the standard algorithm. You may draw an area model if it helps you.

a. $24 \times 2.31 \approx$ _____ \times _____ $=$ _____

$$\begin{array}{r} 2.31 \\ \times 24 \\ \hline \end{array}$$

b. $5.42 \times 305 \approx$ _____ \times _____ $=$ _____

$$\begin{array}{r} 5.42 \\ \times 305 \\ \hline \end{array}$$

2. Estimate. Then, solve using the standard algorithm. Use a separate sheet to draw the area model if it helps you.

a. $1.23 \times 21 \approx \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

b. $3.2 \times 41 \approx \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

c. $0.32 \times 41 \approx \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

d. $0.54 \times 62 \approx \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

e. $6.09 \times 28 \approx \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

f. $6.83 \times 683 \approx \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

g. $6.09 \times 208 \approx \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

h. $171.76 \times 555 \approx \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

- Eric's goal is to walk 2.75 miles to and from the park every day for an entire year. If he meets his goal, how many miles will Eric walk?
- Art galleries often price paintings by the square inch. If a painting measures 22.5 inches by 34 inches and costs \$4.15 per square inch, what is the selling price for the painting?
- Gerry spends \$1.25 each day on lunch at school. On Fridays, she buys an extra snack for \$0.55. How much money will she spend in two weeks?

1. Solve.

a. Convert years to days.

$$\begin{aligned}
 5 \text{ years} &= 5 \times (1 \text{ year}) \\
 &= 5 \times (365 \text{ days}) \\
 &= 1,825 \text{ days}
 \end{aligned}$$

$$\begin{array}{r}
 365 \\
 \times 5 \\
 \hline
 1,825
 \end{array}$$

1 year is equal to 365 days. I can multiply 5 times 365 days to find 1,825 days in 5 years.

b. Convert pounds to ounces.

$$\begin{aligned}
 13.5 \text{ lb.} &= 13.5 \times (1 \text{ lb.}) \\
 &= 13.5 \times (16 \text{ oz.}) \\
 &= 216 \text{ oz.}
 \end{aligned}$$

$$\begin{array}{r}
 13.5 \\
 \times 16 \\
 \hline
 810 \\
 + 1350 \\
 \hline
 216.0
 \end{array}$$

1 pound is equal to 16 ounces. I can multiply 13.5 times 16 ounces to find that there are 216 ounces in 13.5 pounds.

2. After solving, write a statement to express each conversion.

a. The height of a male ostrich is 7.3 meters. What is his height in centimeters?

$$\begin{aligned}
 7.3 \text{ m} &= 7.3 \times (1 \text{ m}) \\
 &= 7.3 \times (100 \text{ cm}) \\
 &= 730 \text{ cm}
 \end{aligned}$$

1 meter is equal to 100 centimeters. I multiply 7.3 times 100 centimeters to get 730 centimeters.

His height is 730 centimeters.

- b. The capacity of a container is 0.3 liter. Convert this to milliliters.

$$\begin{aligned}0.3 \text{ L} &= 0.3 \times (1 \text{ L}) \\&= 0.3 \times (1,000 \text{ ml}) \\&= 300 \text{ ml}\end{aligned}$$

1 liter is equal to 1,000 milliliters. I multiply 0.3 times 1,000 milliliters to get 300 milliliters.

The capacity of the container is 300 milliliters.

Name _____

Date _____

1. Solve. The first one is done for you.

<p>a. Convert weeks to days.</p> <p>6 weeks = $6 \times (1 \text{ week})$</p> <p>= $6 \times (7 \text{ days})$</p> <p>= 42 days</p>	<p>b. Convert years to days.</p> <p>7 years = _____ \times (_____ year)</p> <p>= _____ \times (_____ days)</p> <p>= _____ days</p>
<p>c. Convert meters to centimeters.</p> <p>4.5 m = _____ \times (_____ m)</p> <p>= _____ \times (_____ cm)</p> <p>= _____ cm</p>	<p>d. Convert pounds to ounces.</p> <p>12.6 pounds</p>
<p>e. Convert kilograms to grams.</p> <p>3.09 kg</p>	<p>f. Convert yards to inches.</p> <p>245 yd</p>

2. After solving, write a statement to express each conversion. The first one is done for you.

<p>a. Convert the number of hours in a day to minutes.</p> $\begin{aligned}24 \text{ hours} &= 24 \times (1 \text{ hour}) \\&= 24 \times (60 \text{ minutes}) \\&= 1,440 \text{ minutes}\end{aligned}$ <p>One day has 24 hours, which is the same as 1,440 minutes.</p>	<p>b. A newborn giraffe weighs about 65 kilograms. How much does it weigh in grams?</p>
<p>c. The average height of a female giraffe is 4.6 meters. What is her height in centimeters?</p>	<p>d. The capacity of a beaker is 0.1 liter. Convert this to milliliters.</p>
<p>e. A pig weighs 9.8 pounds. Convert the pig's weight to ounces.</p>	<p>f. A marker is 0.13 meters long. What is the length in millimeters?</p>

1. Solve.

a. Convert quarts to gallons.

$$\begin{aligned} 28 \text{ quarts} &= 28 \times (1 \text{ quart}) \\ &= 28 \times \left(\frac{1}{4} \text{ gallon}\right) \\ &= \frac{28}{4} \text{ gallons} \\ &= 7 \text{ gallons} \end{aligned}$$

1 quart is equal to $\frac{1}{4}$ gallon. I multiply 28 times $\frac{1}{4}$ gallon to find 7 gallons is equal to 28 quarts.

b. Convert grams to kilograms.

$$\begin{aligned} 5,030 \text{ g} &= 5,030 \times (1 \text{ g}) \\ &= 5,030 \times (0.001 \text{ kg}) \\ &= 5.030 \text{ kg} \end{aligned}$$

1 gram is equal to 0.001 kilogram. I multiply 5,030 times 0.001 kilogram to get 5.030 kilograms.

2. After solving, write a statement to express each conversion.

a. A jug of milk holds 16 cups. Convert 16 cups to pints.

$$\begin{aligned} 16 \text{ cups} &= 16 \times (1 \text{ cup}) \\ &= 16 \times \left(\frac{1}{2} \text{ pint}\right) \\ &= \frac{16}{2} \text{ pints} \\ &= 8 \text{ pints} \end{aligned}$$

1 cup is equal to $\frac{1}{2}$ pint. I multiply 16 times $\frac{1}{2}$ pint to find that 8 pints is equal to 16 cups.

16 cups is equal to 8 pints.

b. The length of a table is 305 centimeters. What is its length in meters?

$$\begin{aligned} 305 \text{ cm} &= 305 \times (1 \text{ cm}) \\ &= 305 \times (0.01 \text{ m}) \\ &= 3.05 \text{ m} \end{aligned}$$

1 centimeter is equal to 0.01 meter. I multiply 305 times 0.01 meter to get 3.05 meters.

The table's length is 3.05 meters.

Name _____

Date _____

1. Solve. The first one is done for you.

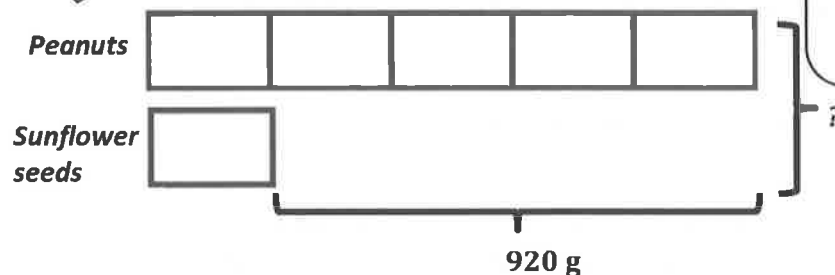
<p>a. Convert days to weeks.</p> <p>42 days = $42 \times (1 \text{ day})$</p> <p>= $42 \times \left(\frac{1}{7} \text{ week}\right)$</p> <p>= $\frac{42}{7} \text{ week}$</p> <p>= 6 weeks</p>	<p>b. Convert quarts to gallons.</p> <p>36 quarts = _____ $\times (1 \text{ quart})$</p> <p>= _____ $\times \left(\frac{1}{4} \text{ gallon}\right)$</p> <p>= _____ gallons</p> <p>= _____ gallons</p>
<p>c. Convert centimeters to meters.</p> <p>760 cm = _____ $\times (\text{_____ cm})$</p> <p>= _____ $\times (\text{_____ m})$</p> <p>= _____ m</p>	<p>d. Convert meters to kilometers.</p> <p>2,485 m = _____ $\times (\text{_____ m})$</p> <p>= _____ $\times (0.001 \text{ km})$</p> <p>= _____ km</p>
<p>e. Convert grams to kilograms.</p> <p>3,090 g =</p>	<p>f. Convert milliliters to liters.</p> <p>205 mL =</p>

2. After solving, write a statement to express each conversion. The first one is done for you.

<p>a. The screen measures 36 inches. Convert 36 inches to feet.</p> $\begin{aligned} 36 \text{ inches} &= 36 \times (1 \text{ inch}) \\ &= 36 \times \left(\frac{1}{12} \text{ feet}\right) \\ &= \frac{36}{12} \text{ feet} \\ &= 3 \text{ feet} \end{aligned}$ <p>The screen measures 36 inches or 3 feet.</p>	<p>b. A jug of juice holds 8 cups. Convert 8 cups to pints.</p>
<p>c. The length of the flower garden is 529 centimeters. What is its length in meters?</p>	<p>d. The capacity of a container is 2,060 milliliters. Convert this to liters.</p>
<p>e. A hippopotamus weighs 1,560,000 grams. Convert the hippopotamus' weight to kilograms.</p>	<p>f. The distance was 372,060 meters. Convert the distance to kilometers.</p>

1. A bag of peanuts is 5 times as heavy as a bag of sunflower seeds. The bag of peanuts also weighs 920 grams more than the bag of sunflower seeds.
- a. What is the total weight in grams for the bag of peanuts and the bag of sunflower seeds?

I need to draw 5 units for the peanuts and 1 unit for the sunflower seeds.



I label the total weight of the peanuts and the sunflower seeds with a question mark. This is what I'm trying to find out.

Since I know 4 units is equal to 920 grams, I'll divide 920 grams by 4 to find the value of 1 unit, which is equal to 230 grams.

$$4 \text{ units} = 920 \text{ g}$$

$$1 \text{ unit} = 920 \text{ g} \div 4$$

$$= 230 \text{ g}$$

$$\begin{array}{r} 230 \\ 4 \overline{) 920} \\ \underline{- 8} \\ 12 \\ \underline{- 12} \\ 00 \\ \underline{- 0} \\ 0 \end{array}$$

There are a total of 6 units between the peanuts and the sunflower seeds. I multiply 6 times 230 grams to get a total of 1,380 grams.

$$6 \text{ units} = 6 \times 230 \text{ g}$$

$$= 1,380 \text{ g}$$

$$\begin{array}{r} 230 \\ \times 6 \\ \hline 1,380 \end{array}$$

The total weight for the bag of peanuts and the bag of sunflower seeds is 1,380 grams.

- b. Express the total weight of the bag of peanuts and the bag of sunflower seeds in kilograms.

$$\begin{aligned} 1,380 \text{ g} &= 1,380 \times (1 \text{ g}) \\ &= 1,380 \times (0.001 \text{ kg}) \\ &= 1.380 \text{ kg} \end{aligned}$$

1 gram is equal to 0.001 kilogram. I multiply 1,380 times 0.001 kilogram to find that 1.38 kilograms is equal to 1,380 grams.

The total weight of the bag of peanuts and the bag of sunflower seeds is 1.38 kilograms.

4 meters 50 centimeters is equal to 450 centimeters.

2. Gabriel cut a 4 meter 50 centimeter string into 9 equal pieces. Michael cut a 508 centimeter string into 10 equal pieces. How much longer is one of Michael's strings than one of Gabriel's?

Gabriel: $450 \text{ cm} \div 9 = 50 \text{ cm}$

Each piece of Gabriel's string is 50 centimeters long.

Michael: $508 \text{ cm} \div 10 = 50.8 \text{ cm}$

Each piece of Michael's string is 50.8 centimeters long.

$50.8 \text{ cm} - 50 \text{ cm} = 0.8 \text{ cm}$

I'll subtract to find the difference between Michael and Gabriel's strings.

One of Michael's strings is 0.8 centimeters longer than one of Gabriel's.

Name _____

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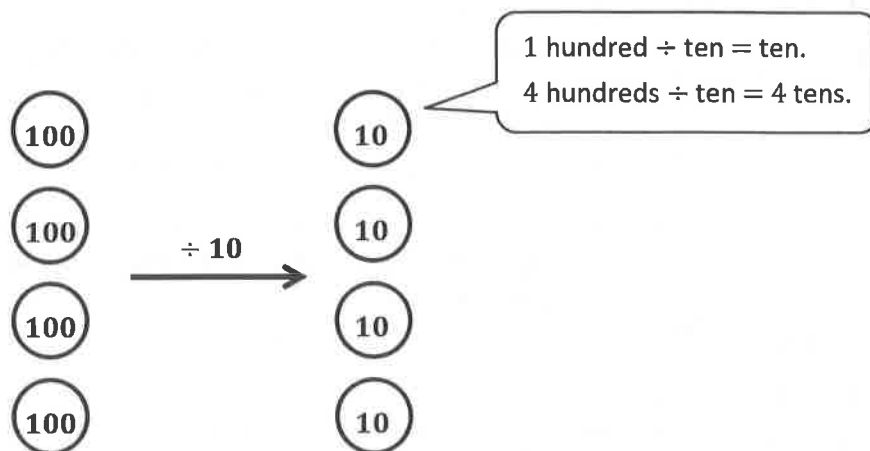
Solve.

1. Tia cut a 4-meter 8-centimeter wire into 10 equal pieces. Marta cut a 540-centimeter wire into 9 equal pieces. How much longer is one of Marta's wires than one of Tia's?
2. Jay needs 19 quarts more paint for the outside of his barn than for the inside. If he uses 107 quarts in all, how many gallons of paint will be used to paint the inside of the barn?

3. String A is 35 centimeters long. String B is 5 times as long as String A. Both are necessary to create a decorative bottle. Find the total length of string needed for 17 identical decorative bottles. Express your answer in meters.
4. A pineapple is 7 times as heavy as an orange. The pineapple also weighs 870 grams more than the orange.
- What is the total weight in grams for the pineapple and orange?
 - Express the total weight of the pineapple and orange in kilograms.

1. Divide. Draw place value disks to show your thinking for (a).

a. $400 \div 10 = 40$



b. $650,000 \div 100$

= **6,500** \div **1**

= **6,500**

I can divide both the dividend and the divisor by 100, so I can rewrite the division sentence as $6,500 \div 1$. The answer is 6,500.

2. Divide.

a. $240,000 \div 40$

= **240,000** \div **10** \div **4**

= **24,000** \div **4**

= **6,000**

Dividing by 40 is the same thing as dividing by 10 and then dividing by 4.

I can solve $240,000 \div 10 = 24,000$. Then I can find that $24,000 \div 4 = 6,000$.

In unit form, this is 24 thousands \div 4 = 6 thousands.

b. $240,000 \div 400$

$$= 240,000 \div 100 \div 4$$

$$= 2,400 \div 4$$

$$= 600$$

Dividing by 400 is the same thing as dividing by 100 and then dividing by 4.

I can solve $240,000 \div 100 = 2,400$. Then I can solve $2,400 \div 4 = 600$.

c. $240,000 \div 4,000$

$$= 240,000 \div 1,000 \div 4$$

$$= 240 \div 4$$

$$= 60$$

Dividing by 4,000 is the same thing as dividing by 1,000 and then dividing by 4.

I can solve $240,000 \div 1,000 = 240$. Then I can solve $240 \div 4 = 60$.

Name _____

Date _____

1. Divide. Draw place value disks to show your thinking for (a) and (c). You may draw disks on your personal white board to solve the others if necessary.

a. $300 \div 10$	b. $450 \div 10$
c. $18,000 \div 100$	d. $730,000 \div 100$
e. $900,000 \div 1,000$	f. $680,000 \div 1,000$

2. Divide. The first one is done for you.

a. $18,000 \div 20$ $= 18,000 \div 10 \div 2$ $= 1,800 \div 2$ $= 900$	b. $18,000 \div 200$	c. $18,000 \div 2,000$
d. $420,000 \div 60$	e. $420,000 \div 600$	f. $420,000 \div 6,000$
g. $24,000 \div 30$	h. $560,000 \div 700$	i. $450,000 \div 9,000$

3. A stadium holds 50,000 people. The stadium is divided into 250 different seating sections. How many seats are in each section?
4. Over the course of a year, a tractor trailer commutes 160,000 miles across America.
- Assuming a trucker changes his tires every 40,000 miles, and that he starts with a brand new set of tires, how many sets of tires will he use in a year?
 - If the trucker changes the oil every 10,000 miles, and he starts the year with a fresh oil change, how many times will he change the oil in a year?

1. Estimate the quotient for the following problems.

a. $612 \div 33$

$\approx 600 \div 30$

$= 20$

I look at the divisor, 33, and round it to the nearest ten. $33 \approx 30$

I need to think of a multiple of 30 that's closest to 612. 600 works.

I use the simple fact, $6 \div 3 = 2$, to help me solve $600 \div 30 = 20$.

b. $735 \div 78$

$\approx 720 \div 80$

$= 9$

I look at the divisor, 78, and round it to the nearest ten. $78 \approx 80$

I'll think of a multiple of 80 that is close to 735. 720 is the closest multiple.

I use the simple fact, $72 \div 8 = 9$, to help me solve $720 \div 80 = 9$.

c. $821 \div 99$

$\approx 800 \div 100$

$= 8$

I look at the divisor, 99, and round to the nearest ten. $99 \approx 100$

I can think of a multiple of 100 that is close to 821. 800 is the closest multiple.

I can use the simple fact, $8 \div 1 = 8$, to help solve $800 \div 100 = 8$.

2. Mrs. Johnson spent \$611 buying lunch for 78 students. If all the lunches cost the same, about how much did she spend on each lunch?
3. An oil well produces 172 gallons of oil every day. A standard oil barrel holds 42 gallons of oil. About how many barrels of oil will the well produce in one day? Explain your thinking.

1. Estimate the quotients for the following problems.

a. $3,782 \div 23$

I look at the divisor, 23, and round it to the nearest ten. $23 \approx 20$

$\approx 4,000 \div 20$

I need to think of a multiple of 20 that's closest to 3,782. 4,000 is closest.

$= 200$

I use the simple fact, $4 \div 2 = 2$, and unit form to help me solve.
4 thousands \div 2 tens = 2 hundreds

b. $2,519 \div 43$

I look at the divisor, 43, and round to the nearest ten. $43 \approx 40$

$\approx 2,400 \div 40$

I need to think of a multiple of 40 that's close to 2,519. 2,400 is closest.

$= 60$

I can use the simple fact, $24 \div 4 = 6$, to help me solve $2,400 \div 40 = 60$.

c. $4,621 \div 94$

I look at the divisor, 94, and round it to the nearest ten. $94 \approx 90$

$\approx 4,500 \div 90$

4,500 is close to 4,621 and is a multiple of 90.

$= 50$

I can use the simple fact, $45 \div 9 = 5$, to help me solve $4,500 \div 90 = 50$.

2. Meilin has saved \$4,825. If she is paid \$68 an hour, about how many hours did she work?

I'll use division to find the number of hours that Meilin worked to save \$4,825.

The divisor, 68, rounds to 70. $68 \approx 70$

$$4,825 \div 68$$

$$\approx 4,900 \div 70$$

$$= 70$$

I need to find a multiple of 70 that's closest to 4,825. 4,900 is closest.

I can use the basic fact, $49 \div 7 = 7$, to help me solve $4,900 \div 70 = 70$.

Meilin worked about 70 hours.

Name _____

Date _____

1. Estimate the quotients for the following problems. The first one is done for you.

<p>a. $8,328 \div 41$</p> <p>$\approx 8,000 \div 40$</p> <p>$= 200$</p>	<p>b. $2,109 \div 23$</p> <p>\approx _____ \div _____</p> <p>$=$ _____</p>	<p>c. $8,215 \div 38$</p> <p>\approx _____ \div _____</p> <p>$=$ _____</p>
<p>d. $3,861 \div 59$</p> <p>\approx _____ \div _____</p> <p>$=$ _____</p>	<p>e. $2,899 \div 66$</p> <p>\approx _____ \div _____</p> <p>$=$ _____</p>	<p>f. $5,576 \div 92$</p> <p>\approx _____ \div _____</p> <p>$=$ _____</p>
<p>g. $5,086 \div 73$</p> <p>\approx _____ \div _____</p> <p>$=$ _____</p>	<p>h. $8,432 \div 81$</p> <p>\approx _____ \div _____</p> <p>$=$ _____</p>	<p>i. $9,032 \div 89$</p> <p>\approx _____ \div _____</p> <p>$=$ _____</p>
<p>j. $2,759 \div 48$</p> <p>\approx _____ \div _____</p> <p>$=$ _____</p>	<p>k. $8,194 \div 91$</p> <p>\approx _____ \div _____</p> <p>$=$ _____</p>	<p>l. $4,368 \div 63$</p> <p>\approx _____ \div _____</p> <p>$=$ _____</p>
<p>m. $6,537 \div 74$</p> <p>\approx _____ \div _____</p> <p>$=$ _____</p>	<p>n. $4,998 \div 48$</p> <p>\approx _____ \div _____</p> <p>$=$ _____</p>	<p>o. $6,106 \div 25$</p> <p>\approx _____ \div _____</p> <p>$=$ _____</p>

2. 91 boxes of apples hold a total of 2,605 apples. Assuming each box has about the same number of apples, estimate the number of apples in each box.

3. A wild tiger can eat up to 55 pounds of meat in a day. About how many days would it take for a tiger to eat the following prey?

Prey	Weight of Prey	Number of Days
Eland Antelope	1,754 pounds	
Boar	661 pounds	
Chital Deer	183 pounds	
Water Buffalo	2,322 pounds	

1. Divide, and then check.

a. $87 \div 40$

I use the estimation strategy from the previous lesson to help me solve.
 $80 \div 40 = 2$. The estimated quotient is 2.

I write the remainder of 7 here next to the quotient of 2.

$$\begin{array}{r} 2 \text{ R } 7 \\ 40 \overline{) 87} \\ - 80 \\ \hline 7 \end{array}$$

2 groups of 40 is equal to 80.

The difference between 87 and 80 is 7.

I check my answer by multiplying the divisor of 40 by the quotient of 2 and then add the remainder of 7.

Check:

$$40 \times 2 = 80$$

$$80 + 7 = 87$$

This 87 matches the original dividend in the problem, which means I divided correctly. The quotient is 2 with a remainder of 7.

b. $451 \div 70$

I estimate to find the quotient. $420 \div 70 = 6$

The quotient is 6 with a remainder of 31.

$$\begin{array}{r} 6 \text{ R } 31 \\ 70 \overline{) 451} \\ - 420 \\ \hline 31 \end{array}$$

Check:

$$70 \times 6 = 420$$

$$420 + 31 = 451$$

After checking, I see that 451 does match the original dividend in the problem.

The quotient is 6 with a remainder of 31.

2. How many groups of thirty are in two hundred twenty-four?

I use division to find how many 30's are in 224. But first, I estimate to find the quotient. $210 \div 30 = 7$

There are 7 groups of thirty in 224 with a remainder of 14.

$$\begin{array}{r} 7 \text{ R } 14 \\ 30 \overline{) 224} \\ \underline{- 210} \\ 14 \end{array}$$

14 is remaining. In order to make another group of 30, there would need to be 16 more in the dividend, 224.

There are 7 groups of thirty in two hundred twenty-four.

Name _____

Date _____

1. Divide, and then check using multiplication. The first one is done for you.

a. $71 \div 20$

$$\begin{array}{r} 3 \text{ R } 11 \\ 20 \overline{) 71} \\ \underline{60} \\ 11 \end{array}$$

Check:

$$\begin{aligned} 20 \times 3 &= 60 \\ 60 + 11 &= 71 \end{aligned}$$

b. $90 \div 40$

c. $95 \div 60$

d. $280 \div 30$

e. $437 \div 60$

f. $346 \div 80$

1. Divide. Then check with multiplication

a. $48 \div 21$

I do a quick mental estimation to find the quotient.
 $40 \div 20 = 2$

$$\begin{array}{r} 21 \overline{) 48} \\ \underline{42} \\ 6 \end{array}$$

The actual quotient is 2 with a remainder of 6.

Check:

$$\begin{array}{r} 21 \\ \times 2 \\ \hline 42 \end{array}$$

$$\begin{array}{r} 42 \\ + 6 \\ \hline 48 \end{array}$$

I'll check my answer by multiplying the divisor and the quotient, 21×2 . Then, I'll add the remainder of 6.

This 48 matches the original dividend in the problem, which means I divided correctly. The quotient is 2 with a remainder of 6.

b. $79 \div 38$

I do a quick mental estimation to find the quotient.
 $80 \div 40 = 2$

$$\begin{array}{r} 38 \overline{) 79} \\ \underline{76} \\ 3 \end{array}$$

The actual quotient is 2 with a remainder of 3.

Check:

$$\begin{array}{r} 38 \\ \times 2 \\ \hline 76 \end{array}$$

$$\begin{array}{r} 76 \\ + 3 \\ \hline 79 \end{array}$$

After checking, I see that 79 does match the original dividend.

Area is equal to length times width. So, I can use the area divided by the length to find the width.

$$A = l \times w \quad \text{and} \quad A \div l = w$$

2. A rectangular 95-square-foot vegetable garden has a length of 19 feet. What is the width of the vegetable garden?

$$95 \div 19 = 5$$

I'll do a quick mental estimation to help me solve.

$$100 \div 20 = 5$$

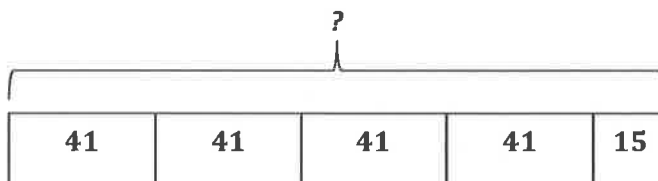
$$\begin{array}{r} 5 \\ 19 \overline{) 95} \\ - 95 \\ \hline 0 \end{array}$$

The quotient of 5 means the width is 5 feet, with 0 feet remaining.

The width of the vegetable garden is 5 feet.

3. A number divided by 41 has a quotient of 4 with 15 as a remainder. Find the number.

In other words, 4 units of 41, plus 15 more, is equal to what number?



$$\begin{array}{r} 4 \text{ R } 15 \\ 41 \overline{) ?} \end{array}$$

I know I have to find the missing dividend.

I can multiply the divisor of 41 and the quotient of 4 to get 164.

$$\begin{array}{r} 41 \\ \times 4 \\ \hline 164 \end{array}$$

I need to add 164 and the remainder of 15 to get a total of 179. The dividend is 179.

$$\begin{array}{r} 164 \\ + 15 \\ \hline 179 \end{array}$$

The number is 179.

Name _____

Date _____

1. Divide. Then, check with multiplication. The first one is done for you.

a. $72 \div 31$

b. $89 \div 21$

$$\begin{array}{r} 2 \text{ R } 10 \\ 31 \overline{) 72} \\ \underline{- 62} \\ 10 \end{array}$$

Check:

$31 \times 2 = 62$

$62 + 10 = 72$

c. $94 \div 33$

d. $67 \div 19$

e. $79 \div 25$

f. $83 \div 21$

2. A 91 square foot bathroom has a length of 13 feet. What is the width of the bathroom?
3. While preparing for a morning conference, Principal Corsetti is laying out 8 dozen bagels on square plates. Each plate can hold 14 bagels.
- How many plates of bagels will Mr. Corsetti have?
 - How many more bagels would be needed to fill the final plate with bagels?

1. Divide. Then check using multiplication.

a. $235 \div 68$

I can find the estimated quotient and then divide using the long division algorithm.

I can estimate to find the quotient. $210 \div 70 = 3$

I'll use the quotient of 3. 3 groups of 68 is 204, and the difference between 235 and 204 is 31. The remainder is 31.

$$\begin{array}{r} 3 \text{ R } 31 \\ 68 \overline{) 235} \\ \underline{- 204} \\ 31 \end{array}$$

Check:

$$\begin{array}{r} 68 \\ \times 3 \\ \hline 204 \end{array} \qquad \begin{array}{r} 204 \\ + 31 \\ \hline 235 \end{array}$$

After checking, I see that 235 does match the original dividend in the problem.

b. $125 \div 32$

I estimate to find the quotient. $120 \div 30 = 4$. Therefore, there should be about 4 units of 32 in 125.

When I use the estimated quotient of 4, I see that 4 groups of 32 is 128. 128 is more than the original dividend of 125. That means I over estimated. The quotient of 4 is too high.

$$\begin{array}{r} 4 \\ 32 \overline{) 125} \\ \underline{- 128} \\ ? \end{array} \quad \Rightarrow \quad \begin{array}{r} 3 \text{ R } 29 \\ 32 \overline{) 125} \\ \underline{- 96} \\ 29 \end{array}$$

Since the quotient of 4 is too much, I'll try 3 as the quotient. 3 groups of 32 is 96. The difference between 125 and 96 is 29. The remainder is 29.

The actual quotient is 3 with a remainder of 29.

Check:

To check, I'll multiply the divisor and the quotient and then add the remainder.

$$\begin{array}{r} 32 \\ \times 3 \\ \hline 96 \end{array}$$

$$\begin{array}{r} 96 \\ + 29 \\ \hline 125 \end{array}$$

I can use division to find how many 49's are in 159. First, I should estimate to find the quotient.
 $150 \div 50 = 3$

2. How many forty-nines are in one hundred fifty-nine?

$$\begin{array}{r} 3 \text{ R } 12 \\ 49 \overline{) 159} \\ - 147 \\ \hline 12 \end{array}$$

There are 3 groups of forty-nine in 159, with a remainder of 12.

12 is the remainder, and it will need 37 more to make another group of 49.

There are 3 groups of forty-nine in 159.

Name _____

Date _____

1. Divide. Then, check using multiplication. The first one is done for you.

a. $129 \div 21$

$$\begin{array}{r} 6 \text{ R } 3 \\ 21 \overline{) 129} \\ \underline{- 126} \\ 3 \end{array}$$

Check:

$$21 \times 6 = 126$$

$$126 + 3 = 129$$

b. $158 \div 37$

c. $261 \div 49$

d. $574 \div 82$

e. $464 \div 58$

f. $640 \div 79$

2. It takes Juwan exactly 35 minutes by car to get to his grandmother's. The nearest parking area is a 4-minute walk from her apartment. One week, he realized that he spent 5 hours and 12 minutes traveling to her apartment and then back home. How many round trips did he make to visit his grandmother?
3. How many eighty-fours are in 672?

1. Divide. Then check using multiplication.

a. $874 \div 41$

I look at the dividend of 874 and estimate $80 \text{ tens} \div 40 = 2 \text{ tens}$, or $800 \div 40 = 20$. I'll record 2 in the tens place. 5 tens remain.

$$\begin{array}{r} 2 \\ 41 \overline{) 874} \\ \underline{- 82} \\ 5 \end{array}$$

I look at 54 and estimate $40 \text{ ones} \div 40 = 1 \text{ one}$, or $40 \div 40 = 1$. I'll record 1 in the ones place. There's a remainder of 13.

$$\begin{array}{r} 21 \text{ R } 13 \\ 41 \overline{) 874} \\ \underline{- 82} \\ 54 \\ \underline{- 41} \\ 13 \end{array}$$

5 tens plus 4 in the dividend makes 54.

The quotient is 21 with a remainder of 13.

Check:

I check my answer by multiplying the quotient and the divisor, 21×41 , and then add the remainder of 13.

$$\begin{array}{r} 21 \\ \times 41 \\ \hline 21 \\ + 840 \\ \hline 861 \end{array}$$

$$\begin{array}{r} 861 \\ + 13 \\ \hline 874 \end{array}$$

After checking, I get 874, which does match the original dividend. So, I know I solved correctly.

b. $703 \div 29$

I look at the dividend of 703 and estimate $60 \text{ tens} \div 30 = 2 \text{ tens}$, or $600 \div 30 = 20$. I'll record 2 in the tens place. There's a remainder of 12 tens.

$$\begin{array}{r} 2 \\ 29 \overline{) 703} \\ \underline{- 58} \\ 12 \end{array}$$

$$\begin{array}{r} 24 \text{ R } 7 \\ 29 \overline{) 703} \\ \underline{- 58} \\ 123 \\ \underline{- 116} \\ 7 \end{array}$$

12 tens plus 3 in the dividend makes 123.

I can estimate. $12 \text{ tens} \div 30 = 4 \text{ ones}$, or $120 \div 30 = 4$. I'll record 4 in the ones place. 4 units of 29 is 116.

Check:

I check my answer by multiplying the quotient and the divisor, and then I add the remainder.

$$\begin{array}{r} 24 \\ \times 29 \\ \hline 216 \\ + 480 \\ \hline 696 \end{array}$$

$$\begin{array}{r} 696 \\ + 07 \\ \hline 703 \end{array}$$

2. 31 students are selling cupcakes. There are 167 cupcakes to be shared equally among students.
- a. How many cupcakes are left over after sharing them equally?

$$\begin{array}{r} 5 \text{ R } 12 \\ 31 \overline{) 167} \\ \underline{- 155} \\ 12 \end{array}$$

167 cupcakes shared equally among 31 students: each student gets 5 cupcakes, with 12 cupcakes left over.

There are 12 cupcakes left over after sharing them equally.

- b. If each student needs 6 cupcakes to sell, how many more cupcakes are needed?

$$\begin{array}{r} 31 \\ \times 6 \\ \hline 186 \end{array}$$

Since each student needs 6 cupcakes, then 31 students will need a total of 186 cupcakes.

19 more cupcakes are needed.

$$\begin{array}{r} 716 \\ 1 \cancel{8} \cancel{6} \\ - 167 \\ \hline 19 \end{array}$$

The difference between 167 and 186 is 19.

My solution makes sense. The remainder of 12 cupcakes, in part (a), tells me that if there were 19 more cupcakes, there would be enough for each student to have 6 cupcakes.

$$12 + 19 = 31$$

Name _____

Date _____

1. Divide. Then, check using multiplication. The first one is done for you.

a. $487 \div 21$

$$\begin{array}{r} 23 \text{ R } 4 \\ 21 \overline{) 487} \\ \underline{- 42} \\ 67 \\ \underline{- 63} \\ 4 \end{array}$$

Check:

$$21 \times 23 = 483$$

$$483 + 4 = 487$$

b. $485 \div 15$

c. $700 \div 21$

d. $399 \div 31$

e. $820 \div 42$

f. $908 \div 56$

2. When dividing 878 by 31, a student finds a quotient of 28 with a remainder of 11. Check the student's work, and use the check to find the error in the solution.
3. A baker was going to arrange 432 desserts into rows of 28. The baker divides 432 by 28 and gets a quotient of 15 with remainder 12. Explain what the quotient and remainder represent.

1. Divide. Then check using multiplication.

a. $4,753 \div 22$

I look at the dividend of 4,753 and estimate. $40 \text{ hundreds} \div 20 = 2 \text{ hundreds}$, or $4,000 \div 20 = 200$. I record 2 in the hundreds place. There's a remainder of 3 hundreds.

$$\begin{array}{r} 2 \\ 22 \overline{) 4,753} \\ \underline{- 44} \\ 3 \end{array}$$

I look at 35 tens and estimate $20 \text{ tens} \div 20 = 1 \text{ ten}$, or $200 \div 20 = 10$. I record 1 in the tens place. There's a remainder of 13 tens.

$$\begin{array}{r} 21 \\ 22 \overline{) 4,753} \\ \underline{- 44} \\ 35 \\ \underline{- 22} \\ 13 \end{array}$$

I look at 133 ones and estimate $120 \text{ ones} \div 20 = 6 \text{ ones}$, or $120 \div 20 = 6$. I record 6 in the ones place. There's a remainder of 1 one.

$$\begin{array}{r} 216 \text{ R}1 \\ 22 \overline{) 4,753} \\ \underline{- 44} \\ 35 \\ \underline{- 22} \\ 133 \\ \underline{- 132} \\ 1 \end{array}$$

I check my answer by multiplying the quotient and the divisor, 216×22 , and then add the remainder of 1.

Check:

$$\begin{array}{r} 216 \\ \times 22 \\ \hline 432 \\ + 4320 \\ \hline 4,752 \end{array}$$

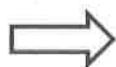
$$\begin{array}{r} 4,752 \\ + 1 \\ \hline 4,753 \end{array}$$

After checking, I get 4,753, which does match the original dividend. So I know I solved it correctly.

b. $3,795 \div 62$

I look at the dividend of 3,795 and estimate $360 \text{ tens} \div 60 = 6 \text{ tens}$, or $3600 \div 60 = 60$. I record 6 in the tens place. There's a remainder of 7 tens.

$$\begin{array}{r} 6 \\ 62 \overline{) 3,795} \\ \underline{- 372} \\ 7 \end{array}$$



$$\begin{array}{r} 61 \text{ R } 13 \\ 62 \overline{) 3,795} \\ \underline{- 372} \\ 75 \\ \underline{- 62} \\ 13 \end{array}$$

I look at 75 and estimate $60 \text{ ones} \div 60 = 1 \text{ one}$, or $60 \div 60 = 1$. I record 1 in the ones place. The quotient is 61 with a remainder of 13.

Check:

I check my answer by first multiplying the quotient and the divisor, and then I add the remainder.

$$\begin{array}{r} 61 \\ \times 62 \\ \hline 122 \\ + 3660 \\ \hline 3,782 \end{array}$$

$$\begin{array}{r} 3,782 \\ + 13 \\ \hline 3,795 \end{array}$$

2. 1,292 balloons were shared equally among 38 students. How many balloons did each student receive?

I use division, $1,292 \div 38$, to find how many balloons each student receives.

$$\begin{array}{r} 34 \\ 38 \overline{) 1,292} \\ \underline{- 114} \\ 152 \\ \underline{- 152} \\ 0 \end{array}$$

Each student received 34 balloons with 0 balloons left over.

Each student received 34 balloons.

Name _____

Date _____

1. Divide. Then, check using multiplication.

a. $9,962 \div 41$

b. $1,495 \div 45$

c. $6,691 \div 28$

d. $2,625 \div 32$

e. $2,409 \div 19$

f. $5,821 \div 62$

1. Divide.

a. $3.5 \div 7 = 0.5$

I can use the basic fact of $35 \div 7 = 5$ to help me solve this problem. 3.5 is 35 tenths. $35 \text{ tenths} \div 7 = 5 \text{ tenths}$, or 0.5.

Dividing by 70 is the same as dividing by 10 and then dividing by 7.

$$\begin{aligned} \text{b. } 3.5 \div 70 &= 3.5 \div 10 \div 7 \\ &= 0.35 \div 7 \\ &= 0.05 \end{aligned}$$

35 tenths $\div 10 = 35 \text{ hundredths}$, or 0.35.

35 hundredths $\div 7 = 5 \text{ hundredths}$, or 0.05.

c. $4.84 \div 2 = 2.42$

$4.84 = 4 \text{ ones} + 8 \text{ tenths} + 4 \text{ hundredths}$.

$4 \text{ ones} \div 2 = 2 \text{ ones}$, or 2.

$8 \text{ tenths} \div 2 = 4 \text{ tenths}$, or 0.4.

$4 \text{ hundredths} \div 2 = 2 \text{ hundredths}$, or 0.02.

The answer is $2 + 0.4 + 0.02 = 2.42$.

Dividing by 200 is equal to dividing by 100 and then dividing by 2.
Or I can think of it as dividing by 2 and then dividing by 100.

$$\begin{aligned} \text{d. } 48.4 \div 200 &= 48.4 \div 2 \div 100 \\ &= 24.2 \div 100 \\ &= 0.242 \end{aligned}$$

$$48 \div 2 = 24$$

$$4 \text{ tenths} \div 2 = 2 \text{ tenths or } 0.2.$$

$$\text{So, } 48.4 \div 2 = 24.2.$$

I can visualize a place value chart. When I divide by 100, each digit shifts 2 places to the right.

2. Use place value reasoning and the first quotient to compute the second quotient. Use place value to explain how you placed the decimal point.

The dividend, 15.6, is the same in both number sentences.

a. $15.6 \div 60 = 0.26$

I look at the divisors in both number sentences. They are 60 and 6, respectively. 60 is 10 times as large as 6.

$15.6 \div 6 = 2.6$

I know the quotient in this problem must be 10 times as large as 0.26, from the problem above. The answer is 26 hundredths $\times 10 = 26$ tenths, or 2.6.

There are 10 times fewer groups, so there has to be 10 times more in each group.

The dividend, 0.72, is the same in both number sentences.

b. $0.72 \div 4 = 0.18$

I look at the divisors in both number sentences. They are 4 and 40, respectively. 4 is 10 times smaller than 40.

$0.72 \div 40 = 0.018$

I know the quotient in this problem must be 10 times smaller than 0.18, from the problem above. The answer is 18 hundredths $\div 10 = 18$ thousandths, or 0.018.

Instead of 4 groups, there are 40 groups. That's 10 times more groups, so there must be 10 times less in each group.

Name _____

Date _____

1. Divide. Show every other division sentence in two steps. The first two have been done for you.

a. $1.8 \div 6 = 0.3$

b. $1.8 \div 60 = (1.8 \div 6) \div 10 = 0.3 \div 10 = 0.03$

c. $2.4 \div 8 =$ _____

d. $2.4 \div 80 =$ _____

e. $14.6 \div 2 =$ _____

f. $14.6 \div 20 =$ _____

g. $0.8 \div 4 =$ _____

h. $80 \div 400 =$ _____

i. $0.56 \div 7 =$ _____

j. $0.56 \div 70 =$ _____

k. $9.45 \div 9 =$ _____

l. $9.45 \div 900 =$ _____

2. Use place value reasoning and the first quotient to compute the second quotient. Use place value to explain how you placed the decimal point.

a. $65.6 \div 80 = 0.82$

$65.6 \div 8 = \underline{\hspace{2cm}}$

b. $2.5 \div 50 = 0.05$

$2.5 \div 5 = \underline{\hspace{2cm}}$

c. $19.2 \div 40 = 0.48$

$19.2 \div 4 = \underline{\hspace{2cm}}$

d. $39.6 \div 6 = 6.6$

$39.6 \div 60 = \underline{\hspace{2cm}}$

3. Chris rode his bike along the same route every day for 60 days. He logged that he had gone exactly 127.8 miles.
- a. How many miles did he bike each day? Show your work to explain how you know.
- b. How many miles did he bike over the course of two weeks?
4. 2.1 liters of coffee were equally distributed to 30 cups. How many milliliters of coffee were in each cup?

1. Estimate the quotients.

I look at the divisor, 72, and round it to the nearest ten. $72 \approx 70$

a. $5.68 \div 72$

$\approx 560 \text{ hundredths} \div 70$

$= 560 \text{ hundredths} \div 10 \div 7$

$= 56 \text{ hundredths} \div 7$

$= 8 \text{ hundredths}$

$= 0.08$

I can think of the dividend as 568 hundredths. 560 is close to 568 and a multiple of 70, so I can round 568 hundredths to 560 hundredths.

Dividing by 70 is the same as dividing by 10 and then dividing by 7.

The basic fact $56 \div 7 = 8$ helps me solve this problem.

I look at the divisor, 41, and round it to the nearest ten. $41 \approx 40$

b. $9.14 \div 41$

$\approx 8 \div 40$

$= 8 \div 4 \div 10$

$= 2 \div 10$

$= 0.2$

I'll approximate the dividend, 9.14, to be 8. I'll use the basic fact, $8 \div 4 = 2$, to help me solve this problem.

Dividing by 40 is the same as dividing by 4 and then dividing by 10.

I can visualize a place value chart. Dividing by 10 moves the digit, 2, one place to the right.

2. Estimate the quotient in (a). Use your estimated quotient to estimate (b) and (c).

$$18 \approx 20$$

a. $5.29 \div 18$

$$\approx 6 \div 20$$

$$= 6 \div 2 \div 10$$

$$= 3 \div 10$$

$$= 0.3$$

5.29 \approx 6. I can use the basic fact, $6 \div 2 = 3$, to help me solve this problem.

Dividing by 20 is the same as dividing by 2 and then dividing by 10.

Since the digits in this expression are the same as (a), I can use place value understanding to help me solve.

b. $529 \div 18$

$$\approx 600 \div 20$$

$$= 60 \div 2$$

$$= 30$$

I can use the same basic fact, $6 \div 2 = 3$, to help me solve.

$$18 \approx 20 \text{ and } 529 \approx 600$$

$600 \div 20$ is equal to $60 \div 2$ because I divided both the dividend and the divisor by 10.

My quotient makes sense! When I compare (b) to (a), I see that 529 is 100 times greater than 5.29. Therefore, the quotient should be 100 times greater as well. 30 is 100 times greater than 0.3.

c. $52.9 \div 18$

$$\approx 60 \div 20$$

$$= 6 \div 2$$

$$= 3$$

Again, I can use the same basic fact, $6 \div 2 = 3$, to help me solve this problem.

I'll round 18 to 20 and approximate 52.9 to 60.

$60 \div 20$ is equal to $6 \div 2$ because I divided both the dividend and the divisor by 10.

Name _____

Date _____

1. Estimate the quotients.

a. $3.53 \div 51 \approx$

b. $24.2 \div 42 \approx$

c. $9.13 \div 23 \approx$

d. $79.2 \div 39 \approx$

e. $7.19 \div 58 \approx$

2. Estimate the quotient in (a). Use your estimated quotient to estimate (b) and (c).

a. $9.13 \div 42 \approx$

b. $913 \div 42 \approx$

c. $91.3 \div 42 \approx$

3. Mrs. Huynh bought a bag of 3 dozen toy animals as party favors for her son's birthday party. The bag of toy animals cost \$28.97. Estimate the price of each toy animal.
4. Carter drank 15.75 gallons of water in 4 weeks. He drank the same amount of water each day.
- Estimate how many gallons he drank in one day.
 - Estimate how many gallons he drank in one week.
 - About how many days altogether will it take him to drink 20 gallons?

1. Divide. Then check your work with multiplication.

a. $48.07 \div 19 = 2.53$

I can estimate.

$40 \text{ ones} \div 20 = 2 \text{ ones.}$

I record a 2 in the ones place.

$$\begin{array}{r} 2. \\ 19 \overline{) 48.07} \\ \underline{- 38} \\ 10 \end{array}$$

I can estimate again.

$100 \text{ tenths} \div 20 = 5 \text{ tenths.}$

I record a 5 in the tenths place.

$$\begin{array}{r} 2.5 \\ 19 \overline{) 48.07} \\ \underline{- 38} \\ 100 \\ \underline{- 95} \\ 5 \end{array}$$

I can estimate again.

$60 \text{ hundredths} \div 20 = 3 \text{ hundredths.}$

I record a 3 in the hundredths place.

$$\begin{array}{r} 2.53 \\ 19 \overline{) 48.07} \\ \underline{- 38} \\ 100 \\ \underline{- 95} \\ 57 \\ \underline{- 57} \\ 0 \end{array}$$

Check:

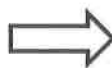
I'll check my answer by multiplying the quotient and the divisor, 2.53×19 .

$$\begin{array}{r} 2.53 \\ \times 19 \\ \hline 2277 \\ + 2530 \\ \hline 48.07 \end{array}$$

After checking, I get 48.07, which does match the original dividend. So I know I solved it correctly.

b. $122.4 \div 51$

$$\begin{array}{r} 2. \\ 51 \overline{) 122.4} \\ \underline{- 102} \\ 20 \end{array}$$



$$\begin{array}{r} 2.4 \\ 51 \overline{) 122.4} \\ \underline{- 102} \\ 204 \\ \underline{- 204} \\ 0 \end{array}$$

I can estimate.

$200 \text{ tenths} \div 50 = 4 \text{ tenths.}$

I record a 4 in the tenths place.

Check:

I check my division by multiplying.

$$\begin{array}{r} 51 \\ \times 2.4 \\ \hline 204 \\ + 1020 \\ \hline 122.4 \end{array}$$

2. The weight of 42 identical mini toy soldiers is 109.2 grams. What is the weight of each toy soldier?

$$\begin{array}{r} 2.6 \\ 42 \overline{) 109.2} \\ \underline{- 84} \\ 252 \\ \underline{- 252} \\ 0 \end{array}$$

I can use division, $109.2 \div 42$, to find the weight of each toy soldier.

109.2 grams divided by 42 is equal to 2.6 grams with 0 grams remaining.

The weight of each toy soldier is 2.6 grams.

Name _____

Date _____

1. Create two whole number division problems that have a quotient of 9 and a remainder of 5. Justify which is greater using decimal division.

2. Divide. Then, check your work with multiplication.

a. $75.9 \div 22$

b. $97.28 \div 19$

c. $77.14 \div 38$

d. $12.18 \div 29$

3. Divide.

a. $97.58 \div 34$

b. $55.35 \div 45$

4. Use the equations on the left to solve the problems on the right. Explain how you decided where to place the decimal in the quotient.

a. $520.3 \div 43 = 12.1$

$52.03 \div 43 =$ _____

b. $19.08 \div 36 = 0.53$

$190.8 \div 36 =$ _____

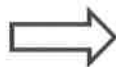
5. You can look up information on the world's tallest buildings at <http://www.infoplease.com/ipa/A0001338.html>.
- a. The Aon Centre in Chicago, Illinois, is one of the world's tallest buildings. Built in 1973, it is 1,136 feet high and has 80 stories. If each story is of equal height, how tall is each story?
- b. Burj al Arab Hotel, another one of the world's tallest buildings, was finished in 1999. Located in Dubai, it is 1,053 feet high with 60 stories. If each floor is the same height, how much taller or shorter is each floor than the height of the floors in the Aon Center?

1. Divide. Check your work with multiplication.

$$6.3 \div 18$$

I can estimate. $60 \text{ tenths} \div 20 = 3 \text{ tenths}$.

$$\begin{array}{r} 0.3 \\ 18 \overline{) 6.30} \\ \underline{- 54} \\ 9 \end{array}$$



I can estimate again.
 $100 \text{ hundredths} \div 20 = 5 \text{ hundredths}$.

$$\begin{array}{r} 0.35 \\ 18 \overline{) 6.30} \\ \underline{- 54} \\ 90 \\ \underline{- 90} \\ 0 \end{array}$$

Check:

I still need to check my work. But since the dividend, 6.3, is less than the divisor, 18, a quotient of less than 1 is reasonable.

$$\begin{array}{r} 0.35 \\ \times 18 \\ \hline 280 \\ + 350 \\ \hline 6.30 \end{array}$$

After checking, I get 6.30, which does match the original dividend. So I know I divided correctly.

2. 43.4 kilograms of raisins was placed into 31 packages of equal weight. What is the weight of one package of raisins?

$$\begin{array}{r} 1.4 \\ 31 \overline{) 43.4} \\ \underline{- 31} \\ 124 \\ \underline{- 124} \\ 0 \end{array}$$

I can use division, $43.4 \div 31$, to find the weight of one package.

43.4 kilograms divided by 31 is equal to 1.4 kilograms.

The weight of one package of raisins is 1.4 kilograms.

The quotient is reasonable. Since the dividend, 43.4, is just a little bit more than the divisor, 31, a quotient of 1.4 makes sense.

Name _____

Date _____

1. Divide. Check your work with multiplication.

a. $7 \div 28$

b. $51 \div 25$

c. $6.5 \div 13$

d. $132.16 \div 16$

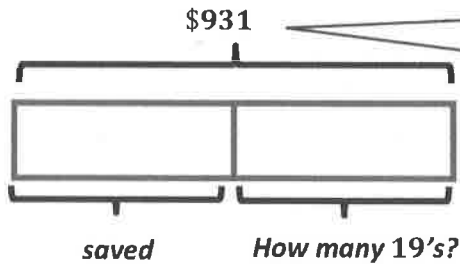
e. $561.68 \div 28$

f. $604.8 \div 36$

2. In a science class, students water a plant with the same amount of water each day for 28 consecutive days. If the students use a total of 23.8 liters of water over the 28 days, how many liters of water did they use each day? How many milliliters did they use each day?

3. A seamstress has a piece of cloth that is 3 yards long. She cuts it into shorter lengths of 16 inches each. How many of the shorter pieces can she cut?
4. Jenny filled 12 pitchers with an equal amount of lemonade in each. The total amount of lemonade in the 12 pitchers was 41.4 liters. How many liters of lemonade would be in 7 pitchers?

1. Juanita is saving for a new television that costs \$931. She has already saved half of the money. Juanita earns \$19.00 per hour. How many hours must Juanita work to save the rest of the money?



I draw a tape diagram and label the whole as \$931. Since she has already saved half, I cut it into 2 equal units.

I have to find how many 19's are in the other half.

$$\$931 \div 2 = \$465.5$$

Since Juanita already saved half of the money, then I'll use \$931 divided by 2 to find how much she still needs to save.

$$\begin{array}{r} 465.5 \\ 2 \overline{) 931.0} \\ \underline{- 8} \\ 13 \\ \underline{- 12} \\ 11 \\ \underline{- 10} \\ 10 \\ \underline{- 10} \\ 0 \end{array}$$

Juanita already saved \$465.50 and will need to save \$465.50 more.

$$\$465.5 \div \$19 = 24.5$$

Since Juanita makes \$19 an hour, then I'll use \$465.50 divided by \$19 to find how many more hours she will need to work.

$$\begin{array}{r} 24.5 \\ 19 \overline{) 465.5} \\ \underline{- 38} \\ 85 \\ \underline{- 76} \\ 95 \\ \underline{- 95} \\ 0 \end{array}$$

Juanita will need to work 24.5 more hours.

I can estimate to help me find the quotient. $465.5 \approx 400$.
 $40 \text{ tens} \div 20 = 2 \text{ tens}$.

I estimate again.
 $80 \text{ ones} \div 20 = 4 \text{ ones}$.

I estimate a 3rd time.
 $100 \text{ tenths} \div 20 = 5 \text{ tenths}$.

Juanita needs to work 24.5 more hours.

2. Timmy has a collection of 1,008 baseball cards. He hopes to sell the collection in packs of 48 cards and make \$178.50 when all the packs are sold. If each pack is priced the same, how much should Timmy charge per pack?

I need to find out how many packs of baseball cards Timmy has by dividing $1,008 \div 48$. Then I can find out how much Timmy should charge per pack.

$$1,008 \div 48 = 21$$

Timmy will have 21 packs of baseball cards.

$$\begin{array}{r} 21 \\ 48 \overline{) 1008} \\ \underline{- 96} \\ 48 \\ \underline{- 48} \\ 0 \end{array}$$

I can estimate.

$$100 \text{ tens} \div 50 = 2 \text{ tens.}$$

I estimate again.

$$40 \text{ ones} \div 40 = 1 \text{ one.}$$

$$\$178.50 \div 21 = \$8.50$$

The price of each pack of cards needs to be \$8.50.

$$\begin{array}{r} 8.5 \\ 21 \overline{) 178.5} \\ \underline{- 168} \\ 105 \\ \underline{- 105} \\ 0 \end{array}$$

Timmy should charge \$8.50 per pack.

Name _____

Date _____

1. Mr. Rice needs to replace the 166.25 ft of edging on the flower beds in his backyard. The edging is sold in lengths of 19 ft each. How many lengths of edging will Mr. Rice need to purchase?
2. Olivia is making granola bars. She will use 17.9 ounces of pistachios, 12.6 ounces of almonds, 12.5 ounces of walnuts, and 12.5 ounces of cashews. This amount makes 25 bars. How many ounces of nuts are in each granola bar?

1. Alonzo has 2,580.2 kilograms of apples to deliver in equal amounts to 19 stores. Eleven of the stores are in Philadelphia. How many kilograms of apples will be delivered to stores in Philadelphia?

$$2,580.2 \div 19 = 135.8$$

$$\begin{array}{r}
 135.8 \\
 19 \overline{) 2580.2} \\
 \underline{- 19} \\
 68 \\
 \underline{- 57} \\
 110 \\
 \underline{- 95} \\
 152 \\
 \underline{- 152} \\
 0
 \end{array}$$

I can use division to find out how many kilograms of apples are delivered to each store. Each store receives 135.8 kilograms of apples.

$$135.8 \times 11 = 1,493.8$$

$$\begin{array}{r}
 135.8 \\
 \times 11 \\
 \hline
 1358 \\
 + 13580 \\
 \hline
 1493.8
 \end{array}$$

Since I know each store receives 135.8 kilograms of apples, then I use multiplication to find the total kilograms of apples that will be delivered to 11 stores in Philadelphia.

1493.8 kilograms of apples will be delivered to stores in Philadelphia.

2. The area of a rectangle is 88.4 m^2 . If the length is 13 m, what is its perimeter?

In order to find the perimeter, I need to know the width of the rectangle.

$$\text{area} = \text{length} \times \text{width}$$

$$\text{width} = \text{area} \div \text{length}$$

$$= 88.4 \text{ m}^2 \div 13 \text{ m}$$

$$= 6.8 \text{ m}$$

$$\begin{array}{r} 6.8 \\ 13 \overline{) 88.4} \\ \underline{- 78} \\ 104 \\ \underline{- 104} \\ 0 \end{array}$$

I know the width is equal to the area divided by the length. The width of the rectangle is 6.8 meters.

$$\text{Perimeter of a rectangle} = \text{length} + \text{length} + \text{width} + \text{width}$$

$$= 13 \text{ m} + 13 \text{ m} + 6.8 \text{ m} + 6.8 \text{ m}$$

$$= 26 \text{ m} + 13.6 \text{ m}$$

$$= 39.6 \text{ m}$$

I can add up all four sides of the rectangle to find the perimeter.

$$\begin{array}{r} 13.0 \\ 13.0 \\ 6.8 \\ + 6.8 \\ \hline 39.6 \end{array}$$

The perimeter of the rectangle is 39.6 meters.

Name _____

Date _____

Solve.

1. Michelle wants to save \$150 for a trip to the Six Flags amusement park. If she saves \$12 each week, how many weeks will it take her to save enough money for the trip?
2. Karen works for 85 hours throughout a two-week period. She earns \$1,891.25 throughout this period. How much does Karen earn for 8 hours of work?

3. The area of a rectangle is 256.5 m^2 . If the length is 18 m, what is the perimeter of the rectangle?
4. Tyler baked 702 cookies. He sold them in boxes of 18. After selling all of the boxes of cookies for the same amount each, he earned \$136.50. What was the cost of one box of cookies?
5. A park is 4 times as long as it is wide. If the distance around the park is 12.5 kilometers, what is the area of the park?