A Story of Units

Pleasanton UNIFIED SCHOOL DISTRICT Mathematics Curriculum

GRADE 5 • MODULE 2

Multi-Digit Whole Number and Decimal Fraction Operations

Problem Sets

Video tutorials: http://bit.ly/eurekapusd
Info for parents: http://bit.ly/pusdmath

Table of Contents

GRADE 5 • MODULE 2

Multi-Digit Whole Number and Decimal Fraction Operations

NOTE: Student sheets should be printed at 100% scale to preserve the intended size of figures for accurate measurements. Adjust copier or printer settings to *actual size* and set page scaling to *none*.

Name _____ Date _____

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

a. 23 × 20 Think: 23 ones × 2 tens = _____ tens 23 × 20 = _____	b. 230 × 20 Think: 23 tens × 2 tens = _____ 230 × 20 = _____
c. 41 × 4 41 ones × 4 ones = 164 _____ 41 × 4 = _____	d. 410 × 400 41 tens × 4 hundreds = 164 _____ 410 × 400 = _____
e. 3,310 × 300 _____ tens × _____ hundreds = 993 _____ 3,310 × 300 = _____	f. 500 × 600 _____ hundreds × _____ hundreds = 30 _____ 500 × 600 = _____

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. 6 tens = 2 tens × 3 tens

   b. 44 × 20 × 10 = 440 × 2

   c. 86 ones × 90 hundreds = 86 ones × 900 tens

   d. 64 × 8 × 100 = 640 × 8 × 10

e. $57 \times 2 \times 10 \times 10 \times 10 = 570 \times 2 \times 10$

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

a.	7×9 $= 63$	7×90 $= 63 \times 10$ $= 630$	70×90 $= (7 \times 10) \times (9 \times 10)$ $= (7 \times 9) \times 100$ $= 6{,}300$	70×900 $= (7 \times 9) \times (10 \times 100)$ $= 63{,}000$
b.	45×3	45×30	450×30	450×300
c.	40×5	40×50	40×500	$400 \times 5{,}000$
d.	718×2	$7{,}180 \times 20$	$7{,}180 \times 200$	$71{,}800 \times 2{,}000$

4. Ripley told his mom that multiplying whole numbers by multiples of 10 was easy because you just count zeros in the factors and put them in the product. He used these two examples to explain his strategy.

7,000	×	600	=	4,200,000	800	×	700	=	560,000
(3 zeros)		(2 zeros)		(5 zeros)	(2 zeros)		(2 zeros)		(4 zeros)

   a. Ripley's mom said his strategy will not always work. Why not? Give an example.

5. The Canadian side of Niagara Falls has a flow rate of 600,000 gallons per second. How many gallons of water flow over the falls in 1 minute?

6. Tickets to a baseball game are $20 for an adult and $15 for a student. A school buys tickets for 45 adults and 600 students. How much money will the school spend for the tickets?

$\frac{1}{1,000}$	Thousandths					
$\frac{1}{100}$	Hundredths					
$\frac{1}{10}$	Tenths					
•	•	•	•	•	•	•
1	Ones					
10	Tens					
100	Hundreds					
1,000	Thousands					
10,000	Ten Thousands					
100,000	Hundred Thousands					
1,000,000	Millions					

millions to thousandths place value chart

Name _____ Date _____

1. Round the factors to estimate the products.

   a. 597 × 52 ≈ _____ × _____ = _____

      A reasonable estimate for 597 × 52 is _____.

   b. 1,103 × 59 ≈ _____ × _____ = _____

      A reasonable estimate for 1,103 × 59 is _____.

   c. 5,840 × 25 ≈ _____ × _____ = _____

      A reasonable estimate for 5,840 × 25 is _____.

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

Expressions	Rounded Factors	Estimate
a. 2,809 × 42	3,000 × 40	120,000
b. 28,090 × 420		
c. 8,932 × 59		
d. 89 tens × 63 tens		
e. 398 hundreds × 52 tens		

3. For which of the following expressions would 200,000 be a reasonable estimate? Explain how you know.

   2,146 × 12 21,467 × 121 2,146 × 121 21,477 × 1,217

4. Fill in the missing factors to find the given estimated product.

   a. 571 × 43 ≈ _____ × _____ = 24,000

   b. 726 × 674 ≈ _____ × _____ = 490,000

   c. 8,379 × 541 ≈ _____ × _____ = 4,000,000

5. There are 19,763 tickets available for a New York Knicks home game. If there are 41 home games in a season, about how many tickets are available for all the Knicks' home games?

6. Michael saves $423 dollars a month for college.

   a. About how much money will he have saved after 4 years?

   b. Will your estimate be lower or higher than the actual amount Michael will save? How do you know?

Name _____ Date _____

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

a. The sum of 8 and 7, doubled	b. 4 times the sum of 14 and 26
c. 3 times the difference between 37.5 and 24.5	d. The sum of 3 sixteens and 2 nines
e. The difference between 4 twenty-fives and 3 twenty-fives	f. Triple the sum of 33 and 27

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

Expression	Words	The Value of the Expression
a. $12 \times (5 + 25)$		
b. $(62 - 12) \times 11$		
c. $(45 + 55) \times 23$		
d. $(30 \times 2) + (8 \times 2)$		

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. $24 \times (20 + 5)$	◯	$(20 + 5) \times 12$
b. 18×27	◯	20 twenty-sevens minus 1 twenty-seven
c. 19×9	◯	3 nineteens, tripled

4. Mr. Huynh wrote *the sum of 7 fifteens and 38 fifteens* on the board.

   Draw a model, and write the correct expression.

5. Two students wrote the following numerical expressions.
   Angeline: $(7 + 15) \times (38 + 15)$
   MeiLing: $15 \times (7 + 38)$

   Are the students' expressions equivalent to your answer in Problem 4? Explain your answer.

6. A box contains 24 oranges. Mr. Lee ordered 8 boxes for his store and 12 boxes for his restaurant.
   a. Write an expression to show how to find the total number of oranges ordered.

   b. Next week, Mr. Lee will double the number of boxes he orders. Write a new expression to represent the number of oranges in next week's order.

   c. Evaluate your expression from Part (b) to find the total number of oranges ordered in both weeks.

Name _____ Date _____

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

   a. **16 × 29**

   29 sixteens | 16 × (30 – 1) | (15 – 1) × 29 | (10 × 29) – (6 × 29)

   b. **38 × 45**

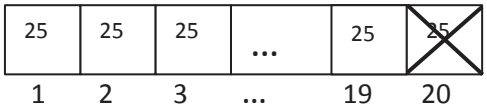
   (38 + 40) × (38 + 5) | (38 × 40) + (38 × 5) | 45 × (40 + 2) | 45 thirty-eights

   c. **74 × 59**

   74 × (50 + 9) | 74 × (60 – 1) | (74 × 5) + (74 × 9) | 59 seventy-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 × 25 = _____ twenty-fives



Think: 20 twenty-fives – 1 twenty-five.

= (_____ × 25) – (_____ × 25)

= _____ – _____

= _____

b. 24 × 11 = _____ twenty-fours

Think: _____ twenty fours + _____ twenty four

= (_____ × 24) + (_____ × 24)

= _____ + _____

= _____

c. 79 × 14 = _____ fourteens Think: _____ fourteens – 1 fourteen = (_____ × 14) – (_____ × 14) = _____ – _____ = _____	d. 21 × 75 = _____ seventy-fives Think: _____ seventy-fives + _____ seventy-five = (_____ × 75) + (_____ × 75) = _____ + _____ = _____

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

a. 19 × 15 = 19 _____ Think: 20 _____ – 1 _____ = (20 × _____) – (1 × _____) = _____ – _____ = _____	b. 14 × 15 = 14 _____ Think: 10 _____ + 4 _____ = (10 × _____) + (4 × _____) = _____ + _____ = _____

c. 25 × 12 = 12 _____ Think: 10 _____ + 2 _____ = (10 × _____) + (2 × _____) = _____ + _____ = _____	d. 18 × 17 = 18 _____ Think: 20 _____ – 2 _____ = (20 × _____) – (2 × _____) = _____ – _____ = _____

4. How can 14 × 50 help you find 14 × 49?

5. Solve mentally.
   a. 101 × 15 = _____
   b. 18 × 99 = _____

6. Saleem says 45 × 32 is the same as (45 × 3) + (45 × 2). Explain Saleem's error using words, numbers, and/or pictures.

7. Juan delivers 174 newspapers every day. Edward delivers 126 more newspapers each day than Juan.
   a. Write an expression to show how many newspapers Edward will deliver in 29 days.

   b. Use mental math to solve. Show your thinking.

Estimate and then multiply.

1	29 x 11 ≈		23	801 x 31 ≈	
2	29 x 21 ≈		24	803 x 31 ≈	
3	29 x 31 ≈		25	703 x 31 ≈	
4	23 x 12 ≈		26	43 x 34 ≈	
5	23 x 22 ≈		27	53 x 34 ≈	
6	23 x 32 ≈		28	53 x 31 ≈	
7	23 x 42 ≈		29	53 x 51 ≈	
8	37 x 13 ≈		30	93 x 31 ≈	
9	37 x 23 ≈		31	913 x 31 ≈	
10	36 x 24 ≈		32	73 x 31 ≈	
11	24 x 36 ≈		33	723 x 31 ≈	
12	43 x 11 ≈		34	78 x 34 ≈	
13	43 x 21 ≈		35	798 x 34 ≈	
14	403 x 21 ≈		36	62 x 33 ≈	
15	303 x 21 ≈		37	642 x 33 ≈	
16	203 x 21 ≈		38	374 x 64 ≈	
17	41 x 11 ≈		39	64 x 374 ≈	
18	41 x 21 ≈		40	740 x 36 ≈	
19	41 x 31 ≈		41	750 x 36 ≈	
20	401 x 31 ≈		42	65 x 680 ≈	
21	501 x 31 ≈		43	849 x 84 ≈	
22	601 x 31 ≈		44	85 x 849 ≈	

estimate products by rounding

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 of the algorithm.

   a. 34 × 21 = _____

   3 4
   × 2 1

   b. 434 × 21 = _____

   4 3 4
   × 2 1

2. Solve using the standard algorithm.

   a. 431 × 12 = _____ b. 123 × 23 = _____ c. 312 × 32 = _____

3. Betty saves $161 a month. She saves $141 less each month than Jack. How much will Jack save in 2 years?

4. Farmer Brown feeds 12.1 kilograms of alfalfa to each of his 2 horses daily. How many kilograms of alfalfa will all his horses have eaten after 21 days? Draw an area model to solve.

Solve.

1	5 x 100 =		23	5000 - 50 =	
2	500 - 5 =		24	50 x 99 =	
3	5 x 99 =		25	80 x 100 =	
4	3 x 100 =		26	80 x 99 =	
5	300 - 3 =		27	60 x 100 =	
6	3 x 99 =		28	60 x 99 =	
7	2 x 100 =		29	11 x 100 =	
8	200 - 2 =		30	1100 - 11 =	
9	2 x 99 =		31	11 x 99 =	
10	6 x 100 =		32	21 x 100 =	
11	600 - 6 =		33	2100 - 21 =	
12	6 x 99 =		34	21 x 99 =	
13	4 x 100 =		35	31 x 100 =	
14	4 x 99 =		36	31 x 99 =	
15	7 x 100 =		37	71 x 100 =	
16	7 x 99 =		38	71 x 99 =	
17	9 x 100 =		39	42 x 100 =	
18	9 x 99 =		40	42 x 99 =	
19	8 x 100 =		41	53 x 99 =	
20	8 x 99 =		42	64 x 99 =	
21	5 x 100 =		43	75 x 99 =	
22	50 x 100 =		44	97 x 99 =	

mental multiplication

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. 48 × 35

   4 8
   × 3 5

   b. 648 × 35

   6 4 8
   × 3 5

2. Solve using the standard algorithm.

   a. 758 × 92

   b. 958 × 94

c. 476 × 65

d. 547 × 64

3. Carpet costs $16 a square foot. A rectangular floor is 16 feet long by 14 feet wide. How much would it cost to carpet the floor?

4. General admission to The American Museum of Natural History is $19.
   a. If a group of 125 students visits the museum, how much will the group's tickets cost?

   b. If the group also purchases IMAX movie tickets for an additional $4 per student, what is the new total cost of all the tickets? Write an expression that shows how you calculated the new price.

Name _____ Date _____

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.

   a. 481 × 352

   4 8 1

   × 3 5 2

   b. 481 × 302

   4 8 1

   × 3 0 2

   c. Why are there three partial products in 1(a) and only two partial products in 1(b)?

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

   a. 8,401 × 305

   8,401
   × 305

   b. 7,481 × 350

   7,481
   × 350

3. Solve using the standard algorithm.

   a. 346 × 27

   b. 1,346 × 297

c. 346 × 207

d. 1,346 × 207

4. A school district purchased 615 new laptops for their mobile labs. Each computer cost $409. What is the total cost for all of the laptops?

5. A publisher prints 1,512 copies of a book in each print run. If they print 305 runs, how many books will be printed?

6. As of the 2010 census, there were 3,669 people living in Marlboro, New York. Brooklyn, New York, has 681 times as many people. How many more people live in Brooklyn than in Marlboro?

Name _____ Date _____

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

a. 213 × 328 ≈ 200 × 300 = 60,000 2 1 3 × 3 2 8	b. 662 × 372	c. 739 × 442
d. 807 × 491	e. 3,502 × 656	f. 4,390 × 741
g. 530 × 2,075	h. 4,004 × 603	i. 987 × 3,105

2. Each container holds 1 L 275 mL of water. How much water is in 609 identical containers? Find the difference between your estimated product and precise product.

3. A club had some money to purchase new chairs. After buying 355 chairs at $199 each, there was $1,068 remaining. How much money did the club have at first?

4. So far, Carmella has collected 14 boxes of baseball cards. There are 315 cards in each box. Carmella estimates that she has about 3,000 cards, so she buys 6 albums that hold 500 cards each.
   a. Will the albums have enough space for all of her cards? Why or why not?

   b. How many cards does Carmella have?

   c. How many albums will she need for all of her baseball cards?

Name _____ Date _____

Solve.

1. An office space in New York City measures 48 feet by 56 feet. If it sells for $565 per square foot, what is the total cost of the office space?

2. Gemma and Leah are both jewelry makers. Gemma made 106 beaded necklaces. Leah made 39 more necklaces than Gemma.
   a. Each necklace they make has exactly 104 beads on it. How many beads did both girls use altogether while making their necklaces?

   b. At a recent craft fair, Gemma sold each of her necklaces for $14. Leah sold each of her necklaces for 10 dollars more. Who made more money at the craft fair? How much more?

3. Peng bought 26 treadmills for her new fitness center at $1,334 each. Then, she bought 19 stationary bikes for $749 each. How much did she spend on her new equipment? Write an expression, and then solve.

4. A Hudson Valley farmer has 26 employees. He pays each employee $410 per week. After paying his workers for one week, the farmer has $162 left in his bank account. How much money did he have at first?

5. Frances is sewing a border around 2 rectangular tablecloths that each measure 9 feet long by 6 feet wide. If it takes her 3 minutes to sew on 1 inch of border, how many minutes will it take her to complete her sewing project? Write an expression, and then solve.

6. Each grade level at Hooperville Schools has 298 students.
   a. If there are 13 grade levels, how many students attend Hooperville Schools?

   b. A nearby district, Willington, is much larger. They have 12 times as many students. How many students attend schools in Willington?

Name _____ Date _____

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

   a. 22 × 2.4 ≈ _____ × _____ = _____

   2 4
   (tenths) × 2 2

   b. 3.1 × 33 _____ × _____ = _____

   3 1
   (tenths) × 3 3

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

   a. 3.2 × 47 ≈ _____ × _____ = _____

   3 2
   (tenths) × 4 7

   b. 3.2 × 94 ≈ _____ × _____ = _____

   3 2
   (tenths) × 9 4

c. $6.3 \times 44 \approx$ _____ × _____ = _____

d. $14.6 \times 17 \approx$ _____ × _____ = _____

e. $8.2 \times 34 \approx$ _____ × _____ = _____

f. $160.4 \times 17 \approx$ _____ × _____ = _____

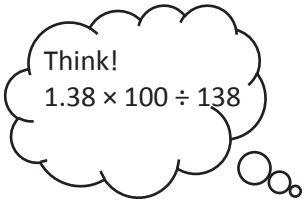
3. Michelle multiplied 3.4×52. She incorrectly wrote 1,768 as her product. Use words, numbers, and/or pictures to explain Michelle's mistake.

4. A wire is bent to form a square with a perimeter of 16.4 cm. How much wire would be needed to form 25 such squares? Express your answer in meters.

Name _____ Date _____

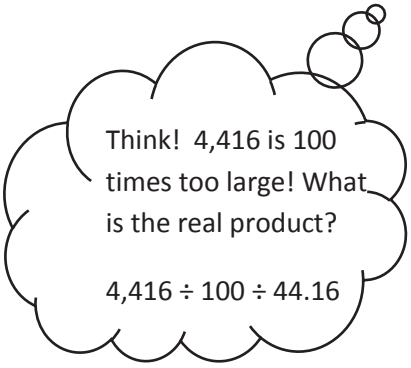
1. Estimate the product. Solve using the standard algorithm. Use the thought bubbles to show your thinking. (Draw an area model on a separate sheet if it helps you.)

a. 1.38 × 32 ≈ _____ × _____ = _____

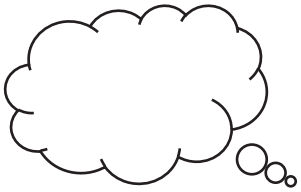


1 . 3 8
× 3 2

1.38 × 32 = _____



b. 3.55 × 89 ≈ _____ × _____ = _____



3 . 5 5
× 8 9

3.55 × 89 = _____

2. Solve using the standard algorithm.

a. 5.04 × 8

b. 147.83 × 67

c. 83.41 × 504

d. 0.56 × 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 98 × 768 = 75,264 then 98 × 7.68 = _____

b. If 73 × 1,563 = 114,099 then 73 × 15.63 = _____

c. If 46 × 1,239 = 56,994 then 46 × 123.9 = _____

4. Jenny buys 22 pens that cost $1.15 each and 15 markers that cost $2.05 each. How much did Jenny spend?

5. A living room measures 24 feet by 15 feet. An adjacent square dining room measures 13 feet on each side. If carpet costs $6.98 per square foot, what is the total cost of putting carpet in both rooms?

Name _____ Date _____

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

   a. 1.21 × 14 ≈ _____ × _____ = _____

   $$\begin{array}{r} 1.21 \\ \times\ 14 \\ \hline \end{array}$$

   b. 2.45 × 305 ≈ _____ × _____ = _____

   $$\begin{array}{r} 2.45 \\ \times\ 305 \\ \hline \end{array}$$

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

   a. 1.23 × 12 ≈ _____ × _____ = _____

   b. 1.3 × 26 ≈ _____ × _____ = _____

   c. 0.23 × 14 ≈ _____ × _____ = _____

   d. 0.45 × 26 ≈ _____ × _____ = _____

e. $7.06 \times 28 \approx$ _____ × _____ = _____

f. $6.32 \times 223 \approx$ _____ × _____ = _____

g. $7.06 \times 208 \approx$ _____ × _____ = _____

h. $151.46 \times 555 \approx$ _____ × _____ = _____

3. Denise walks on the beach every afternoon. In the month of July, she walked 3.45 miles each day. How far did Denise walk during the month of July?

4. A gallon of gas costs $4.34. Greg puts 12 gallons of gas in his car. He has a 50-dollar bill. Tell how much money Greg will have left, or how much more money he will need. Show all your calculations.

5. Seth drinks a glass of orange juice every day that contains 0.6 grams of Vitamin C. He eats a serving of strawberries for snack after school every day that contains 0.35 grams of Vitamin C. How many grams of Vitamin C does Seth consume in 3 weeks?

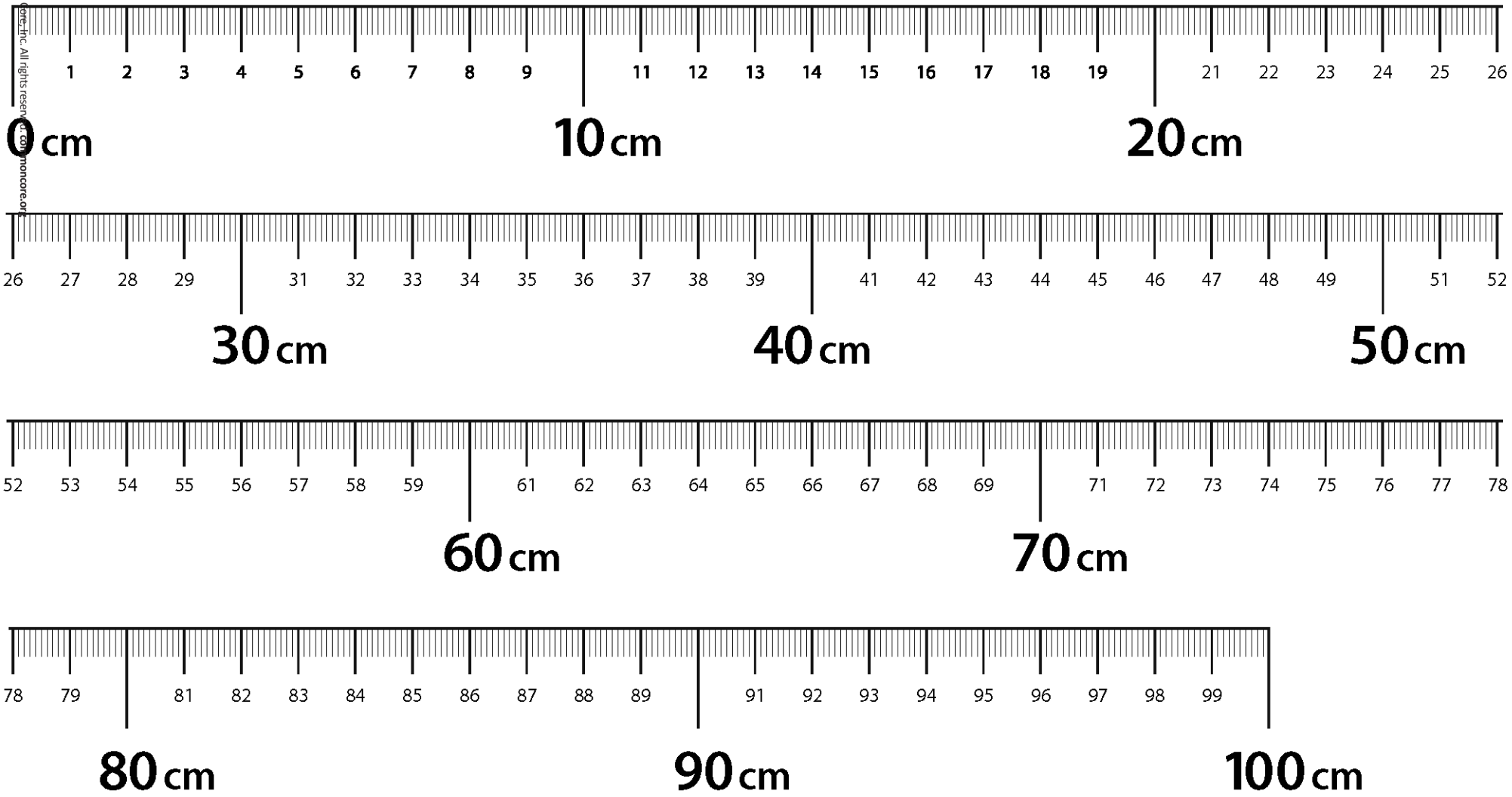
Name _____ Date _____

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

a. Convert weeks to days. 8 weeks = 8 × (1 week) = 8 × (7 days) = 56 days	b. Convert years to days. 4 years = _____ × (_____ year) = _____ × (_____ days) = _____ days
c. Convert meters to centimeters. 9.2 m = _____ × (_____ m) = _____ × (_____ cm) = _____ cm	d. Convert yards to feet. 5.7 yards
e. Convert kilograms to grams. 6.08 kg	f. Convert pounds to ounces. 12.5 pounds

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

a. Convert the number of hours in a day to minutes. 24 hours = 24 × (1 hour) = 24 × (60 minutes) = 1,440 minutes One day has 24 hours, which is the same as 1,440 minutes.	b. A small female gorilla weighs 68 kilograms. How much does she weigh in grams?
c. The height of a man is 1.7 meters. What is his height in centimeters?	d. The capacity of a syringe is 0.08 liters. Convert this to milliliters.
e. A coyote weighs 11.3 pounds. Convert the coyote's weight to ounces.	f. An alligator is 2.3 yards long. What is the length of the alligator in inches?



meter strip

Name _____ Date _____

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

a. Convert days to weeks. 28 days = 28 × (1 day) $= 28 \times \left(\frac{1}{7} \text{ week}\right)$ $= \frac{28}{7}$ week = 4 weeks	b. Convert quarts to gallons. 20 quarts = _____ × (1 quart) $=$ _____ $\times \left(\frac{1}{4} \text{ gallon}\right)$ = _____ gallons = _____ gallons
c. Convert centimeters to meters. 920 cm = _____ × (_____ cm) = _____ × (_____ m) = _____ m	d. Convert meters to kilometers. 1,578 m = _____ × (_____ m) = _____ × (0.001 km) = _____ km
e. Convert grams to kilograms. 6,080 g =	f. Convert milliliters to liters. 509 mL =

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

<table>
<tr>
<td>a. The screen measures 24 inches. Convert 24 inches to feet.

24 inches = 24 × (1 inch)

$= 24 \times \left(\frac{1}{12} \text{ feet}\right)$

$= \frac{24}{12}$ feet

= 2 feet

The screen measures 24 inches or 2 feet.</td>
<td>b. A jug of syrup holds 12 cups. Convert 12 cups to pints.</td>
</tr>
<tr>
<td>c. The length of the diving board is 378 centimeters. What is its length in meters?</td>
<td>d. The capacity of a container is 1,478 milliliters. Convert this to liters.</td>
</tr>
<tr>
<td>e. A truck weighs 3,900,000 grams. Convert the truck's weight to kilograms.</td>
<td>f. The distance was 264,040 meters. Convert the distance to kilometers.</td>
</tr>
</table>

Name _____ Date _____

Solve.

1. Liza's cat had six kittens! When Liza and her brother weighed all the kittens together, they weighed 4 pounds 2 ounces. Since all the kittens are about the same size, about how many ounces does each kitten weigh?

2. A container of oregano is 17 pounds heavier than a container of peppercorns. Their total weight is 253 pounds. The peppercorns will be sold in one-ounce bags. How many bags of peppercorns can be made?

3. Each costume needs 46 centimeters of red ribbon and 3 times as much yellow ribbon. What is the total length of ribbon needed for 64 costumes? Express your answer in meters.

4. When making a batch of orange juice for her basketball team, Jackie used 5 times as much water as concentrate. There were 32 more cups of water than concentrate.

   a. How much juice did she make in all?

   b. She poured the juice into quart containers. How many containers could she fill?

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. 500 ÷ 10	b. 360 ÷ 10
c. 12,000 ÷ 100	d. 450,000 ÷ 100
e. 700,000 ÷ 1,000	f. 530,000 ÷ 100

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

a. 12,000 ÷ 30 = 12,000 ÷ 10 ÷ 3 = 1,200 ÷ 3 = 400	b. 12,000 ÷ 300	c. 12,000 ÷ 3,000
d. 560,000 ÷ 70	e. 560,000 ÷ 700	f. 560,000 ÷ 7,000

g. 28,000 ÷ 40	h. 450,000 ÷ 500	i. 810,000 ÷ 9,000

3. The floor of a rectangular banquet hall has an area of 3,600 m^2. The length is 90 m.
   a. What is the width of the banquet hall?

   b. A square banquet hall has the same area. What is the length of the room?

   c. A third rectangular banquet hall has a perimeter of 3,600 m. What is the width if the length is 5 times the width?

4. Two fifth graders solved 400,000 divided by 800. Carter said the answer is 500, while Kim said the answer is 5,000.
   a. Who has the correct answer? Explain your thinking.

   b. What if the problem is 4,000,000 divided by 8,000? What is the quotient?

Name _____ Date _____

1. Estimate the quotient for the following problems. Round the divisor first.

a. 609 ÷ 21 ≈ 600 ÷ 20 = 30	b. 913 ÷ 29 ≈ _____ ÷ _____ = _____	c. 826 ÷ 37 ≈ _____ ÷ _____ = _____
d. 141 ÷ 73 ≈ _____ ÷ _____ = _____	e. 241 ÷ 58 ≈ _____ ÷ _____ = _____	f. 482 ÷ 62 ≈ _____ ÷ _____ = _____
g. 656 ÷ 81 ≈ _____ ÷ _____ = _____	h. 799 ÷ 99 ≈ _____ ÷ _____ = _____	i. 635 ÷ 95 ≈ _____ ÷ _____ = _____
j. 311 ÷ 76 ≈ _____ ÷ _____ = _____	k. 648 ÷ 83 ≈ _____ ÷ _____ = _____	l. 143 ÷ 35 ≈ _____ ÷ _____ = _____
m. 525 ÷ 25 ≈ _____ ÷ _____ = _____	n. 552 ÷ 85 ≈ _____ ÷ _____ = _____	o. 667 ÷ 11 ≈ _____ ÷ _____ = _____

2. A video game store has a budget of $825, and would like to purchase new video games. If each video game costs $41, estimate the total number of video games the store can purchase with its budget. Explain your thinking.

3. Jackson estimated 637 ÷ 78 as 640 ÷ 80. He reasoned that 64 tens divided by 8 tens should be 8 tens. Is Jackson's reasoning correct? If so, explain why. If not, explain a correct solution.

Name _____ Date _____

1. Estimate the quotients for the following problems. The first one is done for you.

a. 5,738 ÷ 21 ≈ 6,000 ÷ 20 = 300	b. 2,659 ÷ 28 ≈ _____ ÷ _____ = _____	c. 9,155 ÷ 34 ≈ _____ ÷ _____ = _____
d. 1,463 ÷ 53 ≈ _____ ÷ _____ = _____	e. 2,525 ÷ 64 ≈ _____ ÷ _____ = _____	f. 2,271 ÷ 72 ≈ _____ ÷ _____ = _____
g. 4,901 ÷ 75 ≈ _____ ÷ _____ = _____	h. 8,515 ÷ 81 ≈ _____ ÷ _____ = _____	i. 8,515 ÷ 89 ≈ _____ ÷ _____ = _____
j. 3,925 ÷ 68 ≈ _____ ÷ _____ = _____	k. 5,124 ÷ 81 ≈ _____ ÷ _____ = _____	l. 4,945 ÷ 93 ≈ _____ ÷ _____ = _____
m. 5,397 ÷ 94 ≈ _____ ÷ _____ = _____	n. 6,918 ÷ 86 ≈ _____ ÷ _____ = _____	o. 2,806 ÷ 15 ≈ _____ ÷ _____ = _____

2. A swimming pool requires 672 ft^2 of floor space. The length of the swimming pool is 32 ft. Estimate the width of the swimming pool.

3. Janice bought 28 apps for her phone that, altogether, used 1,348 MB of space.
   a. If each app used the same amount of space, about how many MB of memory did each app use? Show how you estimated.

   b. If half of the apps were free and the other half were $1.99 each, about how much did she spend?

4. A quart of paint covers about 85 square feet. About how many quarts would you need to cover a fence with an area of 3,817 square feet?

5. Peggy has saved $9,215. If she is paid $45 an hour, about how many hours did she work?

Name _____ Date _____

1. Divide, and then check. The first problem is done for you.

a. 41 ÷ 30

$$\begin{array}{r} \quad 1 \text{ R } 11 \\ 30 \overline{)\,41} \\ -\,30 \\ \hline 11 \end{array}$$

Check:

30 × 1 = 30
30 + 11 = 41

b. 80 ÷ 30

c. 71 ÷ 50

d. 270 ÷ 30

e. 643 ÷ 80

f. 215 ÷ 90

2. Terry says the solution to 299 ÷ 40 is 6 with a remainder of 59. His work is shown below. Explain Terry's error in thinking, and then find the correct quotient using the space on the right.

```
      6
40 | 299
   - 240
     59
```

```
40 | 299
```

3. A number divided by 80 has a quotient of 7 with 4 as a remainder. Find the number.

4. While swimming a 2 km race, Adam changes from breaststroke to butterfly every 200 m. How many times did he switch strokes during the first half of the race?

Name _____ Date _____

1. Divide. Then, check with multiplication. The first one is done for you.

a. 65 ÷ 17

```
      3 R 14
17 ) 65
   - 51
     14
```

Check:

17 × 3 = 51

51 + 14 = 65

b. 49 ÷ 21

c. 78 ÷ 39

d. 84 ÷ 32

e. 77 ÷ 25

f. 68 ÷ 17

2. When dividing 82 by 43, Linda estimated the quotient to be 2. Examine Linda's work, and explain what she needs to do next. On the right, show how you would solve the problem.

Linda's estimation:	Linda's work:	Your work:
2 40 ⟌ 80	2 43 ⟌ 82 - 86 ??	43 ⟌ 82

3. A number divided by 43 has a quotient of 3 with 28 as a remainder. Find the number. Show your work.

4. Write another division problem that has a quotient of 3 and a remainder of 28.

5. Mrs. Silverstein sold 91 cupcakes at a food fair. The cupcakes were sold in boxes of "a baker's dozen," which is 13. She sold all the cupcakes at $15 per box. How much money did she receive?

Name _____ Date _____

1. Divide. Then, check using multiplication. The first one is done for you.

   a. 258 ÷ 47

$$\begin{array}{r} 5\ \text{R}\ 23 \\ 47\,\overline{|\,2\ 5\ 8} \\ -\ 2\ 3\ 5 \\ \hline 2\ 3 \end{array}$$

Check:

$47 \times 5 = 235$

$235 + 23 = 258$

   b. 148 ÷ 67

   c. 591 ÷ 73

   d. 759 ÷ 94

   e. 653 ÷ 74

   f. 257 ÷ 36

2. Generate and solve at least one more division problem with the same quotient and remainder as the one below. Explain your thought process.

```
      8
58 | 475
   - 464
     11
```

3. Assume that Mrs. Giang's car travels 14 miles on each gallon of gas. If she travels to visit her niece who lives 133 miles away, how many gallons of gas will Mrs. Giang need to make the round trip?

4. Louis brings 79 pencils to school. After he gives each of his 15 classmates an equal number of pencils, he will give any leftover pencils to his teacher.
   a. How many pencils will Louis' teacher receive?

   b. If Louis decides instead to take an equal share of the pencils along with his classmates, will his teacher receive more pencils or fewer pencils? Show your thinking.

Name _____ Date _____

1. Divide. Then, check using multiplication. The first one is done for you.

a. 580 ÷ 17

```
      3 4 R 2
17 | 5 8 0
   - 5 1
     7 0
    -6 8
       2
```

Check:

34 × 17 = 578

578 + 2 = 580

b. 730 ÷ 32

c. 940 ÷ 28

d. 553 ÷ 23

e. 704 ÷ 46

f. 614 ÷ 15

2. Halle solved 664 ÷ 48 below. She got a quotient of 13 with a remainder of 40. How could she use her work below to solve 659 ÷ 48 without redoing the work? Explain your thinking.

```
      1 3
   ┌──────
48 │ 6 6 4
 - │ 4 8
   ├──────
     1 8 4
   - 1 4 4
   ├──────
       4 0
```

3. 27 students are learning to make balloon animals. There are 172 balloons to be shared equally among the students.
   a. How many balloons are left over after sharing them equally?

   b. If each student needs 7 balloons, how many more balloons are needed? Explain how you know.

Name _____ Date _____

1. Divide. Then, check using multiplication.

a. 4,859 ÷ 23

b. 4,368 ÷ 52

c. 7,242 ÷ 34

d. 3,164 ÷ 45

e. 9,152 ÷ 29

f. 4,424 ÷ 63

2. Mr. Riley baked 1,692 chocolate cookies. He sold them in boxes of 36 cookies each. How much money did he collect if he sold them all at $8 per box?

3. 1,092 flowers are arranged into 26 vases, with the same number of flowers in each vase. How many flowers would be needed to fill 130 such vases?

4. The elephant's water tank holds 2,560 gallons of water. After two weeks, the zookeeper measures and finds that the tank has 1,944 gallons of water left. If the elephant drinks the same amount of water each day, how many days will a full tank of water last?

Name _____ Date _____

1. Divide. Show the division in the right-hand column in two steps. The first two have been done for you.

a. 1.2 ÷ 6 = 0.2

b. 1.2 ÷ 60 = (1.2 ÷ 6) ÷ 10 = 0.2 ÷ 10 = 0.02

c. 2.4 ÷ 4 = _____

d. 2.4 ÷ 40 = _____

e. 14.7 ÷ 7 = _____

f. 14.7 ÷ 70 = _____

g. 0.34 ÷ 2 = _____

h. 3.4 ÷ 20 = _____

i. 0.45 ÷ 9 = _____

j. 0.45 ÷ 90 = _____

k. 3.45 ÷ 3 = _____

l. 34.5 ÷ 300 _____

2. Use place value reasoning and the first quotient to compute the second quotient. Explain your thinking.
   a. $46.5 \div 5 = 9.3$

      $46.5 \div 50 =$ _____

   b. $0.51 \div 3 = 0.17$

      $0.51 \div 30 =$ _____

   c. $29.4 \div 70 = 0.42$

      $29.4 \div 7 =$ _____

   d. $13.6 \div 40 = 0.34$

      $13.6 \div 4 =$ _____

3. Twenty polar bears live at the zoo. In four weeks, they eat 9,732.8 pounds of food altogether. Assuming each bear is fed the same amount of food, how much food is used to feed one bear for a week? Round your answer to the nearest pound.

4. The total weight of 30 bags of flour and 4 bags of sugar is 42.6 kg. If each bag of sugar weighs 0.75 kg, what is the weight of each bag of flour?

Name _____ Date _____

1. Estimate the quotients.

   a. $3.24 \div 82 \approx$

   b. $361.2 \div 61 \approx$

   c. $7.15 \div 31 \approx$

   d. $85.2 \div 31 \approx$

   e. $27.97 \div 28 \approx$

2. Estimate the quotient in (a). Use your estimated quotient to estimate (b) and (c).

   a. $7.16 \div 36 \approx$

   b. $716 \div 36 \approx$

   c. $71.6 \div 36 \approx$

3. Edward bikes the same route to and from school each day. After 28 school days, he bikes a total distance of 389.2 miles.

   a. Estimate how many miles he bikes in one day.

   b. If Edward continues his routine of biking to school, about how many days altogether will it take him to reach a total distance of 500 miles?

4. Xavier goes to the store with $40. He spends $38.60 on 13 bags of popcorn.

   a. About how much does one bag of popcorn cost?

   b. Does he have enough money for another bag? Use your estimate to explain your answer.

Name _____ Date _____

1. 156 ÷ 24 and 102 ÷ 15 both have a quotient of 6 and a remainder of 12.
   a. Are the division expressions equivalent to each other? Use your knowledge of decimal division to justify your answer.

   b. Construct your own division problem with a two-digit divisor that has a quotient of 6 and a remainder of 12 but is not equivalent to the problems in 1(a).

2. Divide. Then, check your work with multiplication.
   a. 36.14 ÷ 13
   b. 62.79 ÷ 23
   c. 12.21 ÷ 11
   d. 6.89 ÷ 13
   e. 249.6 ÷ 52
   f. 24.96 ÷ 52

g. $300.9 \div 59$

h. $30.09 \div 59$

3. The weight of 72 identical marbles is 183.6 grams. What is the weight of each marble? Explain how you know the decimal point of your quotient is placed reasonably.

4. Cameron wants to measure the length of his classroom using his foot as a length unit. His teacher tells him the length of the classroom is 23 meters. Cameron steps across the classroom heel to toe and finds that it takes him 92 steps. How long is Cameron's foot in meters?

5. A blue rope is three times as long as a red rope. A green rope is 5 times as long as the blue rope. If the total length of the three ropes is 508.25 meters, what is the length of the blue rope?

Name _____ Date _____

1. Divide. Check your work with multiplication.
   a. 5.6 ÷ 16
   b. 21 ÷ 14
   c. 24 ÷ 48
   d. 36 ÷ 24
   e. 81 ÷ 54
   f. 15.6 ÷ 15
   g. 5.4 ÷ 15
   h. 16.12 ÷ 52
   i. 2.8 ÷ 16

2. 30.48 kg of beef was placed into 24 packages of equal weight. What is the weight of one package of beef?

3. What is the length of a rectangle whose width is 17 inches and whose area is 582.25 in^2?

4. A soccer coach spent $162 dollars on 24 pairs of socks for his players. How much did five pairs of socks cost?

5. A craft club makes 95 identical paperweights to sell. They collect $230.85 from selling all the paperweights. If the profit the club collects on each paperweight is two times as much as the cost to make each one, what does it cost the club to make each paperweight?

Name _____ Date _____

1. Ava is saving for a new computer that costs $1,218. She has already saved half of the money. Ava earns $14.00 per hour. How many hours must Ava work in order to save the rest of the money?

2. Michael has a collection of 1,404 sports cards. He hopes to sell the collection in packs of 36 cards, and make $633.75 when all the packs are sold. If each pack is priced the same, how much should Michael charge per pack?

3. Jim Nasium is building a tree house for his two daughters. He cuts 12 pieces of wood from a board that is 128 inches long. He cuts 5 pieces that measure 15.75 inches each, and 7 pieces evenly cut from what is left. Jim calculates that, due to the width of his cutting blade, he will lose a total of 2 inches of wood after making all of the cuts. What is the length of each of the seven pieces?

4. A load of bricks is twice as heavy as a load of sticks. The total weight of 4 loads of bricks and 4 loads of sticks is 771 kilograms. What is the total weight of 1 load of bricks and 3 loads of sticks?

Name _____ Date _____

Solve.

1. Lamar has 1,354.5 kilograms of potatoes to deliver equally to 18 stores. 12 of the stores are in the Bronx. How many kilograms of potatoes will be delivered to stores in the Bronx?

2. Valerie uses 12 fluid oz of detergent each week for her laundry. If there are 75 fluid oz of detergent in the bottle, in how many weeks will she need to buy a new bottle of detergent? Explain how you know.

3. The area of a rectangle is 56.96 m^2. If the length is 16 m, what is its perimeter?

4. A city block is 3 times as long as it is wide. If the distance around the block is 0.48 kilometers, what is the area of the block in square meters?

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