Problem Set Answer Key

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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 = 46 tens 23 × 20 = 460	b. 230 × 20 Think: 23 tens × 2 tens = 46 hundreds 230 × 20 = 4,600
c. 41 × 4 41 ones × 4 ones = 164 ones 41 × 4 = 164	d. 410 × 400 41 tens × 4 hundreds = 164 thousands 410 × 400 = 164,000
e. 3,310 × 300 331 tens × 3 hundreds = 993 thousands 3,310 × 300 = 993,000	f. 500 × 600 5 hundreds × 6 hundreds = 30 ten-thousands 500 × 600 = 300,000

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. 6 tens = 2 tens × 3 tens

False, because 2 tens × 3 tens = 6 hundreds or 600. 20 × 30 = 600

b. 44 × 20 × 10 = 440 × 2

False, because these aren't equal. I can rewrite 44 × 10 = 440 and 440 × 20 ≠ 440 × 2.

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

True, because 90 hundreds is equal to 900 tens which is equal to the value of 9,000

d. 64 × 8 × 100 = 640 × 8 × 10

True. I can rewrite the problem to be 8 × 64 × 100 = 8 × 640 × 10. 64 × 100 is equal to 640 × 10.

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

False. I can rewrite the right side of the equation to be $57 \times 2 \times 1,000$. $57 \times 2 \times 1,000 \neq 570 \times 2 \times 10$.

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

a. 7×9 = 63 | 7×90 = 63 × 10 = 630 | 70×90 = (7 × 10) × (9 × 10) = (7 × 9) × 100 = 6,300 | 70×900 = (7 × 9) × (10 × 100) = 63,000

b. 45×3 = 135 | 45×30 = 135 × 10 = 1,350 | 450×30 = (45 × 10) × (3 × 10) = (45 × 3) × 100 = 13,500 | 450×300 = (45 × 3) × (10 × 100) = 135,000

c. 40×5 = 200 | 40×50 = 20 × 100 = 2,000 | 40×500 = (4 × 10) × (5 × 100) = (4 × 5) × 1,000 = 20,000 | $400 \times 5,000$ = (4 × 5) × (100 × 1,000) = 20 × 100,000 = 2,000,000

d. 718×2 = 1,436 | $7,180 \times 20$ = 1,436 × 100 = 143,600 | $7,180 \times 200$ = (718 × 10) × (2 × 100) = (718 × 2) × (10 × 100) = 1436 × 1000 = 1,436,000 | $71,800 \times 2,000$ = (718 × 2) × (100 × 1,000) = 1,436 × 100,000 = 143,600,000

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.

This strategy won't always work because it depends on the factors you're multiplying. For example: 400 x 500 = 200,000. It doesn't work in this example because 4x5=20. That's way the product has 5 zeros.

(400: 2 zeros; 500: 2 zeros; 200,000: 5 zeros)

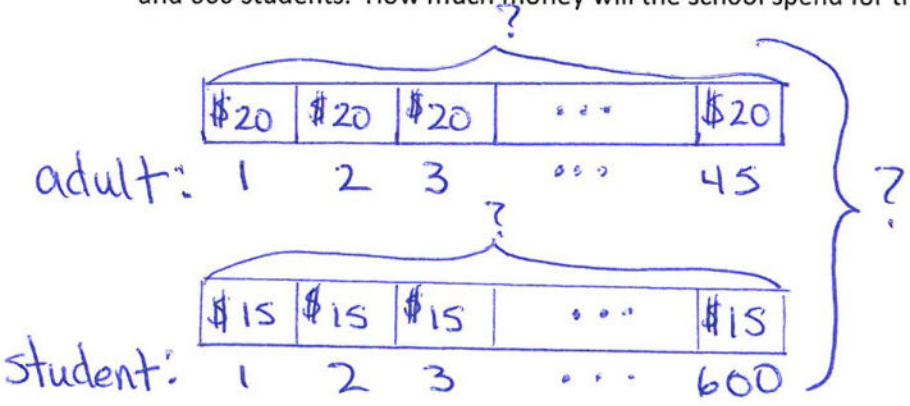
5. The Canadian side of Niagara Falls has a flow rate of 600,000 gallons per second. How many gallons of water flow over the falls in 1 minute?

1 unit = 600,000 gallons

60 units = 600,000 x 60 = 36,000,000 gallons

36,000,000 gallons of water will 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?



45 x $20 = $900

600 x $15 = $9,000

900
+9,000
9,900

The school will spend $9,900 for tickets.

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1. Round the factors to estimate the products.

a. $597 \times 52 \approx$ 600 × 50 = 30,000

A reasonable estimate for 597×52 is 30,000.

b. $1{,}103 \times 59 \approx$ 1,000 × 60 = 60,000

A reasonable estimate for $1{,}103 \times 59$ is 60,000.

c. $5{,}840 \times 25 \approx$ 6,000 × 25 = 150,000

A reasonable estimate for $5{,}840 \times 25$ is 150,000.

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

Expressions	Rounded Factors	Estimate
a. $2{,}809 \times 42$	$3{,}000 \times 40$	120,000
b. $28{,}090 \times 420$	30,000 × 400	12,000,000
c. $8{,}932 \times 59$	9,000 × 60	540,000
d. 89 tens × 63 tens	900 × 600	540,000
e. 398 hundreds × 52 tens	40,000 × 500	20,000,000

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
= 2,000 × 10	= 20,000 × 100	= 2,000 × 100	= 20,000 × 1,000
= 20,000	= 2,000,000	= 200,000	= 20,000,000

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

a. 571 × 43 ≈ 600 × 40 = 24,000

b. 726 × 674 ≈ 700 × 700 = 490,000

c. 8,379 × 541 ≈ 8,000 × 500 = 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?

19,763 × 41 ≈ 20,000 × 40

20,000 × 40 = 800,000

There were about 800,000 tickets 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?

4 × 12 months = 48 months

$423 × 48 ≈ $400 × 50 $400 × 50 = $20,000

He would have saved about $20,000 after 4 years.

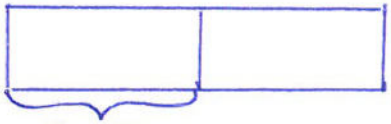
b. Will your estimate be lower or higher than the actual amount Michael will save? How do you know?

I think my estimate was lower than the actual amount Michael will save, because I rounded $423 to $400, but I did round 48 to 50. I think my estimate of $20,000 is really close to the actual amount.

Name _____ Date _____

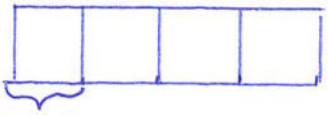
1. Draw a model. Then, write the numerical expressions.

a. The sum of 8 and 7, doubled



(8+7) x 2

b. 4 times the sum of 14 and 26



4 x (14+26)

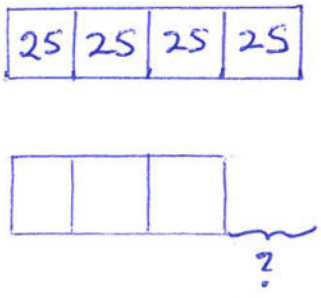
c. 3 times the difference between 37.5 and 24.5

3 x (37.5-24.5)

d. The sum of 3 sixteens and 2 nines

(3 x 16) + (2 x 9)

e. The difference between 4 twenty-fives and 3 twenty-fives



(4 x 25) - (3 x 25)

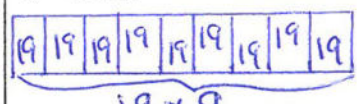
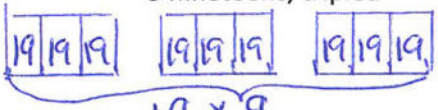
f. Triple the sum of 33 and 27

3 x (33+27)

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

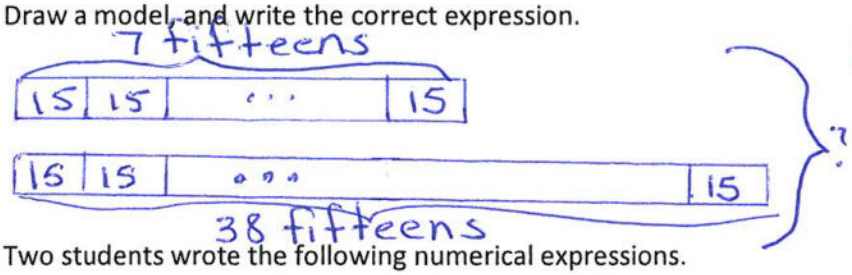
Expression	Words	The Value of the Expression
a. $12 \times (5 + 25)$	12 times the sum of 5 and 25	360
b. $(62 - 12) \times 11$	11 times the difference between 62 and 12	550
c. $(45 + 55) \times 23$	23 times the sum of 45 and 55	2,300
d. $(30 \times 2) + (8 \times 2)$	the sum of 30 twos and 8 twos	76

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. $24 \times (20 + 5)$	>	$(20 + 5) \times 12$
It's greater than because the left side shows 24 groups of (20+5), but the right side only has 12 groups of (20+5).		
b. 18×27	<	20 twenty-sevens minus 1 twenty-seven
It's less than because the left side shows 18 twenty-sevens and the right side shows 19 twenty-sevens.		
c. 19×9 	=	3 nineteens, tripled 
Both sides are equal. They're both 9 groups of 19.		

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

Draw a model, and write the correct expression.



$(7 \times 15) + (38 \times 15)$

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.

MeiLing's answer is equivalent. She found the sum (added) of the 2 bars together. Angeline's answer is not equivalent. She multiplied the values of the two bars.

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.

$(8 \times 24) + (12 \times 24)$ or $24(8 + 12)$ or 24×20

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.

$((8 \times 24) + (12 \times 24)) \times 2$ or $(24 \times 20) \times 2$

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

Week 1: $(24 \times 20) = 480$

Week 2: $(24 \times 20) \times 2 = 960$

$$\begin{array}{r} 480 \\ +\ 960 \\ \hline 1,440 \end{array}$$

In both weeks, Mr. Lee ordered 1,440 oranges.

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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**

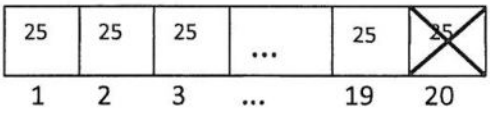
   (38 + 40) × (38 + 5) | (38 × 40) + (38 × 5) | 45 × (40 + 2) | 45 thirty-eights

   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 = 19 twenty-fives



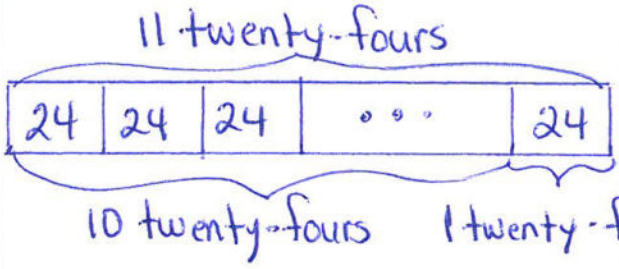
Think: 20 twenty-fives – 1 twenty-five.

= (20 × 25) – (1 × 25)

= 500 – 25

= 475

b. 24 × 11 = 11 twenty-fours



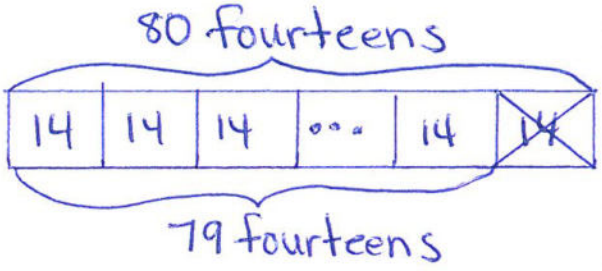
Think: 10 twenty fours + 1 twenty four

= (10 × 24) + (1 × 24)

= 240 + 24

= 264

c. $79 \times 14 =$ 79 fourteens



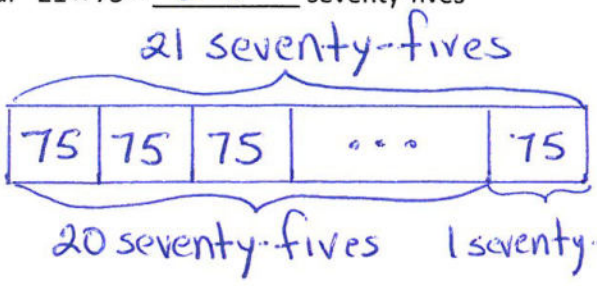
Think: 80 fourteens – 1 fourteen

$= (80 \times 14) - (1 \times 14)$

$= 1{,}120 - 14$

$= 1{,}106$

d. $21 \times 75 =$ 21 seventy-fives



Think: 20 seventy-fives + 1 seventy-five

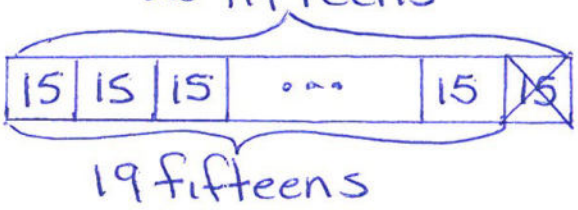
$= (20 \times 75) + (1 \times 75)$

$= 1{,}500 + 75$

$= 1{,}575$

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

a. $19 \times 15 = 19$ fifteens



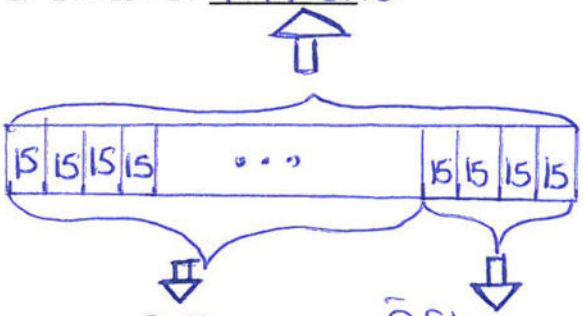
Think: 20 fifteens – 1 fifteen

$= (20 \times 15) - (1 \times 15)$

$= 300 - 15$

$= 285$

b. $14 \times 15 = 14$ fifteens



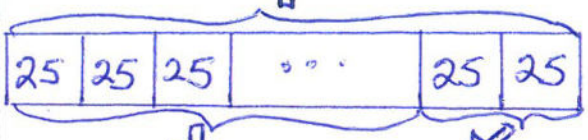
Think: 10 fifteens + 4 fifteens

$= (10 \times 15) + (4 \times 15)$

$= 150 + 60$

$= 210$

c. $25 \times 12 = 12$ twenty-fives



Think: 10 twenty-fives + 2 twenty-fives

$= (10 \times 25) + (2 \times 25)$

$= 250 + 50$

$= 300$

d. $18 \times 17 = 18$ seventeens

20 seventeens

18 seventeens

Think: 20 seventeens − 2 seventeens

$= (20 \times 17) - (2 \times 17)$

$= 340 - 34$

$= 306$

4. How can 14×50 help you find 14×49?

Once I find 50 fourteens, I can subtract 1 fourteen and it will give me 49 fourteens.

5. Solve mentally.

a. $101 \times 15 = 1515$

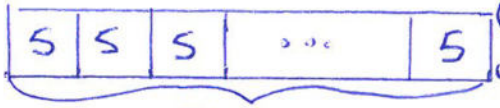
$= (100 \times 15) + (1 \times 15)$

b. $18 \times 99 = 1782$

$= (100 \times 18) - (1 \times 18)$

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

45 thirty-twos



45 fives

45 x 32 = 45 thirty-twos

(45 x 3) + (45 x 2) = 45 five

45 thirty-twos ≠ 45 five

They are not the same because 45 thirty-twos does not equal 45 Fives.

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.

$(174 + 126) \times 29$

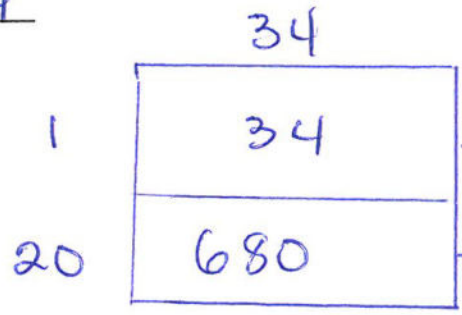
b. Use mental math to solve. Show your thinking.

I first added 174 and 126 to get 300. Then I multiplied 300 times 29 to get 8,700 by finding thirty 300's and then subtracting one 300.

Name _____ Date _____

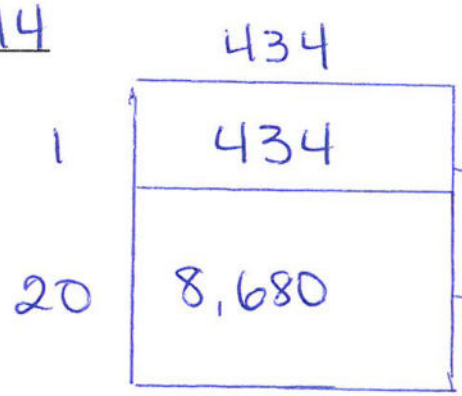
1. Draw an area model, and then solve using the standard algorithm. Use arrows to match the partial products from the area model to the partial products of the algorithm.

a. $34 \times 21 =$ 714



$$\begin{array}{r} 34 \\ \times\ 21 \\ \hline 34 \\ +\ 680 \\ \hline 714 \end{array}$$

b. $434 \times 21 =$ 9114



$$\begin{array}{r} 434 \\ \times\ 21 \\ \hline 434 \\ +\ 8,680 \\ \hline 9,114 \end{array}$$

2. Solve using the standard algorithm.

a. $431 \times 12 =$ 5,172

$$\begin{array}{r} 431 \\ \times\ 12 \\ \hline 862 \\ +\ 4310 \\ \hline 5,172 \end{array}$$

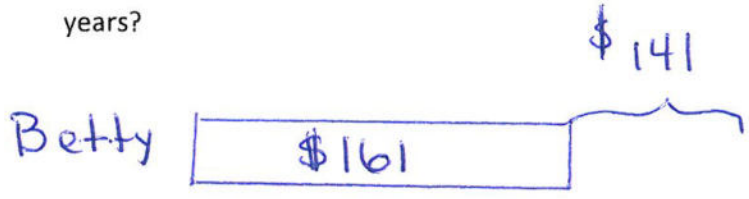
b. $123 \times 23 =$ 2829

$$\begin{array}{r} 123 \\ \times\ 23 \\ \hline 369 \\ 2,460 \\ \hline 2,829 \end{array}$$

c. $312 \times 32 =$ 9,984

$$\begin{array}{r} 312 \\ \times\ 32 \\ \hline 624 \\ 9360 \\ \hline 9,984 \end{array}$$

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



1 unit = $302
24 units = 302 x 24 = $7,248

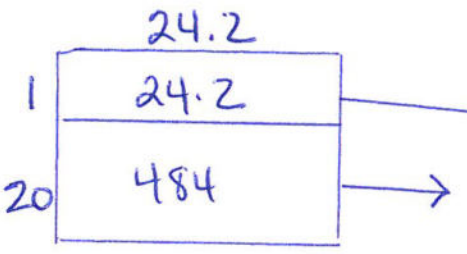
$161 + $141 = $302

Jack will save $7,248 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.

12.1 + 12.1 = 24.2 kg

1 unit = 24.2 kg
21 units = 24.2 x 21
= 508.2 kg



$$\begin{array}{r} 24.2 \\ \times\ \ 21 \\ \hline 242 \\ +\ 4840 \\ \hline 508.2 \end{array}$$

All of his horses will have eaten 508.2 kg of alfalfa after 21 days.

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

	40	+ 8	
5	200	40	240
+			
3	1200	240	1,440

48
× 35
240
1,440
1,680

b. 648 × 35

	600	+ 40	+ 8	
5	3,000	200	40	3240
+				
3	18,000	1200	240	19440

648
× 35
3240
19440
22,680

2. Solve using the standard algorithm.

a. 758 × 92

5 1
758
× 92
1516
68220
69,736

b. 958 × 94

5 1
2 8
958
× 94
3832
+ 86220
90,052

c. 476 × 65

4 3
476
× 65
2380
28560
30,940

d. 547 × 64

2 4
547
× 64
2188
32820
35,008

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?

16 ft
14 ft | ?

Area = Length × width
= 16 ft × 14 ft
= 224 ft²

16
×14
64
160
224

1 unit = $16
224 units = 224 × $16
= $3,584

224
× 16
1344
+ 2240
3584

It would cost $3,584 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?

1 unit = $19
125 units = 125 × $19
= $2,375

125
×19
1125
1250
2375

The group's tickets will cost $2,375

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.

(19 × 14) × 125
= 23 × 125
= 2,875

125
× 23
375
2500
2875

The new total cost for all the tickets will be $2,875.

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

	400	80	1	
2	800	160	2	962
50	20,000	4,000	50	24,050
300	120,000	24,000	300	144,300

481
× 352
962
24 050
+ 144 300
169,312

b. 481 × 302

	400	80	1	
2	800	160	2	962
300	120,000	24,000	300	144,300

481
× 302
962
+ 144 300
145 262

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

Since there is a zero in the tens place in (b), we don't need a section in the rectangle for tens. The whole value can be shown with just hundreds and ones.

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

a. 8,401 × 305

8,000 + 400 + 1

5	40,000	2,000	5	42,005
+				
300	2,400,000	120,000	300	2,520,300

$$\begin{array}{r} 8,401 \\ \times \quad 305 \\ \hline 42005 \\ +\,2520300 \\ \hline 2,562,305 \end{array}$$

b. 7,481 × 350

7000 + 400 + 80 + 1

50	350,000	20,000	4,000	50	374,050
+					
300	2,100,000	120,000	24,000	300	2,244,300

$$\begin{array}{r} 7,481 \\ \times \quad 350 \\ \hline 374050 \\ +2244300 \\ \hline 2,618,350 \end{array}$$

3. Solve using the standard algorithm.

a. 346 × 27

$$\begin{array}{r} {\scriptstyle 1} \\ 346 \\ \times \quad 27 \\ \hline 2422 \\ +\,6920 \\ \hline 9,342 \end{array}$$

b. 1,346 × 297

$$\begin{array}{r} {\scriptstyle 1\ 1} \\ 1346 \\ \times \quad 297 \\ \hline 9422 \\ 12114 \\ +\,269200 \\ \hline 399,762 \end{array}$$

c. 346 × 207

```
  346
× 207
 2422
+69200
 71,622
```

d. 1,346 × 207

```
 1346
×  207
 9422
+269200
278,622
```

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?

```
  615
× 409
 5535
246000
251,535
```

The laptops cost $251,535.

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?

```
  1512
×  305
  7560
453600
461,160
```

461,160 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?

```
  3669
× 681
 3669
293520
2201400
2,498,589
```

```
2,498,589
-    3669
2,494,920
```

2,494,920 more people live in Brooklyn than 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

213
× 328
1704
4260
+63900
69,864

b. 662 × 372

≈ 700 × 400
= 280,000

662
×372
1324
46340
+198600
246,264

c. 739 × 442

≈ 700 × 400
= 280,000

739
×442
1478
29560
+295600
326,638

d. 807 × 491

≈ 800 × 500
= 400,000

807
×491
807
72630
+322800
396,237

e. 3,502 × 656

≈ 4,000 × 700
= 2,800,000

3502
× 656
21012
175100
+2101200
2,297,312

f. 4,390 × 741

≈ 4000 × 700
= 2,800,000

4390
× 741
4390
175600
+3073000
3,252,990

g. 530 × 2,075

≈ 500 × 2,000
= 1,000,000

2075
× 530
0000
62250
+1037500
1,099,750

h. 4,004 × 603

≈ 4,000 × 600
= 2,400,000

4004
× 603
12012
00000
+2402400
2,414,412

i. 987 × 3,105

≈ 1,000 × 3,000
= 3,000,000

3105
× 987
21735
248400
2794500
3,064,635

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.

Estimate:
1,200ml × 600
= 720,000
= 720L

Actual:
1275ml × 609
= 776,475ml
= 776L 475ml

1275
× 609
11475
765000
776,475

776L 475ml
- 720L
56L 475ml

My actual product was 56L 475ml larger the the estimated 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?

1 unit = $199
355 units = 355 × $199
= $70,645

355
× 199
3195
31950
+35500
70,645

$70,645
+ 1,068
$71,713

The club had $71,713 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?

She won't have enough room for all her cards in the album she bought. Carmella probably rounded both the numbers of cards per box and the number of boxes down. Her estimate was low. Since she wants to make sure she has enough room for all her cards, she probably should have rounded the number of boxes up. Like, ≈ 3000 × 15 = 4,500 would have been a better estimate in this situation.

b. How many cards does Carmella have?

315 × 14 = 4,410

$\overset{2}{3}15$
14
1260
3150
4410

Carmella actually has 4,410 cards.

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

skip counting: 500, 1,000, 1,500, 2,000, 2,500, 3,000, 3,500, 4,000, 4,500.
OR
≈ 4,500 ÷ 500
= 9

Since the albums hold 500 cards each, she'll need 9 albums to hold all her cards.

Name _____ Date _____

Solve.

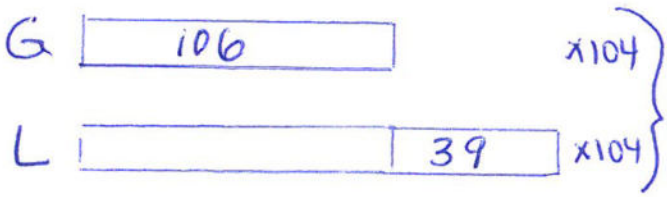
1. An office space in New York City measures 48 feet by 56 feet. If it sells for $565 per square foot, what is the total cost of the office space?

48 ft
× 56 ft
288
+ 2400
2,688 ft²

2688
× 565
13440
161280
1344000
1,518,720

The office space costs $1,518,720.

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?



106
106
+ 39
251 Necklaces

251
× 104
1004
0000
+ 25100
26,104

Together they used 26,104 beads

   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?

106
× 14
424
+ 1060
$1484

145
× 24
580
2900
$3480

$3480
− 1484
$1996

Leah made $1,996 more than Gemma.

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.

(26 × $1334) + (19 × $749)

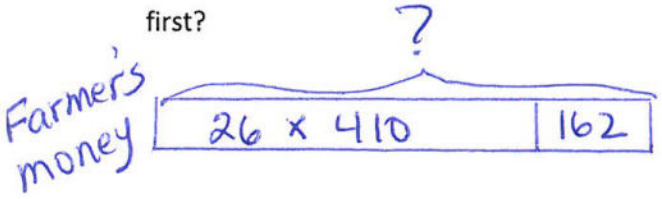
$1334
× 26
8004
+ 26680
$34684

$749
× 19
6741
+ 7490
$14,231

$34,684
+ 14,231
$48,915

Peng spent $48,915.

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?

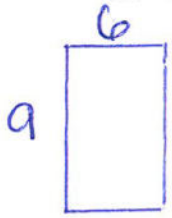


410 × 26 = 2460 + 8200 = 10,660

10,660 + 162 = 10,822

At first the farmer had $10,822.

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.



$2 \times (9+6+9+6) \times 12 \times 3 =$
$2 \times 30 \times 12 \times 3 =$
$2 \times 360 \times 3 =$
$720 \times 3 = 2{,}160$

It will take Francis 2,160 minutes to complete her project.

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

298 × 13 = 894 + 2980 = 3,874

3,874 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?

3874 × 12 = 7748 + 38740 = 46,488

46,488 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. $22 \times 2.4 \approx$ 20 × 2 = 40

	20	+ 4 (tenths)	
2	40	8	48 tenths
+			
20	400	80	480 tenths

~~2 4~~
(tenths) ~~× 2 2~~

24 (tenths)
× 22
48
+ 480
528 (tenths) = 52.8

b. 3.1×33 3 × 30 = 90

	30	+ 1 (tenth)	
3	90	3	93 tenths
+			
30	900	30	930 tenths

~~3 1~~
(tenths) ~~× 3 3~~

31 (tenths)
× 33
93
+ 930
1023 (tenths) = 102.3

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

a. $3.2 \times 47 \approx$ 3 × 50 = 150

~~3 2~~
(tenths) ~~× 4 7~~

32 (tenths)
× 47
224
+ 1280
1504 (tenths) = 150.4

b. $3.2 \times 94 \approx$ 3 × 90 = 270

~~3 2~~
(tenths) ~~× 9 4~~

32
× 94
128
+ 2880
3008 (tenths) = 300.8

c. $6.3 \times 44 \approx 6 \times 40 = 240$

63 (tenths)
× 44
252
+2520
2,772 (tenths) = 277.2

d. $14.6 \times 17 \approx 10 \times 20 = 200$

146 (tenths)
× 17
1022
+1460
2,482 (tenths) = 248.2

e. $8.2 \times 34 \approx 8 \times 30 = 240$

82 (tenths)
× 34
328
+2460
2,788 (tenths) = 278.8

f. $160.4 \times 17 \approx 200 \times 20 = 4,000$

1604 (tenths)
× 17
11228
+16040
27,268 (tenths) = 2,726.8

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.

	30	+ 4 (tenths)	
2	60	8	68 tenths
+			
50	1500	200	1,700 tenths

34 tenths
× 52
68
1700
1,768 (tenths) = 176.8

Michelle's numbers are right, but she forgot her unit was tenths.

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.

164 (tenths)
× 25
820
+3280
4100 (tenths) = 410

410 cm ÷ 100 = 4.1 m

4.1 meters of wire is needed to make 25 squares.

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. $1.38 \times 32 \approx$ 1 × 30 = 30

$1.38 \times 32 =$ 44.16

Think!
1.38 × 100 = 138

1.38
× 32
276
+ 4140
4,416 ÷100 → 44.16

Think! 4,416 is 100 times too large! What is the real product?

4,416 ÷ 100 = 44.16

b. $3.55 \times 89 \approx$ 4 × 90 = 360

$3.55 \times 89 =$ 315.95

3.55 × 100 = 355

3.55
× 89
3195
+ 28400
31,595 ÷100 → 315.95

31,595 ÷ 100 = 315.95

2. Solve using the standard algorithm.

a. 5.04×8

5.04
× 8
40.32

b. 147.83×67

147.83
× 67
103481
+ 886980
9,904.61

c. 83.41×504

$$\begin{array}{r} 83.41 \\ \times\ 504 \\ \hline 33364 \\ +\ 4170500 \\ \hline 42,038.64 \end{array}$$

d. 0.56×432

$$\begin{array}{r} 432 \\ \times 0.56 \\ \hline 2592 \\ +\ 21600 \\ \hline 241.92 \end{array}$$

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 $98 \times 768 = 75{,}264$ then $98 \times 7.68 =$ 752.64

7.68 would be like 768 hundredths, so just divide 75,264 by 100. $75{,}264 \div 100 = 752.64$

b. If $73 \times 1{,}563 = 114{,}099$ then $73 \times 15.63 =$ 1,140.99

15.63 would be like 1,563 hundredths, so just divide 114,099 by 100. $114{,}099 \div 100 = 1{,}140.99$

c. If $46 \times 1{,}239 = 56{,}994$ then $46 \times 123.9 =$ 5699.4

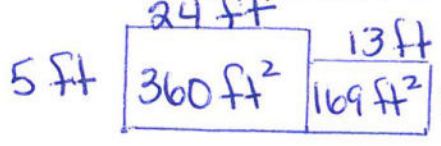
123.9 would be like 1,239 tenths, so just divide 56,994 by 10. $56{,}994 \div 10 = 5{,}699.4$

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

$$\begin{array}{r} \$1.15 \\ \times\ 22 \\ \hline 230 \\ +\ 2300 \\ \hline \$25.30 \end{array} \qquad \begin{array}{r} \$2.05 \\ \times\ 15 \\ \hline 1025 \\ +\ 2050 \\ \hline \$30.75 \end{array} \qquad \begin{array}{r} \$\ 25.30 \\ +\ 30.75 \\ \hline \$\ 56.05 \end{array}$$

Jenny will spend \$56.05.

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?



$$\begin{array}{r} 24 \\ \times 15 \\ \hline 120 \\ +240 \\ \hline 360 \end{array} \qquad \begin{array}{r} 13 \\ \times 13 \\ \hline 39 \\ +130 \\ \hline 169 \end{array} \qquad \begin{array}{r} 360 \\ +169 \\ \hline 529 \end{array} \qquad \begin{array}{r} \$6.98 \\ \times\ 529 \\ \hline 6282 \\ 13960 \\ +\ 349000 \\ \hline \$\ 3{,}692.42 \end{array}$$

It would cost \$3,692.42 to carpet both rooms.

Name _____ Date _____

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

a. $1.21 \times 14 \approx \underline{1} \times \underline{14} = \underline{14}$

100 + 20 + 1 (hundredths)

4	400	80	4	484 hundredths
+ 10	1,000	200	10	1,210 hundredths

$$\begin{array}{r} 1.21 \\ \times\ 14 \\ \hline 484 \\ +1210 \\ \hline 16.94 \end{array}$$

b. $2.45 \times 305 \approx \underline{2} \times \underline{300} = \underline{600}$

$$\begin{array}{r} 2.45 \\ \times\ 305 \\ \hline 1225 \\ +73500 \\ \hline 747.25 \end{array}$$

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

a. $1.23 \times 12 \approx \underline{1} \times \underline{12} = \underline{12}$

$$\begin{array}{r} 1.23 \\ \times\ 12 \\ \hline 246 \\ +1230 \\ \hline 14.76 \end{array}$$

b. $1.3 \times 26 \approx \underline{1} \times \underline{30} = \underline{30}$

$$\begin{array}{r} 1.3 \\ \times\ 26 \\ \hline 78 \\ +260 \\ \hline 33.8 \end{array}$$

c. $0.23 \times 14 \approx \underline{0.2} \times \underline{10} = \underline{2}$

$$\begin{array}{r} 0.23 \\ \times\ 14 \\ \hline 92 \\ +230 \\ \hline 3.22 \end{array}$$

d. $0.45 \times 26 \approx \underline{0.5} \times \underline{30} = \underline{15.0}$

$$\begin{array}{r} 0.45 \\ \times\ 26 \\ \hline 270 \\ +900 \\ \hline 11.70 \end{array}$$

e. $7.06 \times 28 \approx 7 \times 30 = 210$

$$\begin{array}{r} 7.06 \\ \times\ 28 \\ \hline 5648 \\ +\ 14120 \\ \hline 197.68 \end{array}$$

f. $6.32 \times 223 \approx 6 \times 200 = 1{,}200$

$$\begin{array}{r} 6.32 \\ \times\ 223 \\ \hline 1896 \\ 12640 \\ +\ 126400 \\ \hline 1{,}409.36 \end{array}$$

g. $7.06 \times 208 \approx 7 \times 200 = 1{,}400$

$$\begin{array}{r} 706 \\ \times\ 208 \\ \hline 5648 \\ +\ 141200 \\ \hline 1468.48 \end{array}$$

h. $151.46 \times 555 \approx 200 \times 600 = 120{,}000$

$$\begin{array}{r} 151.46 \\ \times\ 555 \\ \hline 75730 \\ 757300 \\ +\ 7573000 \\ \hline 84{,}060.30 \end{array}$$

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?

There are 31 days in July.

$$\begin{array}{r} 3.45 \\ \times\ 31 \\ \hline 345 \\ +\ 10350 \\ \hline 106.95 \end{array}$$

Denise walked 106.95 miles in 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.

$$\begin{array}{r} \$4.34 \\ \times\ 12 \\ \hline 868 \\ +\ 4340 \\ \hline \$52.08 \end{array}$$

$$\begin{array}{r} \$\ 52.08 \\ 50.00 \\ \hline \$\ 2.08 \end{array}$$

The gas cost $52.08
Greg needs another $2.08

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?

3 weeks.

$$\begin{array}{r} 21 \text{ days} \\ \times\ 0.6 \\ \hline 12.6 \end{array}$$

3 weeks afterschool:

$$\begin{array}{r} 15 \text{ days} \\ \times\ 0.35 \\ \hline 75 \\ +\ 450 \\ \hline 5.25 \end{array}$$

$$\begin{array}{r} 12.6 \\ +\ 5.25 \\ \hline 17.85 \end{array}$$

Seth consumes 17.85 grams 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 = 4 × (1 year)

= 4 × (365 days)

= 1,460 days

c. Convert meters to centimeters.

9.2 m = 9.2 × (1 m)

= 9.2 × (100 cm)

= 920 cm

d. Convert yards to feet.

5.7 yards = 5.7 × (1 yard)

= 5.7 × (3 feet)

= 17.1 feet

e. Convert kilograms to grams.

6.08 kg = 6.08 × (1 kg)

= 6.08 × (1,000 g)

= 6,080 g

f. Convert pounds to ounces.

12.5 pounds = 12.5 × (1 lb)

= 12.5 × (16 oz)

= 200 oz

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?

68 kg = 68 × (1 kg)
= 68 × (1,000g)
= 68,000

She weighs 68,000 grams.

c. The height of a man is 1.7 meters. What is his height in centimeters?

1.7m = 1.7 × (1m)
= 1.7 × (100cm)
= 170 cm

His height is 170 centimeters.

d. The capacity of a syringe is 0.08 liters. Convert this to milliliters.

0.08 L = 0.08 × (1 L)
= 0.08 × (1,000 mL)
= 80 mL

The capacity of the syringe is 80 milliliters.

e. A coyote weighs 11.3 pounds. Convert the coyote's weight to ounces.

11.3 lb = 11.3 × (1 lb)
= 11.3 × (16 oz)
= 180.8 oz

The coyote weighs 180.8 ounces

f. An alligator is 2.3 yards long. What is the length of the alligator in inches?

2.3 yd = 2.3 × (1 yd)
= 2.3 × (36 in)
= 82.8 in

The length of the alligator is 82.8 inches.

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 = 20 × (1 quart)

$= 20 \times \left(\frac{1}{4} \text{ gallon}\right)$

$= \frac{20}{4}$ gallons

= 5 gallons

c. Convert centimeters to meters.

920 cm = 920 × (1 cm)

= 920 × (0.01 m)

= 9.2 m

d. Convert meters to kilometers.

1,578 m = 1,578 × (1 m)

= 1,578 × (0.001 km)

= 1.578 km

e. Convert grams to kilograms.

6,080 g = 6,080 × (1 g)

= 6,080 × (0.001 kg)

= 6.08 kg

f. Convert milliliters to liters.

509 mL = 509 × (1 ml)

= 509 × (0.001 L)

= 0.509 L

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

a. The screen measures 24 inches. Convert 24 inches to feet.

$24 \text{ inches} = 24 \times (1 \text{ inch})$

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

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

$= 2 \text{ feet}$

The screen measures 24 inches or 2 feet.

b. A jug of syrup holds 12 cups. Convert 12 cups to pints.

$12 \text{ cups} = 12 \times (1 \text{ cup})$

$= 12 \times \left(\frac{1}{2} \text{ pint}\right)$

$= \frac{12}{2} \text{ pints}$

$= 6 \text{ pints}$

12 cups is equal to 6 pints

c. The length of the diving board is 378 centimeters. What is its length in meters?

$378 \text{ cm} = 378 \times (1 \text{ cm})$

$= 378 \times (0.01 \text{ m})$

$= 3.78 \text{ m}$

The diving board's length is 3.78 meters.

d. The capacity of a container is 1,478 milliliters. Convert this to liters.

$1{,}478 \text{ mL} = 1{,}478 \times (1 \text{ mL})$

$= 1{,}478 \times (0.001 \text{ L})$

$= 1.478 \text{ L}$

1,478 milliliters is equal to 1.478 liters.

e. A truck weighs 3,900,000 grams. Convert the truck's weight to kilograms.

$3{,}900{,}000 \text{ g} = 3{,}900{,}000 \times (1 \text{ g})$

$= 3{,}900{,}000 \times (0.001 \text{ kg})$

$= 3{,}900 \text{ kg}$

The truck's weight is 3,900 kilograms.

f. The distance was 264,040 meters. Convert the distance to kilometers.

$264{,}040 \text{ m} = 264{,}040 \times (1 \text{ m})$

$= 264{,}040 \times (0.001 \text{ Km})$

$= 264.04 \text{ Km}$

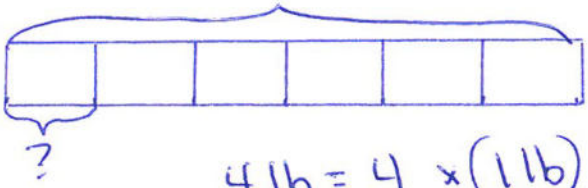
The distance was 264.04 Kilometers.

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?

4lb 2oz



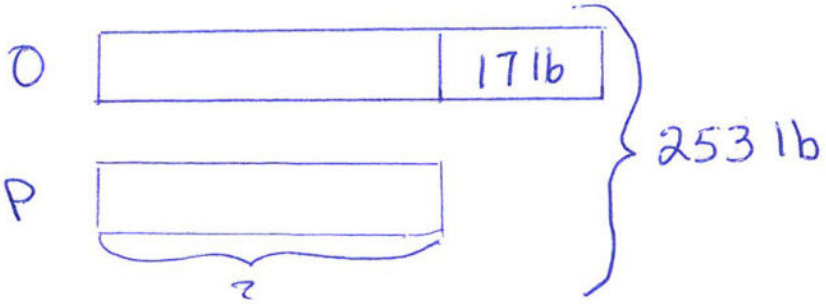
6 units = 66
1 unit = 6

4lb = 4 x (1lb)
= 4 x (16oz)
= 64 oz

64 oz + 2 oz = 66oz

Each kitten weighed about 11 ounces.

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?



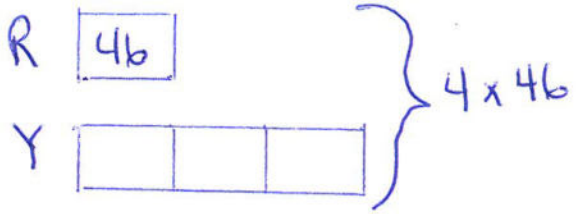
253 - 17 = 236
2 units = 236
1 unit = 118

1181b = 118 x (1lb)
= 118 x (16oz)
= 1,888 oz

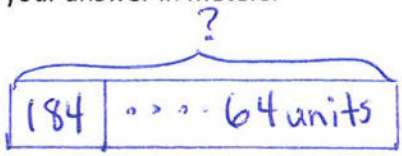
118
x16
708
+1180
1,888

1,888 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.



1 unit = 46 cm
4 units = 4 x 46 cm
= 184 cm



1 unit = 184 cm
64 units = 64 x 184 cm
= 11,776 cm

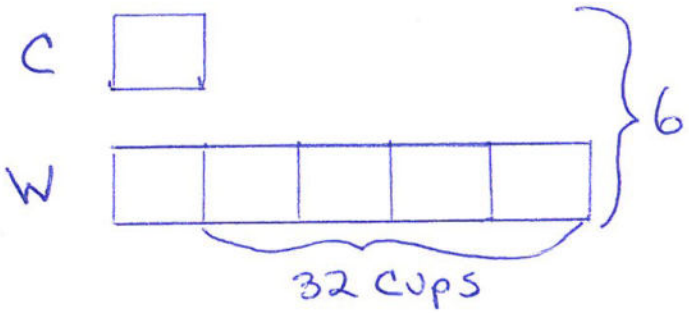
184
x 64
736
+ 11040
11,776

11,776 x (1 cm)
= 11,776 x (0.01 meter)
= 117.76 meters

The total length of ribbon needed for 64 costumes is 117.76 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?



4 units = 32 cups
1 unit = 8 cups
6 units = 48 cups

Jackie made 48 cups of juice.

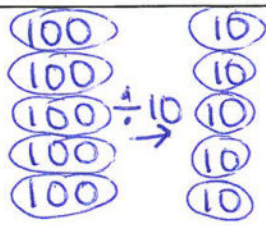
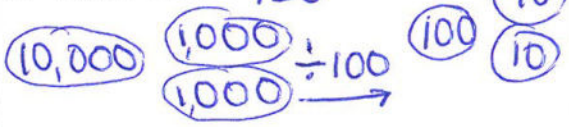
b. She poured the juice into quart containers. How many containers could she fill?

48 cups = 48 x (1 cup)
= 48 x ($\frac{1}{4}$ quart)
= $\frac{48}{4}$
= 12

She could fill 12 containers.

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 = 50 	b. 360 ÷ 10 = 36 ÷ 1 = 36
c. 12,000 ÷ 100 = 120 	d. 450,000 ÷ 100 = 4,500 ÷ 1 = 4,500
e. 700,000 ÷ 1,000 = 700 ÷ 1 = 700	f. 530,000 ÷ 100 = 5,300 ÷ 1 = 5,300

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 = 12,000 ÷ 100 ÷ 3 = 120 ÷ 3 = 40	c. 12,000 ÷ 3,000 = 12,000 ÷ 1000 ÷ 3 = 12 ÷ 3 = 4
d. 560,000 ÷ 70 = 560,000 ÷ 10 ÷ 7 = 56,000 ÷ 7 = 8,000	e. 560,000 ÷ 700 = 560,000 ÷ 100 ÷ 7 = 5,600 ÷ 7 = 800	f. 560,000 ÷ 7,000 = 560,000 ÷ 1,000 ÷ 7 = 560 ÷ 7 = 80

g. 28,000 ÷ 40	h. 450,000 ÷ 500	i. 810,000 ÷ 9,000
$= 28{,}000 \div 10 \div 4$ $= 2{,}800 \div 4$ $= 700$	$= 450{,}000 \div 100 \div 5$ $= 4500 \div 5$ $= 900$	$= 810{,}000 \div 1{,}000 \div 9$ $= 810 \div 9$ $= 9$

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?

90 m

? | $A = 3{,}600\ m^2$

$3{,}600 \div 90$
$= 3{,}600 \div 10 \div 9$
$= 360 \div 9$
$= 40$

The width of the banquet hall is 40 meters.

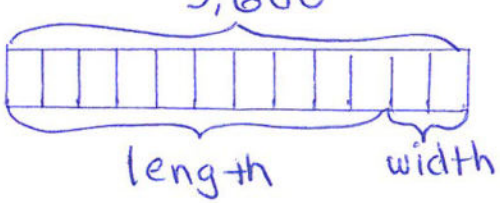
   b. A square banquet hall has the same area. What is the length of the room?

? | $A = 3{,}600\ m^2$

$6 \times 6 = 36$
$60 \times 60 = 3{,}600$

The length of the banquet hall is 60 meters.

   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?



12 units = 3,600
1 unit = 3,600 ÷ 12
= 300

The width of the banquet hall is 300 meters.

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.

$400,000 \div 800$
$= 400,000 \div 100 \div 8$
$= 4,000 \div 8$
$= 500$

Carter was correct because as it showed on the last step, 4 thousands divided by 8 is equal to 5 hundreds, Not 5 thousands.

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

$4,000,000 \div 8000$
$= 4,000,000 \div 1,000 \div 8$
$= 4,000 \div 8$
$= 500$

The quotient was 500.

Name _____ Date _____

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

a. 609 ÷ 21 ≈ 600 ÷ 20 = 30	b. 913 ÷ 29 ≈ 900 ÷ 30 = 30	c. 826 ÷ 37 ≈ 800 ÷ 40 = 20
d. 141 ÷ 73 ≈ 140 ÷ 70 = 2	e. 241 ÷ 58 ≈ 240 ÷ 60 = 4	f. 482 ÷ 62 ≈ 480 ÷ 60 = 8
g. 656 ÷ 81 ≈ 640 ÷ 80 = 8	h. 799 ÷ 99 ≈ 800 ÷ 100 = 8	i. 635 ÷ 95 ≈ 600 ÷ 100 = 6
j. 311 ÷ 76 ≈ 320 ÷ 80 = 4	k. 648 ÷ 83 ≈ 640 ÷ 80 = 8	l. 143 ÷ 35 ≈ 160 ÷ 40 = 4
m. 525 ÷ 25 ≈ 600 ÷ 30 = 20	n. 552 ÷ 85 ≈ 540 ÷ 90 = 6	o. 667 ÷ 11 ≈ 600 ÷ 10 = 60

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.

$825 ÷ $41 is approximately $800 ÷ $40. $800 ÷ $40 is 20. The video store can afford to buy 20 video games.

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.

637 ÷ 78
≈ 640 ÷ 80
= 8

Jackson's reasoning was incorrect because 64 tens divided by 8 tens is equal to 8 ones, not 8 tens. The correct solution is 8 ones.

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 ≈ 3,000 ÷ 30 = 100	c. 9,155 ÷ 34 ≈ 9000 ÷ 30 = 300
d. 1,463 ÷ 53 ≈ 1,500 ÷ 50 = 30	e. 2,525 ÷ 64 ≈ 2,400 ÷ 60 = 40	f. 2,271 ÷ 72 ≈ 2,100 ÷ 70 = 30
g. 4,901 ÷ 75 ≈ 4,800 ÷ 80 = 60	h. 8,515 ÷ 81 ≈ 8,000 ÷ 80 = 100	i. 8,515 ÷ 89 ≈ 8,100 ÷ 90 = 90
j. 3,925 ÷ 68 ≈ 4,200 ÷ 70 = 60	k. 5,124 ÷ 81 ≈ 4,800 ÷ 80 = 60	l. 4,945 ÷ 93 ≈ 4,500 ÷ 90 = 50
m. 5,397 ÷ 94 ≈ 5,400 ÷ 90 = 60	n. 6,918 ÷ 86 ≈ 7,200 ÷ 90 = 80	o. 2,806 ÷ 15 ≈ 3,000 ÷ 15 = 200

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.

$672 \div 32$
$\approx 600 \div 30$
$= 20$

The estimated width of the swimming pool is 20 feet.

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.

$1{,}348 \div 28$
$\approx 1{,}200 \div 30$
$= 40$

Each app used about 40 MB of memory.

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

$28 \div 2 = 14$
$14 \times \$1.99$
$\approx 14 \times 2$
$= 28$

Janice spent about $28.

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?

$3{,}817 \div 85$
$\approx 3{,}600 \div 90$
$= 40$

You would need about 40 quarts to cover the fence.

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

$9{,}215 \div 45$
$\approx 10{,}000 \div 50$
$= 200$

Peggy worked about 200 hours.

Name _____ Date _____

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

a. $41 \div 30$

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

Check:

$30 \times 1 = 30$
$30 + 11 = 41$

b. $80 \div 30$

$$\begin{array}{r} 2 \text{ R } 20 \\ 30\overline{)80} \\ -\,60 \\ \hline 20 \end{array}$$

$30 \times 2 = 60$
$60 + 20 = 80$

c. $71 \div 50$

$$\begin{array}{r} 1 \\ 50\overline{)71} \\ -\,50 \\ \hline 21 \end{array}$$

$50 \times 1 = 50$
$50 + 21 = 71$

d. $270 \div 30$

$$\begin{array}{r} 9 \\ 30\overline{)270} \\ -\,270 \\ \hline 0 \end{array}$$

$30 \times 9 = 270$

e. $643 \div 80$

$$\begin{array}{r} 8 \text{ R } 3 \\ 80\overline{)643} \\ -\,640 \\ \hline 3 \end{array}$$

$80 \times 8 = 640$
$640 + 3 = 643$

f. $215 \div 90$

$$\begin{array}{r} 2 \text{ R } 35 \\ 90\overline{)215} \\ -\,180 \\ \hline 35 \end{array}$$

$90 \times 2 = 180$
$180 + 35 = 215$

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.

$$\begin{array}{r} 6 \\ 40\overline{)299} \\ -240 \\ \hline 59 \end{array}$$

$$\begin{array}{r} 7 \\ 40\overline{)299} \\ -280 \\ \hline 19 \end{array}$$

check
$40 \times 7 = 280$
$280 + 19 = 299$

Terry used 6 groups of 40 and got 240. But there was a remainder of 59, which means he could make one more group of 40. The correct quotient is 7 with a remander of 19.

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

$$80\overline{)\begin{array}{r} 7\text{ R}4 \\ ? \end{array}}$$

$80 \times 7 = 560$
$560 + 4 = 564$

The number was 564.

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?

2 km = 2,000 m

$\frac{1}{2}$ of 2,000 m = 1,000 m

1,000 ÷ 200 = 5

Adam switched strokes 5 times during the first half of the race.

Name _____ Date _____

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

a. $65 \div 17$

$$\begin{array}{r} 3\text{ R }14 \\ 17\overline{)65} \\ -\,51 \\ \hline 14 \end{array}$$

Check:

$17 \times 3 = 51$

$51 + 14 = 65$

b. $49 \div 21$

$$\begin{array}{r} 2\text{R}7 \\ 21\overline{)49} \\ -\,42 \\ \hline 7 \end{array}$$

Check:

$21 \times 2 = 42$

$42 + 7 = 49$

c. $78 \div 39$

$$\begin{array}{r} 2 \\ 39\overline{)78} \\ -\,78 \\ \hline 0 \end{array}$$

Check:

$39 \times 2 = 78$

d. $84 \div 32$

$$\begin{array}{r} 2 \\ 32\overline{)84} \\ -\,64 \\ \hline 20 \end{array}$$

check:

$32 \times 2 = 64$

$64 + 20 = 84$

e. $77 \div 25$

$$\begin{array}{r} 3\text{R}2 \\ 25\overline{)77} \\ -\,75 \\ \hline 2 \end{array}$$

check:

$25 \times 3 = 75$

$75 + 2 = 77$

f. $68 \div 17$

$$\begin{array}{r} 4 \\ 17\overline{)68} \\ -\,68 \\ \hline 0 \end{array}$$

check:

$17 \times 4 = 68$

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:
$40\overline{)80}$ → 2	$43\overline{)82}$ → 2; $-\ 86$; $??$	$43\overline{)82}$ → 1 R39; $-\ 43$; 39

Linda's estimation of $80 \div 40 = 2$ was fine. But when she divided, she realized that $43 \times 2 = 86$. She can't take away 86 from 82. It should be 1 group of 43. The quotient is 1 with a remainder of 39.

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

$43\overline{)?}$ → 3 R28

$43 \times 3 = 129$

$129 + 28 = 157$

The number was 157.

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

$?\overline{)?}$ → 3 R28

$52 \times 3 = 156$

$156 + 28 = 184$

check: $52\overline{)184}$ → 3 R28; $-\ 156$; 28

184 divided by 52 is equal to 3 with 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?

$13\overline{)91}$ → 7; $-\ 91$; 0

1 unit = \$15

7 units = $7 \times \$15$

$= 105$

She received \$105.

Name _____ Date _____

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

a. 258 ÷ 47

```
     5 R 23
47 | 2 5 8
   - 2 3 5
     2 3
```

Check:

47 × 5 = 235

235 + 23 = 258

b. 148 ÷ 67

```
     2 R 14
67 | 148
   - 134
     14
```

check: 67 × 2 = 134 ; 134 + 14 = 148

c. 591 ÷ 73

```
     8 R 7
73 | 591
   - 584
     7
```

check: 73 × 8 = 584 ; 584 + 7 = 591

d. 759 ÷ 94

```
     8 R 7
94 | 759
   - 752
     7
```

check: 94 × 8 = 752 ; 752 + 7 = 759

e. 653 ÷ 74

```
     8 R 61
74 | 653
   - 592
     61
```

check: 74 × 8 = 592 ; 592 + 61 = 653

f. 257 ÷ 36

```
     7 R 5
36 | 257
   - 252
     5
```

check: 36 × 7 = 252 ; 252 + 5 = 257

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
```

```
      8 R11
12 | 107
   - 96
     11
```

In order to have 11 as a remainder, it means that the divisor has to be more than 11. I picked 12. $12 \times 8 = 96$, and $96 + 11 = 107$.

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?

$133 + 133 = 266$

$266 \div 14 = 19$

```
      19
14 | 266
   - 14↓
     126
   - 126
       0
```

Mrs. Giang needs 19 gallons of gas 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?

```
      5 R4
15 | 79
   - 75
     4
```

Louis' teacher will receive 4 pencils.

   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.

```
      4 R15
16 | 79
   - 64
     15
```

$15 - 4 = 11$

If Louis takes an equal share, his teacher will get 11 more pencils.

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

```
     22 R 26
32 | 730
   - 64
     90
   - 64
     26
```

check:

```
  32
 x22
 64
+640
 704
```

```
 704
+ 26
 730
```

c. 940 ÷ 28

```
     33 R 16
28 | 940
   - 84
     100
     84
     16
```

check:

```
  33
 x28
 264
+660
 924
```

```
 924
+ 16
 940
```

d. 553 ÷ 23

```
     24 R 1
23 | 553
   - 46
     93
   - 92
      1
```

check:

```
  24
 x23
 72
+480
 552
```

```
 552
+ 1
 553
```

e. 704 ÷ 46

```
     15 R 14
46 | 704
   - 46
     244
   - 230
     14
```

check:

```
  46
 x15
 230
+460
 690
```

```
 690
+ 14
 704
```

f. $614 \div 15$

$$\begin{array}{r} 40\text{ R }14 \\ 15\overline{)614} \\ -60\downarrow \\ \hline 14 \\ -\ 0 \\ \hline 14 \end{array}$$

check:

$$\begin{array}{r} 15 \\ \times 40 \\ \hline 00 \\ 600 \\ \hline 600 \end{array} \qquad \begin{array}{r} 600 \\ +\ 14 \\ \hline 614 \end{array}$$

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

$$\begin{array}{r} 13 \\ 48\overline{)664} \\ -\ 48 \\ \hline 184 \\ -144 \\ \hline 40 \end{array}$$

Since the whole of 659 is 5 less than the original whole of 664. It means that instead of a remainder of 40, it should be 35. The quotient of 659 divided by 48 is 13 with a remainder of 35.

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?

$$\begin{array}{r} 6 \\ 27\overline{)172} \\ -162 \\ \hline 10 \end{array}$$

10 balloons were left over after sharing them equally.

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

$$\begin{array}{r} 27 \\ \times 7 \\ \hline 189 \end{array} \qquad \begin{array}{r} 189 \\ -172 \\ \hline 17 \end{array}$$

17 more balloons were needed in order for each student to have 7 balloons. 27 groups of 7 is equal to 189. They already have 172. $189 - 172 = 17$.

Name _____ Date _____

1. Divide. Then, check using multiplication.

a. 4,859 ÷ 23

$$\begin{array}{r} 211 \\ 23\overline{)4859} \\ -46\downarrow \\ \hline 25 \\ -23\downarrow \\ \hline 29 \\ -23 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 211 \\ \times 23 \\ \hline 633 \\ +4220 \\ \hline 4,853 \end{array} \qquad \begin{array}{r} 4853 \\ +\ 6 \\ \hline 4,859 \end{array}$$

b. 4,368 ÷ 52

$$\begin{array}{r} 84 \\ 52\overline{)4,368} \\ -416\downarrow \\ \hline 208 \\ -208 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 84 \\ \times 52 \\ \hline 168 \\ +4200 \\ \hline 4,368 \end{array}$$

c. 7,242 ÷ 34

$$\begin{array}{r} 213 \\ 34\overline{)7242} \\ -68\downarrow \\ \hline 44 \\ 34\downarrow \\ \hline 102 \\ -102 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 213 \\ \times\ 34 \\ \hline 852 \\ +6390 \\ \hline 7,242 \end{array}$$

d. 3,164 ÷ 45

$$\begin{array}{r} 70 \\ 45\overline{)3164} \\ -315\downarrow \\ \hline 14 \\ -\ 0 \\ \hline 14 \end{array}$$

$$\begin{array}{r} 70 \\ \times 45 \\ \hline 350 \\ +2800 \\ \hline 3,150 \end{array} \qquad \begin{array}{r} 3150 \\ +\ 14 \\ \hline 3,164 \end{array}$$

e. 9,152 ÷ 29

$$\begin{array}{r} 315 \\ 29\overline{)9152} \\ -87\downarrow \\ \hline 45 \\ -29\downarrow \\ \hline 162 \\ -145 \\ \hline 7 \end{array}$$

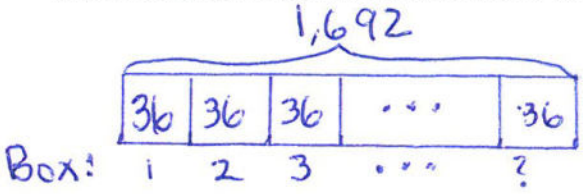
$$\begin{array}{r} 315 \\ \times 29 \\ \hline 2835 \\ +6300 \\ \hline 9,135 \end{array} \qquad \begin{array}{r} 9135 \\ +\ 7 \\ \hline 9,152 \end{array}$$

f. 4,424 ÷ 63

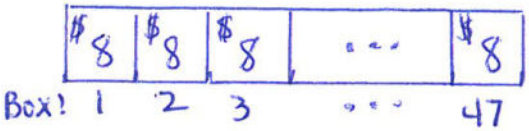
$$\begin{array}{r} 70 \\ 63\overline{)4424} \\ -441\downarrow \\ \hline 14 \\ -\ 0 \\ \hline 14 \end{array}$$

$$\begin{array}{r} 70 \\ \times 63 \\ \hline 210 \\ 4200 \\ \hline 4,410 \end{array} \qquad \begin{array}{r} 4410 \\ +\ 14 \\ \hline 4,424 \end{array}$$

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?



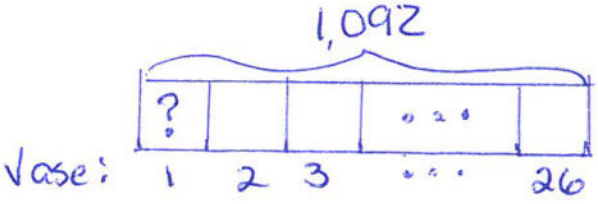
$$\begin{array}{r} 47 \\ 36\overline{)1692} \\ -144\downarrow \\ \hline 252 \\ -252 \\ \hline 0 \end{array}$$



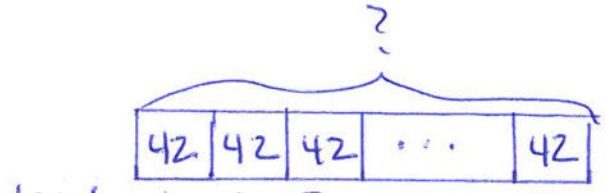
Mr. Riley collected $376.

$$\begin{array}{r} 47 \\ \times\ 8 \\ \hline 376 \end{array}$$

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?



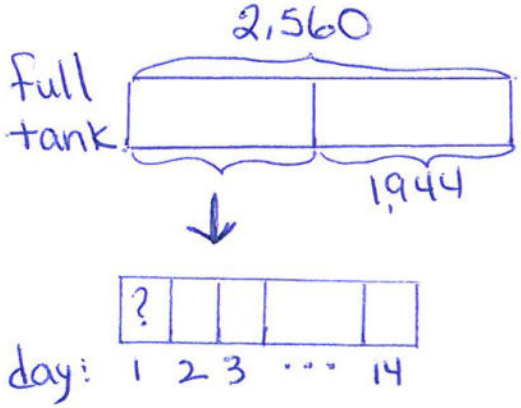
$$\begin{array}{r} 4 \\ 26\overline{)1092} \\ -104\downarrow \\ \hline 52 \\ -52 \\ \hline 0 \end{array}$$



$$\begin{array}{r} 130 \\ \times\ 42 \\ \hline 260 \\ +\ 5200 \\ \hline 5460 \end{array}$$

5460 flowers would be needed to fill 130 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?



$$\begin{array}{r} 2{,}560 \\ -\ 1{,}944 \\ \hline 616 \end{array}$$

$$\begin{array}{r} 44 \\ 14\overline{)616} \\ -56\downarrow \\ \hline 56 \\ -56 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 58 \\ 44\overline{)2560} \\ 220 \\ \hline 360 \\ -352 \\ \hline 8 \end{array}$$

The full tank will last 58 days. There will be a little water left.

Name _____ Date _____

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

a. $1.2 \div 6 = 0.2$

b. $1.2 \div 60 = (1.2 \div 6) \div 10 = 0.2 \div 10 = 0.02$

c. $2.4 \div 4 =$ .6

d. $2.4 \div 40 =$ 2.4 ÷ 10 ÷ 4 = 0.24 ÷ 4 = .06

e. $14.7 \div 7 =$ 2.1

f. $14.7 \div 70 =$ 14.7 ÷ 10 ÷ 7 = 1.47 ÷ 7 = 0.21

g. $0.34 \div 2 =$ .17

h. $3.4 \div 20 =$ 3.4 ÷ 10 ÷ 2 = 0.34 ÷ 2 = 0.17

i. $0.45 \div 9 =$ .05

j. $0.45 \div 90 =$ 0.45 ÷ 10 ÷ 9 = 0.045 ÷ 9 = 0.005

k. $3.45 \div 3 =$ 1.15

l. $34.5 \div 300$ 34.5 ÷ 100 ÷ 3 = 0.345 ÷ 3 = 0.115

2. Use place value reasoning and the first quotient to compute the second quotient. Explain your thinking.

a. $46.5 \div 5 = 9.3$

$46.5 \div 50 =$ 0.93

Instead of 5 groups, there are 50 groups. That's 10 times more groups, so there must be 10 times less in each group.

b. $0.51 \div 3 = 0.17$

$0.51 \div 30 =$ 0.017

There are 10 times as many groups, so there must be 10 times less in each group.

c. $29.4 \div 70 = 0.42$

$29.4 \div 7 =$ 4.2

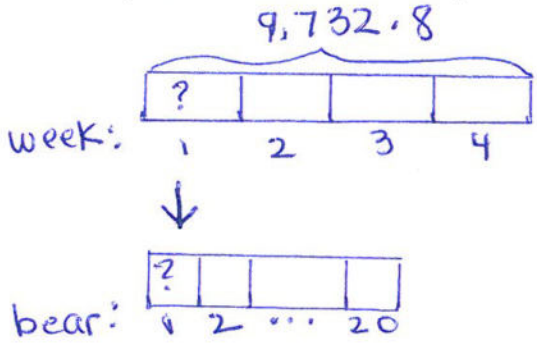
There are 10 times fewer groups, so there has to be 10 times more in each group.

d. $13.6 \div 40 = 0.34$

$13.6 \div 4 =$ 3.4

There are 10 times fewer groups, so each group must have 10 times more.

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.



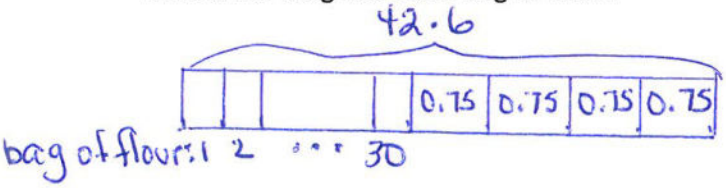
$$\begin{array}{r} 2433.2 \\ 4\overline{)9732.8} \\ -8\downarrow \\ \hline 17 \\ -16\downarrow \\ \hline 13 \\ -12\downarrow \\ \hline 12 \\ -12 \\ \hline 08 \\ -8 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 121.66 \\ 20\overline{)2433.20} \\ -20\downarrow \\ \hline 43 \\ -40\downarrow \\ \hline 33 \\ -20 \\ \hline 132 \\ -120 \\ \hline 120 \\ -120 \\ \hline 0 \end{array}$$

$2433.2 \div 20 = 121.66 \approx 122$

About 122 pounds of food is fed to one polar bear for one week.

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?



$$\begin{array}{r} 0.75 \\ \times\ 4 \\ \hline 3.00 \end{array} \qquad \begin{array}{r} 42.6 \\ -\ 3.0 \\ \hline 39.6 \end{array}$$

$$\begin{array}{r} 1.32 \\ 30\overline{)39.60} \\ -30\downarrow \\ \hline 96 \\ 90 \\ \hline 60 \\ -60 \\ \hline 0 \end{array}$$

Each bag of flour weighs 1.32 kilograms.

Name _____ Date _____

1. Estimate the quotients.

a. $3.24 \div 82 \approx$ 320 hundredths ÷ 80 = 4 hundredths = 0.04

b. $361.2 \div 61 \approx$ 360 ÷ 60 = 6

c. $7.15 \div 31 \approx$ 6 ÷ 30 = (6 ÷ 3) ÷ 10 = 2 ÷ 10 = 0.2

d. $85.2 \div 31 \approx$ 90 ÷ 30 = 3

e. $27.97 \div 28 \approx$ 28 ÷ 28 = 1

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

a. $7.16 \div 36 \approx$ 8 ÷ 40 = (8 ÷ 4) ÷ 10 = 2 ÷ 10 = 0.2

b. $716 \div 36 \approx$ 800 ÷ 40 = 20

c. $71.6 \div 36 \approx$ 80 ÷ 40 = 2

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.

   $390 \div 30 = (390 \div 10) \div 3 = 39 \div 3 = 13$

   Edward bikes about 13 miles a 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?

   $500 \div 13$
   $\approx 450 \div 15 = 30$
   $\approx 480 \div 12 = 40$

   It will take about 40 days to reach 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?

   $38.60 \div 13$
   $\approx 39 \div 10 = 3.9$

   One bag costs about $3.90

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

   No. Xavier only has $1.40 left and the popcorn costs way more than that for a bag.

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.

   24 ⟌156.0 = 6.5; −144, 120, −120, 0
   15 ⟌102.0 = 6.8; −90, 120, −120, 0
   6.5 ≠ 6.8
   No, they are not equal.

   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).

   ? ⟌ ? = 6 R12
   17 × 6 = 102; 102 + 12 = 114
   check! 17 ⟌114 = 6 R12; −102, 12
   114 divided by 17 is equal to 6 with a remainder of 12.

2. Divide. Then, check your work with multiplication.

   a. 36.14 ÷ 13
   13 ⟌36.14 = 2.78; −26, 101, −91, 104, −104, 0
   Check: 2.78 × 13: 834 + 2780 = 36.14

   b. 62.79 ÷ 23
   23 ⟌62.79 = 2.73; −46, 167, 161, 69, −69, 0
   Check: 2.73 × 23: 819 + 5460 = 62.79

   c. 12.21 ÷ 11
   11 ⟌12.21 = 1.11; −11, 12, −11, 11, −11, 0
   check: 1.11 × 11: 111 + 1110 = 12.21

   d. 6.89 ÷ 13
   13 ⟌6.89 = 0.53; −65, 39, −39, 0
   check: 0.53 × 13: 159, 530, 6.89

   e. 249.6 ÷ 52
   52 ⟌249.6 = 4.8; −208, 416, −416, 0
   Check: 4.8 × 52: 96 + 2400 = 249.6

   f. 24.96 ÷ 52
   52 ⟌24.96 = 0.48; −208, 416, −416, 0
   check: 0.48 × 52: 96 + 2400 = 24.96

g. $300.9 \div 59$

$$\begin{array}{r} 5.1 \\ 59\overline{)300.9} \\ -295 \\ \hline 59 \\ -59 \\ \hline 0 \end{array}$$

Check:

$$\begin{array}{r} 59 \\ \times\ 5.1 \\ \hline 59 \\ +2950 \\ \hline 300.9 \end{array}$$

h. $30.09 \div 59$

$$\begin{array}{r} .51 \\ 59\overline{)30.09} \\ -295 \\ \hline 59 \\ -59 \\ \hline 0 \end{array}$$

Check:

$$\begin{array}{r} 59 \\ \times\ 0.51 \\ \hline 59 \\ 2950 \\ \hline 30.09 \end{array}$$

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.

$$\begin{array}{r} 2.55 \\ 72\overline{)183.60} \\ -144 \\ \hline 396 \\ -360 \\ \hline 360 \\ -360 \\ \hline 0 \end{array}$$

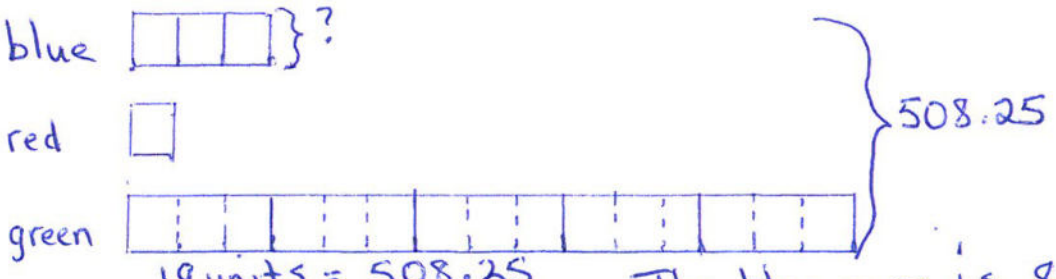
Each marble weighs 2.55 grams. This makes sense because $183.6 \div 72$ is about $180 \div 60$ which is 3.

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?

$$\begin{array}{r} .25 \\ 92\overline{)23.00} \\ -184 \\ \hline 460 \\ -460 \\ \hline 0 \end{array}$$

Cameron's foot is 0.25 m long.

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?



19 units = 508.25
1 unit = 26.75
3 units = 80.25

$$\begin{array}{r} 26.75 \\ 19\overline{)508.25} \\ -38 \\ \hline 128 \\ -114 \\ \hline 142 \\ -133 \\ \hline 95 \\ -95 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 26.75 \\ \times\ 3 \\ \hline 80.25 \end{array}$$

The blue rope is 80.25 meters long.

Name _____ Date _____

1. Divide. Check your work with multiplication.

a. 5.6 ÷ 16

.35
16 | 5.60
-48↓
80
-80
0

0.35
× 16
210
+350
5.60

b. 21 ÷ 14

1.5
14 | 21.0
-14↓
70
-70
0

1.5
×14
60
150
21.0

c. 24 ÷ 48

0.5
48 | 24.0
-240
0

48
×0.5
24.0

d. 36 ÷ 24

1.5
24 | 36.0
-24↓
120
-120
0

1.5
×24
60
+300
36.0

e. 81 ÷ 54

1.5
54 | 81.0
-54↓
270
-270
0

1.5
×54
60
750
81.0

f. 15.6 ÷ 15

1.04
15 | 15.60
-15↓
06
-0↓
60
-60
0

1.04
× 15
520
+1040
15.60

g. 5.4 ÷ 15

.36
15 | 5.40
-45↓
90
-90
0

0.36
× 15
180
+360
5.40

h. 16.12 ÷ 52

.31
52 | 16.12
-156↓
52
-52
0

0.31
× 52
62
+1550
16.12

i. 2.8 ÷ 16

.175
16 | 2.800
-16↓
120
-112↓
80
-80
0

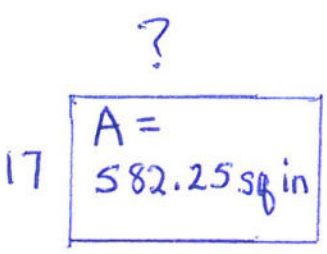
0.175
× 16
1050
+1750
2.800

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

1.27
24 | 30.48
-24↓
64
-48↓
168
-168
0

One package weighs 1.27 kg.

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



$$\begin{array}{r} 34.25 \\ 17\overline{)582.25} \\ -51\downarrow \\ \hline 72 \\ -68\downarrow \\ \hline 42 \\ -34\downarrow \\ \hline 85 \\ -85 \\ \hline 0 \end{array}$$

The length of the rectangle is 34.25 inches.

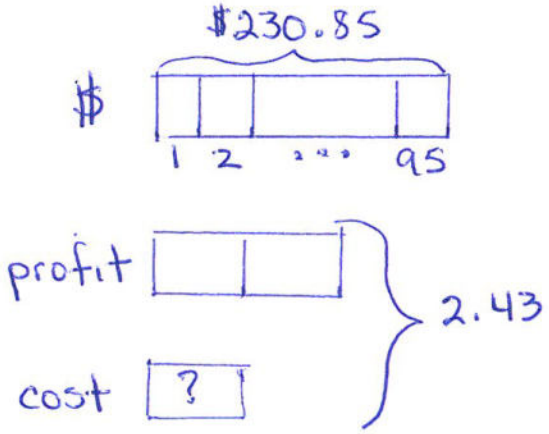
4. A soccer coach spent $162 dollars on 24 pairs of socks for his players. How much did five pairs of socks cost?

$$\begin{array}{r} 6.75 \\ 24\overline{)162.00} \\ -144\downarrow \\ \hline 180 \\ 168\downarrow \\ \hline 120 \\ -120 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 6.75 \\ \times\quad 5 \\ \hline 33.75 \end{array}$$

Five pairs of socks cost $33.75

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?



3 units = 2.43
1 unit = 0.81

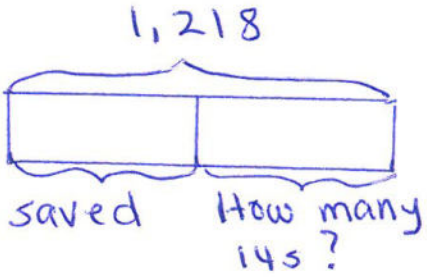
$$\begin{array}{r} 2.43 \\ 95\overline{)230.85} \\ -190\downarrow \\ \hline 408 \\ -380\downarrow \\ \hline 285 \\ -285 \\ \hline 0 \end{array}$$

$$\begin{array}{r} .81 \\ 3\overline{)2.43} \\ -24\downarrow \\ \hline 03 \\ -3 \\ \hline 0 \end{array}$$

It costs the club 81¢ 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?

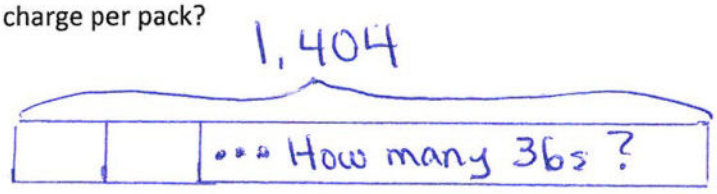


$$\begin{array}{r} 43.5 \\ 14\overline{)609.0} \\ -56\downarrow \\ \hline 49 \\ -42\downarrow \\ \hline 70 \\ -70 \\ \hline 0 \end{array}$$

1218 ÷ 2 = 609
609 ÷ 14 = 43.5

Ava needs to work 43.5 more hours.

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?



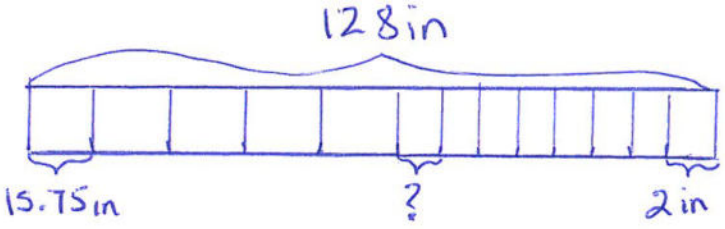
$$\begin{array}{r} 39 \\ 36\overline{)1404} \\ -108 \\ \hline 324 \\ -324 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 16.25 \\ 39\overline{)633.75} \\ -39\downarrow \\ \hline 243 \\ -234\downarrow \\ \hline 97 \\ -78\downarrow \\ \hline 195 \\ -195 \\ \hline 0 \end{array}$$

1404 ÷ 36 = 39
633.75 ÷ 39 = 16.25

Michael should charge $16.25.

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?



$15.75 \times 5 = 78.75$

$126.00 - 78.75 = 47.25$

$47.25 \div 7 = 6.75$

128 − 2 = 126

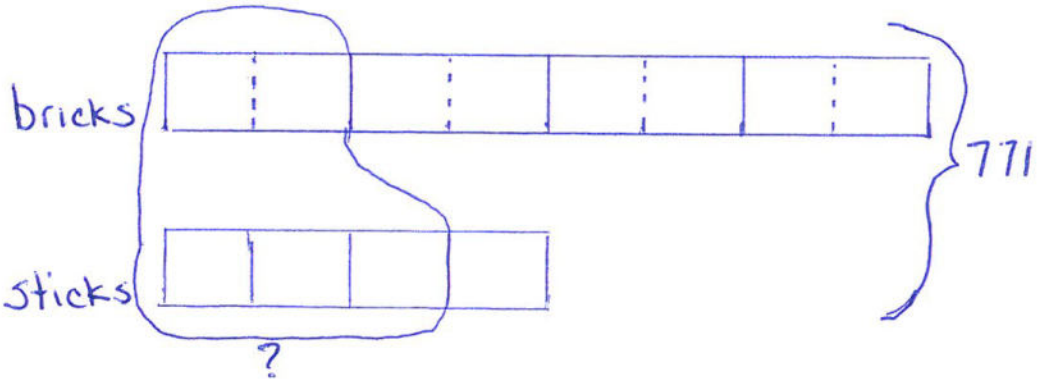
15.75 × 5 = 78.75

126 − 78.75 = 47.25

47.25 ÷ 7 = 6.75

Each of the 7 pieces is 6.75 inches long.

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?



12 units = 771

1 unit = 64.25

5 units = 321.25

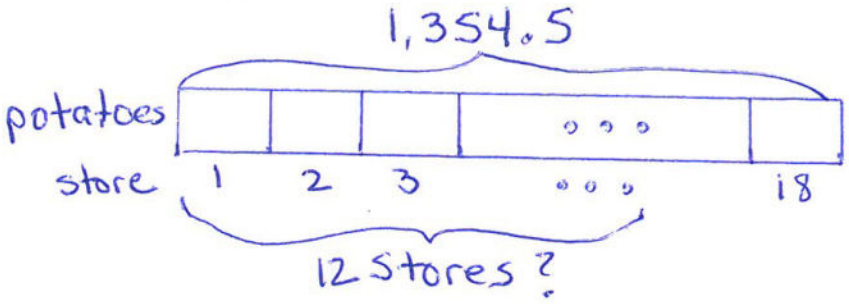
$64.25 \times 5 = 321.25$

The weight of 1 brick load and 3 stick loads is 321.25 kg.

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?



18 units = 1,354.5
1 unit = 75.25
12 units = 903

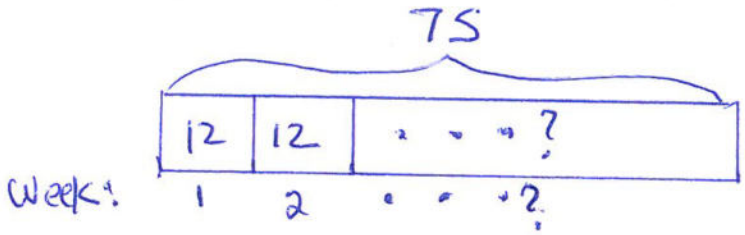
```
      75.25
18 | 1354.50
   - 126
     ----
      94
    - 90
     ----
      45
    - 36
     ----
      90
    - 90
     ----
       0
```

```
   75.25
 x   12
 -------
 15050
 75250
 -------
 903.00
```

(×100) (÷100)

903 kg of potatoes will be delivered to the Bronx.

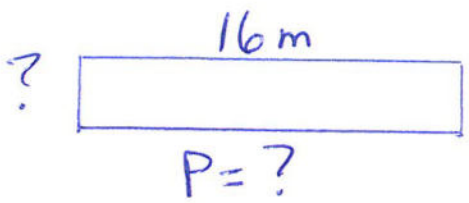
2. Valerie uses 12 fluid oz of detergent each week for her laundry. If there are 75 fluid oz of detergent in the bottle, in how many weeks will she need to buy a new bottle of detergent? Explain how you know.




```
      6.25
12 | 75.00
   - 72
     ----
      30
    - 24
     ----
      60
    - 60
     ----
       0
```

Valerie will need to buy a new bottle of detergent after 6 weeks. She will have a little left over after 6 weeks, but no enough to do all laundry in the 7th week.

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



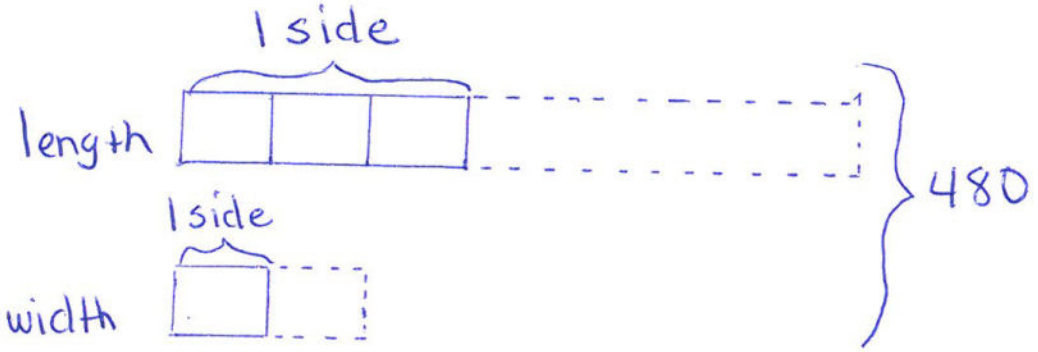
$P = (3.56 \times 2) + (16 \times 2)$
$= 7.12 + 32$
$= 39.12$

The perimeter of the rectangle is 39.12 meters.

$16 \overline{)56.96}$ → 3.56
-48
89
-80
96
-96
0

$3.56 \times 2 = 7.12$

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?



8 units = 480
1 unit = 60

$A = 180 \times 60$
$= 18 \times 6 \times 100$
$= 108 \times 100$
$= 10,800$

$18 \times 6 = 108$

The area of the block is 10,800 square meters.

Name Charlie Date

1. Fill in the chart.

Words	Expression	The Value of the Expression
a. 50 times the sum of 64 and 36	50x(64+36)	5,000
b. Divide the difference between 1,200 and 700 by 5	(1,200−700)÷5	100
c. The sum of 3 fifteens and 17 fifteens	(3x15)+(17x15)	300
d. 15 times the sum of 14 and 6	15 x(14+6)	300
e. 10 times the sum of 250 and 45	10 × (250 + 45)	2,950
f. 14 times the sum of 560 and 440	(560 + 440) × 14	14,000

2. Compare the two expressions using <, >, or =. For each, explain how you can determine the answer without calculating.

a. 100×8 (<) $25 \times (4 \times 9)$

The product here is 800.

The product of this part is 100, so 100 x 9 is equal to 900.

b. 48×12 (>) 50 twelves − 3 twelves

This is 48 twelves.

This is 47 twelves
The other side is 1 more group of twelve.

c. 24×36 (=) 18 twenty-fours, doubled

Double 18 is 36, so it's 36 twenty-fours on both sides.

3. Solve. Use words, numbers or pictures to explain how your answers to parts (a) and (b) are related.

a. $25 \times 30 =$ 750

b. $2.5 \times 30 =$ 25 tenths $\times 30 =$ 750 tenths $= 75.0$

The digits are exactly the same. But the units in (b) are smaller so the answer is smaller. Ones are 10 times as large as tenths so the answer to (a) is ten times larger than (b)

4. Multiply using the standard algorithm. Show your work below each problem. Write the product in the blank.

a. $514 \times 33 =$ 16,962

$$\begin{array}{r} 514 \\ \times\ 33 \\ \hline 1542 \\ +15420 \\ \hline 16,962 \end{array}$$

b. $546 \times 405 =$ 221,130

$$\begin{array}{r} 546 \\ \times 405 \\ \hline 2730 \\ +218400 \\ \hline 221,130 \end{array}$$

5. For a field trip, the school bought 47 sandwiches for $4.60 each and 39 bags of chips for $1.25 each. How much did the school spend in all?

460 cents $\times$ 47 = 3220 + 18400 = 21,620 cents = \$216.20

125 cents $\times$ 39 = 1125 + 3750 = 4875 cents = \$48.75

\$216.20 + \$48.75 = \$264.95

The school spent \$264.95 in all.

6. Jeanne makes hair bows to sell at the craft fair. Each bow requires 1.5 yards of ribbon.

   a. At the fabric store, ribbon is sold by the foot. If Jeanne wants to make 84 bows, how many feet of ribbon must she buy? Show all your work.

$1.5 \text{ yd} = 1.5 \times (1 \text{ yd})$

$= 1.5 \times (3 \text{ ft})$

$= 4.5 \text{ ft}$

45 tenths

$\times \ 84$

180

$+ \ 3600$

378.0

Jeanne has to buy 378 feet of ribbon.

   b. If the ribbon costs 10¢ per foot, what is the total cost of the ribbon in dollars? Explain your reasoning, including how you decided where to place the decimal.

$378 \times 10¢ = 3780¢ = \$37.80$

When I multiplied by 10, all the digits got 10 times larger and moved one place to the left. That was 3,780 cents. To find dollars, I divided by 100 which moved my digits back 2 places to the left, so my decimal point went between the 7 and 8.

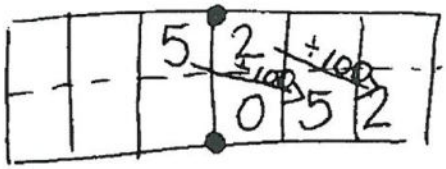
   c. A manufacturer is making 1,000 times as many bows as Jeanne to sell in stores nationwide. Write an expression using exponents to show how many yards of ribbon the manufacturer will need. Do not calculate the total.

$84 \times 10^3 \times 1.5$

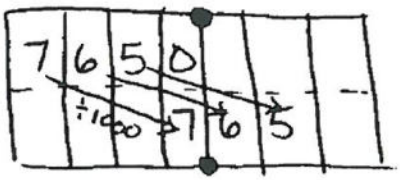
Name Garrett Date _____

1. Express the missing divisor using an exponent. Explain your reasoning using a place value chart.

a. $5.2 \div 10^2 = 0.052$



b. $7{,}650 \div 10^3 = 7.65$



2. Estimate the quotient by rounding the equation to relate to a 1-digit fact. Explain your thinking in the space below.

a. $432 \div 73 \approx 6$

$420 \div 70 = 42 \div 7 = 6$

73 is close to 7 tens. The nearest multiple of 7 that's like 432 is 42 tens. So $42 \div 7 = 6$

b. $1275 \div 588 \approx 2$

$1200 \div 600 = 12 \div 6 = 2$

588 is close to 600. The nearest multiple of 600 that is close to 1275 is 12 hundreds. So $12 \div 6 = 2$

3. Generate and solve another division problem with the same quotient and remainder as the two problems below. Explain your strategy for creating the new problem.

$$\begin{array}{r} 3 \\ 17\overline{)63} \\ 51 \\ \hline 12 \end{array}$$

$$\begin{array}{r} 3 \\ 42\overline{)138} \\ 126 \\ \hline 12 \end{array}$$

$$\begin{array}{r} 3 \\ 27\overline{)93} \\ -81 \\ \hline 12 \end{array}$$

To check division, I can multiply the answer and the divisor, then add the remainder. So I multiplied 3 X my number which was 27 and got 81 and then I added 12. So my dividend must be 93.

$$\begin{array}{r} 27 \\ \times\ 3 \\ \hline 81 \\ +\ 12 \\ \hline 93 \end{array}$$

4. Sarah says that 26 ÷ 8 equals 14 ÷ 4 because both are "3 R2." Show her mistake using decimal division.

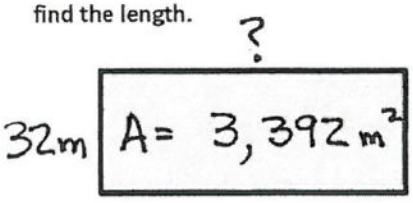
```
   3.25
8)26.00
 -24
  20
 -16
  40
 -40
   0
```

```
   3.5
4)14.0
 -12
  20
 -20
   0
```

26 ÷ 8 = 3.25

14 ÷ 4 = 3.5

5. A rectangular playground has an area of 3,392 square meters. If the width of the rectangle is 32 meters, find the length.



32 x ? = 3,392

```
   106
32)3,392
 -32
  19
 - 0
  192
 -192
    0
```

The length of the rectangle is 106 meters.

6. A baker uses 5.5 pounds of flour daily.

a. How many ounces of flour will he use in two weeks? Use words, numbers, or pictures to explain your thinking. (1 lb = 16 oz.)

5.5 lbs = ___ oz

5.5 x (1lb) = ___ oz

5.5 x (16 oz) = ___ oz

```
 55 tenths
x 16
 330
+550
 880 tenths = 88
```

```
  88 oz
x 14
 352
+880
1,232 oz
```

First, I found the ounces he uses every day. Then I multiplied by 14 days.

The baker uses 1,232 oz of flour in 2 weeks.

b. The baker's recipe for a loaf of bread calls for 12 ounces of flour. If he uses all of his flour to make loaves of bread, how many full loaves can he bake in two weeks?

```
   102 R8
12)1,232
  -12
   03
  -00
    32
   -24
     8
```

The baker can bake 102 full loaves in two weeks.

c. The baker sends all his bread to one store. If he can pack up to 15 loaves of bread in a box for shipping, what is the minimum number of boxes required to ship all the loaves baked in two weeks. Explain your reasoning.

```
   6
15)102
  -90
   12
```

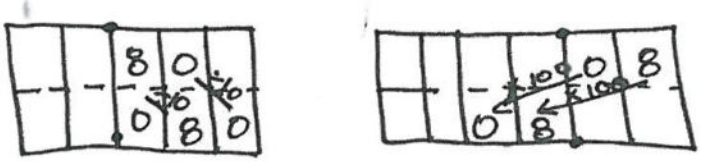
He needs 7 boxes to ship all the bread. The last box won't be full. It will only have 12 loaves in it.

d. The baker pays $0.80 per pound for sugar and $1.25 per pound for butter. Write an expression that shows how much the baker will spend if he buys 6 pounds of butter and 20 pounds of sugar.

$(6 \times \$1.25) + (20 \times \$0.80)$

e. Chocolate sprinkles cost as much per pound as sugar. Find $\frac{1}{10}$ the baker's total cost for 100 pounds of chocolate sprinkles. Explain the number of zeros and the placement of the decimal in your answer using a place value chart.

$\$0.80 \div 10 = \$0.08$



The baker pays $8.00 for 100 lbs of sprinkles.