



SOLUTIONS

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GRADE 5 • MODULE 2

Multi-Digit Whole Number and Decimal Fraction Operations

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SOLUTIONS

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 _____

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

a. 43×30

Think: 43 ones \times 3 tens = 129 tens

$43 \times 30 = \underline{1,290}$

b. 430×30

Think: 43 tens \times 3 tens = 129 hundreds

$430 \times 30 = \underline{12,900}$

c. 830×20

Think: 83 tens \times 2 tens = 166 hundreds

$830 \times 20 = \underline{16,600}$

d. $4,400 \times 400$

44 hundreds \times 4 hundreds = 176 10,000

$4,400 \times 400 = \underline{1,760,000}$

e. $80 \times 5,000$

8 tens \times 5 thousands = 40 10,000

$80 \times 5,000 = \underline{400,000}$

1000's	100's	10's	1's
		129	
1	2	9	0

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

a. $35 \text{ hundreds} = 5 \text{ tens} \times 7 \text{ tens}$ True $5 \text{ tens} \times 7 \text{ tens} = 5 \times 7 \times \text{ten} \times \text{ten} = 35 \text{ hundreds}$

b. $770 \times 6 = 77 \times 6 \times 100$ False. $770 \times 6 = 77 \text{ tens} \times 6 = 77 \times 6 \times 10 \leftarrow \text{not } 100$

c. $50 \text{ tens} \times 4 \text{ hundreds} = 40 \text{ tens} \times 5 \text{ hundreds}$ True. $40 \text{ tens} \times 5 \text{ hundreds}$

$= 10 \text{ tens} \times 4 \times 5 \text{ hundreds}$

$= 10 \text{ tens} \times 5 \times 4 \text{ hundreds}$

$= 50 \text{ tens} \times 4 \text{ hundreds}$

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

240×90

90×240

False

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

a. 5×5 $= 25$	5×50 $= 25 \times 10$ $= 250$	50×50 $= (5 \times 10) \times (5 \times 10)$ $= (5 \times 5) \times 100$ $= 2,500$	50×500 $= (5 \times 5) \times (10 \times 100)$ $= 25,000$
---------------------------	--	--	--

b. 80×5 $8 \times 10 \times 5$ $8 \times 5 \times 10$ $40 \times 10 = 400$	80×50 $8 \times 5 \times 10 \times 10$ 40×100 4000	800×500 $8 \times 5 \times 100 \times 100$ $40 \times 1,000$ $40,000$	$8,000 \times 50$ $8 \times 5 \times 1,000 \times 10$ $40 \times 10,000$ $400,000$
--	---	---	---

c. 637×3 1911	$6,370 \times 30$ $637 \times 3 \times 10 \times 10$ 1911×100 $191,100$	$6,370 \times 300$ $637 \times 3 \times 10 \times 100$ $1911 \times 1,000$ $1,911,000$	$63,700 \times 300$ $637 \times 3 \times 100 \times 100$ $1911 \times 10,000$ $19,110,000$
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4. A concrete stepping stone measures 20 inches square. What is the area of 30 such tiles?

20×30
 $2 \times 3 \times 10 \times 10$
 6×100
 600

600 sq. in.

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

$\underline{4,230} \times 10 = 42,300$

$4,230 \times 500$

$423 \times 5 \times 10 \times 100$

$2115 \times 1,000$

$2,115,000$

Name _____

Date _____

1. Round the factors to estimate the products.

a. $697 \times 82 \approx \underline{700} \times \underline{80} = \underline{56,000}$

A reasonable estimate for 697×82 is 56,000.

b. $5,897 \times 67 \approx \underline{6,000} \times \underline{70} = \underline{420,000}$

A reasonable estimate for $5,897 \times 67$ is 420,000.

c. $8,840 \times 45 \approx \underline{9,000} \times \underline{50} = \underline{450,000}$

A reasonable estimate for $8,840 \times 45$ is 450,000.

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

Factors	Rounded Factors	Estimate
a. $3,409 \times 73$	$3,000 \times 70$	210,000
b. $82,290 \times 240$	$80,000 \times 200$	16,000,000
c. $9,832 \times 39$	$10,000 \times 40$	400,000
d. 98 tens \times 36 tens	1000×400	400,000
e. 893 hundreds \times 85 tens	$90,000 \times 900$	81,000,000

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

$8,146 \times 12$	$81,467 \times 121$	$8,146 \times 121$	$81,477 \times 1,217$
8000×10	$80,000 \times 100$	$8,000 \times 100$	80000×1000
$80,000$	$8,000,000$	$800,000$	$80,000,000$

(Note: The expression $8,146 \times 121$ and its corresponding estimate $8,000 \times 100 = 800,000$ are circled in red in the original image.)

4. Fill in the blank with the missing estimate.

a. $751 \times 34 \approx \underline{8000} \times \underline{30} = 24,000$

b. $627 \times 674 \approx \underline{600} \times \underline{700} = 420,000$

c. $7,939 \times 541 \approx \underline{8000} \times \underline{500} = 4,000,000$

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

$$42,362 \times 81 \approx 40,000 \times 80 = 3,200,000$$

6. Raphael wants to buy a new car.

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

$$340 \times \underline{\quad} = 3,000$$

$$300 \times \underline{10} = 3000$$

About 10 months

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

$$288 \times 12 \times 5$$

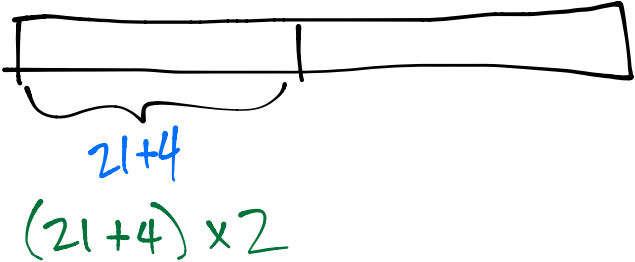
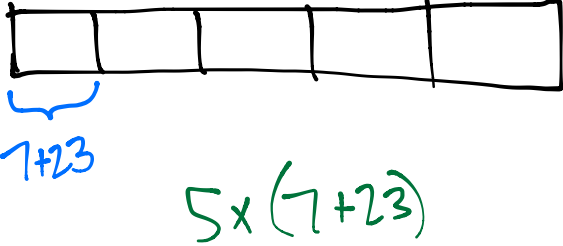
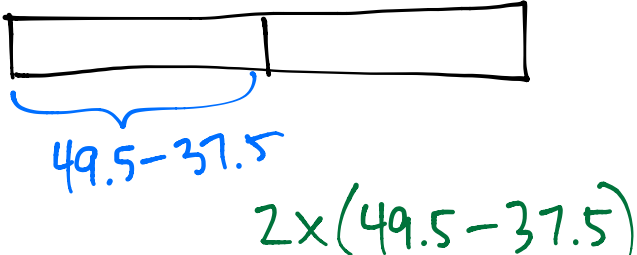
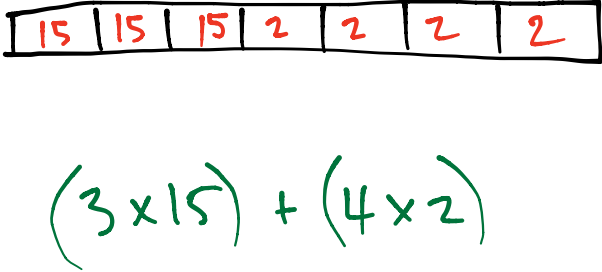
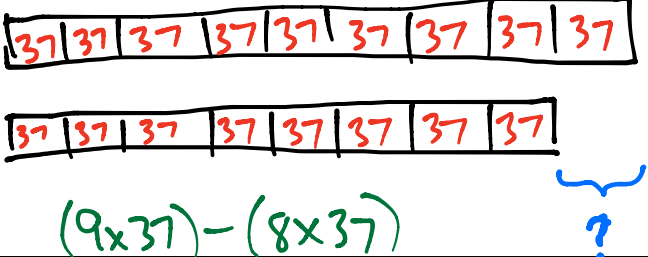
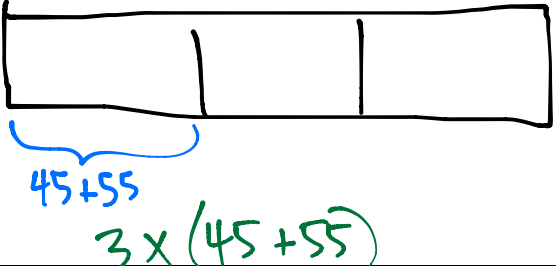
$$300 \times 10 \times 5 = 300 \times 50 = 15000$$

About \$15,000

Name _____

Date _____



1. Draw a model then write the numerical expressions.

<p>a. The sum of 21 and 4, doubled</p> 	<p>b. 5 times the sum of 7 and 23</p> 
<p>c. 2 times the difference between 49.5 and 37.5</p> 	<p>d. The sum of 3 fifteens and 4 twos</p> 
<p>e. The difference between 9 thirty-sevens and 8 thirty-sevens</p> 	<p>f. Triple the sum of 45 and 55</p> 

2. Write the numerical expressions in words.

Expression	Words	The Value of the Expression
a. $10 \times (2.5 + 13.5)$	10 times the sum of 2.5 and 13.5	160
b. $(98 - 78) \times 11$	11 times the difference between 98 and 78	220
c. $(71 + 29) \times 26$	26 times the sum of 71 and 29.	2600
d. $(50 \times 2) + (15 \times 2)$	The sum of 50 twos and 15 twos.	130

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

a. $93 \times (40 + 2)$		$(40 + 2) \times 39$
The left side is greater because it is 93 groups of $(40 + 2)$, but the right side only has 39 groups of $(40 + 2)$.		
b. 61×25		60 twenty-fives minus 1 twenty-five
The left side is bigger because it is 61 twenty-fives, but the right side is only 59 twenty-fives.		

4. Larry claims that $(14 + 12) \times (8 + 12)$ and $(14 \times 12) + (8 \times 12)$ are equivalent because they have the same digits and the same operations.
- a. Is Larry correct? Explain your thinking.

Larry is incorrect. The left is 26 copies of 20. The right is 14 copies of 12, plus 8 copies of 12.

- b. Which expression is greater? How much greater?

The left is obviously bigger because 26 twenties is bigger than 22 twelves.

$$\begin{aligned}26 \times 20 &= 26 \times 2 \times 10 \\ &= 52 \times 10 \\ &= 520\end{aligned}$$

$$\begin{aligned}(14 \times 12) + (8 \times 12) \\ 168 + 96 \\ 264\end{aligned}$$

Name _____

Date _____

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

a. **37×19**

37 nineteens

$(30 \times 19) - (7 \times 29)$

$37 \times (20 - 1)$

$(40 - 2) \times 19$

b. **26×35**

35 twenty-sixes

$(26 + 30) \times (26 + 5)$

$(26 \times 30) + (26 \times 5)$

$35 \times (20 + 60)$

c. **34×89**

$34 \times (80 + 9)$

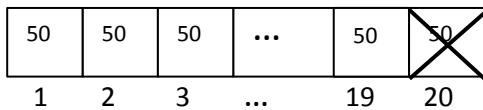
$(34 \times 8) + (34 \times 9)$

$34 \times (90 - 1)$

89 thirty-fours

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

a. $19 \times 50 =$ 19 fifties

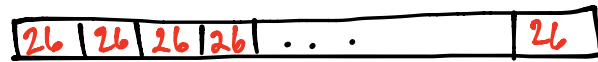


Think: 20 fifties – 1 fifties

$= (20 \times 50) - (1 \times 50)$

$= 1000 - 50 = 950$

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



Think: 10 twenty-sixes + 1 twenty-sixes

$= (10 \times 26) + (1 \times 26)$

$= 260 + 26 = 286$

<p>c. $49 \times 12 = \underline{49}$ <u>twelves</u></p> <p style="margin-left: 40px;"><u>50 twelves</u></p> <p>Think: <u>50</u> <u>twelves</u> - 1 <u>twelve</u></p> $= (50 \times 12) - (1 \times 12)$ $= \underline{600} - \underline{12} = \underline{588}$	<p>d. $12 \times 25 = \underline{12}$ <u>seventy-fives</u></p> <p style="margin-left: 40px;"><u>twenty-fives</u></p> <p>Think: <u>10</u> <u>twenty-fives</u> + <u>2</u> <u>twenty-fives</u></p> $= (10 \times 25) + (2 \times 25)$ $= \underline{250} + \underline{50} = \underline{300}$
--	--

3. Define the unit in word form and complete the sequence of problems as was done in Problems 3–4 in the lesson.

<p>a. $29 \times 12 = 29$ <u>twelves</u></p> <p>Think: <u>30</u> <u>twelves</u> - 1 <u>twelve</u></p> $= 30 \times \underline{12} - (1 \times \underline{12})$ $= \underline{360} - \underline{12} = \underline{348}$	<p>b. $11 \times 31 = 31$ <u>elevens</u></p> <p>Think: <u>30</u> <u>elevens</u> + 1 <u>eleven</u></p> $= (30 \times \underline{11}) + (1 \times \underline{11})$ $= \underline{330} + \underline{11} = \underline{341}$
<p>c. $19 \times 11 = 19$ <u>elevens</u></p> <p>Think: <u>20</u> <u>elevens</u> - 1 <u>eleven</u></p> $= (20 \times \underline{11}) - (1 \times \underline{11})$ $= \underline{220} - \underline{11} = \underline{209}$	<p>d. $50 \times 13 = 13$ <u>fiftys</u></p> <p>Think: <u>10</u> <u>fiftys</u> + 3 <u>fiftys</u></p> $= (10 \times \underline{50}) + (3 \times \underline{50})$ $= \underline{500} + \underline{150} = \underline{650}$

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

12×50 would be too big by 12. Now subtract 12 to get 12×49 .

5. Solve mentally.

a. $16 \times 99 = \underline{(16 \times 100) - (16 \times 1)} = 1600 - 16 = 1584$

b. $20 \times 101 = \underline{(20 \times 100) + (20 \times 1)} = 2000 + 20 = 2020$

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

$$\begin{aligned} 14 \times 19 &= (14 \times 20) - (14 \times 1) \\ &= 280 - 14 \\ &= 266 \end{aligned}$$

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

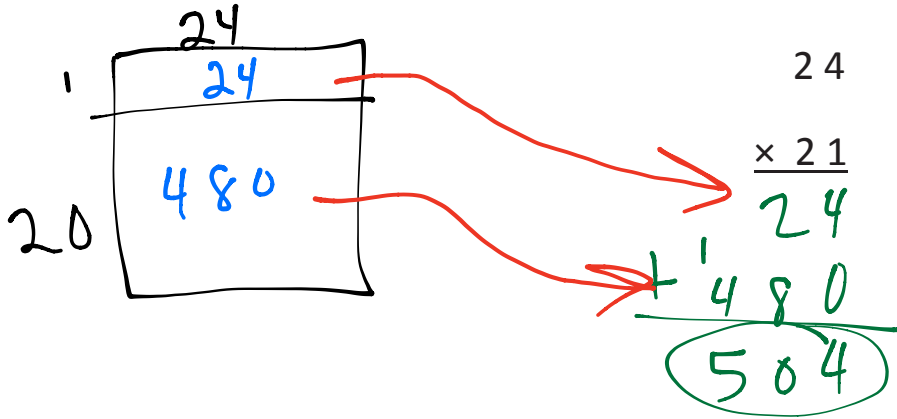
$$\begin{aligned} 23 \times 101 &= (23 \times 100) + (23 \times 1) \\ &= 2300 + 23 \\ &= 2323 \end{aligned}$$

Name _____

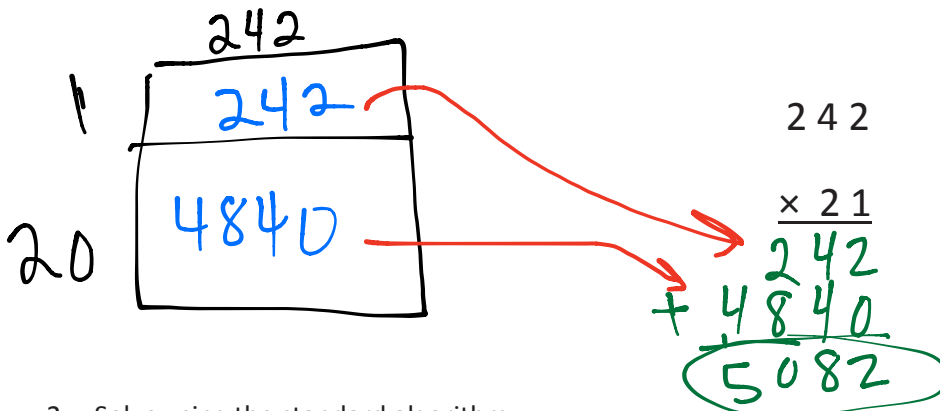
Date _____

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. $24 \times 21 =$ _____

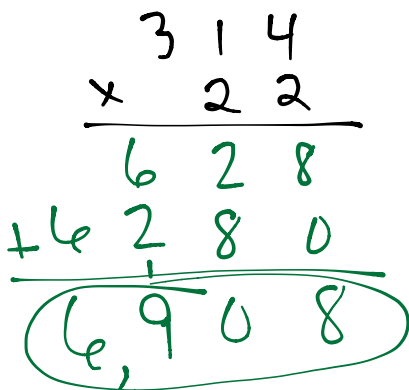


b. $242 \times 21 =$ _____

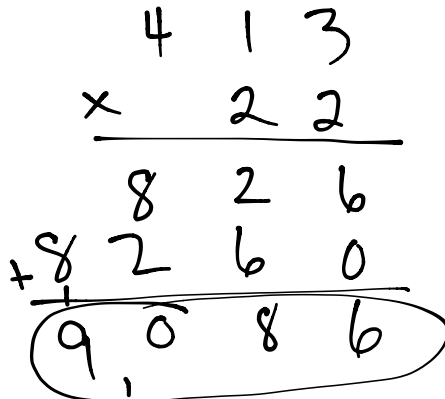


2. Solve using the standard algorithm.

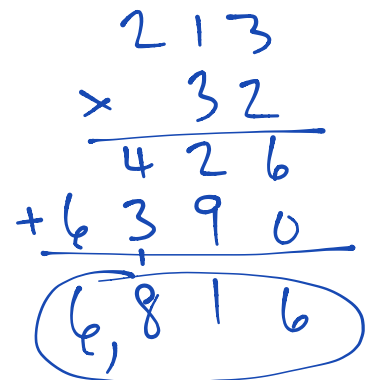
a. $314 \times 22 =$ _____



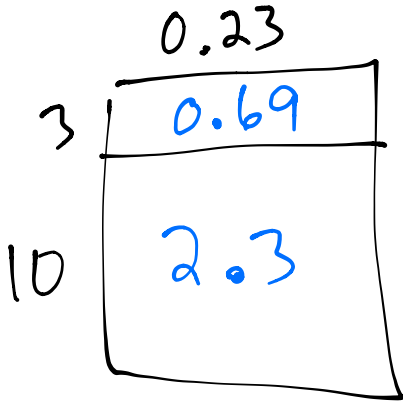
b. $413 \times 22 =$ _____



c. $213 \times 32 =$ _____

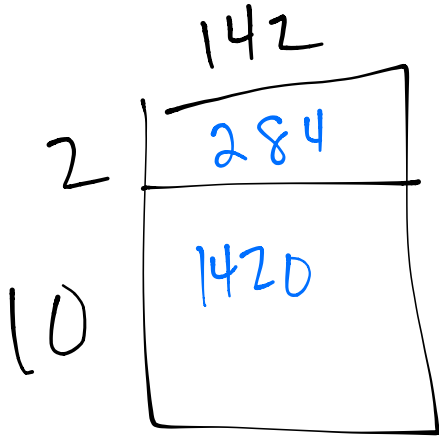


3. A young snake measures 0.23 m long. During the course of his lifetime, he will grow to be 13 times his current length. What will his length be when he's full grown?



$$\begin{array}{r}
 0.23 \\
 \times 13 \\
 \hline
 69 \\
 230 \\
 \hline
 2.99
 \end{array}$$

4. Zenin earns \$142 per shift at his new job. During a pay period, he works 12 shifts. What would his pay be for that period?



$$\begin{array}{r}
 142 \\
 \times 12 \\
 \hline
 284 \\
 + 1420 \\
 \hline
 1,704
 \end{array}$$

\$1,704

Name _____

Date _____

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

a. $27 \times 36 =$ _____

Area Model: 27×36

	20	7	
6	120	42	$\rightarrow 162$
30	600	210	$\rightarrow 810$

Standard Algorithm:

$$\begin{array}{r} 27 \\ \times 36 \\ \hline 162 \\ + 810 \\ \hline 972 \end{array}$$

b. $527 \times 36 =$ _____

Area Model: 527×36

	500	20	7	
6	3000	120	42	$\rightarrow 3162$
30	15000	600	210	$\rightarrow 15810$

Standard Algorithm:

$$\begin{array}{r} 527 \\ \times 36 \\ \hline 3162 \\ + 15810 \\ \hline 18972 \end{array}$$

2. Solve using the standard algorithm.

a. 649×53

$$\begin{array}{r} 649 \\ \times 53 \\ \hline 1947 \\ + 32450 \\ \hline 34397 \end{array}$$

34,397

c. 758×46

$$\begin{array}{r} 758 \\ \times 46 \\ \hline 4548 \\ + 30320 \\ \hline 34868 \end{array}$$

34,868

b. 496×53

$$\begin{array}{r} 496 \\ \times 53 \\ \hline 1488 \\ + 24800 \\ \hline 26288 \end{array}$$

26,288

d. 529×48

$$\begin{array}{r} 529 \\ \times 48 \\ \hline 4232 \\ + 21160 \\ \hline 25392 \end{array}$$

25,392

3. Each of the 25 students in Mr. McDonald’s class sold 16 raffle tickets. If each ticket cost \$15, how much money did Mr. McDonald’s students raise?

$$\begin{array}{r} 25 \\ \times 16 \\ \hline 150 \\ 250 \\ \hline 400 \end{array}$$

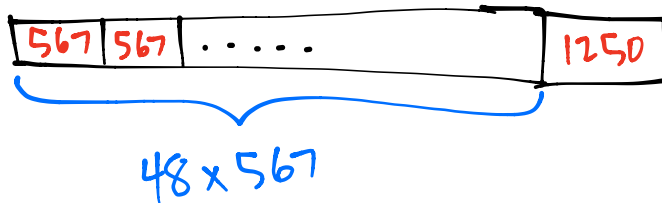
→ 400 tickets

$$\begin{array}{r} 400 \\ \times 15 \\ \hline 6000 \end{array} \quad \begin{array}{r} 15 \\ \times 4 \\ \hline 60 \end{array}$$

\$6,000

4. Jayson buys a car and pays by installments. Each installment is \$567 per month. After 48 months, Jayson owes \$1250. What was the total price of the vehicle?

$$\begin{array}{r} 567 \\ \times 48 \\ \hline 4536 \\ 22680 \\ \hline 27216 \end{array}$$



$$\begin{array}{r} 27216 \\ + 1250 \\ \hline 28,466 \end{array}$$

\$28,466

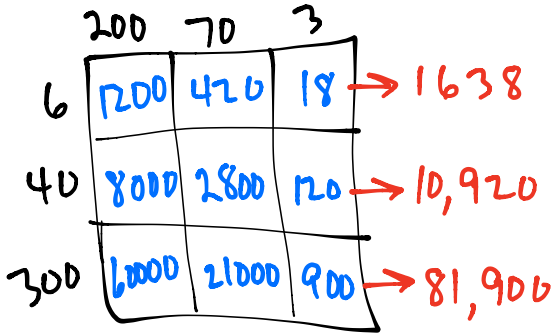
Name _____

Date _____

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

a. $273 \times 346 =$ _____

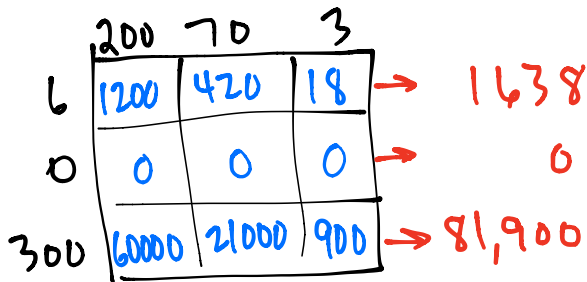
273



$$\begin{array}{r} \times 346 \\ 1638 \\ 10920 \\ 81900 \\ \hline 94,458 \end{array}$$

b. $273 \times 306 =$ _____

273



$$\begin{array}{r} \times 306 \\ 1638 \\ + 81900 \\ \hline 83,538 \end{array}$$

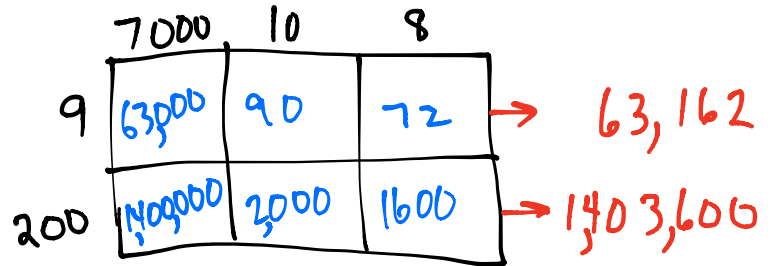
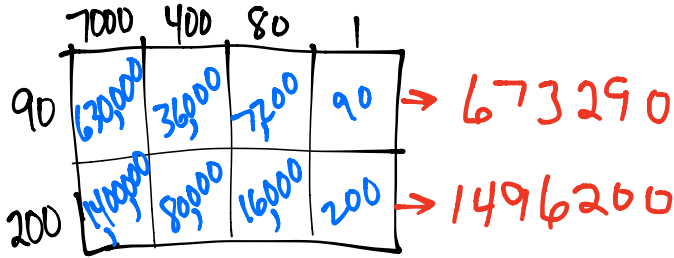
- c. Both Parts (a) and (b) have three-digit multipliers. Why are there three partial products in (a) and only two partial products in (b)?

Because in 306 there is no digit/value in the 10's place.

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

a. $7,481 \times 290 =$ _____

b. $7,018 \times 209 =$ _____



3. Solve using the standard algorithm.

a. 426×357

$$\begin{array}{r} 426 \\ \times 357 \\ \hline 2982 \\ 21300 \\ 127800 \\ \hline 152082 \end{array}$$

c. 426×307

$$\begin{array}{r} 426 \\ \times 307 \\ \hline 2982 \\ 127800 \\ \hline 130782 \end{array}$$

b. $1,426 \times 357$

d. $1,426 \times 307$

see next page

see next page.

4. The Hudson Valley Renegades Stadium holds a maximum of 4,505 people. During the heights of their popularity, they sold out 219 consecutive games. How many tickets were sold during this time?

$$\begin{array}{r} 4505 \\ \times 219 \\ \hline 40545 \\ 45050 \\ 901000 \\ \hline 986595 \end{array}$$

986,595 tickets

5. At the farmer's market, each of the 94 vendors makes \$502 in profit each weekend. How much profit will all vendors make on Saturday?

$$\begin{array}{r} 502 \\ \times 94 \\ \hline 2008 \\ 45180 \\ \hline 47188 \end{array}$$

\$47,188 profit

$$\begin{array}{r}
 2a) \quad 7481 \\
 \quad \times 290 \\
 \hline
 673290 \\
 +1496200 \\
 \hline
 2,169,490
 \end{array}$$

$$\begin{array}{r}
 2b) \quad 7018 \\
 \quad \times 209 \\
 \hline
 63162 \\
 +1403600 \\
 \hline
 1,466,762
 \end{array}$$

$$\begin{array}{r}
 3b) \quad 1426 \\
 \quad \quad 357 \\
 \hline
 9982 \\
 71300 \\
 427800 \\
 \hline
 509,082
 \end{array}$$

$$\begin{array}{r}
 3d) \quad 1426 \\
 \quad \times 307 \\
 \hline
 9982 \\
 +427800 \\
 \hline
 437,782
 \end{array}$$

Name _____

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

<p>a. 312×149</p> <p>$\approx 300 \times 100$ $= 30,000$</p> $\begin{array}{r} 312 \\ \times 149 \\ \hline 2808 \\ 12480 \\ +31200 \\ \hline 46,488 \end{array}$	<p>b. 743×295</p> <p>$\approx 700 \times 300 = 210,000$</p> $\begin{array}{r} 743 \\ \times 295 \\ \hline 3715 \\ 66870 \\ +148600 \\ \hline 219,185 \end{array}$	<p>c. 428×637</p> <p>$\approx 400 \times 600 = 240,000$</p> $\begin{array}{r} 428 \\ \times 637 \\ \hline 2996 \\ 12840 \\ +256800 \\ \hline 272,636 \end{array}$
<p>d. 691×305</p> <p>$\approx 700 \times 300 = 210,000$</p> $\begin{array}{r} 691 \\ \times 305 \\ \hline 3455 \\ +207300 \\ \hline 210,755 \end{array}$	<p>e. $4,208 \times 606$</p> <p>$\approx 4,000 \times 600 = 2,400,000$</p> $\begin{array}{r} 4208 \\ \times 606 \\ \hline 25248 \\ +2524800 \\ \hline 2,550,048 \end{array}$	<p>f. $3,068 \times 523$</p> <p>$\approx 3,000 \times 500 = 1,500,000$</p> $\begin{array}{r} 3068 \\ \times 523 \\ \hline 9204 \\ 61360 \\ +1534000 \\ \hline 1,604,564 \end{array}$
<p>g. $430 \times 3,064$</p> <p>$\approx 400 \times 3,000 = 1,200,000$</p> $\begin{array}{r} 3064 \\ \times 430 \\ \hline 91920 \\ +1225600 \\ \hline 1,317,520 \end{array}$	<p>h. $3,007 \times 502$</p> <p>$\approx 3,000 \times 500 = 1,500,000$</p> $\begin{array}{r} 3007 \\ \times 502 \\ \hline 6014 \\ +1503500 \\ \hline 1,509,514 \end{array}$	<p>i. $254 \times 6,104$</p> <p>$\approx 300 \times 6,000 = 1,800,000$</p> $\begin{array}{r} 6104 \\ \times 254 \\ \hline 24416 \\ 305200 \\ +1220800 \\ \hline 1,550,416 \end{array}$

2. When multiplying 1,729 times 308, Clayton got a product of 53,253. Without calculating, does his product seem reasonable? Explain your thinking.

$$\begin{array}{l}
 1729 \times 308 \\
 \approx 2000 \times 300 \\
 = 600,000
 \end{array}$$

Clayton's product does not seem reasonable since our estimation is around 600,000.

3. A publisher prints 1,912 copies of a book in each print run. If they print 305 runs, the manager wants to know about how many books will be printed. What's a reasonable estimate?

$$\begin{array}{l}
 1912 \times 305 \\
 \approx 2000 \times 300 \\
 = 600,000
 \end{array}$$

Around 600,000 copies.

Name _____

Date _____

Solve.

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

$$\begin{array}{r}
 203 \\
 \times 12 \\
 \hline
 406 \\
 + 2030 \\
 \hline
 2436
 \end{array}$$

$$\begin{array}{r}
 2436 \\
 - 907 \\
 \hline
 1529
 \end{array}$$

1529 stickers left

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

- a. How many total yards did the quarterback pass for?

$$\begin{array}{r}
 302 \\
 \times 16 \\
 \hline
 1812 \\
 + 3020 \\
 \hline
 4832
 \end{array}$$

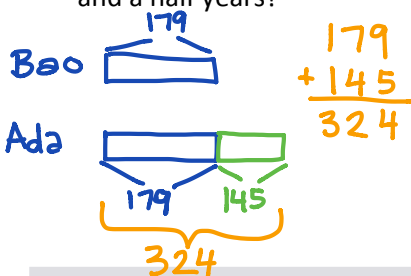
4832 yards

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

$$\begin{array}{r}
 4832 \\
 \times 13 \\
 \hline
 14496 \\
 + 48320 \\
 \hline
 62816
 \end{array}$$

62,816 yards

3. Bao saved \$179 a month. He saved \$145 less than Ada each month. How much would Ada save in three and a half years?



$3\frac{1}{2}$ years = 12 + 12 + 12 + 6 = 42 months

$$\begin{array}{r}
 324 \\
 \times 42 \\
 \hline
 648 \\
 + 12960 \\
 \hline
 13608
 \end{array}$$

Ada would save \$13,608 in $3\frac{1}{2}$ years.

4. Mrs. Williams is knitting a blanket for her newborn granddaughter. The blanket is 2.25 meters long and 1.8 meters wide. What is the area of the blanket? Write the answer in centimeters.

$$\begin{array}{r} 225 \\ \times 180 \\ \hline 18000 \\ + 22500 \\ \hline 40500 \end{array}$$

40,500 square centimeters

5. Use the chart to solve.

Soccer Field Dimensions

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

- a. Write an expression to find the difference in the maximum area and minimum area of a NYS high school soccer field. Then evaluate your expression.

$$(120 \times 80) - (100 \times 55)$$

4,100 sq. yrs.

$$\begin{array}{r} 9600 \\ - 5500 \\ \hline 4100 \end{array}$$

- b. Would a field with a width of 75 yards and an area of 7,500 square yards be within FIFA regulation? Why or why not?

$$75 \times 100 = 7500$$

Since the minimum length is 110 yards, this field is not within regulation.

- c. It costs \$26 to fertilize, water, mow, and maintain each square yard of a full size FIFA field (with maximum dimensions) before each game. How much will it cost to prepare the field for next week's match?

$$\begin{array}{r} 120 \\ \times 80 \\ \hline 9600 \end{array}$$

$$\begin{array}{r} 9600 \\ \times 26 \\ \hline 57600 \\ 192000 \\ \hline 249600 \end{array}$$

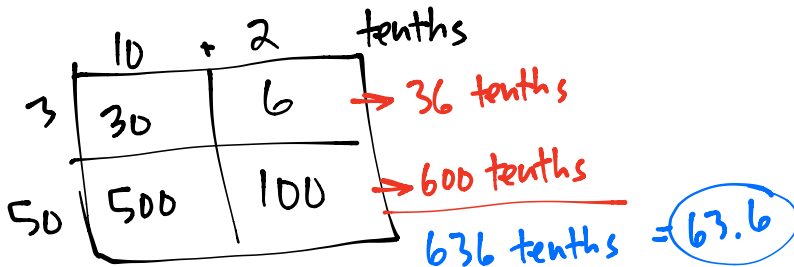
\$249,600

Name _____

Date _____

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

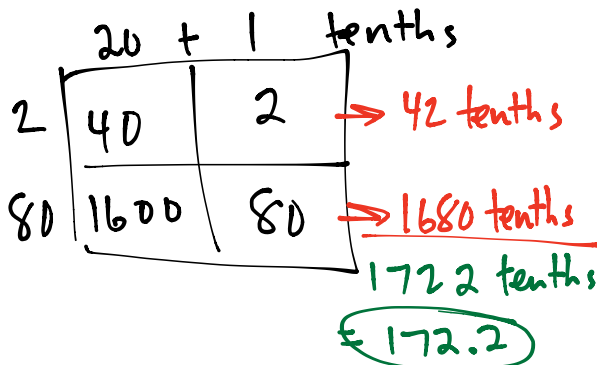
a. $53 \times 1.2 \approx \underline{50} \times \underline{1} = \underline{50}$



12 (tenths)

$$\begin{array}{r} \times 53 \\ + 36 \\ \hline 636 \text{ tenths} = 63.6 \end{array}$$

b. $2.1 \times 82 \approx \underline{2} \times \underline{80} = \underline{160}$



21 (tenths)

$$\begin{array}{r} \times 82 \\ + 42 \\ \hline 1680 \\ + 1722 \text{ tenths} = 172.2 \end{array}$$

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

a. $4.2 \times 34 \approx \underline{4} \times \underline{30} = \underline{120}$

42 (tenths)

$$\begin{array}{r} \times 34 \\ + 168 \\ \hline 1260 \\ \hline 1428 \text{ tenths} \\ = 142.8 \end{array}$$

b. $65 \times 5.8 \approx \underline{70} \times \underline{6} = \underline{420}$

58 (tenths)

$$\begin{array}{r} \times 65 \\ + 290 \\ \hline 3480 \\ \hline 3770 \text{ tenths} \\ = 377 \end{array}$$

c. 3.3×16

$$\begin{array}{r} 3.3 \xrightarrow{\times 10} 33 \\ \times 16 \\ \hline 198 \\ 330 \\ \hline 528 \xrightarrow{\div 10} 52.8 \end{array}$$

d. 15.6×17

$$\begin{array}{r} 15.6 \xrightarrow{\times 10} 156 \\ \times 17 \\ \hline 1092 \\ + 1560 \\ \hline 2652 \xrightarrow{\div 10} 265.2 \end{array}$$

e. 73×2.4

$$\begin{array}{r} 73 \\ \times 2.4 \xrightarrow{\times 10} \times 24 \\ \hline 292 \\ 1460 \\ \hline 1752 \xrightarrow{\div 10} 175.2 \end{array}$$

f. 193.5×57

$$\begin{array}{r} 193.5 \xrightarrow{\times 10} 1935 \\ \times 57 \\ \hline 13545 \\ + 96750 \\ \hline 110295 \xrightarrow{\div 10} 11029.5 \end{array}$$

3. Mr. Jansen is building an ice rink in his backyard that will measure 8.4 meters by 22 meters. What is the area of the rink?

$$\begin{array}{r} 8.4 \xrightarrow{\times 10} 84 \\ \times 22 \\ \hline 168 \\ 1680 \\ \hline 1848 \xrightarrow{\div 10} 184.8 \end{array}$$

184.8 sq. m.

4. Rachel runs 3.2 miles each week day and 1.5 miles each day of the weekend. How many miles will she have run in 6 weeks?

$$\begin{array}{r} 3.2 \xrightarrow{\times 10} 32 \\ \times 30 \\ \hline 960 \xrightarrow{\div 10} 96 \end{array}$$

$$\begin{array}{r} 1.5 \xrightarrow{\times 10} 15 \\ \times 12 \\ \hline 30 \\ + 150 \\ \hline 180 \xrightarrow{\div 10} 18 \end{array}$$

$$96 + 18 = 114 \text{ miles}$$

Name _____

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

a. $2.42 \times 12 \approx \underline{2} \times \underline{12} = \underline{24}$

Think: 242
(2.42×100)

$$\begin{array}{r} \times 12 \\ 484 \\ 2420 \\ \hline 2904 \end{array}$$

Think! 2904 is 100 times too large! What is the real product?

$2.42 \times 12 = \underline{29.04}$

b. $4.13 \times 37 \approx \underline{4} \times \underline{40} = \underline{160}$

Think 413
(4.13×100)

$$\begin{array}{r} \times 37 \\ 2891 \\ 12390 \\ \hline 15281 \end{array}$$

Now we have to divide by 100

$4.13 \times 37 = \underline{152.81}$

2. Solve using the standard algorithm.

a. $2.03 \times 13 = \underline{26.39}$

$$\begin{array}{r} 2.03 \\ \times 13 \\ \hline 609 \\ 2030 \\ \hline 26.39 \end{array}$$

c. 371.23×53

$$\begin{array}{r} 371.23 \\ \times 53 \\ \hline 111369 \\ + 1856150 \\ \hline 19675.19 \end{array}$$

b. 53.16×34

$$\begin{array}{r} 53.16 \\ \times 34 \\ \hline 21264 \\ + 159480 \\ \hline 1807.44 \end{array}$$

d. 1.57×432

$$\begin{array}{r} 1.57 \\ \times 432 \\ \hline 4314 \\ + 62800 \\ \hline 678.24 \end{array}$$

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 $36 \times 134 = 4,824$ then $36 \times 1.34 = \underline{48.24}$

b. If $84 \times 2,674 = 224,616$ then $84 \times 26.74 = \underline{2246.16}$

c. $19 \times 3,211 = 61,009$ then $321.1 \times 19 = \underline{6100.9}$

4. A slice of pizza costs \$1.57. How much does 27 slices cost?

$$\begin{array}{r} 1.57 \\ \times 27 \\ \hline 1099 \\ 3140 \\ \hline 42.39 \end{array}$$

\$42.39

5. A spool of ribbon holds 6.75 meters. If the craft club buys 21 spools:

a. What is the total cost if the ribbon sells for \$2 per meter?

$$6.75 \times 21 \times 2$$

$$6.75 \times 42$$

$$\begin{array}{r} 6.75 \\ \times 42 \\ \hline 1350 \\ 27000 \\ \hline 283.50 \end{array}$$

\$283.50

b. If the club uses 76.54 meters to complete a project, how much ribbon will be left?

$$\begin{array}{r} 6.75 \\ \times 21 \\ \hline 13500 \\ 13500 \\ \hline 141.75 \end{array}$$

$$\begin{array}{r} 141.75 \\ - 76.54 \\ \hline 65.21 \end{array}$$

65.21 yards

Name _____

Date _____

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

a. $24 \times 2.31 \approx \underline{20} \times \underline{2} = \underline{40}$

$$\begin{array}{r} 2.31 \\ \times 24 \\ \hline 924 \\ + 4620 \\ \hline 55.44 \end{array}$$

b. $5.42 \times 305 \approx \underline{5} \times \underline{300} = \underline{1500}$

$$\begin{array}{r} 5.42 \\ \times 305 \\ \hline 2710 \\ + 162600 \\ \hline 1653.10 \end{array}$$

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

a. 1.23×21
 $\approx 1 \times 21 = 21$

$$\begin{array}{r} 1.23 \\ \times 21 \\ \hline 123 \\ + 2460 \\ \hline 25.83 \end{array}$$

b. 3.2×41
 $\approx 3 \times 40 = 120$

$$\begin{array}{r} 3.2 \\ \times 41 \\ \hline 32 \\ + 1280 \\ \hline 131.2 \end{array}$$

c. 0.32×41
 $\approx \frac{1}{2} \times 40 = 20$

$$\begin{array}{r} 0.32 \\ \times 41 \\ \hline 32 \\ + 1280 \\ \hline 13.12 \end{array}$$

d. 0.54×62
 $\approx \frac{1}{2} \times 62 = 31$

$$\begin{array}{r} 0.54 \\ \times 62 \\ \hline 108 \\ + 3240 \\ \hline 33.48 \end{array}$$

e. 6.09×28
 $\approx 6 \times 30 = 180$

$$\begin{array}{r} 6.09 \\ \times 28 \\ \hline 4872 \\ 12180 \\ \hline 170.52 \end{array}$$

f. 6.83×683
 $\approx 7 \times 700 = 4900$

$$\begin{array}{r} 6.83 \\ \times 683 \\ \hline 2049 \\ 54640 \\ 404800 \\ \hline 4614.89 \end{array}$$

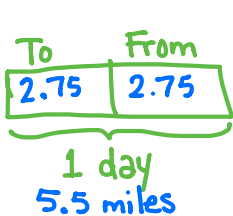
g. 6.09×208
 $\approx 6 \times 200 = 1200$
 $= 1266$

$$\begin{array}{r} 6.09 \\ \times 208 \\ \hline 4872 \\ +121800 \\ \hline 1266.72 \end{array}$$

h. 171.76×555
 $\approx 200 \times 600 = 120000$

$$\begin{array}{r} 171.76 \\ \times 555 \\ \hline 85880 \\ 858800 \\ +8588000 \\ \hline 95326.80 \end{array}$$

3. Eric walks 2.75 miles to and from work every day for an entire year. How many miles did he walk?



$$\begin{array}{r} 365 \\ \times 5.5 \\ \hline 1825 \\ +18250 \\ \hline 2007.5 \end{array}$$

Eric walked 2007.5 miles during the year.

NOTE: It is likely students may interpret the problem as Eric walking only 2.75 mi per day. This is understandable! Roll with it.

4. Art galleries often price paintings by the square inch. If a painting measures 22.5 inches by 34 inches and costs \$4.15 per square inch, what is the selling price for the painting?

$$\begin{array}{r} 22.5 \\ \times 34 \\ \hline 900 \\ 6750 \\ \hline 765.0 \end{array}$$

$$\begin{array}{r} 4.15 \\ \times 765 \\ \hline 2075 \\ 24900 \\ +290500 \\ \hline 3174.75 \end{array}$$

\$3174.75

5. Gerry spends \$1.25 each day on lunch at school. On Fridays she buys an extra snack for \$0.55. How much money will she spend in two weeks?

$$\begin{array}{r} 1.25 \\ + .55 \\ \hline 1.80 \end{array}$$

$$\begin{array}{r} 1.25 \\ \times 8 \\ \hline 10.00 \end{array}$$

$$\begin{array}{r} 1.80 \\ \times 2 \\ \hline 3.60 \end{array}$$

$$\begin{array}{r} 10.00 \\ + 3.60 \\ \hline 13.60 \end{array}$$

\$13.60

Name _____

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

<p>a. Convert weeks to days.</p> $6 \text{ weeks} = 6 \times (1 \text{ week})$ $= 6 \times (7 \text{ days})$ $= 42 \text{ days}$	<p>b. Convert years to days.</p> $7 \text{ years} = \underline{7} \times (\underline{1} \text{ year})$ $= \underline{7} \times (\underline{365} \text{ days})$ $= \underline{2,555} \text{ days}$
<p>c. Convert meters to centimeters.</p> $4.5 \text{ m} = \underline{4.5} \times (\underline{1} \text{ m})$ $= \underline{4.5} \times (\underline{100} \text{ cm})$ $= \underline{450} \text{ cm}$	<p>d. Convert pounds to ounces.</p> $12.6 \text{ pounds} = 12.6 \times (1 \text{ lb})$ $= 12.6 \times (16 \text{ oz})$ $= 201.6 \text{ ounces}$
<p>e. Convert kilograms to grams.</p> $3.09 \text{ kg} = 3.09 \times (1 \text{ kg})$ $= 3.09 \times (1,000 \text{ g})$ $= 3,090 \text{ g}$	<p>f. Convert yards to inches.</p> $245 \text{ yd} = 245 \times (1 \text{ yd})$ $= 245 \times (3 \text{ ft})$ $= 245 \times 3 \times (1 \text{ ft})$ $= 245 \times 3 \times (12 \text{ in})$ $= 8,820 \text{ in}$

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

<p>a. Convert the number of hours in a day to minutes.</p> $\begin{aligned} 24 \text{ hours} &= 24 \times (1 \text{ hour}) \\ &= 24 \times (60 \text{ minutes}) \\ &= 1,440 \text{ minutes} \end{aligned}$ <p>One day has 24 hours, which is the same as 1,440 minutes.</p>	<p>b. A newborn giraffe weighs about 65 kilograms. How much does it weigh in grams?</p> $\begin{aligned} 65 \text{ kg} &= 65 \times (1 \text{ kg}) \\ &= 65 \times (1,000 \text{ g}) \\ &= 65,000 \text{ g} \end{aligned}$ <p>One kilogram has 1,000 grams, so 65 kilograms is the same as 65,000 grams.</p>
<p>c. The average height of a female giraffe is 4.6 meters. What is her height in centimeters?</p> $\begin{aligned} 4.6 \text{ m} &= 4.6 \times (1 \text{ m}) \\ &= 4.6 \times (100 \text{ cm}) \\ &= 460 \text{ cm} \end{aligned}$ <p>One meter has 100 centimeters, so 4.6 meters is the same as 460 centimeters.</p>	<p>d. The capacity of a beaker is 0.1 liter. Convert this to milliliters.</p> $\begin{aligned} 0.1 \text{ L} &= 0.1 \times (1 \text{ L}) \\ &= 0.1 \times (1,000 \text{ mL}) \\ &= 100 \text{ mL} \end{aligned}$ <p>One liter has 1,000 milliliters, so 0.1 liter is the same as 100 milliliters.</p>
<p>e. A pig weighs 9.8 pounds. Convert the pig's weight to ounces.</p> $\begin{aligned} 9.8 \text{ lb} &= 9.8 \times (1 \text{ lb}) \\ &= 9.8 \times (16 \text{ oz}) \\ &= 156.8 \text{ oz} \end{aligned}$ <p>One pound has 16 ounces, so 9.8 pounds is the same as 156.8 ounces.</p>	<p>f. A marker is 0.13 meters long. What is the length in millimeters?</p> $\begin{aligned} 0.13 \text{ m} &= 0.13 \times (1 \text{ m}) \\ &= 0.13 \times (1,000 \text{ mm}) \\ &= 130 \text{ mm} \end{aligned}$ <p>One meter has 1,000 millimeters, so 0.13 meters is the same as 130 millimeters.</p>

Name _____

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

<p>a. Convert days to weeks.</p> $42 \text{ days} = 42 \times (1 \text{ day})$ $= 42 \times \left(\frac{1}{7} \text{ week}\right)$ $= \frac{42}{7} \text{ week}$ $= 6 \text{ weeks}$	<p>b. Convert quarts to gallons.</p> $36 \text{ quarts} = \underline{36} \times (1 \text{ quart})$ $= \underline{36} \times \left(\frac{1}{4} \text{ gallon}\right)$ $= \underline{\frac{36}{4}} \text{ gallons}$ $= \underline{9} \text{ gallons}$
<p>c. Convert centimeters to meters.</p> $760 \text{ cm} = \underline{760} \times (\underline{1} \text{ cm})$ $= \underline{760} \times (\underline{0.01} \text{ m})$ $= \underline{7.6} \text{ m}$	<p>d. Convert meters to kilometers.</p> $2,485 \text{ m} = \underline{2,485} \times (\underline{1} \text{ m})$ $= \underline{2,485} \times (0.001 \text{ km})$ $= \underline{2.485} \text{ km}$
<p>e. Convert grams to kilograms.</p> $3,090 \text{ g} = \underline{3,090} \times (1 \text{ g})$ $= \underline{3,090} \times (0.001 \text{ kg})$ $= \underline{3.090} \text{ kg}$ $= \underline{3.09} \text{ kg}$	<p>f. Convert milliliters to liters.</p> $205 \text{ mL} = \underline{205} \times (1 \text{ mL})$ $= \underline{205} \times (0.001 \text{ L})$ $= \underline{0.205} \text{ L}$

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

<p>a. The screen measures 36 inches. Convert 36 inches to feet.</p> $36 \text{ inches} = 36 \times (1 \text{ inch})$ $= 36 \times \left(\frac{1}{12} \text{ feet}\right)$ $= \frac{36}{12} \text{ feet}$ $= 3 \text{ feet}$ <p>The screen measures 36 inches or 3 feet.</p>	<p>b. A jug of juice holds 8 cups. Convert 8 cups to pints.</p> $8 \text{ c} = 8 \times (1 \text{ c})$ $= 8 \times \left(\frac{1}{2} \text{ p}\right)$ $= \frac{8}{2} \text{ p}$ $= 4 \text{ p}$ <p>One cup makes $\frac{1}{2}$ pint, so 8 cups is the same as 4 pints.</p>
<p>c. The length of the flower garden is 529 centimeters. What is its length in meters?</p> $529 \text{ cm} = 529 \times (1 \text{ cm})$ $= 529 \times (0.01 \text{ m})$ $= 5.29 \text{ m}$ <p>One centimeter makes $\frac{1}{100} = 0.01$ meter, so 529 centimeters is the same as 5.29 meters.</p>	<p>d. The capacity of a container is 2,060 milliliters. Convert this to liters.</p> $2,060 \text{ mL} = 2,060 \times (1 \text{ mL})$ $= 2,060 \times (0.001 \text{ L})$ $= 2.06 \text{ L}$ <p>One milliliter makes $\frac{1}{1,000} = 0.001$ liter, so 2,060 milliliters is the same as 2.06 liters.</p>
<p>e. A hippopotamus weighs 1,560,000 grams. Convert the hippopotamus' weight to kilograms.</p> $1,560,000 \text{ g} = 1,560,000 \times (1 \text{ g})$ $= 1,560,000 \times (0.001 \text{ kg})$ $= 1,560 \text{ kg}$ <p>One gram makes $\frac{1}{1,000} = 0.001$ kilogram, so 1,560,000 grams is the same as 1,560 kilograms.</p>	<p>f. The distance was 372,060 meters. Convert the distance to kilometers.</p> $372,060 \text{ m} = 372,060 \times (1 \text{ m})$ $= 372,060 \times (0.001 \text{ km})$ $= 372.06 \text{ km}$ <p>One meter makes $\frac{1}{1,000} = 0.001$ kilometer, so 372,060 meters is the same as 372.06 kilometers.</p>

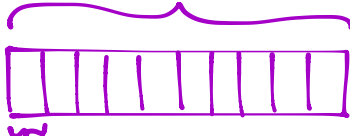
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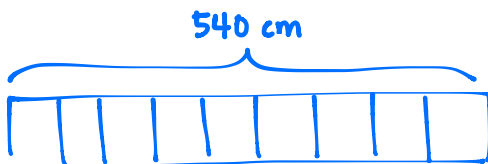
Solve.

1. Tia cut a 4 meters 8 centimeters wire into 10 equal pieces. Marta cut a 540 centimeters wire into 9 equal pieces. How much longer is one of Marta's wires than one of Tia's?

$$4\text{ m } 8\text{ cm} = 4 \times (100\text{ cm}) + 8\text{ cm} = 408\text{ cm}$$



$$408\text{ cm} \div 10 = 40.8\text{ cm}$$

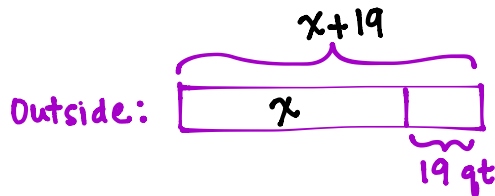


$$540\text{ cm} \div 9 = 60\text{ cm}$$

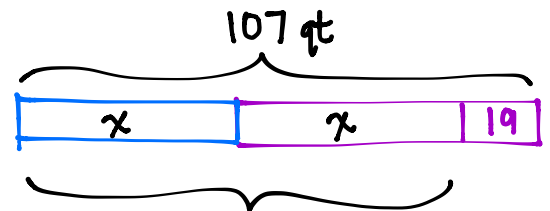
$$\begin{array}{r} 59.2 \\ - 40.8 \\ \hline 19.2 \end{array}$$

One of Marta's wires is 19.2 cm longer than one of Tia's.

2. Jay needs 19 quarts more paint for the outside of his barn than for the inside. If he uses 107 quarts in all, how many gallons of paint will be used to paint the inside of the barn?



x = number of qts used inside



$$107 - 19 = 88$$

$$x = 88 \div 2 = 44\text{ qt}$$

$$44\text{ qt} = 44 \times \left(\frac{1}{4}\text{ gallon}\right)$$

$$= \frac{44}{4}$$

$$= \frac{4 \times 11}{4}$$

$$= \boxed{11\text{ gallons}}$$

11 gallons will be used to paint the inside of the barn.

3. String A is 35 centimeters long. String B is 5 times as long as String A. Both are necessary to create a decorative bottle. Find the total length of string needed for 17 identical decorative bottles. Express your answer in meters.

1 bottle:

Together:

$$\begin{array}{r} 175 \\ + 35 \\ \hline 210 \text{ cm} \end{array}$$

17 bottles: 210 cm

$$\begin{array}{r} \times 17 \\ 1470 \\ + 2100 \\ \hline 3570 \text{ cm} \end{array}$$

$$3570 \text{ cm} = 3570 \times (0.01 \text{ m}) = \boxed{35.7 \text{ m}}$$

The total length of string needed for 17 bottles is 35.7 meters.

4. A pineapple is 7 times as heavy as an orange. The pineapple also weighs 870 grams more than the orange.

- a. What is the total weight in grams for the pineapple and orange?

x = weight of an orange

orange: x

pineapple: $x \mid x \mid x \mid x \mid x \mid x \mid x$

870

$$\begin{array}{r} 145 = x \\ 6 \overline{)870} \\ \underline{-6} \\ 27 \\ \underline{-24} \\ 30 \end{array}$$

$$\begin{array}{r} \text{Total} = 145 \text{ g} \\ \times 8 \\ \hline \boxed{1160 \text{ g}} \end{array}$$

The total weight is 1,160 grams.

- b. Express the total weight of the pineapple and orange in kilograms.

$$\begin{aligned} 1,160 \text{ g} &= 1,160 \times (0.001 \text{ kg}) \\ &= \boxed{1.16 \text{ kg}} \end{aligned}$$

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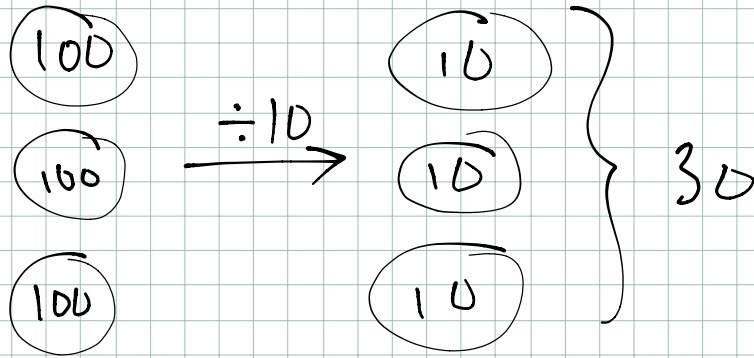
1. Divide. Draw number disks to show your thinking for (a) and (c). You may draw disks on your personal white board to solve the others if necessary.

<p>a. $300 \div 10$</p> <p>see next page</p>	<p>b. $450 \div 10$</p> <p>45</p>
<p>c. $18,000 \div 100$</p> <p>see next page</p>	<p>d. $730,000 \div 100$</p> <p>7300</p>
<p>e. $900,000 \div 1,000$</p> <p>900</p>	<p>f. $680,000 \div 1,000$</p> <p>680</p>

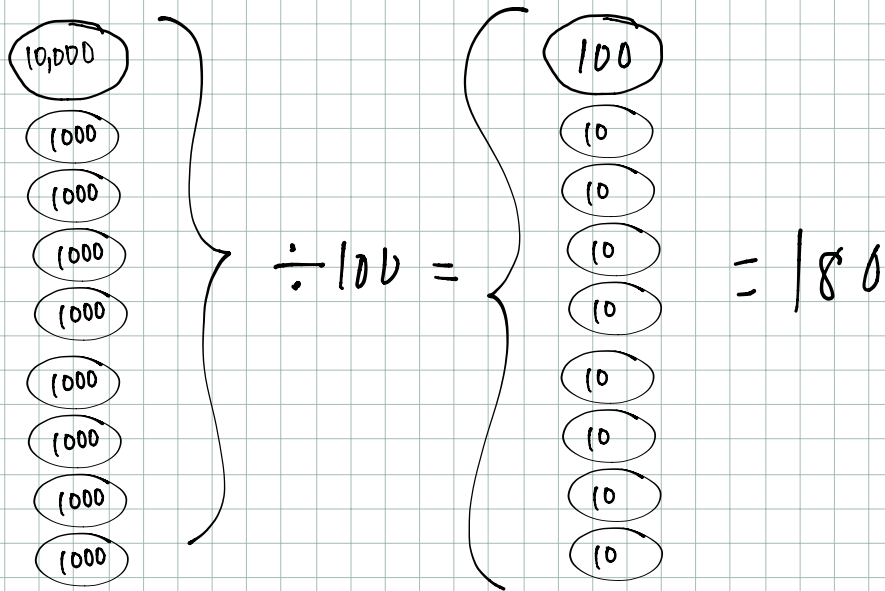
2. Divide. The first one is done for you.

<p>a. $18,000 \div 20$</p> <p>$= 18,000 \div 10 \div 2$</p> <p>$= 1,800 \div 2$</p> <p>$= 900$</p>	<p>b. $18,000 \div 200$</p> <p>$= 18,000 \div 100 \div 2$</p> <p>$= 180 \div 2$</p> <p>$= 90$</p>	<p>c. $18,000 \div 2,000$</p> <p>$= 18,000 \div 1,000 \div 2$</p> <p>$= 18 \div 2$</p> <p>$= 9$</p>
<p>d. $420,000 \div 60$</p> <p>$= 420,000 \div 10 \div 6$</p> <p>$= 42,000 \div 6$</p> <p>$= 7,000$</p>	<p>e. $420,000 \div 600$</p> <p>$= 420,000 \div 100 \div 6$</p> <p>$= 4,200 \div 6$</p> <p>$= 700$</p>	<p>f. $420,000 \div 6,000$</p> <p>$= 420,000 \div 1,000 \div 6$</p> <p>$= 420 \div 6$</p> <p>$= 70$</p>

a) $300 \div 10 = 30$



c) $18,000 \div 100 = 180$



<p>g. $24,000 \div 30$</p> <p>$= 24000 \div 10 \div 3$</p> <p>$= 2400 \div 3$</p> <p>$= 800$</p>	<p>h. $560,000 \div 700$</p> <p>$= 560000 \div 100 \div 7$</p> <p>$= 5600 \div 7$</p> <p>$= 800$</p>	<p>i. $450,000 \div 9,000$</p> <p>$= 450000 \div 1000 \div 9$</p> <p>$= 450 \div 9$</p> <p>$= 50$</p>
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3. A stadium holds 50,000 people. The stadium is divided into 250 different seating sections. How many seats are in each section?

$$\begin{aligned}
 & 50000 \div 250 \\
 = & 50000 \div 10 \div 25 \\
 = & 5000 \div 25 \\
 = & 200
 \end{aligned}$$

200 seats

4. Over the course of a year, a tractor-trailer commutes 160,000 miles across America.
- a. Assuming a trucker changes his tires every 40,000 miles, and that he starts with a brand new set of tires, how many sets of tires will he use in a year?

$$\begin{aligned}
 & 160000 \div 40000 \\
 = & 160000 \div 10000 \div 4 \\
 = & 16 \div 4 \\
 = & 4
 \end{aligned}$$

4 sets of tires

- b. If the trucker changes the oil every 10,000 miles and he starts the year with a fresh oil change, how many times will he change the oil in a year?

$$\begin{aligned}
 & 160000 \div 10000 \\
 = & 16
 \end{aligned}$$

16 oil changes

Name _____

Date _____

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

<p>a. $821 \div 41$ $\approx 800 \div 40$ $= 20$</p>	<p>b. $617 \div 23$ $\approx \underline{600} \div \underline{20}$ $= \underline{30}$</p>	<p>c. $821 \div 39$ $\approx \underline{800} \div \underline{40}$ $= \underline{20}$</p>
<p>d. $482 \div 52$ $\approx \underline{500} \div \underline{50}$ $= \underline{10}$</p>	<p>e. $531 \div 48$ $\approx \underline{500} \div \underline{50}$ $= \underline{10}$</p>	<p>f. $141 \div 73$ $\approx \underline{100} \div \underline{100}$ $= \underline{1}$</p>
<p>g. $476 \div 81$ $\approx \underline{500} \div \underline{100}$ $= \underline{5}$</p>	<p>h. $645 \div 69$ $\approx \underline{700} \div \underline{70}$ $= \underline{10}$</p>	<p>i. $599 \div 99$ $\approx \underline{600} \div \underline{100}$ $= \underline{6}$</p>
<p>j. $301 \div 26$ $\approx \underline{300} \div \underline{30}$ $= \underline{10}$</p>	<p>k. $729 \div 81$ $\approx \underline{700} \div \underline{100}$ $= \underline{7}$</p>	<p>l. $636 \div 25$ $\approx \underline{600} \div \underline{60}$ $= \underline{10}$</p>

m. $835 \div 89$ $\approx \underline{900} \div \underline{90}$ $= \underline{10}$	n. $345 \div 72$ $\approx \underline{350} \div \underline{100}$ $= \underline{3.5}$	o. $559 \div 11$ $\approx \underline{600} \div \underline{10}$ $= \underline{60}$
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2. Mrs. Johnson spent \$611 buying lunch for 78 students. If all of the lunches were the same cost, about how much did she spend on each lunch?

$$\begin{aligned}
 &611 \div 78 \\
 &\approx 600 \div 100 \\
 &= 6
 \end{aligned}$$

About \$6

3. An oil well produces 172 gallons of oil every day. A standard oil barrel holds 42 gallons of oil. About how many barrels of oil will the well produce in one day? Explain your thinking.

$$\begin{aligned}
 &172 \div 42 \\
 &\approx 200 \div 50 \\
 &= 4
 \end{aligned}$$

About 4 barrels

Name _____

Date _____

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

<p>a. $8,328 \div 41$ $\approx 8,000 \div 40$ $= 200$</p>	<p>b. $2,109 \div 23$ $\approx \underline{2000} \div \underline{20}$ $= \underline{100}$</p>	<p>c. $8,215 \div 38$ $\approx \underline{8000} \div \underline{40}$ $= \underline{200}$</p>
<p>d. $3,861 \div 59$ $\approx \underline{3600} \div \underline{60}$ $= \underline{60}$</p>	<p>e. $2,899 \div 66$ $\approx \underline{2800} \div \underline{70}$ $= \underline{40}$</p>	<p>f. $5,576 \div 92$ $\approx \underline{5600} \div \underline{100}$ $= \underline{56}$</p>
<p>g. $5,086 \div 73$ $\approx \underline{4900} \div \underline{70}$ $= \underline{70}$</p>	<p>h. $8,432 \div 81$ $\approx \underline{8800} \div \underline{80}$ $= \underline{110}$</p>	<p>i. $9,032 \div 89$ $\approx \underline{9000} \div \underline{90}$ $= \underline{100}$</p>
<p>j. $2,759 \div 48$ $\approx \underline{3000} \div \underline{50}$ $= \underline{60}$</p>	<p>k. $8,194 \div 91$ $\approx \underline{8100} \div \underline{90}$ $= \underline{90}$</p>	<p>l. $4,368 \div 63$ $\approx \underline{4200} \div \underline{60}$ $= \underline{70}$</p>
<p>m. $6,537 \div 74$ $\approx \underline{6300} \div \underline{70}$ $= \underline{90}$</p>	<p>n. $4,998 \div 48$ $\approx \underline{5000} \div \underline{50}$ $= \underline{100}$</p>	<p>o. $6,106 \div 25$ $\approx \underline{6000} \div \underline{30}$ $= \underline{200}$</p>

2. 91 boxes of apples hold a total of 2,605 apples. Assuming each box has about the same number of apples, estimate the number of apples in each box.

$$2605 \div 91$$

$$\approx 2700 \div 90$$

$$= 30$$

About 30 apples in each box

3. A wild tiger can eat up to 55 pounds of meat in a day. About how many days would it take for a tiger to eat the following prey?

Prey	Weight of Prey	Number of Days
Eland Antelope	1,754 pounds	30
Boar	661 pounds	11
Chital Deer	183 pounds	3
Water Buffalo	2,322 pounds	40

$$1754 \div 55$$

$$\approx 1800 \div 60$$

$$= 30$$

$$661 \div 55$$

$$\approx 660 \div 60$$

$$= 11$$

$$183 \div 55$$

$$\approx 180 \div 60$$

$$= 3$$

$$2322 \div 55$$

$$\approx 2400 \div 60$$

$$= 40$$

Name _____

Date _____

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

a. $71 \div 20$

$$\begin{array}{r} 3 \text{ R } 11 \\ 20 \overline{) 71} \\ \underline{60} \\ 11 \end{array}$$

Check:

$$20 \times 3 = 60$$

$$60 + 11 = 71$$

b. $90 \div 40$

$$\begin{array}{r} 2 \text{ R } 10 \\ 40 \overline{) 90} \\ \underline{80} \\ 10 \end{array}$$

$$40 \times 2 = 80$$

$$80 + 10 = 90$$

c. $95 \div 60$

$$\begin{array}{r} 1 \text{ R } 35 \\ 60 \overline{) 95} \\ \underline{60} \\ 35 \end{array}$$

$$60 \times 1 = 60$$

$$60 + 35 = 95$$

d. $280 \div 30$

$$\begin{array}{r} 9 \text{ R } 10 \\ 30 \overline{) 280} \\ \underline{270} \\ 10 \end{array}$$

$$30 \times 9 = 270$$

$$270 + 10 = 280$$

e. $437 \div 60$

$$\begin{array}{r} 7 \text{ R } 17 \\ 60 \overline{) 437} \\ \underline{420} \\ 17 \end{array}$$

$$60 \times 7 = 420$$

$$420 + 17 = 437$$

f. $346 \div 80$

$$\begin{array}{r} 4 \text{ R } 26 \\ 80 \overline{) 346} \\ \underline{320} \\ 26 \end{array}$$

$$80 \times 4 = 320$$

$$320 + 26 = 346$$

2. A number divided by 40 has a quotient of 6 with a remainder of 16. Find the number.

$$40 \overline{) \boxed{?}} \quad 6 \text{ R } 16$$

$$40 \times 6 = 240$$

$$240 + 16 = 256$$

3. A shipment of 288 reams of paper was delivered. Each of the 30 classrooms received an equal share of the paper. Any extra reams of paper were stored. After the paper was distributed to the classrooms, how many reams of paper were stored?

$$30 \overline{) 288} \quad 9 \text{ R } 18$$

$$\begin{array}{r} 288 \\ -270 \\ \hline 18 \end{array}$$

Each classroom received 9 reams of paper.
The remaining 18 reams were stored.

4. How many sixties are in two hundred forty-four?

$$60 \overline{) 244} \quad 4 \text{ R } 4$$

$$\begin{array}{r} 244 \\ -240 \\ \hline 4 \end{array}$$

There are 4 sixties in 244. There will be 4 left over.

Name _____

Date _____

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

a. $72 \div 31$

$$\begin{array}{r} 2 \text{ R } 10 \\ 31 \overline{) 72} \\ \underline{- 62} \\ 10 \end{array}$$

Check:

$31 \times 2 = 62$

$62 + 10 = 72$

b. $89 \div 21$

$$\begin{array}{r} 4 \text{ R } 5 \\ 21 \overline{) 89} \\ \underline{- 84} \\ 5 \end{array}$$

Check:

$21 \times 4 = 84$

$84 + 5 = 89$ ✓

c. $94 \div 33$

$$\begin{array}{r} 2 \text{ R } 28 \\ 33 \overline{) 94} \\ \underline{- 66} \\ 28 \end{array}$$

Check:

$$\begin{array}{r} 33 \times 2 \\ \hline 66 \end{array} \quad \begin{array}{r} 66 \\ + 28 \\ \hline 94 \end{array}$$



d. $67 \div 19$

$$\begin{array}{r} 3 \\ 19 \overline{) 67} \\ \underline{- 57} \\ 10 \end{array}$$

Check:

$$\begin{array}{r} 19 \times 3 \\ \hline 57 \end{array} \quad \begin{array}{r} 57 \\ + 10 \\ \hline 67 \end{array}$$



e. $79 \div 25$

$$\begin{array}{r} 3 \text{ R } 4 \\ 25 \overline{) 79} \\ \underline{- 75} \\ 4 \end{array}$$

Check:

$$\begin{array}{r} 25 \times 3 \\ \hline 75 \end{array} \quad \begin{array}{r} 75 \\ + 4 \\ \hline 79 \end{array}$$



f. $83 \div 21$

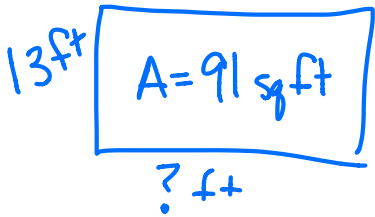
$$\begin{array}{r} 3 \text{ R } 20 \\ 21 \overline{) 83} \\ \underline{- 63} \\ 20 \end{array}$$

Check:

$$\begin{array}{r} 21 \times 3 \\ \hline 63 \end{array} \quad \begin{array}{r} 63 \\ + 20 \\ \hline 83 \end{array}$$



2. A 91 square foot bathroom has a length of 13 feet. What is the width of the bathroom?



$$\begin{array}{r} 7 \\ 13 \overline{) 91} \\ \underline{-91} \\ 0 \end{array}$$

The width is 7 feet.

3. While preparing for a morning conference, Principal Corsetti is laying out 8 dozen bagels on square plates. Each plate can hold 14 bagels.

- a. How many plates of bagels will Mr. Corsetti have?

$$\begin{array}{r} 12 \\ \times 8 \\ \hline 96 \text{ bagels} \end{array}$$

$$\begin{array}{r} 6R12 \\ 14 \overline{) 96} \\ \underline{-84} \\ 12 \end{array}$$

He will have 7 plates.

- b. How many more bagels would be needed to fill the final plate with bagels?

The final plate has 12 bagels, so he will need two more bagels.

Name _____

Date _____

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

a. $129 \div 21$

$$\begin{array}{r} 6 \text{ R}3 \\ 21 \overline{) 129} \\ \underline{- 126} \\ 3 \end{array}$$

Check:

$$21 \times 6 = 126$$

$$126 + 3 = 129$$

b. $158 \div 37$

$$\begin{array}{r} 4 \text{ R}10 \\ 37 \overline{) 158} \\ \underline{- 148} \\ 10 \end{array}$$

$$37 \times 4 = 148$$

$$148 + 10 = 158$$

c. $261 \div 49$

$$\begin{array}{r} 5 \text{ R}16 \\ 49 \overline{) 261} \\ \underline{- 245} \\ 16 \end{array}$$

$$49 \times 5 = 245$$

$$245 + 16 = 261$$

d. $574 \div 82$

$$\begin{array}{r} 7 \text{ R}0 \\ 82 \overline{) 574} \\ \underline{- 574} \\ 0 \end{array}$$

$$82 \times 7 = 574$$

e. $464 \div 58$

$$\begin{array}{r} 8 \\ 58 \overline{) 464} \\ \underline{- 464} \\ 0 \end{array}$$

$$58 \times 8 = 464$$

f. $640 \div 9$

$$\begin{array}{r} 70 \text{ R}10 \\ 9 \overline{) 640} \\ \underline{- 630} \\ 10 \end{array}$$

$$70 \times 9 = 630$$

$$630 + 10 = 640$$

2. It takes Juwan exactly 35 minutes by car to get to his grandmother’s. The nearest parking area is a 4-minute walk from her apartment. One week he visited more often. He realized that he spent 5 hours and 12 minutes traveling to her apartment and then back home. How many round trips did he make to visit his grandmother?

$$\begin{array}{r} 60 \\ \times 5 \\ \hline 300 \end{array}$$

$$300 + 12 = 312$$

$$\begin{array}{r} 8 \\ 39 \overline{) 312} \\ \underline{-312} \\ 0 \end{array}$$

8 trips \rightarrow 4 round trips

3. How many eighty-fours are in 672?

$$\begin{array}{r} 8 \\ 84 \overline{) 672} \\ \underline{-672} \\ 0 \end{array}$$

Name _____

Date _____

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

a. $487 \div 21$

$$\begin{array}{r} 23 \text{ R}4 \\ 21 \overline{) 487} \\ \underline{- 42} \\ 67 \\ \underline{- 63} \\ 4 \end{array}$$

Check:

$21 \times 23 = 483$

$483 + 4 = 487$

b. $485 \div 15$

$$\begin{array}{r} 32 \text{ R}5 \\ 15 \overline{) 485} \\ \underline{- 45} \\ 35 \\ \underline{- 30} \\ 5 \end{array}$$

Check:

$$\begin{array}{r} 32 \\ \times 15 \\ \hline 160 \\ 480 \\ \hline 480 \\ + 5 \\ \hline 485 \end{array}$$



c. $700 \div 21$

$$\begin{array}{r} 33 \text{ R}7 \\ 21 \overline{) 700} \\ \underline{- 63} \\ 70 \\ \underline{- 63} \\ 7 \end{array}$$

Check:

$$\begin{array}{r} 33 \\ \times 21 \\ \hline 693 \\ 693 \\ \hline 693 \\ + 7 \\ \hline 700 \end{array}$$



d. $399 \div 31$

$$\begin{array}{r} 12 \text{ R}27 \\ 31 \overline{) 399} \\ \underline{- 31} \\ 89 \\ \underline{- 62} \\ 27 \end{array}$$

Check:

$$\begin{array}{r} 31 \\ \times 12 \\ \hline 372 \\ 372 \\ \hline 372 \\ + 27 \\ \hline 399 \end{array}$$



e. $820 \div 42$

$$\begin{array}{r} 19 \text{ R}22 \\ 42 \overline{)820} \\ \underline{-42} \\ 400 \\ \underline{-378} \\ 22 \end{array}$$

Check:

$$\begin{array}{r} 42 \\ \times 19 \\ \hline 798 \end{array} \quad \begin{array}{r} 798 \\ + 22 \\ \hline 820 \end{array} \quad \checkmark$$

f. $908 \div 56$

$$\begin{array}{r} 16 \text{ R}12 \\ 56 \overline{)908} \\ \underline{-56} \\ 348 \\ \underline{-336} \\ 12 \end{array}$$

Check:

$$\begin{array}{r} 56 \\ \times 16 \\ \hline 896 \end{array} \quad \begin{array}{r} 896 \\ + 12 \\ \hline 908 \end{array} \quad \checkmark$$

2. When dividing 878 by 31, a student finds a quotient of 28 with a remainder of 11. Check the student's work, and use the check to find the error in the solution.

$$\begin{array}{r} 28 \text{ R}11 \\ 31 \overline{)878} \\ \underline{62} \\ 258 \\ \underline{-248} \\ 10 \end{array}$$

Check

$$\begin{array}{r} 31 \\ \times 28 \\ \hline 868 \end{array} \quad \begin{array}{r} 868 \\ + 10 \\ \hline 878 \end{array}$$

The remainder should be 10, not 11.

Name _____

Date _____

1. Divide. Then, check using multiplication.

a. $9,962 \div 41$ 242 R40 Check

$$\begin{array}{r} 41 \overline{) 9962} \\ \underline{-82} \\ 176 \\ \underline{-164} \\ 122 \\ \underline{-82} \\ 40 \end{array}$$

$$\begin{array}{r} 242 \\ \times 41 \\ \hline 242 \\ + 9680 \\ \hline 9922 \end{array}$$

$$\begin{array}{r} 9922 \\ + 40 \\ \hline 9962 \end{array}$$

b. $1,495 \div 45$ 33 R10 Check

$$\begin{array}{r} 45 \overline{) 1495} \\ \underline{-135} \\ 145 \\ \underline{-135} \\ 10 \end{array}$$

$$\begin{array}{r} 33 \\ \times 45 \\ \hline 165 \\ + 1320 \\ \hline 1485 \end{array}$$

$$\begin{array}{r} 1485 \\ + 10 \\ \hline 1495 \end{array}$$

c. $6,691 \div 28$ 238 R27 Check

$$\begin{array}{r} 28 \overline{) 6691} \\ \underline{-56} \\ 109 \\ \underline{-84} \\ 251 \\ \underline{-224} \\ 27 \end{array}$$

$$\begin{array}{r} 238 \\ \times 28 \\ \hline 1904 \\ + 4760 \\ \hline 6664 \end{array}$$

$$\begin{array}{r} 6664 \\ + 27 \\ \hline 6691 \end{array}$$

d. $2,625 \div 32$ 82 R1 Check

$$\begin{array}{r} 32 \overline{) 2625} \\ \underline{-256} \\ 65 \\ \underline{-64} \\ 1 \end{array}$$

$$\begin{array}{r} 82 \\ \times 32 \\ \hline 164 \\ + 2460 \\ \hline 2624 \end{array}$$

$$\begin{array}{r} 2624 \\ + 1 \\ \hline 2625 \end{array}$$

e. $2,409 \div 19$ 126 R15 Check

$$\begin{array}{r} 19 \overline{) 2409} \\ \underline{-19} \\ 50 \\ \underline{-38} \\ 129 \\ \underline{-114} \\ 15 \end{array}$$

$$\begin{array}{r} 126 \\ \times 19 \\ \hline 1134 \\ + 1260 \\ \hline 2394 \end{array}$$

$$\begin{array}{r} 2394 \\ + 15 \\ \hline 2409 \end{array}$$

f. $5,821 \div 62$ 93 R55 Check

$$\begin{array}{r} 62 \overline{) 5821} \\ \underline{-558} \\ 241 \\ \underline{-186} \\ 55 \end{array}$$

$$\begin{array}{r} 93 \\ \times 62 \\ \hline 186 \\ + 5580 \\ \hline 5766 \end{array}$$

$$\begin{array}{r} 5766 \\ + 55 \\ \hline 5821 \end{array}$$

2. A political gathering in South America was attended by 7,910 people. Each of South America's 14 countries was equally represented. How many representatives attended from each country?

$$\begin{array}{r}
 565 \\
 14 \overline{) 7910} \\
 \underline{-70} \\
 91 \\
 \underline{-84} \\
 70 \\
 \underline{-70} \\
 0
 \end{array}$$

There were 565 representatives from each country.

3. A candy company packages caramel into containers that hold 32 fluid ounces. In the last batch, 1,848 fluid ounces of caramel were made. How many containers were needed for this batch?

$$\begin{array}{r}
 57 \text{ R}24 \\
 32 \overline{) 1848} \\
 \underline{-160} \\
 248 \\
 \underline{-224} \\
 24
 \end{array}$$

The candy company will need 58 containers. 57 will be full. The 58th container will only have 24 fluid ounces.

Name _____

Date _____

1. Divide. Show every other division sentence in two steps. The first two have been done for you.

a. $1.8 \div 6 = 0.3$

b. $1.8 \div 60 = (1.8 \div 6) \div 10 = 0.3 \div 10 = 0.03$

c. $2.4 \div 8 = \underline{0.3}$

d. $2.4 \div 80 = \underline{(2.4 \div 8) \div 10 = 0.3 \div 10 = 0.03}$

e. $14.6 \div 2 = \underline{7.3}$

f. $14.6 \div 20 = \underline{(14.6 \div 2) \div 10 = 7.3 \div 10 = 0.73}$

g. $0.8 \div 4 = \underline{0.2}$

h. $80 \div 400 = \underline{(80 \div 4) \div 100 = 20 \div 100 = 0.2}$

i. $0.56 \div 7 = \underline{0.08}$

j. $0.56 \div 70 = \underline{(0.56 \div 7) \div 10 = 0.08 \div 10 = 0.008}$

k. $9.45 \div 9 = \underline{1.05}$

l. $9.45 \div 900 = \underline{(9.45 \div 9) \div 100 = 1.05 \div 100 = 0.0105}$

2. Use place value reasoning and the first quotient to compute the second quotient. Use place value to explain how you placed the decimal point.

a. $65.6 \div 80 = 0.82$

$65.6 \div 8 = \underline{8.2}$

b. $2.5 \div 50 = 0.05$

$2.5 \div 5 = \underline{0.5}$

c. $19.2 \div 40 = 0.48$

$19.2 \div 4 = \underline{4.8}$

d. $39.6 \div 6 = 6.6$

$39.6 \div 60 = \underline{0.66}$

3. Chris rode his bike along the same route every day for 60 days. He logged that he had gone exactly 127.8 miles.
- a. How many miles did he bike each day? Show your work to explain how you know.

$$127.8 \div 60 = (127.8 \div 6) \div 10 = 21.3 \div 10 = 2.13$$

He biked 2.13 miles each day.

- b. How many miles did he bike over the course of two weeks?

$$\begin{array}{r} 2.13 \\ \times 14 \\ \hline 852 \\ + 2130 \\ \hline 29.82 \end{array}$$

He biked 29.82 miles in two weeks.

4. 2.1 liters of coffee were equally distributed to 30 cups. How many milliliters of coffee were in each cup?

$$2.1 \div 30 = (2.1 \div 3) \div 10 = 0.7 \div 10 = 0.07$$

Each cup has 0.07 liters of coffee.

$$0.07 \text{ L} = 70 \text{ mL}$$

Each cup has 70 mL of coffee

Name _____

Date _____

1. Estimate the quotients.

a. $3.53 \div 51 \approx 3.5 \div 50 = 3.5 \div 5 \div 10 = 0.7 \div 10 = 0.07$

b. $24.2 \div 42 \approx 24 \div 40 = 24 \div 4 \div 10 = 6 \div 10 = 0.6$

c. $9.13 \div 23 \approx 10 \div 20 = 10 \div 2 \div 10 = 5 \div 10 = 0.5$

d. $79.2 \div 39 \approx 80 \div 40 = 2$

e. $7.19 \div 58 \approx 7.2 \div 60 = 7.2 \div 6 \div 10 = 1.2 \div 10 = 0.12$

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

a. $9.13 \div 42 \approx 9.2 \div 40 = 9.2 \div 4 \div 10 = 2.3 \div 10 = 0.23$

b. $913 \div 42 \approx 23$

c. $91.3 \div 42 \approx 2.3$

3. Mrs. Huynh bought a bag of 3 dozen toy animals as party favors for her son's birthday party for \$28.97. Estimate the price of each toy animal.

$$\begin{array}{r} 12 \\ \times 3 \\ \hline 36 \end{array}$$

$$28.97 \div 36 \approx 28 \div 40 = 28 \div 4 \div 10 = 7 \div 10 = 0.7$$

Each toy is about 70¢.

4. Carter drank 15.75 gallons of water in 4 weeks. He drank the same amount of water each day.
- a. Estimate how many gallons he drank in one day.

$$15.75 \div 4 \approx 16 \div 4 = 4 \text{ in a week}$$

$$4 \div 7 \approx 4 \div 8 = 0.5$$

→ About 0.5 gallons each day.

- b. Estimate how many gallons he drank in one week.

$$15.75 \div 4 \approx 16 \div 4 = 4 \text{ in each week}$$

- c. About how many days altogether will it take him to drink 20 gallons?

$$4 \text{ gallons each week} \times \boxed{5} = 20 \text{ gallons}$$

It will take about 5 weeks, which is 35 days.

NOTE: Because students are being asked to estimate, each problem may have multiple correct "answers".

Name _____

Date _____

1. Create two whole number division problems that have a quotient of 9 and a remainder of 5. Justify which is greater using decimal division.

$$\begin{array}{r} 9 \text{ R}5 \\ 8 \overline{)77} \end{array}$$

$$\begin{array}{r} 9 \text{ R}5 \\ 10 \overline{)95} \end{array}$$

$$\begin{array}{r} 9.625 \\ 8 \overline{)77.000} \\ \underline{-72} \downarrow \\ 50 \downarrow \\ \underline{-48} \downarrow \\ 20 \downarrow \\ \underline{-16} \downarrow \\ 40 \downarrow \\ \underline{-40} \\ 0 \end{array}$$

$$\begin{array}{r} 9.5 \\ 10 \overline{)95.0} \\ \underline{-90} \\ 50 \\ \underline{-50} \\ 0 \end{array}$$

8 $\overline{)77}$ is greater than 10 $\overline{)95}$

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

a. $75.9 \div 22$

$$\begin{array}{r} 3.45 \\ \times 22 \\ \hline 690 \\ 6900 \\ \hline 75.90 \end{array}$$

$$\begin{array}{r} 3.45 \\ 22 \overline{)75.90} \\ \underline{-66} \downarrow \\ 99 \downarrow \\ \underline{-88} \downarrow \\ 110 \\ \underline{-110} \\ 0 \end{array}$$

b. $97.28 \div 19$

$$\begin{array}{r} 5.12 \\ 19 \overline{)97.28} \\ \underline{95} \\ 22 \\ \underline{-19} \\ 38 \\ \underline{-38} \\ 0 \end{array}$$

$$\begin{array}{r} 5.12 \\ \times 19 \\ \hline 4608 \\ +5120 \\ \hline 97.28 \end{array}$$

c. $77.14 \div 38$

$$\begin{array}{r} 2.03 \\ 38 \overline{)77.14} \\ \underline{-76} \downarrow \\ 114 \\ \underline{-114} \\ 0 \end{array}$$

$$\begin{array}{r} 2.03 \\ \times 38 \\ \hline 1624 \\ +6090 \\ \hline 77.14 \end{array}$$

d. $12.18 \div 29$

$$\begin{array}{r} 0.42 \\ 29 \overline{)12.18} \\ \underline{-116} \\ 58 \\ \underline{-58} \\ 0 \end{array}$$

$$\begin{array}{r} 0.42 \\ \times 29 \\ \hline 378 \\ 840 \\ \hline 12.18 \end{array}$$

3. Divide.

a. $97.58 \div 34$

$$\begin{array}{r} 2.87 \\ 34 \overline{)97.58} \\ \underline{-68} \\ 295 \\ \underline{-272} \\ 238 \\ \underline{-238} \\ 0 \end{array}$$

$$\begin{array}{r} 2.87 \\ \times 34 \\ \hline 1148 \\ + 8610 \\ \hline 97.58 \end{array}$$

b. $55.35 \div 45$

$$\begin{array}{r} 1.23 \\ 45 \overline{)55.35} \\ \underline{-45} \\ 103 \\ \underline{-90} \\ 135 \\ \underline{-135} \\ 0 \end{array}$$

$$\begin{array}{r} 1.23 \\ \times 45 \\ \hline 615 \\ + 4920 \\ \hline 55.35 \end{array}$$

4. Use the equations on the left to solve the problems on the right. Explain how you decided where to place the decimal in the quotient.

a. $520.3 \div 43 = 12.1$

$52.03 \div 43 = \underline{1.21}$

The dividend is 10 times smaller, so the quotient will be 10 times smaller, too.

b. $19.08 \div 36 = 0.53$

$190.8 \div 36 = \underline{5.3}$

The dividend is 10 times bigger, so the quotient will be 10 times bigger, too.

5. You can look up information on the world's tallest buildings at <http://www.infoplease.com/ipa/A0001338.html>.
- a. The Aon Centre in Chicago, Illinois, is one of the world's tallest buildings. Built in 1973, it is 1,136 feet high and has 80 stories. If each story is of equal height, how tall is each story?

$$\begin{array}{r}
 14.2 \\
 80 \overline{) 1136.0} \\
 \underline{- 80} \\
 336 \\
 \underline{- 320} \\
 160 \\
 \underline{- 160} \\
 0
 \end{array}$$

Each story is 14.2 feet tall.

- b. Burj al Arab Hotel, another one of the world's tallest buildings, was finished in 1999. Located in Dubai, it is 1,053 feet high with 60 stories. If each floor is the same height, how much taller or shorter is each floor than the height of the floors in the Aon Center?

$$\begin{array}{r}
 17.55 \\
 60 \overline{) 1053.00} \\
 \underline{- 60} \\
 453 \\
 \underline{- 420} \\
 330 \\
 \underline{- 300} \\
 300 \\
 \underline{- 300} \\
 0
 \end{array}$$

Each story is 17.55 feet tall.

$$\begin{array}{r}
 17.55 \\
 \underline{- 14.2} \\
 3.35
 \end{array}$$

The floors of the Burj al Arab Hotel are 3.35 feet taller than the floors of the Aon Center.

Name _____

Date _____

1. Divide and check.

a. $7 \div 28$

$$\begin{array}{r} 28 \overline{) 7.00} \\ \underline{-56} \\ 140 \\ \underline{-140} \\ 0 \end{array}$$

$$\begin{array}{r} 0.25 \\ \times 28 \\ \hline 200 \\ +500 \\ \hline 7.00 \end{array}$$

c. $6.5 \div 13$

$$\begin{array}{r} 13 \overline{) 6.5} \\ \underline{-65} \\ 0 \end{array}$$

$$\begin{array}{r} 13 \\ \times 0.5 \\ \hline 6.5 \end{array}$$

e. $561.68 \div 28$

$$\begin{array}{r} 28 \overline{) 561.68} \\ \underline{-56} \\ 0168 \\ \underline{-168} \\ 0 \end{array}$$

$$\begin{array}{r} 20.06 \\ \times 28 \\ \hline 16048 \\ +40120 \\ \hline 561.68 \end{array}$$

b. $51 \div 25$

$$\begin{array}{r} 25 \overline{) 51.00} \\ \underline{-50} \\ 100 \\ \underline{-100} \\ 0 \end{array}$$

d. $132.16 \div 16$

$$\begin{array}{r} 16 \overline{) 132.16} \\ \underline{-128} \\ 41 \\ \underline{-32} \\ 96 \\ \underline{-96} \\ 0 \end{array}$$

$$\begin{array}{r} 8.26 \\ \times 16 \\ \hline 4956 \\ +8260 \\ \hline 132.16 \end{array}$$

f. $604.8 \div 36$

$$\begin{array}{r} 36 \overline{) 604.8} \\ \underline{-36} \\ 244 \\ \underline{-216} \\ 288 \\ \underline{-288} \\ 0 \end{array}$$

$$\begin{array}{r} 16.8 \\ \times 36 \\ \hline 1008 \\ 5040 \\ \hline 604.8 \end{array}$$

$$\begin{array}{r} 2.04 \\ \times 25 \\ \hline 1020 \\ +4080 \\ \hline 51.00 \end{array}$$

2. In a science class, students water a plant with the same amount of water each day for 28 consecutive days. If the students use a total of 23.8 liters of water over the 28 days, how many liters of water did they use each day? How many milliliters did they use each day?

$$\begin{array}{r} 28 \overline{) 23.80} \\ \underline{-224} \\ 140 \\ \underline{-140} \\ 0 \end{array}$$

They use 0.85 L each day.

$$0.85 \text{ L} = 850 \text{ ml}$$

3. A seamstress has a piece of cloth that is 3 yards long. She cuts it into shorter lengths of 16 inches each. How many of the shorter pieces can she cut?

$$\begin{array}{r} 36 \\ \times 3 \\ \hline 108 \end{array}$$

$$\begin{array}{r} 6 \\ 16 \overline{)108} \\ \underline{-96} \\ 12 \end{array}$$

She can cut 6 of the shorter pieces.

4. Jenny filled 12 pitchers with an equal amount of lemonade in each. The total amount of lemonade in the 12 pitchers was 41.4 liters. How much lemonade would be in 7 pitchers?

$$\begin{array}{r} 3.45 \\ 12 \overline{)41.40} \\ \underline{-36} \\ 54 \\ \underline{-48} \\ 60 \\ \underline{-60} \\ 0 \end{array}$$

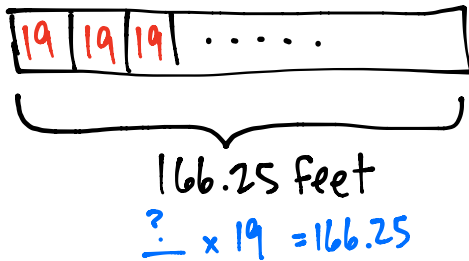
$$\begin{array}{r} 3.45 \\ \times 7 \\ \hline 24.15 \end{array}$$

24.15 liters in the seven pitchers.

Name _____

Date _____

1. Mr. Rice needs to replace the 166.25 ft of edging on the flower beds in his backyard. The edging is sold in length of 19 ft each. How many lengths of edging will he need to purchase?



$$\begin{array}{r} 8.75 \\ 19 \overline{) 166.25} \\ \underline{-152} \\ 142 \\ \underline{-133} \\ 95 \\ \underline{-95} \\ 0 \end{array}$$

He will need to buy 9 lengths.

2. Olivia is making granola bars and will use 17.9 oz of pistachios, 12.6 oz of almonds, 12.5 oz of sunflower seeds, and 12.5 oz of cashews. This amount makes 25 bars. What is the total amount of nuts in each bar?

$$\begin{array}{r} 17.9 \\ 12.6 \\ 12.5 \\ + 12.5 \\ \hline 55.5 \end{array}$$

$$\begin{array}{r} 2.22 \\ 25 \overline{) 55.50} \\ \underline{-50} \\ 55 \\ \underline{-50} \\ 50 \\ \underline{-50} \\ 0 \end{array}$$

There are 2.22 ounces in each bar.

3. Adam has 16.45 kg of flour and he uses 6.4 kg to make hot cross buns. The remaining flour is exactly enough to make 15 batches of scones. How much flour will be in each batch?

$$\begin{array}{r} 16.45 \\ - 6.4 \\ \hline 10.05 \end{array}$$

$$\begin{array}{r} 0.67 \\ 15 \overline{) 10.05} \\ \underline{-90} \\ 105 \\ \underline{-105} \\ 0 \end{array}$$

There is 0.67 kg of flour in each batch.

4. There are 90 fifth grade students going on a field trip. Each one pays the teacher \$9.25 to cover admission to the theater and lunch. Admission for the students will cost \$315 and each one gets and equal amount to spend on lunch. How much will each fifth grader be able to spend on lunch?

$$\begin{array}{r} 9.25 \\ \times 90 \\ \hline 832.50 \end{array}$$

$$\begin{array}{r} 832.50 \\ -315.00 \\ \hline 517.50 \end{array}$$

$$\begin{array}{r} 5.75 \\ 90 \overline{) 517.50} \\ \underline{450} \\ 675 \\ \underline{630} \\ 450 \\ \underline{450} \\ 0 \end{array}$$

Each student gets \$5.75 for lunch.

5. Ben is making math manipulatives to sell. He needs to make at least \$450. Each manipulative costs \$18 to make. He is selling them for \$30 each. What is the minimum number he can sell to reach his goal?

$$\begin{array}{r} 30 \\ -18 \\ \hline 12 \end{array}$$

\$12 profit on each item

$$\begin{array}{r} 37.5 \\ 12 \overline{) 450.0} \\ \underline{-36} \\ 90 \\ \underline{-84} \\ 60 \\ \underline{-60} \\ 0 \end{array}$$

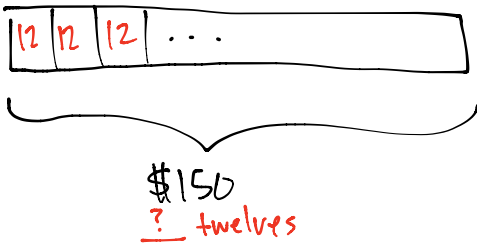
He will need to sell 38 manipulatives

Name _____

Date _____

Directions: Solve the word problems using the bar model.

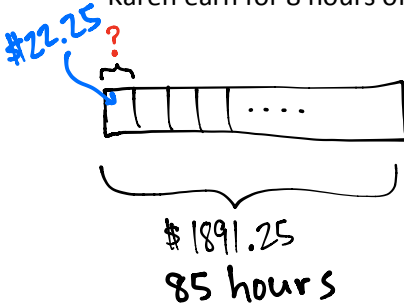
1. Michelle wants to save \$150 for a trip to Six Flags Amusement Park. If she saves \$12 each week, how many weeks will it take her to save enough money for the trip?



$$\begin{array}{r}
 12 \overline{) 150.0} \\
 \underline{-12} \\
 30 \\
 \underline{-24} \\
 60 \\
 \underline{-60} \\
 0
 \end{array}$$

It will take 13 weeks to save enough.

2. Karen works for 85 hours over a two week period. She earns \$1,891.25 over this period. How much does Karen earn for 8 hours of work?

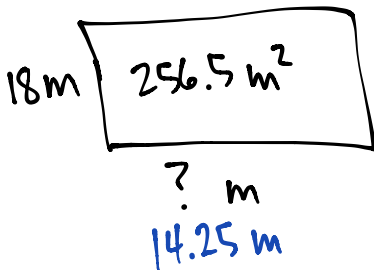


$$\begin{array}{r}
 22.25 \\
 85 \overline{) 1891.25} \\
 \underline{170} \\
 191 \\
 \underline{-170} \\
 212 \\
 \underline{-170} \\
 425 \\
 \underline{-425} \\
 0
 \end{array}$$

$$\begin{array}{r}
 22.25 \\
 \times 8 \\
 \hline
 178.00
 \end{array}$$

\$178

3. The area of a rectangle is 256.5 m^2 . If the length is 18 m, what is the perimeter of the rectangle?



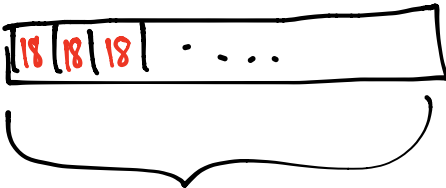
$$\begin{array}{r}
 14.25 \\
 18 \overline{) 256.50} \\
 \underline{18} \\
 76 \\
 \underline{-72} \\
 45 \\
 \underline{-36} \\
 90 \\
 \underline{-90} \\
 0
 \end{array}$$

$$(14.25 \times 2) + (18 \times 2) \\
 28.5 + 36$$

$$\begin{array}{r}
 28.5 \\
 + 36 \\
 \hline
 64.5
 \end{array}$$

64.5 m

4. Tyler baked 702 cookies. He sold them in boxes of 18. After selling all the boxes of cookies, he earned \$136.50. What was the cost of one box of cookies?



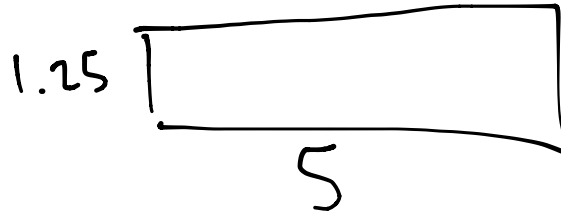
702 cookies
? boxes

$$\begin{array}{r}
 39 \text{ boxes} \\
 18 \overline{)702} \\
 \underline{54} \\
 162 \\
 \underline{-162} \\
 0
 \end{array}$$

$$\begin{array}{r}
 3.50 \\
 39 \overline{)136.50} \\
 \underline{117} \\
 195 \\
 \underline{-195} \\
 0
 \end{array}$$

One box costs \$3.50

5. A park is 4 times as long as it is wide. If the distance around the park is 12.5 kilometers, what is the area of the park?



length = 1 unit
width = 4 units
perimeter = 10 units

$$\begin{array}{r}
 1.25 \\
 \times \quad 5 \\
 \hline
 6.25
 \end{array}$$

$$12.5 \div 10 = 1.25$$

Each unit is 1.25 km long.

$$\begin{array}{r}
 1.25 \\
 \times \quad 4 \\
 \hline
 5.00
 \end{array}$$

Area is 6.25 km²