SOLUTIONS

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GRADE 5 • MODULE 2

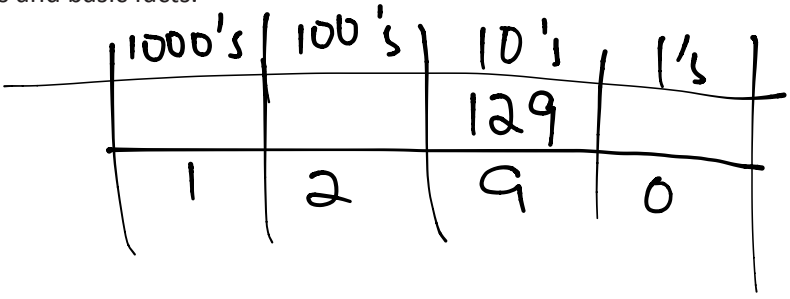
Multi-Digit Whole Number and Decimal Fraction Operations

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 _____ Date _____

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



a. 43 × 30

Think: 43 ones × 3 tens = 129 tens

43 × 30 = 1,290

b. 430 × 30

Think: 43 tens × 3 tens = 129 hundreds

430 × 30 = 12,900

c. 830 × 20

Think: 83 tens × 2 tens = 166 hundreds

830 × 20 = 16,600

d. 4,400 × 400

44 hundreds × 4 hundreds = 176 10,000

4,400 × 400 = 1,760,000

e. 80 × 5,000

8 tens × 5 thousands = 40 10000

80 × 5,000 = 400,000

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

a. 35 hundreds = 5 tens × 7 tens True 5 tens × 7 tens = 5 × 7 × ten × ten = 35 hundreds

b. 770 × 6 = 77 × 6 × 100 False. 770 × 6 = 77 tens × 6 = 77 × 6 × 10 ← not 100

c. 50 tens × 4 hundreds = 40 tens × 5 hundreds True. 40 tens × 5 hundreds
= 10 tens × 4 × 5 hundreds
= 10 tens × 5 × 4 hundreds
= 50 tens × 4 hundreds

d. 24 × 10 × 90 = 90 × 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 × 10 = 250	50 × 50 = (5 × 10) × (5 × 10) = (5 × 5) × 100 = 2,500	50 × 500 = (5 × 5) × (10 × 100) = 25,000
b.	80 × 5 8 × 10 × 5 8 × 5 × 10 40 × 10 = 400	80 × 50 8 × 5 × 10 × 10 40 × 100 4000	800 × 500 8 × 5 × 100 × 100 40 × 10,000 400,000	8,000 × 50 8 × 5 × 1000 × 10 40 × 10,000 400,000
c.	637 × 3 1911	6,370 × 30 637 × 3 × 10 × 10 1911 × 100 191,100	6,370 × 300 637 × 3 × 10 × 100 1911 × 1,000 1,911,000	63,700 × 300 637 × 3 × 100 × 100 1911 × 10,000 19,110,000

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

20 × 30
2 × 3 × 10 × 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.

4,230 × 10 = 42,300

4,230 × 500
423 × 5 × 10 × 100
2115 × 1,000
2,115,000

Name _____ Date _____

1. Round the factors to estimate the products.
   a. 697 × 82 ≈ 700 × 80 = 56 000

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

   b. 5,897 × 67 ≈ 6,000 × 70 = 420,000

   A reasonable estimate for 5,897 × 67 is 420,000.

   c. 8,840 × 45 ≈ 9000 × 50 = 450,000

   A reasonable estimate for 8,840 × 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 × 73	3,000 × 70	210,000
b. 82,290 × 240	80,000 × 200	16,000,000
c. 9,832 × 39	10,000 × 40	400,000
d. 98 tens × 36 tens	1000 × 400	400,000
e. 893 hundreds × 85 tens	90,000 × 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 × 12	81,467 × 121	8,146 × 121	81,477 × 1,217
8000 × 10	80,000 × 100	8,000 × 100	80000 × 1000
80,000	8,000,000	800,000	80,000,000

4. Fill in the blank with the missing estimate.

   a. 751 × 34 ≈ 8000 × 30 = 24,000

   b. 627 × 674 ≈ 600 × 700 = 420,000

   c. 7,939 × 541 ≈ 8000 × 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 × 81 ≈ 40,000 × 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 × ___ = 3,000

300 × 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 × 12 × 5

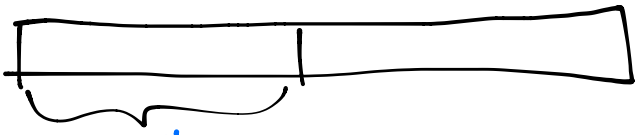
300 × 10 × 5 = 300 × 50 = 15000

About $15,000

Name _____ Date _____

1. Draw a model then write the numerical expressions.

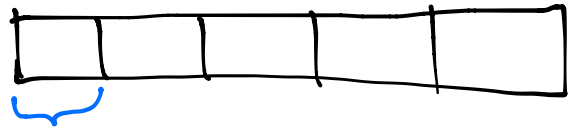
a. The sum of 21 and 4, doubled



21+4

(21+4) x 2

b. 5 times the sum of 7 and 23



7+23

5 x (7+23)

c. 2 times the difference between 49.5 and 37.5

49.5−37.5

2 x (49.5−37.5)

d. The sum of 3 fifteens and 4 twos

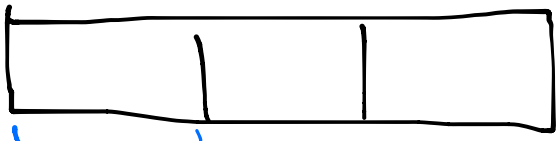
(3 x 15) + (4 x 2)

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

(9x37) − (8x37)

?

f. Triple the sum of 45 and 55



45+55

3 x (45+55)

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) × (8 + 12) and (14 × 12) + (8 × 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 twentys is bigger than 22 twelves.

$26 \times 20 = 26 \times 2 \times 10$

$= 52 \times 10$

$= 520$

$(14 \times 12) + (8 \times 12)$

$168 + 96$

264

Name _____ Date _____

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

   a. **37 × 19**

   37 nineteens | (30 × 19) – (7 × 29) | 37 × (20 – 1) | (40 – 2) × 19

   b. **26 × 35**

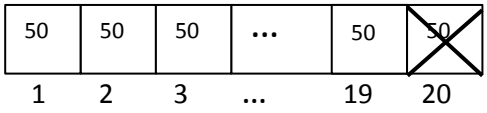
   35 twenty-sixes | (26 + 30) × (26 + 5) | (26 × 30) + (26 × 5) | 35 × (20 + 60)

   c. **34 × 89**

   34 × (80 + 9) | (34 × 8) + (34 × 9) | 34 × (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 × 50 = 19 fifties

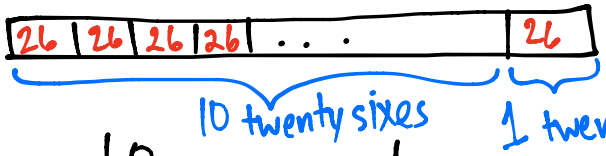


Think: 20 fifties – 1 fifties

= (20 × 50) – (1 × 50)

= 1000 – 50 = 950

b. 11 × 26 = 11 twenty-sixes

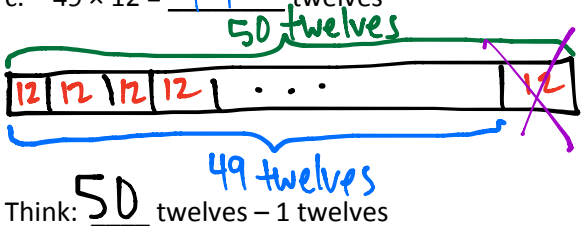


Think: 10 twenty-sixes + 1 twenty-sixes

= (10 × 26) + (1 × 26)

= 260 + 26 = 286

c. 49 × 12 = 49 twelves



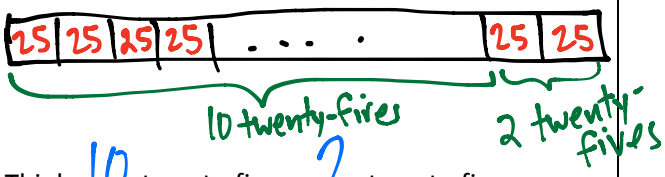
Think: 50 twelves – 1 twelves

= (50 × 12) – (1 × 12)

= 600 – 12 = 588

d. 12 × 25 = 12 ~~seventy~~ fives

twenty-fives



Think: 10 twenty-fives + 2 twenty-fives

= (10 × 25) + (2 × 25)

= 250 + 50 = 300

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

a. 29 × 12 = 29 twelves

Think: 30 twelves – 1 twelve

= 30 × 12) – (1 × 12)

= 360 – 12 = 348

b. 11 × 31 = 31 elevens

Think: 30 elevens + 1 eleven

= (30 × 11) + (1 × 11)

= 330 + 11 = 341

c. 19 × 11 = 19 elevens

Think: 20 elevens – 1 eleven

= (20 × 11) – (1 × 11)

= 220 – 11 = 209

d. 50 × 13 = 13 fifty

Think: 10 fifty + 3 fifty

= (10 × 50) + (3 × 50)

= 500 + 150 = 650

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

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

5. Solve mentally.

a. 16 × 99 = $(16 \times 100) - (16 \times 1) = 1600 - 16 = 1584$

b. 20 × 101 = $(20 \times 100) \times (20 \times 1) = 2000 + 20 = 2020$

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.

$14 \times 19 = (14 \times 20) - (14 \times 1)$

$= 280 - 14$

$= 266$

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.

$23 \times 101 = (23 \times 100) + (23 \times 1)$

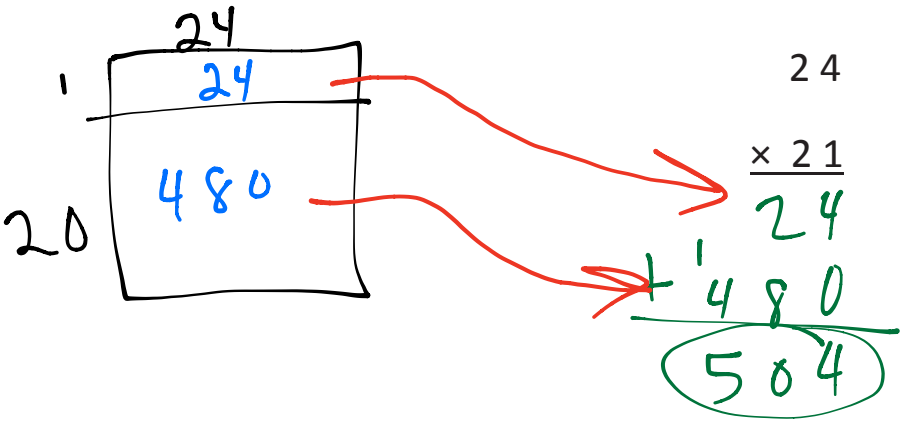
$= 2300 + 23$

$= 2323$

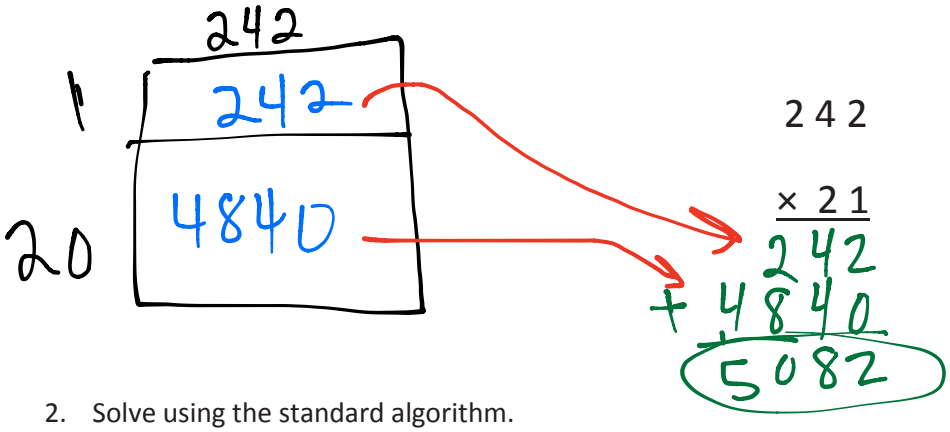
Name _____ Date _____

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 × 21 = _____

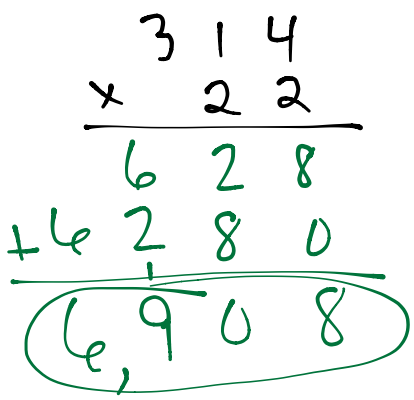


b. 242 × 21 = _____

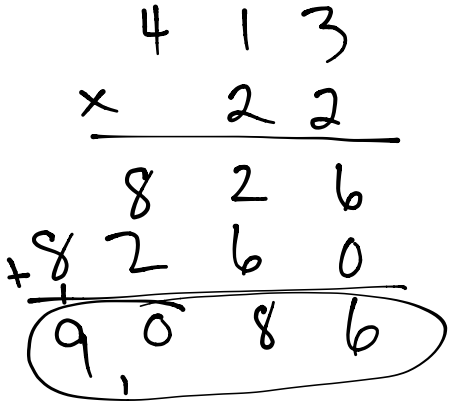


2. Solve using the standard algorithm.

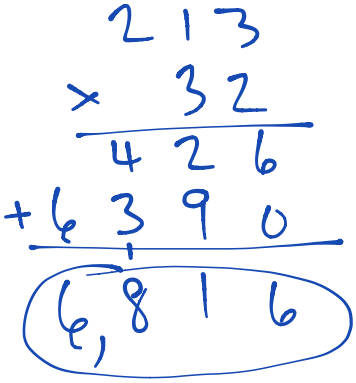
a. 314 × 22 = _____



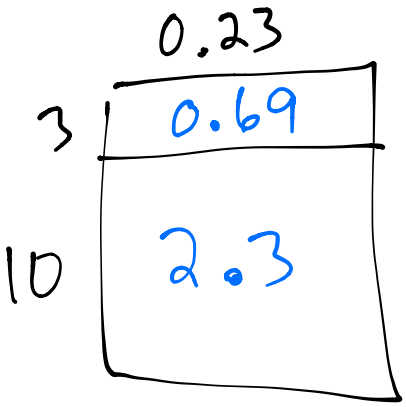
b. 413 × 22 = _____



c. 213 × 32 = _____

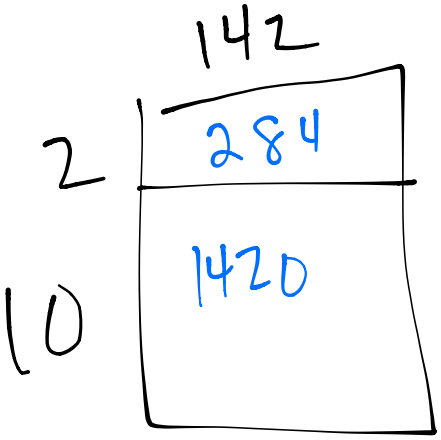


3. A young snake measures 0.23 m long. During the course of his lifetime, he will grow to be 13 times his current length. What will his length be when he's full grown?



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

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?



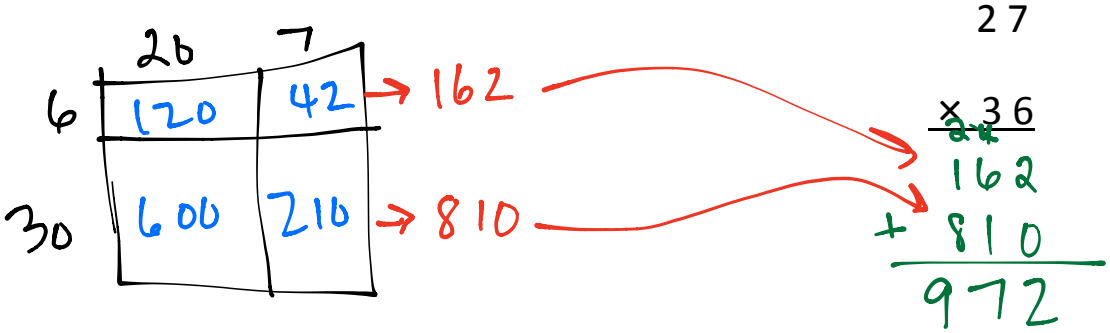
$$\begin{array}{r} 142 \\ \times \quad 12 \\ \hline 284 \\ +1420 \\ \hline 1,704 \end{array}$$

$1,704

Name _____ Date _____

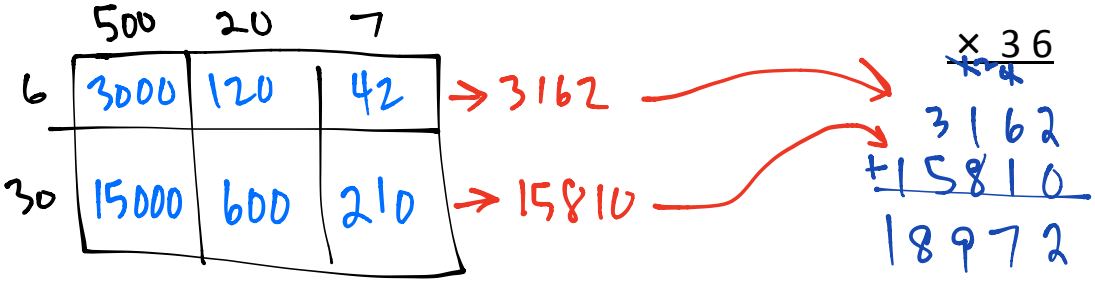
1. Draw an area model, and then solve using the standard algorithm. Use arrows to match the partial products from your area model to the partial products in the algorithm.

a. 27 × 36 = _____



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

b. 527 × 36 = _____



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

2. Solve using the standard algorithm.

a. 649 × 53

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

34,397

b. 496 × 53

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

26,288

c. 758 × 46

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

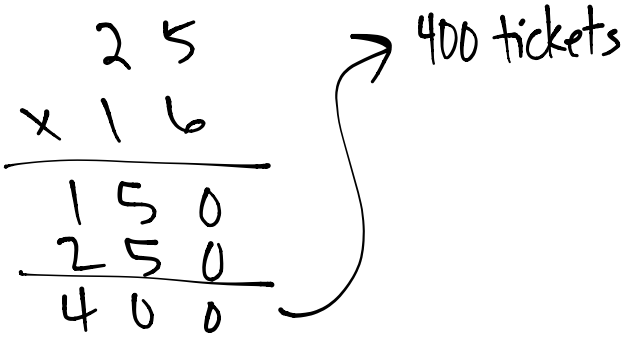
34,868

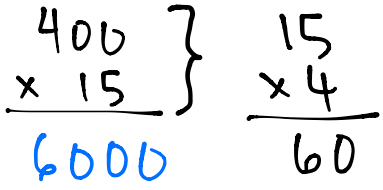
d. 529 × 48

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

25,392

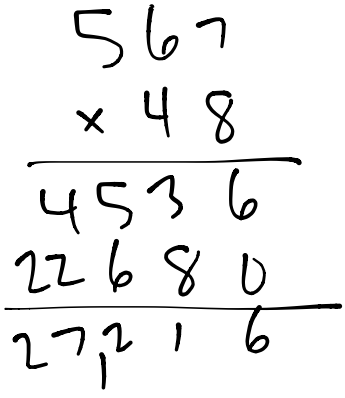
3. Each of the 25 students in Mr. McDonald's class sold 16 raffle tickets. If each ticket cost $15, how much money did Mr. McDonald's students raise?

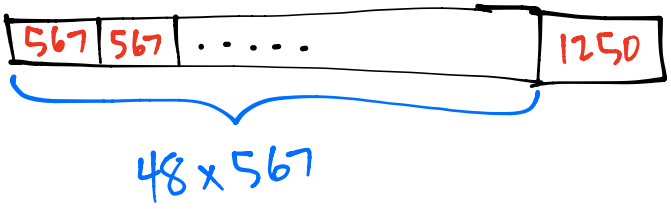


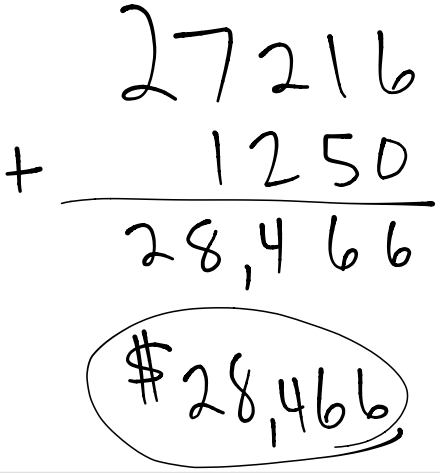


$6,000

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?





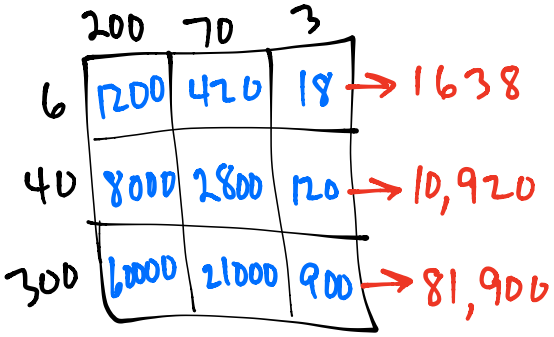


$28,466

Name _____ Date _____

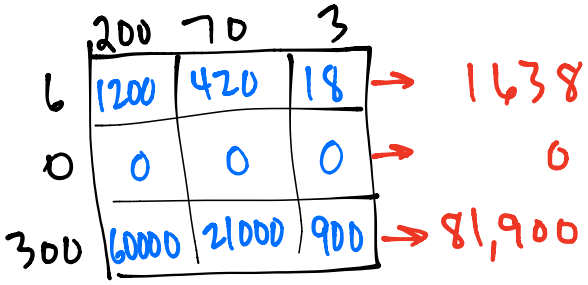
1. Draw an area model, and then solve using the standard algorithm. Use arrows to match the partial products from your area model to the partial products in your algorithm.

a. 273 × 346 = _____




```
  273
× 346
 1638
10920
81900
94,458
```

b. 273 × 306 = _____



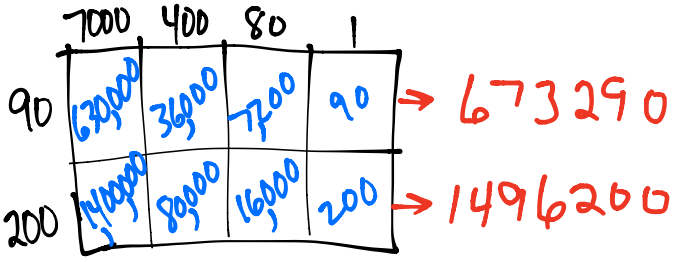

```
  273
× 306
 1638
+81900
83,538
```

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)?

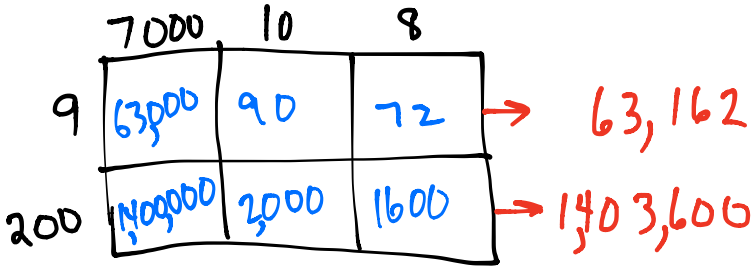
Because in 306 there is no digit/value in the 10's place.

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

a. 7,481 × 290 = _____



b. 7,018 × 209 = _____



3. Solve using the standard algorithm.

a. 426 × 357

$$\begin{array}{r} 426 \\ \times\ 357 \\ \hline 12982 \\ 21300 \\ 128000 \\ \hline 152082 \end{array}$$

b. 1,426 × 357 see next page

c. 426 × 307

$$\begin{array}{r} 426 \\ \times\ 307 \\ \hline 2982 \\ 128000 \\ \hline 130,782 \end{array}$$

d. 1,426 × 307 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?

$$\begin{array}{r} 502 \\ \times\ 94 \\ \hline 2008 \\ 45180 \\ \hline 47,188 \end{array}$$

$47,188 profit

2a)

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

2b)

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

3b)

$$\begin{array}{r} 1426 \\ \times\ 357 \\ \hline 9982 \\ 71300 \\ 427800 \\ \hline 509,082 \end{array}$$

3d)

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

Name _____ Date _____

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

a. 312 × 149

≈ 300 × 100
= 30,000

```
  312
× 149
-----
 2808
12480
+31200
------
46,488
```

b. 743 × 295

≈ 700 × 300 = 210000

```
  743
× 295
-----
 3715
66870
+148600
-------
219,185
```

c. 428 × 637

≈ 400 × 600 = 240,000

```
  428
× 637
-----
 2996
12840
+256800
-------
272,636
```

d. 691 × 305

≈ 700 × 300 = 210000

```
  691
× 305
-----
 3455
+207300
-------
210,755
```

e. 4,208 × 606

≈ 4000 × 600 = 2,400,000

```
 4208
× 606
------
 25248
+2524800
--------
2,550,048
```

f. 3,068 × 523

≈ 3,000 × 500 = 1,500,000

```
 3068
× 523
------
 9204
61360
+1534000
--------
1,604,564
```

g. 430 × 3,064

≈ 400 × 3000 = 1,200,000

```
 3064
× 430
------
 91920
+1225600
--------
1,317,520
```

h. 3,007 × 502

≈ 3000 × 500 = 1,500,000

```
 3007
× 502
------
 6014
+1503500
--------
1,509,514
```

i. 254 × 6,104

≈ 300 × 6000 = 1,800,000

```
 6104
×  254
-------
 24416
305200
+1220800
---------
1,550,416
```

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

1729×308

$\approx 2000 \times 300$

$= 600{,}000$

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?

1912×305

$\approx 2000 \times 300$

$= 600{,}000$

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?

203 × 12 = 406 + 2030 = 2436

2436 − 907 = 1529

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?

302 × 16 = 1812 + 3020 = 4832

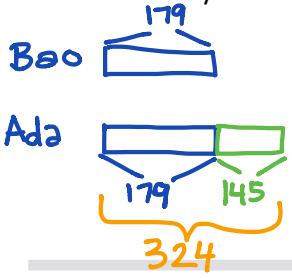
4832 yards

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

4832 × 13 = 14496 + 48320 = 62816

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?



179 + 145 = 324

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

324 × 42 = 648 + 12960 = 13,608

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.

225
× 180
18000
+ 22500
40500

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 × 80) − (100 × 55)

9600 − 5500
4100

4,100 sq. yrs.

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 × 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?

120
× 80
9600

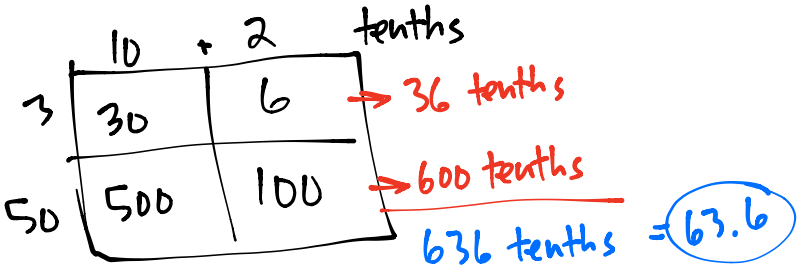
9600
× 26
57600
192000
249600

$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.

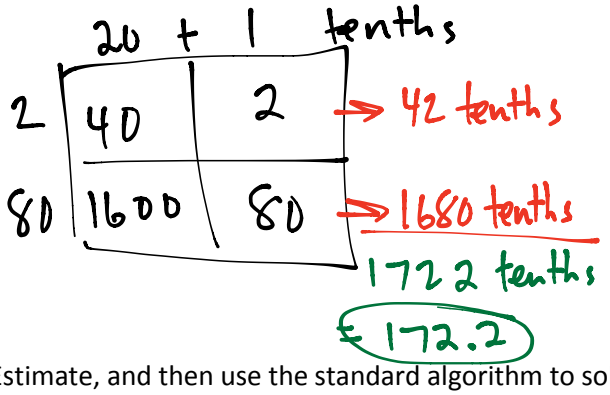
a. $53 \times 1.2 \approx \underline{50} \times \underline{1} = \underline{50}$



1 2 (tenths)

× 5 3
3 6
+ 6 0 0
6 3 6 tenths = 63.6

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



2 1 (tenths)

× 8 2
4 2
+ 1 6 8 0
1 7 2 2 tenths = 172.2

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

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

4 2 (tenths)

× 3 4
1 6 8
+ 1 2 6 0
1 4 2 8 tenths
= 142.8

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

5 8 (tenths)

× 6 5
2 9 0
+ 3 4 8 0
3 7 7 0 tenths
= 377

c. 3.3 × 16

3.3 ×10→ 33
× 16 × 16
198
330
528 ÷10→ 52.8

d. 15.6 × 17

15.6 ×10→ 156
× 17 × 17
1092
+1560
2652 ÷10→ 265.2

e. 73 × 2.4

73 73
×2.4 ×10→ ×24
292
1460
1752 ÷10→ 175.2

f. 193.5 × 57

193.5 ×10→ 1935
× 57 × 57
13545
+96750
110295 ÷10→ 11029.5

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?

8.4 ×10→ 84
× 22 × 22
168
1680
1848 ÷10→ 184.8

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?

3.2 ×10→ 32
× 30 × 30
960 ÷10→ 96

1.5 ×10→ 15
× 12 × 12
30
+150
180 ÷10→ 18

96 + 18 = 114 miles

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. $2.42 \times 12 \approx 2 \times 12 = 24$

Think: 242 (2.42 × 100)

2.42

× 12

484

2420

2904

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

Think 413 (4.13 × 100)

4.13

× 37

2891

12390

15281

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

$2.42 \times 12 = 2.904$

Now we have to divide by 100

$4.13 \times 37 = 152.81$

2. Solve using the standard algorithm.

a. $2.03 \times 13 = 26.39$

2.03

× 13

609

2030

26.39

b. 53.16×34

53.16

× 34

21264

+15948

1807.44

c. 371.23×53

371.23

× 53

11169

+18561 50

19675.19

d. 1.57×432

1.57

× 432

314

+6280 0

678.24

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 × 134 = 4,824 then 36 × 1.34 = 48.24

   b. If 84 × 2,674 = 224,616 then 84 × 26.74 = 2246.16

   c. 19 × 3,211 = 61,009 then 321.1 × 19 = 6100.9

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

   1.57 × 27
   1099
   3140
   42.39

   $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 × 21 × 2
   6.75 × 42

   6.75 × 42
   1350
   27000
   283.50

   $283.50

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

   6.75 × 21
   675
   13500
   141.75

   141.75 − 76.54 = 65.21

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

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

b. $5.42 \times 305 \approx \underline{5} \times \underline{300} = \underline{1506}$

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

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

$\approx 1 \times 21 = 21$

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

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

$\approx \frac{1}{2} \times 40 = 20$

$$\begin{array}{r} 0.32 \\ \times \quad 41 \\ \hline 032 \\ +1280 \\ \hline 13.12 \end{array}$$

d. 0.54×62

$\approx \frac{1}{2} \times 62 = 31$

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

e. 6.09 × 28

≈ 6 × 30 = 180

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

f. 6.83 × 683

≈ 7 × 700

= 4900

$$\begin{array}{r} 6.83 \\ \times\ 683 \\ \hline 2049 \\ 54640 \\ +\ 409800 \\ \hline 4664.89 \end{array}$$

g. 6.09 × 208

≈ 6 × 200

= 1200

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

h. 171.76 × 555

≈ 200 × 600

= 120,000

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

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

To	From
2.75	2.75

1 day
5.5 miles

$$\begin{array}{r} {}^{2}365 \\ \times\ 5.5 \\ \hline 1825 \\ +\ 18250 \\ \hline 2007.5 \end{array}$$

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 _____ Date _____

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

a. Convert weeks to days.

6 weeks = 6 × (1 week)

= 6 × (7 days)

= 42 days

b. Convert years to days.

7 years = 7 × (1 year)

= 7 × (365 days)

= 2,555 days

c. Convert meters to centimeters.

4.5 m = 4.5 × (1 m)

= 4.5 × (100 cm)

= 450 cm

d. Convert pounds to ounces.

12.6 pounds = 12.6 x (1 lb)

= 12.6 x (16 oz)

= 201.6 ounces

e. Convert kilograms to grams.

3.09 kg = 3.09 x (1 kg)

= 3.09 x (1,000 g)

= 3,090 g

f. Convert yards to inches.

245 yd = 245 x (1 yd)

= 245 x (3 ft)

= 245 x 3 x (1 ft)

= 245 x 3x (12 in)

= 8,820 in

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 newborn giraffe weighs about 65 kilograms. How much does it weigh in grams?

65 kg = 65 × (1 kg)
= 65 × (1,000 g)
= 65,000 g

One kilogram has 1,000 grams, so 65 kilograms is the same as 65,000 grams.

c. The average height of a female giraffe is 4.6 meters. What is her height in centimeters?

4.6 m = 4.6 × (1 m)
= 4.6 × (100 cm)
= 460 cm

One meter has 100 centimeters, so 4.6 meters is the same as 460 centimeters.

d. The capacity of a beaker is 0.1 liter. Convert this to milliliters.

0.1 L = 0.1 × (1 L)
= 0.1 × (1,000 mL)
= 100 mL

One liter has 1,000 milliliters, so 0.1 liter is the same as 100 milliliters.

e. A pig weighs 9.8 pounds. Convert the pig's weight to ounces.

9.8 lb = 9.8 × (1 lb)
= 9.8 × (16 oz)
= 156.8 oz

One pound has 16 ounces, so 9.8 pounds is the same as 156.8 ounces.

f. A marker is 0.13 meters long. What is the length in millimeters?

0.13 m = 0.13 × (1 m)
= 0.13 × (1,000 mm)
= 130 mm

One meter has 1,000 millimeters, so 0.13 meters is the same as 130 millimeters.

Name _____ Date _____

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

a. Convert days to weeks.

42 days = 42 × (1 day)

$= 42 \times \left(\frac{1}{7} \text{ week}\right)$

$= \frac{42}{7}$ week

= 6 weeks

b. Convert quarts to gallons.

36 quarts = 36 × (1 quart)

$= 36 \times \left(\frac{1}{4} \text{ gallon}\right)$

$= \frac{36}{4}$ gallons

= 9 gallons

c. Convert centimeters to meters.

760 cm = 760 × (1 cm)

= 760 × (0.01 m)

= 7.6 m

d. Convert meters to kilometers.

2,485 m = 2,485 × (1 m)

= 2,485 × (0.001 km)

= 2.485 km

e. Convert grams to kilograms.

3,090 g = 3,090 x (1 g)

= 3,090 x (0.001 kg)

= 3.090 kg

= 3.09 kg

f. Convert milliliters to liters.

205 mL = 205 x (1 mL)

= 205 x (0.001 L)

= 0.205 L

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

a. The screen measures 36 inches. Convert 36 inches to feet.

36 inches = 36 × (1 inch)

$= 36 \times \left(\frac{1}{12} \text{ feet}\right)$

$= \frac{36}{12}$ feet

= 3 feet

The screen measures 36 inches or 3 feet.

b. A jug of juice holds 8 cups. Convert 8 cups to pints.

$8c = 8 \times (1\ c)$
$= 8 \times (\frac{1}{2}\ p)$
$= \frac{8}{2}\ p$
$= 4\ p$

One cup makes 1/2 pint, so 8 cups is the same as 4 pints.

c. The length of the flower garden is 529 centimeters. What is its length in meters?

$529\ cm = 529 \times (1\ cm)$
$= 529 \times (0.01\ m)$
$= 5.29\ m$

One centimeter makes 1/100 = 0.01 meter, so 529 centimeters is the same as 5.29 meters.

d. The capacity of a container is 2,060 milliliters. Convert this to liters.

$2{,}060\ mL = 2{,}060 \times (1\ mL)$
$= 2{,}060 \times (0.001\ L)$
$= 2\ 06\ L$

One milliliter makes 1/1,000 = 0.001 liter, so 2,060 milliliters is the same as 2.06 liters.

e. A hippopotamus weighs 1,560,000 grams. Convert the hippopotamus' weight to kilograms.

$1{,}560{,}000\ g = 1{,}560{,}000 \times (1\ g)$
$= 1{,}560{,}000 \times (0.001\ kg)$
$= 1{,}560\ kg$

One gram makes 1/1,000 = 0.001 kilogram, so 1,560,000 grams is the same as 1,560 kilograms.

f. The distance was 372,060 meters. Convert the distance to kilometers.

$372{,}060\ m = 372{,}060 \times (1\ m)$
$= 372{,}060 \times (0.001\ km)$
$= 372.06\ km$

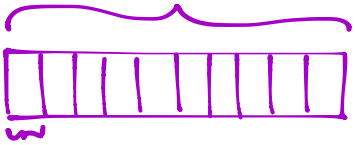
One meter makes 1/1,000 = 0.001 kilometer, so 372,060 meters is the same as 372.06 kilometers.

Name _____ Date _____

Solve.

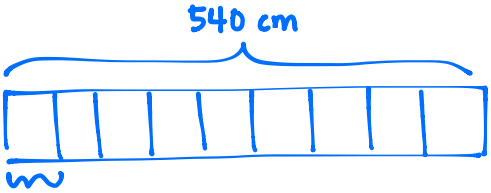
1. Tia cut a 4 meters 8 centimeters wire into 10 equal pieces. Marta cut a 540 centimeters wire into 9 equal pieces. How much longer is one of Marta's wires than one of Tia's?

4m 8cm = 4 x (100 cm) + 8 cm = 408 cm



408 cm ÷ 10 = 40.8 cm

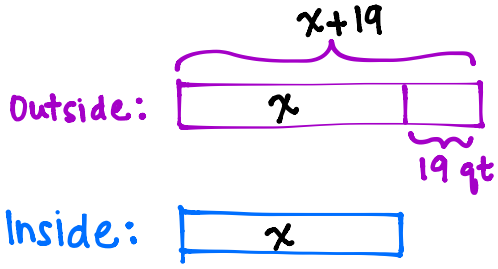
59
60 10
− 40.8
19.2



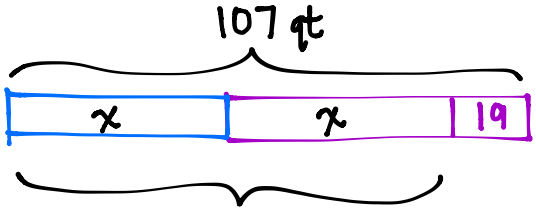
540 cm ÷ 9 = 60 cm

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 ÷ 2 = 44 qt

44 qt = 44 x (¼ gallon)

$= \frac{44}{4}$

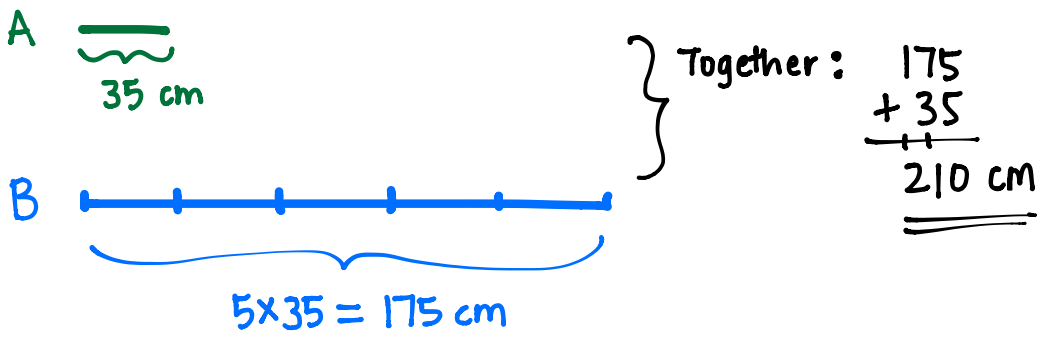
$= \frac{4 \times 11}{4}$

= 11 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:



17 bottles: 210 cm × 17

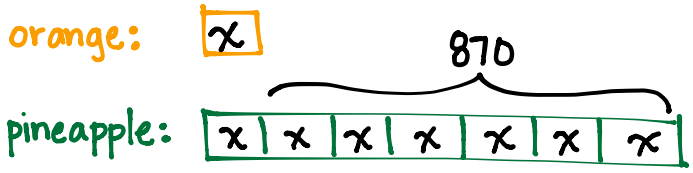
1470
+ 2100
3570 cm = 3570 × (0.01 m) = 35.7 m

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



145 = x
6) 870
−6
27
−24
30

Total = 145 g × 8
1160 g

The total weight is 1,160 grams.

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

1,160 g = 1,160 × (0.001 kg)
= 1.16 kg

Name _____ Date _____

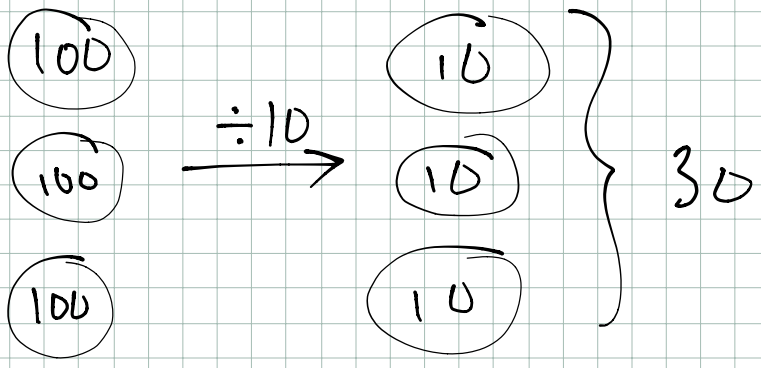
1. Divide. Draw number disks to show your thinking for (a) and (c). You may draw disks on your personal white board to solve the others if necessary.

a. 300 ÷ 10 see next page	b. 450 ÷ 10 45
c. 18,000 ÷ 100 see next page	d. 730,000 ÷ 100 7300
e. 900,000 ÷ 1,000 900	f. 680,000 ÷ 1,000 680

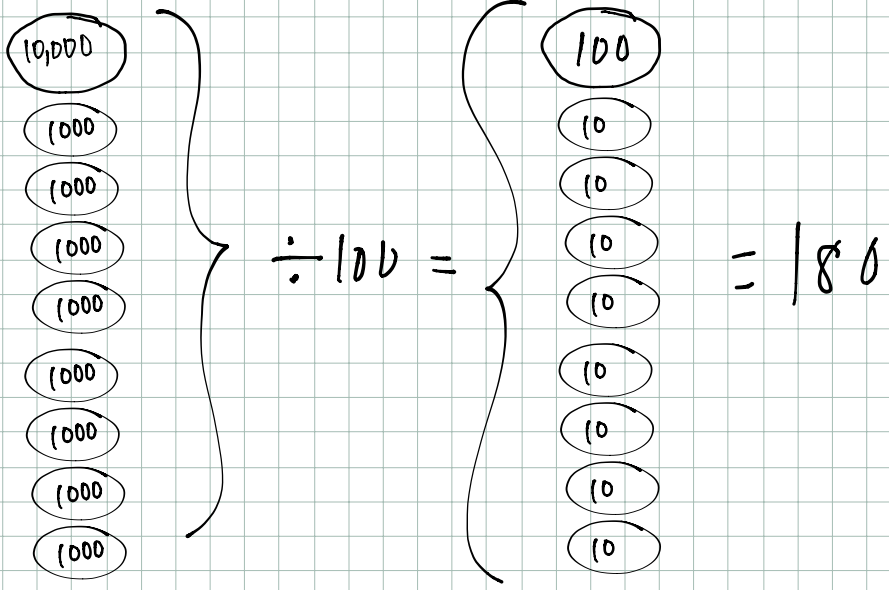
2. Divide. The first one is done for you.

a. 18,000 ÷ 20 = 18,000 ÷ 10 ÷ 2 = 1,800 ÷ 2 = 900	b. 18,000 ÷ 200 = 18,000 ÷ 100 ÷ 2 = 180 ÷ 2 = 90	c. 18,000 ÷ 2,000 = 18000 ÷ 1000 ÷ 2 = 18 ÷ 2 = 9
d. 420,000 ÷ 60 = 420000 ÷ 10 ÷ 6 = 42000 ÷ 6 = 7000	e. 420,000 ÷ 600 = 420000 ÷ 100 ÷ 6 = 4200 ÷ 6 = 700	f. 420,000 ÷ 6,000 = 420000 ÷ 1000 ÷ 6 = 420 ÷ 6 = 70

a) $300 \div 10 = 30$



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



g. 24,000 ÷ 30	h. 560,000 ÷ 700	i. 450,000 ÷ 9,000
= 24000 ÷ 10 ÷ 3 = 2400 ÷ 3 = 800	= 560000 ÷ 100 ÷ 7 = 5600 ÷ 7 = 800	= 450000 ÷ 1000 ÷ 9 = 450 ÷ 9 = 50

3. A stadium holds 50,000 people. The stadium is divided into 250 different seating sections. How many seats are in each section?

50000 ÷ 250
= 50000 ÷ 10 ÷ 25
= 5000 ÷ 25
= 200

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?

160000 ÷ 40000
= 160000 ÷ 10000 ÷ 4
= 16 ÷ 4
= 4

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?

= 160000 ÷ 10000
= 16

16 oil changes

Name _____ Date _____

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

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

m. 835 ÷ 89 ≈ 900 ÷ 90 = 10	n. 345 ÷ 72 ≈ 350 ÷ 100 = 3.5	o. 559 ÷ 11 ≈ 600 ÷ 10 = 60

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?

611 ÷ 78
≈ 600 ÷ 100
= 6

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.

172 ÷ 42
≈ 200 ÷ 50
= 4

About 4 barrels

Name _____ Date _____

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

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

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 ÷ 20

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

Check:

20 × 3 = 60

60 + 11 = 71

b. 90 ÷ 40

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

$40 \times 2 = 80$

$80 + 10 = 90$

c. 95 ÷ 60

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

$60 \times 1 = 60$

$60 + 35 = 95$

d. 280 ÷ 30

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

$30 \times 9 = 270$

$270 + 10 = 280$

e. 437 ÷ 60

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

$60 \times 7 = 420$

$420 + 17 = 437$

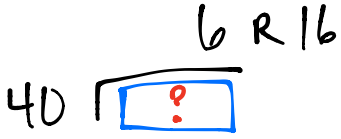
f. 346 ÷ 80

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

$80 \times 4 = 320$

$320 + 26 = 346$

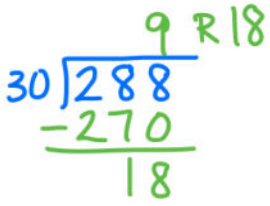
2. A number divided by 40 has a quotient of 6 with a remainder of 16. Find the number.



$40 \times 6 = 240$

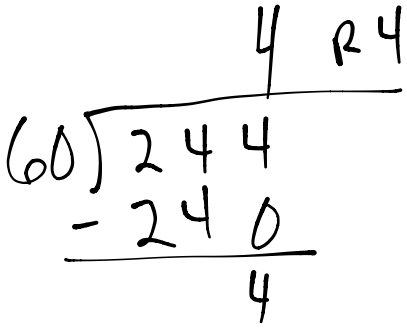
$240 + 16 = 256$

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?



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

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



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 ÷ 31

```
      2 R 10
31 ) 7 2
   - 6 2
     1 0
```

Check:

31 × 2 = 62

62 + 10 = 72

b. 89 ÷ 21

```
      4 R5
21 ) 89
   -84
     5
```

Check:

21 × 4 = 84

84 + 5 = 89

c. 94 ÷ 33

```
      2 R28
33 ) 94
   -66
     28
```

Check:

33 → 66
× 2
66

66 → 94
+ 28

d. 67 ÷ 19

```
      3
19 ) 67
   -57
     10
```

Check:

19 → 57
× 3
57

57 → 67
+ 10

e. 79 ÷ 25

```
      3 R4
25 ) 79
   -75
     4
```

Check:

25 → 75
× 3
75

75 → 79
+ 4

f. 83 ÷ 21

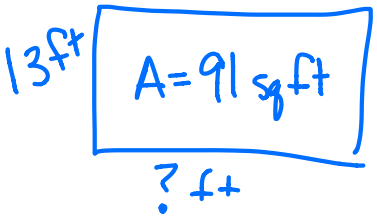
```
      3 R20
21 ) 83
   -63
     20
```

Check:

21 → 63
× 3
63

63 → 83
+ 20

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



$$13\overline{)91}\quad 7,\ -91,\ 0$$

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?

$$12 \times 8 = 96 \text{ bagels}$$

$$14\overline{)96}\quad 6\text{ R }12,\ -84,\ 12$$

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 ÷ 21

```
        6   R 3
2 1 | 1 2 9
  -   1 2 6
          3
```

Check:

21 × 6 = 126

126 + 3 = 129

b. 158 ÷ 37

```
      4 R10
37 ) 158
    -148
      10
```

37 × 4 = 148

148 + 10 = 158

c. 261÷ 49

```
      5 R16
49 ) 261
    -245
      16
```

49 × 5 = 245

245 + 16 = 261

d. 574 ÷ 82

```
      7 R0
82 ) 574
    -574
       0
```

82 × 7 = 574

e. 464 ÷ 58

```
      8
58 ) 464
    -464
       0
```

58 × 8 = 464

f. 640 ÷ 9

```
     70 R10
9 ) 640
   -630
     10
```

70 × 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?

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

$300 + 12 = 312$

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

8 trips → 4 round trips

3. How many eighty-fours are in 672?

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

Name _____ Date _____

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

a. 487 ÷ 21

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

Check:

21 × 23 = 483

483 + 4 = 487

b. 485 ÷ 15

$$\begin{array}{r} 32\ R5 \\ 15\overline{)\,485} \\ -45 \\ \hline 35 \\ -30 \\ \hline 5 \end{array}$$

Check:

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

✓

c. 700 ÷ 21

$$\begin{array}{r} 33\ R7 \\ 21\overline{)\,700} \\ -63 \\ \hline 70 \\ -63 \\ \hline 7 \end{array}$$

Check:

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

✓

d. 399 ÷ 31

$$\begin{array}{r} 12\ R27 \\ 31\overline{)\,399} \\ -31 \\ \hline 89 \\ -62 \\ \hline 27 \end{array}$$

Check:

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

✓

e. 820 ÷ 42

19 R22
42 ⟌ 820
−42 ↓
400
−378
22

Check:

42 × 19 = 798
798 + 22 = 820 ✓

f. 908 ÷ 56

16 R12
56 ⟌ 908
−56
348
−336
12

Check:

56 × 16 = 896
896 + 12 = 908 ✓

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.

28 R10
31 ⟌ 878
62
258
−248
10

Check

31 × 28 = 868
868 + 10 = 878

The remainder should be 10, not 11.

Name _____ Date _____

1. Divide. Then, check using multiplication.

a. 9,962 ÷ 41

$$\begin{array}{r} 242 \text{ R}40 \\ 41\overline{)9962} \\ -82 \\ \hline 176 \\ -164 \\ \hline 122 \\ -\ 82 \\ \hline 40 \end{array}$$

Check

$$\begin{array}{r} 242 \\ \times\ 41 \\ \hline 242 \\ +9680 \\ \hline 9922 \end{array} \rightarrow \begin{array}{r} 9922 \\ +\ 40 \\ \hline 9962 \end{array}$$

✓

b. 1,495 ÷ 45

$$\begin{array}{r} 33 \text{ R}10 \\ 45\overline{)1495} \\ -135 \\ \hline 145 \\ -135 \\ \hline 10 \end{array}$$

Check

$$\begin{array}{r} 33 \\ \times 45 \\ \hline 165 \\ +1320 \\ \hline 1485 \end{array} \rightarrow \begin{array}{r} 1485 \\ +\ 10 \\ \hline 1495 \end{array}$$

✓

c. 6,691 ÷ 28

$$\begin{array}{r} 238 \text{ R}27 \\ 28\overline{)6691} \\ -56 \\ \hline 109 \\ -\ 84 \\ \hline 251 \\ -224 \\ \hline 27 \end{array}$$

Check

$$\begin{array}{r} 238 \\ \times\ 28 \\ \hline 1904 \\ +4760 \\ \hline 6664 \end{array} \rightarrow \begin{array}{r} 6664 \\ +\ 27 \\ \hline 6691 \end{array}$$

✓

d. 2,625 ÷ 32

$$\begin{array}{r} 82 \text{ R}1 \\ 32\overline{)2625} \\ -256 \\ \hline 65 \\ -64 \\ \hline 1 \end{array}$$

Check

$$\begin{array}{r} 82 \\ \times 32 \\ \hline 164 \\ +2460 \\ \hline 2624 \end{array} \rightarrow \begin{array}{r} 2624 \\ +\ 1 \\ \hline 2625 \end{array}$$

✓

e. 2,409 ÷ 19

$$\begin{array}{r} 126 \text{ R}15 \\ 19\overline{)2409} \\ -19 \\ \hline 50 \\ -38 \\ \hline 129 \\ -114 \\ \hline 15 \end{array}$$

Check

$$\begin{array}{r} 126 \\ \times\ 19 \\ \hline 1134 \\ +1260 \\ \hline 2394 \end{array} \rightarrow \begin{array}{r} 2394 \\ +\ 15 \\ \hline 2409 \end{array}$$

✓

f. 5,821 ÷ 62

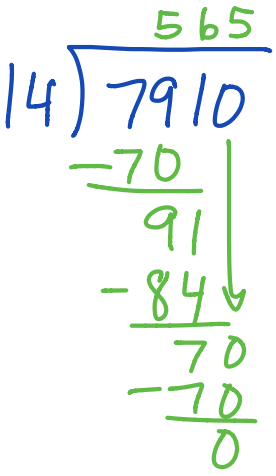
$$\begin{array}{r} 93 \text{ R}55 \\ 62\overline{)5821} \\ -558 \\ \hline 241 \\ -186 \\ \hline 55 \end{array}$$

Check

$$\begin{array}{r} 93 \\ \times\ 62 \\ \hline 186 \\ +5580 \\ \hline 5766 \end{array} \rightarrow \begin{array}{r} 5766 \\ +\ 55 \\ \hline 5821 \end{array}$$

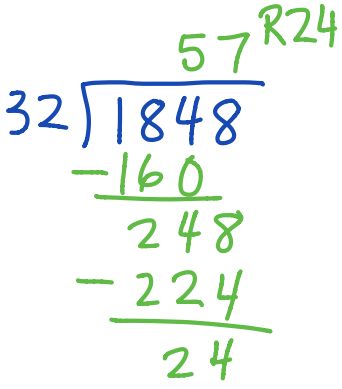
✓

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?



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?



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 ÷ 6 = 0.3

b. 1.8 ÷ 60 = (1.8 ÷ 6) ÷ 10 = 0.3 ÷ 10 = 0.03

c. 2.4 ÷ 8 = 0.3

d. 2.4 ÷ 80 = (2.4 ÷ 8) ÷ 10 = 0.3 ÷ 10 = 0.03

e. 14.6 ÷ 2 = 7.3

f. 14.6 ÷ 20 = (14.6 ÷ 2) ÷ 10 = 7.3 ÷ 10 = 0.73

g. 0.8 ÷ 4 = 0.2

h. 80 ÷ 400 = (80 ÷ 4) ÷ 100 = 20 ÷ 100 = 0.2

i. 0.56 ÷ 7 = 0.08

j. 0.56 ÷ 70 = (0.56 ÷ 7) ÷ 10 = 0.08 ÷ 10 = 0.008

k. 9.45 ÷ 9 = 1.05

l. 9.45 ÷ 900 = (9.45 ÷ 9) ÷ 100 = 1.05 ÷ 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 ÷ 80 = 0.82

      65.6 ÷ 8 = 8.2

   b. 2.5 ÷ 50 = 0.05

      2.5 ÷ 5 = 0.5

   c. 19.2 ÷ 40 = 0.48

      19.2 ÷ 4 = 4.8

   d. 39.6 ÷ 6 = 6.6

      39.6 ÷ 60 = 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?

$$\begin{array}{r} {\scriptstyle 1} \\ 2.13 \\ \times \quad 14 \\ \hline 852 \\ +\ 2130 \\ \hline 29.82 \end{array}$$

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.

$0.07\ L = 70\ mL$

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.

12
× 3
36

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

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.

$15.75 \div 4 \approx 16 \div 4 = 4$ 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.

$15.75 \div 4 \approx 16 \div 4 = 4$ in each week

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

4 gallons each week × 5 = 20 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.

$$\begin{array}{r} 9\ R5 \\ 8\overline{)77} \end{array}$$

$$\begin{array}{r} 9\ R5 \\ 10\overline{)95} \end{array}$$

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

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

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

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

a. $75.9 \div 22$

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

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

b. $97.28 \div 19$

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

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

c. $77.14 \div 38$

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

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

d. $12.18 \div 29$

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

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

3. Divide.

a. 97.58 ÷ 34

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

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

b. 55.35 ÷ 45

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

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

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 ÷ 43 = 12.1

52.03 ÷ 43 = 1.21

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

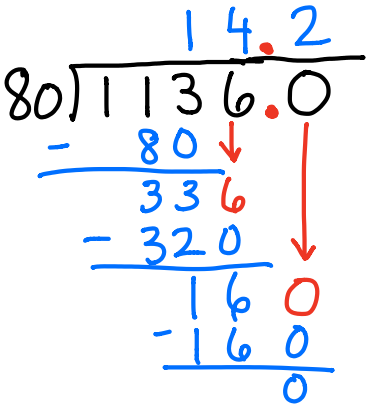
b. 19.08 ÷ 36 = 0.53

190.8 ÷ 36 = 5.3

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

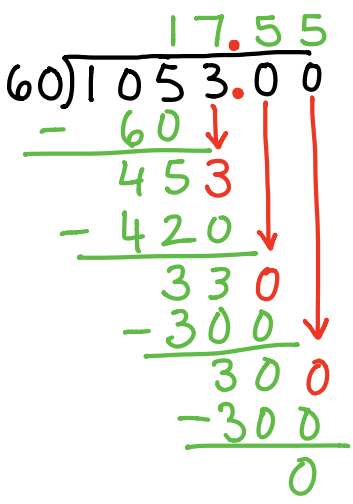
5. You can look up information on the world's tallest buildings at http://www.infoplease.com/ipa/A0001338.html.

   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?



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?



Each story is 17.55 feet tall.

17.55
-14.2
3.35

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 ÷ 28

28) 7.00 = .25
−56
140
−140
0

Check: 0.25 × 28: 200 + 500 = 7.00

b. 51 ÷ 25

25) 51.00 = 2.04
−50
100
−100
0

Check: 2.04 × 25: 1020 + 4080 = 51.00

c. 6.5 ÷ 13

13) 6.5 = .5
−65
0

Check: 13 × .5 = 6.5

d. 132.16 ÷ 16

16) 132.16 = 8.26
−128
41
−32
96
−96
0

Check: 8.26 × 16: 4956 + 8260 = 132.16

e. 561.68 ÷ 28

28) 561.68 = 20.06
−56
0168
−168
0

Check: 20.06 × 28: 16048 + 40120 = 561.68

f. 604.8 ÷ 36

36) 604.8 = 16.8
−36
244
−216
288
−288
0

Check: 16.8 × 36: 1008 + 5040 = 604.8

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?

28) 23.80 = .85
−224
140
−140
0

They use 0.85 L each day.

0.85 L = 850 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?

$$\begin{array}{r} 36 \\ \times\ 3 \\ \hline 108 \end{array} \qquad 16\overline{)108} \quad 6,\ -96,\ 12$$

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?

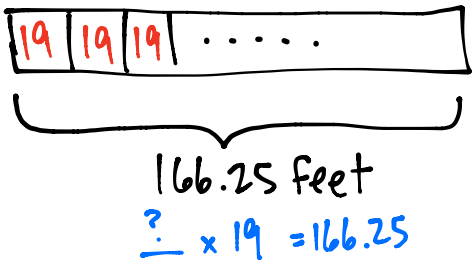
$$12\overline{)41.40} \quad 3.45,\ -36,\ 54,\ -48,\ 60,\ -60,\ 0$$

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

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?



$$19 \overline{)166.25} = 8.75$$
$166.25 - 152 = 142$
$142 - 133 = 95$
$95 - 95 = 0$

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?

$17.9 + 12.6 + 12.5 + 12.5 = 55.5$

$$25 \overline{)55.50} = 2.22$$
$55.5 - 50 = 5.5$
$55 - 50 = 5$
$50 - 50 = 0$

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?

$16.45 - 6.4 = 10.05$

$$15 \overline{)10.05} = 0.67$$
$10.05 - 90 = 15$
$105 - 105 = 0$

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?

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

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

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

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

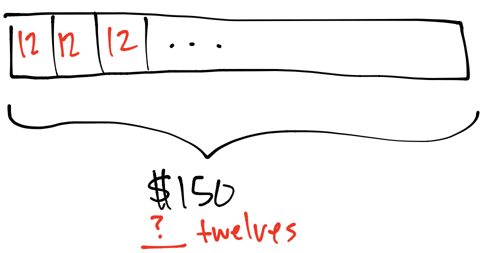
$$\begin{array}{r} 37.5 \\ 12\overline{)450.0} \\ -36 \\ \hline 90 \\ -84 \\ \hline 60 \\ -60 \\ \hline 0 \end{array}$$

He will need to sell 38 manipulatives

Name ______________________________ Date ________________

Directions: Solve the word problems using the bar model.

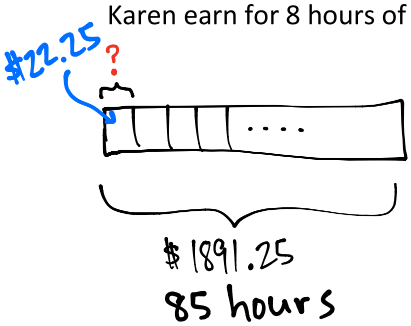
1. Michelle wants to save $150 for a trip to Six Flags Amusement Park. If she saves $12 each week, how many weeks will it take her to save enough money for the trip?



12.5
12) 150.0
−12
30
−24
60
−60
0

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?

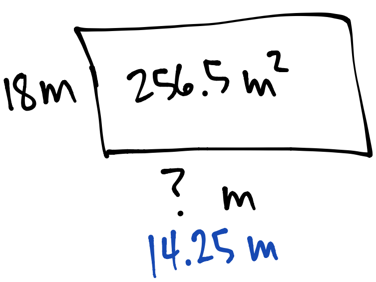


22.25
85) 1891.25
170
191
−170
212
−170
425
−425
0

22.25
× 8
178.00

$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?

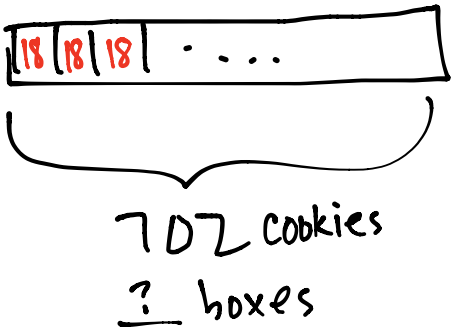


14.25
18) 256.50
18
76
−72
45
−36
90
−90
0

(14.25 × 2) + (18 × 2)
28.5 + 36
64.5 m

28.5
+ 36
64.5

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?



39 boxes
18 ⟌ 702
54
162
−162
0

3.50
39 ⟌ 136.50
117
195
− 195
0

One box costs $3.50

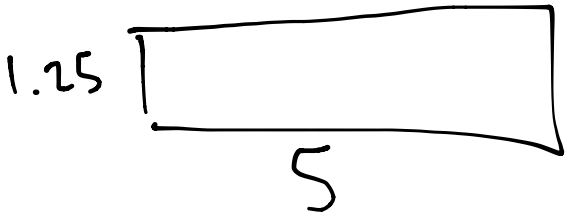
5. A park is 4 times as long as it is wide. If the distance around the park is 12.5 kilometers, what is the area of the park?

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

12.5 ÷ 10 = 1.25

Each unit is 1.25 km long.

1.25
× 4
5.00



1.25
× 5
6.25

Area is 6.25 km^2