Place Value

Write the word form for each number and tell the value of the underlined digit.

1. 34,23<u>5</u>,345

_____

_____

2. 1<u>9</u>,673,890,004

_____

_____

3. Write 2,430,090 in expanded form.

_____

Write each number in standard form.

4. 80,000,000 + 4,000,000 + 100 + 8 _____

5. twenty-nine billion, thirty-two million _____

6. **Number Sense** What number is 10,000 less than 337,676? _____

7. Which number is 164,502,423 decreased by 100,000?

A. 164,402,423 **B.** 164,501,423 **C.** 164,512,423 **D.** 264,502,423

8. **Explain It** Explain how you would write 423,090,709,000 in word form.

_____

_____

_____

_____

Comparing and Ordering Whole Numbers

Complete. Compare the numbers. Use $<$ or $>$ for each ◯.

1. 23,412 ◯ 23,098

2. 9,000,000 ◯ 9,421,090

Order these numbers from least to greatest.

3. 7,545,999 7,445,999 7,554,000

_____

4. Number Sense What digit could be in the ten millions place of a number that is less than 55,000,000 but greater than 25,000,000? _____

5. Put the trenches in order from the least depth to the greatest depth.

_____

_____

_____

_____

Depths of Major Ocean Trenches

Trench	Depth (in feet)
Philippine Trench	32,995
Mariana Trench	35,840
Kermadec Trench	32,963
Tonga Trench	35,433

6. These numbers are ordered from greatest to least. Which number could be placed in the second position?

2,643,022 1,764,322 927,322

A 2,743,022 **B** 1,927,304 **C** 1,443,322 **D** 964,322

7. Explain It Explain why 42,678 is greater than 42,067.

_____

_____

_____

_____

Decimal Place Value

Write the word form of each number and tell the value of the underlined digit.

1. 3.<u>1</u>00

_____

2. 5.2<u>6</u>7

_____

3. 2.77<u>8</u>

_____

Write each number in standard form.

4. 8 + 0.0 + 0.05 + 0.009 + 0.0006

_____

5. 1 + 0.9 + 0.08 + 0.001 + 0.00002

_____

Write two decimals that are equivalent to the given decimal.

6. 5.300 _____

7. 3.7 _____

8. 0.9 _____

9. The longest stem on Eli's geranium plant is 7.24 inches. Write 7.24 in word form.

_____

_____

10. **Explain It** The number 4.124 has two 4s. Why does each 4 have a different value?

_____

_____

_____

Practice **1-3**

Comparing and Ordering Decimals

Write >, <, or = for each ◯.

1. 5.424 ◯ 5.343
2. 0.33 ◯ 0.330
3. 9.489 ◯ 9.479
4. 21.012 ◯ 21.01
5. 223.21 ◯ 223.199
6. 5.43 ◯ 5.432

Order these numbers from least to greatest.

7. 8.37, 8.3, 8.219, 8.129 _____
8. 0.012, 0.100, 0.001, 0.101 _____
9. **Number Sense** Name three numbers between 0.33 and 0.34.

_____

10. Which runner came in first place?

_____

11. Who ran faster, Amanda or Steve?

_____

12. Who ran for the longest time?

_____

Half-Mile Run

Runner	Time (minutes)
Amanda	8.016
Calvin	7.049
Liz	7.03
Steve	8.16

13. Which number is less than 28.43?

A 28.435 **B** 28.34 **C** 28.430 **D** 29.43

14. **Explain It** Explain why it is not reasonable to say that 4.23 is less than 4.13.

_____

_____

_____

Rounding Whole Numbers and Decimals

Round each number to the place of the underlined digit.

1. 32.<u>6</u>0 _____

2. 48<u>9</u>,334,209 _____

3. 32<u>4</u>,650 _____

4. 32.<u>0</u>73 _____

5. **Reasoning** Name two different numbers that round to 30 when rounded to the nearest ten.

_____

In 2000, Italy produced 7,464,000 tons of wheat, and Pakistan produced 21,079,000 tons of wheat. Round each country's wheat production in tons to the nearest hundred thousand.

6. Italy _____

7. Pakistan _____

The price of wheat in 1997 was $3.38 per bushel. In 1998, the price was $2.65 per bushel. Round the price per bushel of wheat for each year to the nearest tenth of a dollar.

8. 1997 _____

9. 1998 _____

10. **Number Sense** Which number rounds to 15,700,000 when rounded to the nearest hundred thousand?

A 15,000,000 **B** 15,579,999 **C** 15,649,999 **D** 15,659,999

11. **Explain It** Write a definition of rounding in your own words.

_____

_____

Adding and Subtracting

Add or subtract.

1. $\begin{array}{r} 29{,}543 \\ +\ 13{,}976 \\ \hline \end{array}$

2. $\begin{array}{r} 93{,}210 \\ -\ 21{,}061 \\ \hline \end{array}$

3. $\begin{array}{r} 369{,}021 \\ -\ 325{,}310 \\ \hline \end{array}$

4. $\begin{array}{r} 893{,}887 \\ +\ 22{,}013 \\ \hline \end{array}$

5. 971,234 + 55,423 = _____

6. Number Sense Is 4,000 a reasonable estimate for the difference of 9,215 − 5,022? Explain.

_____

Practice 2-5

For questions **7** and **8**, use the table at right.

7. How many people were employed as public officials and natural scientists?

_____

8. How many more people were employed as university teachers than as lawyers and judges?

_____

People Employed in U.S. by Occupation in 2000

Occupation	Workers
Public officials	753,000
Natural scientists	566,000
University teachers	961,000
Lawyers and judges	926,000

9. Which is the difference between 403,951 and 135,211?

A 200,000 **B** 221,365 **C** 268,740 **D** 539,162

10. Explain It Issac is adding 59,029 and 55,678. Should his answer be greater than or less than 100,000? Explain how you know.

_____

_____

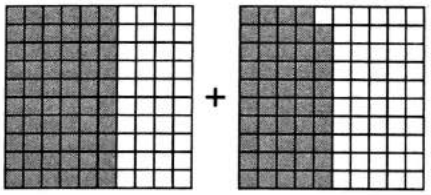
Adding Decimals

In February, Chantell ran a 5K race in 0.6 hour. She ran another 5K race in May in 0.49 hour. What was her combined time for the two races?

Step 1: Write the numbers, lining up the decimal points. Include the zeros to show place value.

$$\begin{array}{r} 0.60 \\ +\ 0.49 \\ \hline \end{array}$$

You can use decimal squares to represent this addition problem.

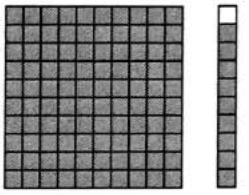


Step 2: Add the hundredths.

$$\begin{array}{r} 0.60 \\ +\ 0.49 \\ \hline 9 \end{array}$$

Step 3: Add the tenths. Remember to write the decimal point in your answer.

$$\begin{array}{r} {\scriptstyle 1} \\ 0.60 \\ +\ 0.49 \\ \hline 1.09 \end{array}$$



Chantell's combined time for the two races was 1.09 hours.

Add.

1. 2.97 + 0.35 = _____

2. 13.88 + 7.694 = _____

3. 39.488 + 26.7 = _____

4. 88.8 + 4.277 + 78.95 = _____

5. Number Sense Is 16.7 a reasonable sum for 7.5 + 9.2? Explain.

_____

_____

6. How much combined snowfall was there in Milwaukee and Oklahoma City?

_____

City	Snowfall (inches) in 2000
Milwaukee, WI	87.8
Baltimore, MD	27.2
Oklahoma City, OK	17.3

Name _____

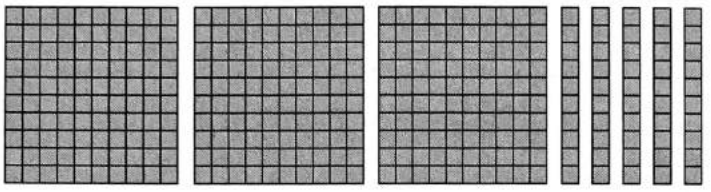
Reteaching
2-7

Subtracting Decimals

Mr. Montoya bought 3.5 lb of ground beef. He used 2.38 lb to make hamburgers. How much ground beef does he have left?

Step 1: Write the numbers, lining up the decimal points. Include the zeros to show place value.

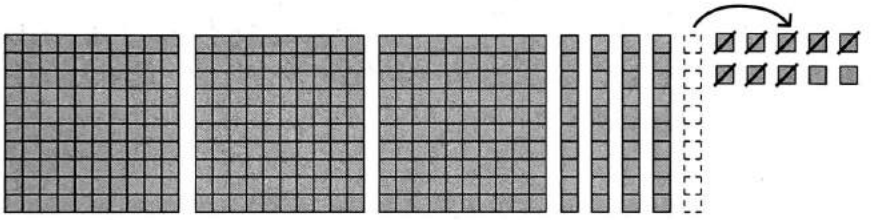
$$\begin{array}{r} 3.50 \\ -2.38 \\ \hline \end{array}$$



You can use decimal squares to represent this subtraction problem.

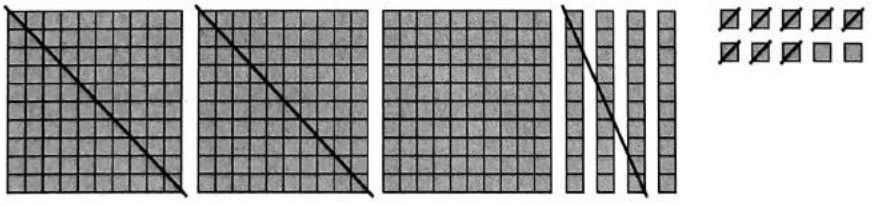
Step 2: Subtract the hundredths. Regroup if you need to.

$$\begin{array}{r} {}^{4}\,{}^{10} \\ 3.\cancel{5}\cancel{0} \\ -2.38 \\ \hline 2 \end{array}$$



Step 3: Subtract the tenths and the ones. Remember to write the decimal point in your answer.

$$\begin{array}{r} {}^{4}\,{}^{10} \\ 3.\cancel{5}\cancel{0} \\ -2.38 \\ \hline 1.12 \end{array}$$



Mr. Montoya has 1.12 lb of ground beef left over.

Subtract.

1. $\begin{array}{r} 82.7 \\ -5.59 \\ \hline \end{array}$ _____

2. $\begin{array}{r} 43.3 \\ -12.82 \\ \hline \end{array}$ _____

3. $\begin{array}{r} 7.28 \\ -4.928 \\ \hline \end{array}$ _____

Multiplication Properties

3-1

You can use multiplication properties to help you multiply more easily.

Associative Property of Multiplication
You can change the grouping of the factors. The product stays the same.

$(3 \times 4) \times 4 = 48$ — Factors: $12 \times 4 =$; Product: 48

$3 \times (4 \times 4) = 48$ — Factors: $3 \times 16 =$; Product: 48

Commutative Property of Multiplication
You can change the order of the factors. The product stays the same.

$7 \times 4 = 28$ — Factors; Product

$4 \times 7 = 28$ — Factors; Product

Zero Property of Multiplication
When one of the factors is 0, the product is always 0.

$3 \times 0 = 0$ — Factors; Product

$0 \times 3 = 0$ — Factors; Product

Identity Property of Multiplication
When one of the factors is 1, the product is always the other factor.

Identify the multiplication property or properties used in each equation.

1. $100 \times 0 = 0$ _____

2. $7 \times 2 = 2 \times 7$ _____

3. $1 \times 55 = 55$ _____

4. $(6 \times 7) \times 9 = 6 \times (7 \times 9)$ _____

Reasoning Use the multiplication properties to determine what number must be in the box.

5. $5 \times 4 = \square \times 5$

6. $99 \times \square = 99$

7. $(3 \times 12) \times \square = 3 \times (12 \times 8)$

8. $\square \times 1 = 0$

9. $\square \times 2 = 2 \times 50$

10. $(16 \times \square) \times 25 = 16 \times (33 \times 25)$

Multiplication Properties

In **1** through **5**, write the multiplication property used in each equation.

1. $53 \times 6 = 6 \times 53$ _____

2. $0 \times 374{,}387 = 0$ _____

3. $5 \times (11 \times 4) = (5 \times 11) \times 4$ _____

4. $42 \times 1 = 42$ _____

5. $14 \times 5 = 5 \times 14$ _____

6. Reasoning Chan bought 2 large frozen yogurts at $1.50 each and 1 small bottle of water for $1.00. How much did she pay in total?

_____

7. Dan has 4 shelves. He has exactly 10 books on each shelf. Judy has 10 shelves. She has exactly 4 books on each shelf. Who has more books? Explain.

_____

_____

8. Algebra If $3 \times 8 \times 12 = 8 \times 3 \times n$, what is the value of n?

A 3 **B** 8 **C** 12 **D** 18

9. Explain It Write a definition for the Associative Property of Multiplication in your own words and explain how you would use it to compute $4 \times 25 \times 27$ mentally.

_____

_____

_____

_____

Practice **3-1**

Multiplying 2-Digit by 2-Digit Numbers

Find 43×26.

Step 1:
Multiply by the ones.
Regroup if necessary.

What You Think
6×3 ones $= 18$ ones
Regroup 18 ones as 1 ten and 8 ones.

6×4 tens $= 24$ tens
24 tens $+ 1$ ten $= 25$ tens
Regroup 25 tens as 2 hundreds and 5 tens.

What You Write

$$\begin{array}{r} {\scriptstyle 1} \\ \mathbf{43} \\ \times\ \mathbf{26} \\ \hline \mathbf{258} \end{array}$$

Step 2:
Multiply by the tens.
Regroup if necessary.

What You Think
20×3 ones $= 60$ ones
Regroup 60 ones as 6 tens.

20×4 tens $= 80$ tens
Regroup 80 tens as 8 hundreds.

$$\begin{array}{r} {\scriptstyle 1} \\ 43 \\ \times\ 26 \\ \hline 258 \\ \mathbf{860} \\ \hline \end{array}$$

Step 3:
Add the partial products.

What You Think
$6 \times 43 = 258$
$20 \times 43 = 860$

$$\begin{array}{r} {\scriptstyle 1} \\ 43 \\ \times\ 26 \\ \hline 258 \\ +\ 860 \\ \hline 1{,}118 \end{array}$$

partial products

Find the product.

1. $\begin{array}{r} 38 \\ \times\ 12 \\ \hline \end{array}$

2. $\begin{array}{r} 64 \\ \times\ 33 \\ \hline \end{array}$

3. $\begin{array}{r} 49 \\ \times\ 27 \\ \hline \end{array}$

4. $\begin{array}{r} 85 \\ \times\ 15 \\ \hline \end{array}$

5. $\begin{array}{r} 26 \\ \times\ 21 \\ \hline \end{array}$

6. $\begin{array}{r} 73 \\ \times\ 19 \\ \hline \end{array}$

7. $\begin{array}{r} 57 \\ \times\ 28 \\ \hline \end{array}$

8. $\begin{array}{r} 91 \\ \times\ 86 \\ \hline \end{array}$

9. Number Sense In the problem 62×45, what are the partial products?

_____

Multiplying Greater Numbers

Find each product. Estimate to check that your answer is reasonable.

1. 556×34

2. 234×75

3. 395×76

4. 483×57

5. 628×33

6. 154×35

7. 643×49

8. 536×94

9. Number Sense In a class of 24 students, 13 students sold over 150 raffle tickets each, and the rest of the class sold about 60 raffle tickets each. The class goal was to sell 2,000 tickets. Did they reach their goal? Explain.

_____

_____

_____

10. Player A's longest home run distance is 484 ft. If Player A hits 45 home runs at his longest distance, what would the total distance be? _____

11. Player B's longest home run distance is 500 ft. There are 5,280 ft in 1 mi. How many home runs would Player B need to hit at his longest distance for the total to be greater than 1 mi? _____

12. Algebra Which equation shows how you can find the number of minutes in one year?

A $60 \times 24 \times 365$
B $60 \times 60 \times 24$
C 60×365
D $60 \times 60 \times 365$

13. Explain It Write a real-world problem where you would have to multiply 120 and 75.

_____

Name _____

Reteaching
4-5

Dividing by 1-Digit Divisors

Find 362 ÷ 5.

Step 1: To decide where to place the first digit in the quotient, compare the first digit of the dividend with the divisor.

$3 < 5$, so the first digit in the quotient will not go in the hundreds place.

Now, compare the first two digits of the dividend with the divisor.

$36 > 5$, so the first digit in the quotient will go in the tens place.

Step 2: Divide the tens. Use multiplication facts and compatible numbers.
Think $5 \times ? = 35$.

Write 7 in the tens place of the quotient.
Multiply. $5 \times 7 = 35$

$$\begin{array}{r} 7 \\ 5\overline{)362} \\ -35 \\ \hline 1 \end{array}$$

Subtract. $36 - 35 = 1$
Compare. $1 < 5$
Bring down the ones.

Step 3: Divide the ones. Use multiplication facts and compatible numbers.
Think $5 \times ? = 10$.

Write 2 in the ones place of the quotient.
Multiply. $5 \times 2 = 10$

$$\begin{array}{r} 72\text{R}2 \\ 5\overline{)362} \\ -35\downarrow \\ \hline 12 \\ -10 \\ \hline 2 \end{array}$$

Subtract. $12 - 10 = 2$
Compare. $2 < 5$
There are no more digits to bring down, so 2 is the remainder.

Step 4: Check by multiplying.

$5 \times 72 = 360 + 2 = 362$

Divide. Check by multiplying.

1. $8\overline{)863}$

2. $7\overline{)249}$

3. $5\overline{)365}$

4. $8\overline{)448}$

5. $2\overline{)499}$

6. $6\overline{)396}$

7. Number Sense How can you tell before you divide 425 by 9 that the first digit of the quotient is in the tens place?

_____

Estimating Quotients with 2-Digit Divisors

You can use compatible numbers to estimate a quotient.

Find 175 ÷ 32.

Step 1: Find compatible numbers for 175 and 32.

32 rounds to 30.

Think: 18 can be divided evenly by 3.

180 is close to 175 and 30 is close to 32.

180 and 30 are compatible numbers.

Step 2: Divide. Use patterns to help you, if possible.

Think: 180 ÷ 30 is the same as 18 tens ÷ 3 tens.

18 ÷ 3 = 6
So, 180 ÷ 30 = 6.

Step 3: Check for reasonableness.

6 × 30 = 180

So, a good estimate of 175 ÷ 32 is 6.

Estimate each quotient using compatible numbers.

1. 298 ÷ 25 _____

2. 5,391 ÷ 77 _____

3. 24,303 ÷ 12 _____

4. 276 ÷ 42 _____

5. 1,347 ÷ 54 _____

6. 5,564 ÷ 91 _____

At Elmer Elementary School, fifth-grade students are saving money for a summer trip to Washington, D.C.

7. The money Percy has saved is how many times as great as the money James has saved?

_____

Student	Amount Saved
Percy	$125
Emily	$ 80
George	$202
James	$ 41
Bertha	$159

1-Digit Quotients

In **1** through **6**, find each quotient.

1. $37\overline{)120}$

2. $39\overline{)342}$

3. $62\overline{)338}$

4. $42\overline{)284}$

5. $82\overline{)599}$

6. $55\overline{)474}$

7. Solomon has \$118. He wants to purchase concert tickets for himself and 5 friends. Each ticket costs \$19. Does he have enough money? Explain.

8. **Number Sense** Which problem will have the greater quotient, $376.0 \div 93$ OR $376 \div 93.01$? Explain how you know.

9. Which is $458 \div 73$?

A 5 R19 **B** 5 R20 **C** 6 R19 **D** 6 R20

10. **Explain It** A student solves the problem $354 \div 24$. The student finds an answer of 13 R40. Explain how you can tell that the answer is incorrect just by looking at the remainder.

Multiplying a Decimal by a Whole Number

Travis can read a book chapter in 2.6 hours. The book has 18 chapters. How long will it take Travis to read the book?

Step 1. Multiply as with whole numbers.

$$\begin{array}{r} 2.6 \\ \times\ 18 \\ \hline 208 \\ +\ 260 \\ \hline 468 \end{array}$$

Step 2. Count the total decimal places in both factors.

2.6 1 decimal place
18 0 decimal places

Step 3. Since there is a total of 1 decimal place in the factors, there is 1 decimal place in the product.

46.8

It will take Travis 46.8 hours to read the book.

For questions **1** through **3**, find the product.

1. $\begin{array}{r} 2.3 \\ \times\ 6 \\ \hline \end{array}$

2. $\begin{array}{r} 71.7 \\ \times\ 12 \\ \hline \end{array}$

3. $\begin{array}{r} 0.894 \\ \times\ 21 \\ \hline \end{array}$

4. Sara is multiplying two factors, one with one decimal place and one with two decimal places. She says that the product should have two decimal places. Is this correct? Explain.

5. Critical Thinking Light bulbs usually cost $2. They are on sale for 0.50 of the regular price. What is the sale price? Is this a better price than if the sale price were 0.35 of the regular price?

Multiplying Two Decimals

Find each product.

1. $\begin{array}{r} 3.7 \\ \times\ 0.3 \\ \hline \end{array}$

2. $\begin{array}{r} 4.4 \\ \times\ 0.2 \\ \hline \end{array}$

3. $\begin{array}{r} 0.61 \\ \times\ 6.8 \\ \hline \end{array}$

4. $\begin{array}{r} 1.9 \\ \times\ 0.005 \\ \hline \end{array}$

5. $0.79 \times 4.3 =$ _____

6. $0.79 \times 0.005 =$ _____

7. Number Sense The product of 4.7 and 6.5 equals 30.55. What is the product of 4.7 and 0.65? 4.7 and 65?

_____

8. What would be the gravity in relation to Earth of a planet with 3.4 times the gravity of Mercury?

_____

9. The gravity of Venus is 0.35 times that of Jupiter. What is the gravity of Venus in relation to Earth's gravity?

_____

Relative (to Earth) Surface Gravity

Planet	Gravity
Mercury	0.39
Neptune	1.22
Jupiter	2.6

10. How many decimal places are in the product of a number with decimal places to the thousandths multiplied by a number with decimal places to the hundredths?

A 2 **B** 3 **C** 4 **D** 5

11. Explain It Explain how you know the number of decimal places that should be in the product when you multiply two decimal numbers together.

_____

_____

_____

_____

Practice 7-4

Dividing a Decimal by a Whole Number

Find each quotient.

1. $13\overline{)68.9}$ **2.** $35\overline{)412.3}$ **3.** $90\overline{)14.4}$ **4.** $60\overline{)53.4}$

5. $123.08 \div 34 =$ _____ **6.** $0.57 \div 30 =$ _____

7. $562.86 \div 59 =$ _____ **8.** $24.4 \div 80 =$ _____

9. John paid \$7.99 for 3 boxes of cereal. The tax was \$1.69. Excluding tax, how much did John pay for each box of cereal if they all were the same price? _____

10. If a package of granola bars with 12 bars costs \$3.48, how much does each granola bar cost?

A 29¢ **B** 31¢ **C** 44¢ **D** \$1.00

11. Estimation $64.82 \div 11$ is

A a little more than 6.

B a little more than 60.

C a little less than 6.

D a little less than 60.

12. Explain It Explain how to divide 0.12 by 8.

_____

_____

_____

_____

Dividing a Decimal by a Decimal

Find each quotient.

1. $0.8\overline{)1.84}$ **2.** $0.9\overline{)2.7}$ **3.** $2.5\overline{)4.75}$ **4.** $1.1\overline{)1.21}$

5. $7.1\overline{)6.39}$ **6.** $0.8\overline{)0.648}$ **7.** $1.3\overline{)10.725}$ **8.** $0.2\overline{)0.51}$

9. $0.07\overline{)0.77}$ **10.** $4.8\overline{)4.32}$ **11.** $0.7\overline{)8.4}$ **12.** $2.3\overline{)6.9}$

13. Chan paid $4.75 for trail mix that costs $2.50 a pound. How many pounds of trail mix did he buy?

_____

14. Max's family car has a gas tank that holds 12.5 gallons of gas. It cost $40.62 to completely fill the tank yesterday. What was the price of gas per gallon?

_____

15. Strategy Practice Strawberries cost $5.99 per pound, and bananas cost $0.59 per pound. How many pounds of bananas could you buy for the cost of one pound of strawberries?

A 101.5 pounds **B** 10.15 pounds **C** 5.99 pounds **D** .59 pounds

16. Explain It When dividing a decimal by a decimal, why is it sometimes necessary to add a zero to the right of the decimal point in the quotient?

_____

_____

_____

_____

_____

Practice 7-8