

What We Are Learning

Understanding Decimals

Vocabulary

These are the math words we are learning:

clustering rounding all of the numbers to the same value

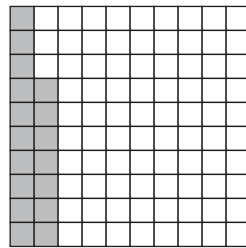
front-end estimation estimating with only the whole number part of the decimal

Dear Family,

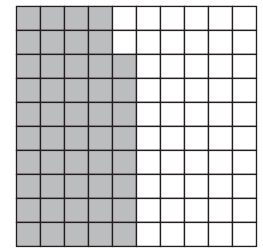
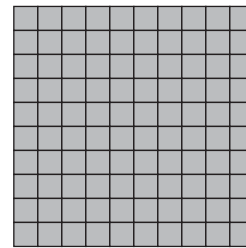
Now that your child has an understanding of whole number applications, he or she can begin to apply that knowledge to decimals. Examples of how your child will model decimals, read and write decimals, and compare and order decimals are shown below.

Model each decimal.

0.17



1.48



Write each decimal in expanded form, standard form, and words.

Standard Form	Expanded Form	Words
3.06	$3 + 0.06$	Three and six hundredths
51.128	$51 + 0.128$	Fifty-one and one hundred twenty-eight thousandths

Ask your child what the word “**and**” stands for when reading and writing decimals. Your child should tell you that the word “**and**” stands for the decimal point.

Your child can use place value or a number line to compare and order decimals. These are the same methods your child used to compare and order whole numbers.

Compare 21.73 and 21.77.

21.73
21.77

Step 1 Line up the decimal points.

21.73
21.77

Step 2 Start at the left and compare digits.

2 1 . 7 3
2 1 . 7 7

Step 3 Look for the first place where the digits are different.

Since $7 > 3$, then $21.77 > 21.73$.

Your child will be using estimation to find sums, differences, products, and quotients. Students may round to an indicated place value or use compatible numbers to estimate an answer to a problem. Two new estimating techniques, clustering and front-end estimation will be introduced to your child in this section. The following is an example of front-end estimation.

Estimate the sum using front-end estimation.

$$14.75 + 32.22 + 6.19$$

$$14 + 32 + 6 = 52 \quad \text{Add only the whole numbers.}$$

Because the whole number values of the decimals are less than the actual numbers, the sum is an *underestimate*. Therefore the exact answer is 52 or more.

The addition and subtraction of decimals is very similar to that of whole numbers. Your child will learn how to accurately add and subtract decimals by knowing where to correctly place the decimal point and when to add place-holding zeros. For example:

Find the difference. $12.3 - 7.56$

$$\begin{array}{r} 12.30 \\ - 7.56 \\ \hline 4.74 \end{array}$$

Align the decimal points.

Use zero as a placeholder.

Subtract. Place the decimal point.

Your child will learn how to multiply and divide decimals by powers of ten just by moving the decimal point. This concept will lead your child directly to converting metric measurements.

Multiply or divide.

$$34.21 \times 10^4$$

$$= 342,100$$

The power of ten is 4. To multiply, move the decimal point 4 places to the right. Add two zeros as placeholders.

$$34.21 \div 10^4$$

$$= 0.003421$$

The power of ten is 4. To divide, move the decimal point 4 places to the left. Add two zeros as placeholders.

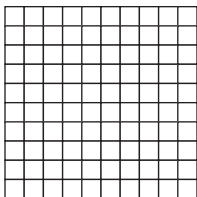
Continue to review these decimal concepts daily with your child.

Sincerely,

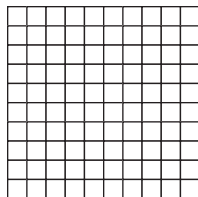
CHAPTER 3 **Family Letter**
3 Understanding Decimals

Model each decimal.

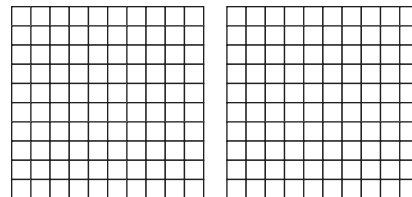
1. 0.3



2. 0.76



3. 1.51



Write each number in standard form, expanded form, and words.

4. 3.103

5. $41 + 0.63$

6. 1 and eight-tenths

Order the decimals from least to greatest.

7. 25.12, 25.07, 25.5

8. 7.33, 7.35, 7.3

Estimate. Round to the indicated place value.

9. $3.0567 + 7.123$; hundredths

10. $95.63 - 74.09$; tenths

Find the sum or difference.

11.
$$\begin{array}{r} 42.18 \\ + 0.05 \\ \hline \end{array}$$

12.
$$\begin{array}{r} 5.03 \\ - 0.15 \\ \hline \end{array}$$

13.
$$\begin{array}{r} 18 \\ - 1.93 \\ \hline \end{array}$$

14.
$$\begin{array}{r} 39.12 \\ + 1.3 \\ \hline \end{array}$$

15.
$$\begin{array}{r} 8.3 \\ - 1.2 \\ \hline \end{array}$$

Multiply or divide.

16. $7.8 \times 10,000$

17. $1.5 \div 10^3$

18. $42,516 \div 100$

19. 0.25×10^5

Convert each measure.

20. 2.4 m = _____ mm

21. 350 g = _____ kg

Answers: 1. 2. 3. 4. $3 + 0.103$; three and one hundred three thousandths
 5. 41.63 ; forty-one and sixty-three hundredths
 6. 1.8
 7. 25.07, 25.12, 25.5
 8. 7.3, 7.33, 7.35
 9. 10.18
 10. 21.5
 11. 42.23
 12. 4.88
 13. 16.07
 14. 40.42
 15. 7.1
 16. 78,000
 17. 0.0015
 18. 425.16
 19. 25,000
 20. 2,400 mm
 21. 0.35 kg

CHAPTER
3 **Family Fun**
Decimal Concentration

Directions

Cut out the cards below. Shuffle the cards and place them face down in rows and columns. Take turns with your partner. Choose two cards and try to match the expression with its value. When you find a pair, remove it from the board. If you do not find a match, return the cards to their spots on the board. The player with the most matches wins.

6.02	six and 2 hundredths	850 g	0.85 kg	Numbers listed from greatest to least
9.602 9.6 9.062 9.006	2.089	$2 + 0.089$	$\begin{array}{r} 78.9 \\ -51.06 \\ \hline \end{array}$	About 28
8.97×10^6	8,970,000	$\begin{array}{r} 1.06 \\ 0.98 \\ + 10.99 \\ \hline \end{array}$	about 13	$0.4 \div 100$
0.004	73 cm	730 mm	height of a man	About 1.5 m

What We Are Learning

Multiplying and Dividing
Decimals

Vocabulary

These are the math words we are learning:

scientific notation

a shorthand method for writing large numbers

Dear Family,

In this section, your child will continue to learn about decimals and decimal applications. One such application involves using decimals to express very large numbers in a simple way. This is called scientific notation. An example is shown below.

Write 6,358,000 in scientific notation.

Step 1 Move the decimal point left to form a number greater than one but less than ten.

6.358000

$6.358000 > 1$ $6.358000 < 10$

Step 2 Since the decimal point was moved 6 places to the left, the number should be multiplied by ten to the sixth power. 10^6

Step 3 Write the number in scientific notation.

$$6,358,000 = 6.358 \times 10^6$$

Your child will also learn how to write a number in standard form when given a number written in scientific notation.

Write 7.82×10^5 in standard form.

$$7.82 \times 10^5$$

7.82000 The power of 10 is 5. Rewrite the number with zeros.

782,000 Now, move the decimal point 5 places to the right.

$$\text{So, } 7.82 \times 10^5 = 782,000.$$

Until now, your child has learned to multiply and divide decimals by the power of ten. In this section, your child will learn to multiply a decimal by a whole number and by another decimal. He or she will also learn to divide a decimal by a whole number and by a decimal.

Becoming proficient with these types of problems will allow your child to evaluate products and quotients for given variables, and learn to solve decimal equations.

The following shows examples of the steps your child will use to multiply and divide decimals. Notice that the process is similar to the one used to multiply and divide whole numbers except that you have to place a decimal point in the product or quotient.

Multiply a Decimal by a Whole Number

6×0.4

$6 \times 0.4 \rightarrow$ Multiply as you would with whole numbers.

Add the number of decimal places in each number multiplied.

$$\begin{array}{r} 6 \rightarrow 0 \text{ decimal place} \\ 0.4 \rightarrow + 1 \text{ decimal place} \\ \hline 1 \text{ decimal place} \end{array}$$

$6 \times 0.4 = 2.4 \rightarrow$ Place the decimal point **1** digit to the left.

Divide a Decimal by a Whole Number

$15.81 \div 3$

Place the decimal point in the quotient directly above the decimal point in the dividend.

$$\begin{array}{r} 5.27 \\ 3 \overline{)15.81} \\ \underline{-15} \\ 8 \\ \underline{-6} \\ 21 \\ \underline{-21} \\ 0 \end{array} \quad \begin{array}{l} \text{Divide as you} \\ \text{would with} \\ \text{whole} \\ \text{numbers.} \end{array}$$

Multiply a Decimal by a Decimal

0.6×0.4

$0.6 \times 0.4 \rightarrow$ Multiply as you would with whole numbers.

Add the number of decimal places in each number multiplied.

$$\begin{array}{r} 0.6 \rightarrow 1 \text{ decimal place} \\ 0.4 \rightarrow + 1 \text{ decimal place} \\ \hline 2 \text{ decimal places} \end{array}$$

$0.6 \times 0.4 = 0.24 \rightarrow$ Place the decimal point **2** digits to the left.

Divide a Decimal by a Decimal

$15.81 \div 0.03$

Make the divisor, 0.03, a whole number by multiplying it and the dividend, 15.81, by the same power of ten.

$$\begin{array}{r} 0.03 \times 100 = 3 \\ 15.81 \times 100 = 1,581 \\ \hline 527 \\ 3 \overline{)1581} \quad \text{Divide} \\ \underline{-15} \\ 8 \\ \underline{-6} \\ 21 \\ \underline{-21} \\ 0 \end{array}$$

It is important that your child understand the reasonableness of an answer when performing decimal operations. When solving equations with decimal coefficients, have your child explain the answers to make certain that the solutions are reasonable.

Sincerely,

CHAPTER

3

Family Letter

Multiplying and Dividing Decimals

Write each number in scientific notation.

1. 67,003 _____ 2. 974,875 _____ 3. 1,000,000 _____

Write each number in standard form.

4. 3.8×10^4 _____ 5. 2.8×10^2 _____ 6. 7.82×10^6 _____

Find each product.

7.
$$\begin{array}{r} 0.3 \\ \times 0.6 \\ \hline \end{array}$$
 8.
$$\begin{array}{r} 45 \\ \times 0.4 \\ \hline \end{array}$$
 9.
$$\begin{array}{r} 2.71 \\ \times 8.0 \\ \hline \end{array}$$

Write and solve an equation.

10. A sheet of drywall is on sale for \$2.89. How much will 25 sheets of drywall cost?
- _____

Evaluate $13x$ for each value of x .

11. $x = 0.35$ _____ 12. $x = 1.51$ _____ 13. $x = 7.8$ _____

Evaluate $x \div 8$ for each value of x .

14. $x = 0.824$ _____ 15. $x = 40.6$ _____ 16. $x = 16.016$ _____

Find each quotient.

17. $7.2 \div 1.2$ _____ 18. $71.4 \div 0.03$ _____ 19. $68.76 \div 1.8$ _____

Solve.

20. The soccer team raised \$260.75 for new uniforms. Each uniform costs \$26. How many new uniforms can the soccer team purchase?
- _____
21. There are 22 students in Mrs. Field's classroom. If juice boxes come in packs of 4, how many packs does Mrs. Field need for her class?
- _____

Answers: 1. 6.7003×10^4 2. 9.74875×10^5 3. 1×10^6 4. 38,000 5. 280 6. 7,820,000 7. 0.18 8. 18
9. 21.68 10. \$72.25 11. 4.55 12. 19.63 13. 101.4 14. 0.103 15. 5.075 16. 2.002 17. 6 18. 2,380 19. 38.2
20. 10 uniforms 21. 6 packs

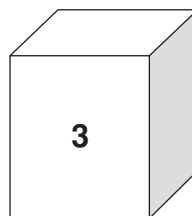
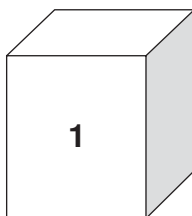
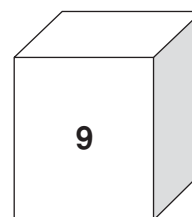
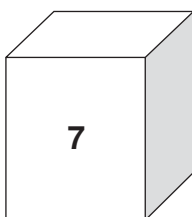
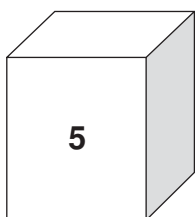
Family Fun

Capture the Flag

Directions

Solve each problem. Then find the sum of the digits of your answer. Shade the square if the sum is an odd number. The picture made by the shaded squares will tell you under which block the flag is. If you evaluate each number correctly, you will capture your enemy's flag.

22×2.6	0.67×10^3	$8.7 \div 0.3$	12×10^2
20×10^5	$\begin{array}{r} 18.2 \\ \times 5.1 \\ \hline \end{array}$	0.5×0.4	3.21×7
$10.55 \div 5$	$9.2 \div 0.5$	6.81×3	$27.6 \div 100$
1.5×0.5	$19 \div 0.2$	33×100	$98 \div 0.7$
$\begin{array}{r} 9.8 \\ \times 0.4 \\ \hline \end{array}$	$1.1 \div 0.5$	$18.3 \div 6$	0.6×0.3



Answer: The flag is under the 9 block.