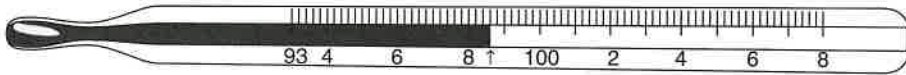




## Decimals and Their Uses

In previous grades, your child had many experiences with money written in decimal notation. In the next unit, the class will learn about other uses of decimals.

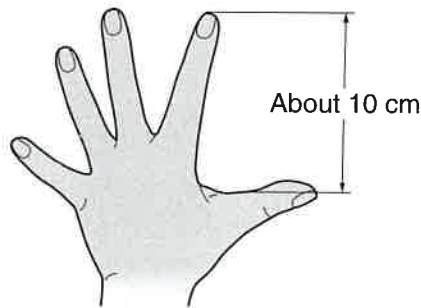
The class will focus on examples of decimals in everyday life. For example, some thermometers have marks that are spaced  $\frac{2}{10}$  of a degree apart. These marks give a fairly precise measurement of body temperature, such as 98.6 °F.



Normal body temperature is about 98.6 °F.

Students will explore how decimals are used in measuring distances, times, and gasoline mileage.

We will also begin a yearlong measurement routine. Students will find their own “personal references,” which they will use to estimate lengths, heights, and distances in metric units. For example, your child might discover that the distance from the base of his or her thumb to the tip of his or her index finger is about 10 centimeters and then use this fact to estimate other distances.



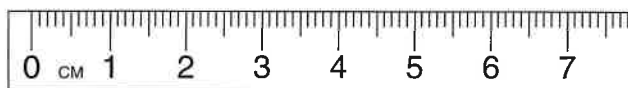
The World Tour will continue. In small groups, students will gather information about different countries in Africa and then share what they have learned with the class. Students can then compare and interpret data for a large number of countries from the same region.

**Please keep this Family Letter for reference as your child works through Unit 4.**

## Vocabulary

Important terms in Unit 4:

**centimeter (cm)** In the metric system, a unit of length equivalent to  $\frac{1}{100}$  of a meter; 10 millimeters;  $\frac{1}{10}$  of a decimeter.



**decimeter (dm)** In the metric system, a unit of length equivalent to  $\frac{1}{10}$  of a meter; 10 centimeters.

**hundredths** In base-10 *place-value* notation, the place in which a digit has a value equal to  $\frac{1}{100}$  of itself; the second digit to the right of the decimal point.

**meter (m)** In the metric system, the unit of length from which other units of length are derived. One meter is the distance light will travel in a vacuum (empty space) in  $\frac{1}{299,792,458}$  second; 100 centimeters; 10 decimeters.

**millimeter (mm)** A metric unit of length equivalent to  $\frac{1}{1,000}$  of a meter;  $\frac{1}{10}$  of a centimeter.

**ONE** Same as *whole*.

**ones** The place-value position in which a digit has a value equal to the digit itself.

### personal measurement reference

A convenient approximation for a standard unit of measurement. For example, many people have thumbs that are approximately one inch wide.

**place value** A number writing system that gives a digit a value according to its position, or place, in the number. In our standard, base-10 system, each place has a value ten times that of the place to its right and 1 tenth the value of the place to its left.

1,000s	100s	10s	1s	.	0.1s	0.01s	0.001s
Thousands	Hundreds	Tens	Ones	.	Tenths	Hundredths	Thousandths

**tens** The place-value position in which a digit has a value equal to 10 times itself.

**tenths** In base-10 *place-value* notation, the place in which a digit has a value equal to  $\frac{1}{10}$  of itself; the first digit to the right of the decimal point.

**thousandths** In base-10 *place-value* notation, the place in which a digit has a value equal to  $\frac{1}{1,000}$  of itself; the third digit to the right of the decimal point.

**whole (or ONE, or unit)** In *Everyday Mathematics*, an entire object, collection of objects, or quantity being considered; 100%. Same as the ONE or unit whole.

# As You Help Your Child with Homework

As your child brings assignments home, you may want to go over the instructions together, clarifying them as necessary. The answers listed below will guide you through some of the Study Links in this unit.

## Study Link 4•1

1.

1,000s	100s	10s	1s
6	8	5	4

3.

10s	1s		0.1s	0.01s	0.001s
7	3	.	0	0	4

## Study Link 4•3

Sample answers:

3. 5.05, 5.25, 5.95
4. 4.15, 4.55, 4.99
5. 21.4, 21.98, 21.57
6. 0.89, 0.85, 0.82
7. 2.155, 2.16, 2.159
8. 0.84, 0.88, 0.87

## Study Link 4•4

1. Seikan and Channel Tunnel
2. Between 90 and 130 miles
3. Sample answer: I rounded the tunnel lengths to "close-but-easier" numbers and added  $35 + 30 + 20 + 15 + 15 = 115$  to find the total length.
4. 12 miles    5. 8 miles

## Study Link 4•5

1. 120.41    2. 1.46    3. 5.18    4. 0.03
5. >    6. <    7. >    8. >
9. Sample answer:  $2.33 + 4.21$
10. Sample answer:  $6.83 - 5.31$

## Study Link 4•6

1. a. \$0.76    b. \$2.43    c. \$4.64    d. \$2.95
2. \$16.40    3. \$2.57    4. \$7.32    5. \$18.10
6. \$10.78
7. Loaf of bread; Sample answer: The price of a loaf of bread in 2000 was \$0.88. The expected price of a loaf of bread in 2025 is \$3.31. This was almost 4 times its cost in 2000.

## Study Link 4•7

1.  $\frac{335}{1,000}$ ; 0.335    2.  $\frac{301}{1,000}$ ; 0.301
3.  $\frac{7}{100}$ ; 0.07    4.  $1\frac{5}{100}$ ; 1.05
5. 0.346    6. 0.092    7. 0.003    8. 2.7
9. 0.536    10. 0.23    11. 7.008    12. 0.4
13. >    14. >    15. <    16. <

## Study Link 4•8

1. a. 7 cm    b. 0.07 m    2. a. 12 cm    b. 0.12 m
3. a. 4 cm    b. 0.04 m    4. a. 6 cm    b. 0.06 m
5. a. 2 cm    b. 0.02 m    6. a. 14 cm    b. 0.14 m

## Study Link 4•9

2. 180 mm    3. 4 cm    4. 3,000 mm
5. 400 cm    6. 7 m    7. 460 cm
8. 794 cm    9. 4.5 m    10. 0.23 m
11. 60 cm    12. 8 cm    13. 7 cm

## Study Link 4•10

2. a. 65 mm    b. 2.6 cm    c. 610 cm
3. a. 50 mm    b. 3 cm    c. 300 cm
4. a. 800 mm    b. 11 cm    c. 5 m
5. a. 430 mm    b. 9.8 cm    c. 0.34 m
6. a. 6 mm    b. 0.4 cm    c. 5,200 mm

**STUDY LINK**  
**4•1**

# Place-Value Puzzles



Use the clues to write the digits in the boxes and find each number.

- ◆ Write 5 in the tens place.
  - ◆ Find  $\frac{1}{2}$  of 24. Subtract 4. Write the result in the hundreds place.
  - ◆ Add 7 to the digit in the tens place. Divide by 2. Write the result in the thousands place.
  - ◆ In the ones place, write an even number greater than 2 that has not been used yet.

1,000s	100s	10s	1s

- ◆ Divide 15 by 3. Write the result in the hundredths place.
  - ◆ Multiply 2 by 10. Divide by 10.

100s	10s	1s	.	0.1s	0.01s	0.001s

- Write the result in the ones place.
- ◆ Write a digit in the tenths place that is 4 more than the digit in the hundredths place.
- ◆ Add 7 to the digit in the ones place. Write the result in the thousandths place.

- ◆ Write the result of  $6 * 9$  divided by 18 in the ones place.
  - ◆ Double 8. Divide by 4. Write the result in the thousandths place.

10s	1s	.	0.1s	0.01s	0.001s

- ◆ Add 3 to the digit in the thousandths place. Write the result in the tens place.
- ◆ Write the same digit in the tenths and hundredths place so that the sum of all the digits is 14.

**Practice**

Write true or false.

4.  $6 * 5 = 15 + 15$  \_\_\_\_\_    5.  $15 + 7 < 13 - 8$  \_\_\_\_\_    6.  $72 / 9 > 9$  \_\_\_\_\_

**STUDY LINK**  
**4•2**

# Decimals All Around



Find examples of decimals in newspapers, in magazines, in books, or on food packages. Ask people in your family for examples.



Write your numbers below or, if an adult says you may, cut them out and tape them on this page. Be sure to write what the numbers mean. For example, “The body temperature of a hibernating dormouse may go down to 35.6°F.”

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**Practice**

Write true or false.

- 1.  $286 + 286 = 462$  \_\_\_\_\_
- 2.  $907 - 709 = 200$  \_\_\_\_\_
- 3.  $641 + 359 = 359 + 641$  \_\_\_\_\_
- 4.  $2,345 - 198 = 2,969 - 822$  \_\_\_\_\_

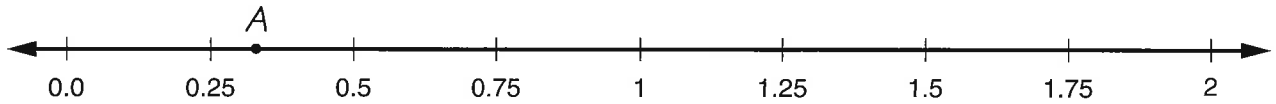
**STUDY LINK**  
**4•3**

# Ordering Decimals



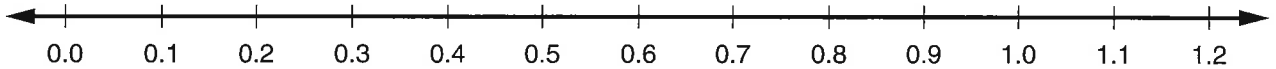
Mark the approximate locations of the decimals and fractions on the number lines below. Rename fractions as decimals as necessary.

1.



- A 0.33      B 1.6      C 0.7      D 1.01  
E 1.99      F 1.33      G 0.1      H 0.8

2.



- I 0.67      J 0.05      K  $\frac{75}{100}$       L 0.49      M 0.99  
N 1.15      O  $\frac{25}{100}$       P 0.101      Q 0.55      R 0.88

Use decimals. Write 3 numbers that are between the following:

3. \$5 and \$6      \$ \_\_\_\_\_      \$ \_\_\_\_\_      \$ \_\_\_\_\_
4. 4 centimeters and 5 centimeters      \_\_\_\_\_ cm      \_\_\_\_\_ cm      \_\_\_\_\_ cm
5. 21 seconds and 22 seconds      \_\_\_\_\_ sec      \_\_\_\_\_ sec      \_\_\_\_\_ sec
6. 8 dimes and 9 dimes      \$ \_\_\_\_\_      \$ \_\_\_\_\_      \$ \_\_\_\_\_
7. 2.15 meters and 2.17 meters      \_\_\_\_\_ m      \_\_\_\_\_ m      \_\_\_\_\_ m
8. 0.8 meter and 0.9 meter      \_\_\_\_\_ m      \_\_\_\_\_ m      \_\_\_\_\_ m

**Practice**

9.  $x + 17 = 23$      $x =$  \_\_\_\_\_    10.  $5 * n = 35$      $n =$  \_\_\_\_\_    11.  $32 / b = 4$      $b =$  \_\_\_\_\_

**STUDY LINK**  
**4•4**

# Railroad Tunnel Lengths



The table below shows the five longest railroad tunnels in the world.

Tunnel	Location	Year Completed	Length in Miles
Seikan	Japan	1988	33.46
Channel	France/England	1994	31.35
Moscow Metro	Russia	1979	19.07
London Underground	United Kingdom	1939	17.30
Dai-Shimizu	Japan	1982	13.98

Use estimation to answer the following questions.

1. Which two tunnels have a combined length of about 60 miles?

\_\_\_\_\_ and \_\_\_\_\_

2. Which of the following is closest to the combined length of all five tunnels?  
Choose the best answer.

Less than 90 miles

Between 90 and 130 miles

Between 130 and 160 miles

More than 160 miles

3. Explain how you solved Problem 2.

\_\_\_\_\_  
 \_\_\_\_\_

4. About how many miles longer is the Channel Tunnel than the Moscow Metro Tunnel?

About \_\_\_\_\_ miles

**Try This**

5. The Cascade Tunnel in Washington State is the longest railroad tunnel in the United States. It is about  $\frac{1}{4}$  the length of the Seikan. About how long is the Cascade Tunnel?

About \_\_\_\_\_ miles

**Practice**

6.  $190 + b = 200$     $b =$  \_\_\_\_\_      7.  $g - 500 = 225$     $g =$  \_\_\_\_\_

**STUDY LINK**  
**4•5**

# Addition and Subtraction of Decimals



Add or subtract. Show your work.



**1.**  $96.45 + 23.96 = \underline{\hspace{2cm}}$

**2.**  $1.06 + 0.4 = \underline{\hspace{2cm}}$

**3.**  $9.87 - 4.69 = \underline{\hspace{2cm}}$

**4.**  $0.4 - 0.37 = \underline{\hspace{2cm}}$




Write  $<$ ,  $>$ , or  $=$  to make each statement true.

**5.**  $2.78 + 9.1 \underline{\hspace{1cm}} 3.36 + 8.49$

**6.**  $0.08 + 0.97 \underline{\hspace{1cm}} 1.04 + 0.03$

**7.**  $13.62 - 4.9 \underline{\hspace{1cm}} 9.4 - 1.33$

**8.**  $9.4 - 5.6 \underline{\hspace{1cm}} 8.3 - 4.7$

**9.** Name two 3-digit numbers whose sum is 6.54.  $\underline{\hspace{2cm}} + \underline{\hspace{2cm}} = 6.54$

**10.** Name two 3-digit numbers whose difference is 1.52.  $\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = 1.52$

## Practice

**11.**  $13 = 7 + s$      $s = \underline{\hspace{2cm}}$

**12.**  $8 * g = 24$      $g = \underline{\hspace{2cm}}$

**13.**  $36 / p = 6$      $p = \underline{\hspace{2cm}}$

**14.**  $m / 9 = 8$      $m = \underline{\hspace{2cm}}$



**STUDY LINK**  
**4•6**

# Rising Grocery Prices



The table below shows some USDA grocery prices for the year 2000 and estimates of grocery prices for the year 2025.



Grocery Item	Price in 2000	Estimated Price in 2025
dozen eggs	\$1.02	\$1.78
loaf of white bread	\$0.88	\$3.31
pound of butter	\$2.72	\$7.36
gallon of milk	\$2.70	\$5.65

- How much more is each item predicted to cost in 2025?  
 a. eggs \_\_\_\_\_ b. bread \_\_\_\_\_ c. butter \_\_\_\_\_ d. milk \_\_\_\_\_
- The year is 2000. You buy bread and butter. You hand the cashier a \$20 bill. How much change should you receive? \_\_\_\_\_
- The year is 2025. You buy eggs and milk. You hand the cashier a \$10 bill. How much change should you receive? \_\_\_\_\_
- The year is 2000. You buy all 4 items. What is the total cost? \_\_\_\_\_
- The year is 2025. You buy all 4 items. What is the total cost? \_\_\_\_\_
- If the predictions are correct, how much more will you pay in 2025 for the 4 items than you paid in 2000? \_\_\_\_\_
- Which item is expected to have the greatest price increase? \_\_\_\_\_

Explain your answer. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Practice**

- List the first ten multiples of 3. \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_
- List the first ten multiples of 7. \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

**STUDY LINK**  
**4•7**

# Tenths, Hundredths, Thousandths



Complete the table. The big cube is the ONE.

Base-10 Blocks	Fraction Notation	Decimal Notation
1.		
2.		
3.		
4.		

Write each number in decimal notation.

5.  $\frac{346}{1,000}$  \_\_\_\_\_

6.  $\frac{92}{1,000}$  \_\_\_\_\_

7.  $\frac{3}{1,000}$  \_\_\_\_\_

8.  $2\frac{7}{10}$  \_\_\_\_\_

Write each of the following in decimal notation.

9. 536 thousandths \_\_\_\_\_

10. 23 hundredths \_\_\_\_\_

11. 7 and 8 thousandths \_\_\_\_\_

12. 4 tenths \_\_\_\_\_

Write < or >.

13. 0.407 \_\_\_\_\_ 0.074

14. 0.65 \_\_\_\_\_ 0.437

15. 0.672 \_\_\_\_\_ 0.7

16. 2.38 \_\_\_\_\_ 2.4

**Practice**

17.  $6.05 + 1.24 =$  \_\_\_\_\_

18. \_\_\_\_\_  $= 47.90 + 0.76$

19. \_\_\_\_\_  $= 8.71 - 2.78$

20.  $46.8 - 3.77 =$  \_\_\_\_\_

**STUDY LINK**  
**4•8**

# Measuring in Centimeters



Measure each line segment to the nearest centimeter. Record the measurement in centimeters and meters.

**Example:** \_\_\_\_\_

- a.** About 5 centimeters      **b.** About 0.05 meter

**1.** \_\_\_\_\_

- a.** About \_\_\_\_\_ centimeters      **b.** About \_\_\_\_\_ meter

**2.** \_\_\_\_\_

- a.** About \_\_\_\_\_ centimeters      **b.** About \_\_\_\_\_ meter

**3.** \_\_\_\_\_

- a.** About \_\_\_\_\_ centimeters      **b.** About \_\_\_\_\_ meter

**4.** \_\_\_\_\_

- a.** About \_\_\_\_\_ centimeters      **b.** About \_\_\_\_\_ meter

**5.** \_\_\_\_\_

- a.** About \_\_\_\_\_ centimeters      **b.** About \_\_\_\_\_ meter

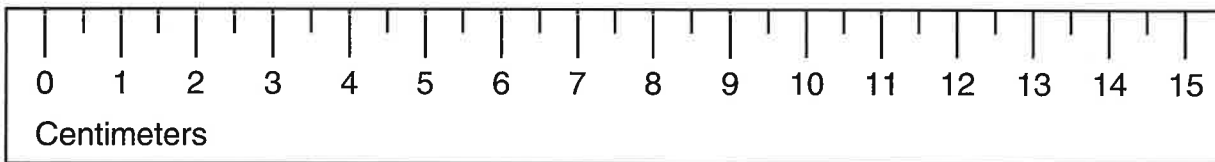
**6.** \_\_\_\_\_

- a.** About \_\_\_\_\_ centimeters      **b.** About \_\_\_\_\_ meter

**Practice**

**7.** \_\_\_\_\_ =  $10.06 + 10.04$       **8.**  $38.93 + 92.4 =$  \_\_\_\_\_

**9.**  $16.85 - 14.23 =$  \_\_\_\_\_      **10.** \_\_\_\_\_ =  $20.9 - 8.57$



**STUDY LINK**  
**4•9**

# Metric Measurements



1. Use your personal references to estimate the lengths of 4 objects in metric units. Then measure each object. Record your estimates and measurements.

Object	Estimated Length	Actual Length

Complete.

2. 18 cm = \_\_\_\_\_ mm                      3. \_\_\_\_\_ cm = 40 mm
4. 3 m = \_\_\_\_\_ mm                      5. 4 m = \_\_\_\_\_ cm
6. \_\_\_\_\_ m = 700 cm                      7. 4.6 m = \_\_\_\_\_ cm
8. 7.94 m = \_\_\_\_\_ cm                      9. \_\_\_\_\_ m = 450 cm
10. \_\_\_\_\_ m = 23 cm                      11. 0.6 m = \_\_\_\_\_ cm

Measure each line segment to the nearest  $\frac{1}{2}$  cm.

12. \_\_\_\_\_

About \_\_\_\_\_ centimeters

13. \_\_\_\_\_

About \_\_\_\_\_ centimeters

**Practice**

Insert < or >.

14. 0.68 \_\_\_\_\_ 0.32                      15. 9.13 \_\_\_\_\_ 9.03                      16. 0.65 \_\_\_\_\_ 0.6

# Decimals and Metric Units



## Symbols for Metric Units of Length

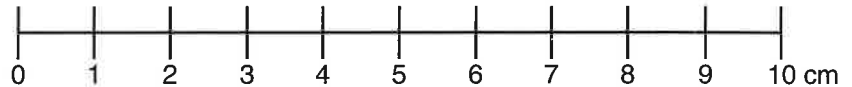
meter (m)  
centimeter (cm)  
decimeter (dm)  
millimeter (mm)

### 1 decimeter



$$1 \text{ m} = 10 \text{ dm} \quad 1 \text{ dm} = 0.1 \text{ m}$$

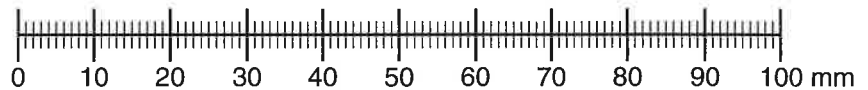
### 10 centimeters



$$1 \text{ m} = 100 \text{ cm} \quad 1 \text{ cm} = 0.01 \text{ m}$$

$$1 \text{ dm} = 10 \text{ cm} \quad 1 \text{ cm} = 0.1 \text{ dm}$$

### 100 millimeters



$$1 \text{ m} = 1,000 \text{ mm} \quad 1 \text{ mm} = 0.001 \text{ m}$$

$$1 \text{ dm} = 100 \text{ mm} \quad 1 \text{ mm} = 0.01 \text{ dm}$$

$$1 \text{ cm} = 10 \text{ mm} \quad 1 \text{ mm} = 0.1 \text{ cm}$$

Use your tape measure or ruler to help you fill in the answers below.

- |                             |                          |                          |
|-----------------------------|--------------------------|--------------------------|
| 1. a. 4.2 cm = <u>42</u> mm | b. 64 mm = <u>6.4</u> cm | c. 2.6 m = <u>260</u> cm |
| 2. a. 6.5 cm = _____ mm     | b. 26 mm = _____ cm      | c. 6.1 m = _____ cm      |
| 3. a. 5 cm = _____ mm       | b. 30 mm = _____ cm      | c. 3 m = _____ cm        |
| 4. a. 80 cm = _____ mm      | b. 110 mm = _____ cm     | c. _____ m = 500 cm      |
| 5. a. 43 cm = _____ mm      | b. 98 mm = _____ cm      | c. _____ m = 34 cm       |
| 6. a. 0.6 cm = _____ mm     | b. 4 mm = _____ cm       | c. 5.2 m = _____ mm      |

## Practice

7. 21, 49, and 56 are multiples of \_\_\_\_\_.
8. 45, 63, and 18 are multiples of \_\_\_\_\_.