



## Family Letter

### Content Overview

Dear Family,

Your child has studied addition and subtraction with whole numbers and decimals in past years. Unit 2 of *Math Expressions* guides students as they study these topics in greater depth.

The main goals of this unit are:

1. to help students extend their understanding of place value for decimals;
2. to help students add and subtract decimals using the methods they learned previously to add and subtract whole numbers;
3. to develop rounding skills as students estimate sums and differences and engage in graphing activities.

Students will extend and apply their knowledge of place value as they complete activities involving money and metric lengths. When the opportunity arises, ask your child questions about money amounts to help reinforce what is being taught in class.

To accomplish the second goal, students will use various methods of grouping. Students may use whatever method they prefer as long as they understand why it works and can explain it. To add and subtract accurately, students need to align the digits by place value correctly. Observe your child as he or she adds and subtracts. Help align the digits when necessary.

The third goal is accomplished in several ways. Students will learn to use the scale on a graph to understand how to round a number. For example, they see that a number such as 3,879 is between 3,000 and 4,000, but closer to 4,000. So, 3,879 rounded to the nearest thousand is 4,000.

Finally, students will solve real world problems that require estimating sums and differences while adding and subtracting large numbers and decimals.

If you have any questions or comments, please call or write to me.

Sincerely,  
Your child's teacher



CA CC

Unit 2 addresses the following standards from the *Common Core State Standards for Mathematics with California Additions*: **5.NBT.1, 5.NBT.3, 5.NBT.3a, 5.NBT.3b, 5.NBT.4, 5.NBT.7** and all Mathematical Practices.



Carta a la familia

## Un vistazo general al contenido

### Estimada familia:

Su niño ha estudiado la suma y resta de números enteros y decimales en años pasados. La Unidad 2 de *Math Expressions* guiará a los estudiantes a medida que estudien esos temas más profundamente.

Los objetivos principales de esta unidad son:

1. ayudar a los estudiantes a ampliar su comprensión del valor posicional de los decimales;
2. ayudar a los estudiantes con la suma y resta de decimales usando los métodos que aprendieron anteriormente para sumar y restar números enteros;
3. desarrollar destrezas de redondeo al estimar sumas y restas y hacer actividades con gráficas.

Los estudiantes ampliarán y aplicarán su conocimiento del valor posicional al realizar actividades con dinero y medidas métricas. Cuando se presente la ocasión, hágale preguntas a su niño sobre cantidades de dinero para reforzar lo que se enseña en la clase.

Los estudiantes lograrán el segundo objetivo utilizando varios métodos de agrupación. Pueden usar el método que prefieran, mientras comprendan por qué funciona y puedan explicarlo. Para sumar y restar con exactitud, necesitan alinear correctamente los dígitos según el valor posicional. Observe a su niño mientras suma y resta. Ayúdele a alinear los dígitos cuando haga falta.

El tercer objetivo se puede cumplir de varias maneras. Los estudiantes aprenderán a usar la escala de una gráfica para comprender cómo se redondea un número. Por ejemplo, van a ver que un número como 3,879 está entre 3,000 y 4,000, pero está más cerca de 4,000. Por lo tanto, redondear 3,879 al millar más cercano da 4,000.

Finalmente, los estudiantes resolverán problemas cotidianos que requieran estimar sumas y restas al sumar y restar números grandes y decimales.

Si tiene alguna pregunta o algún comentario, por favor comuníquese conmigo.

Atentamente,  
El maestro de su niño



CA CC




En la Unidad 2 se aplican los siguientes estándares auxiliares, contenidos en los Estándares estatales comunes de matemáticas con adiciones para California: **5.NBT.1, 5.NBT.3, 5.NBT.3a, 5.NBT.3b, 5.NBT.4, 5.NBT.7** y todos los de prácticas matemáticas.

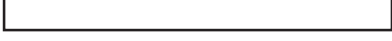


**VOCABULARY**  
 decimal  
 tenth  
 hundredth  
 thousandth

## ► Discuss Fractions and Decimals

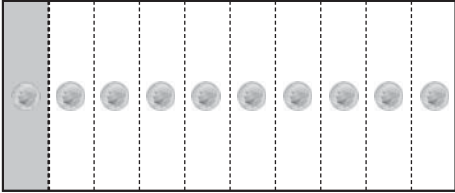
Fractions and decimals are special kinds of numbers. They tell the number of equal parts a whole is divided into, and the number of those parts that are being taken or described.

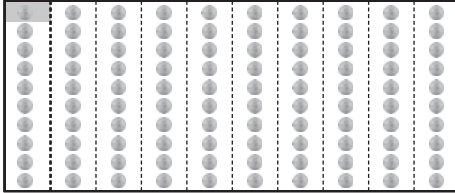
Fraction notation uses a numerator and a denominator to show a whole divided into any number of equal parts.

1. 1 Whole   
 4 equal parts   
 $\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4}$   
 1 part   $\frac{1}{4}$   
 1 of 4 equal parts

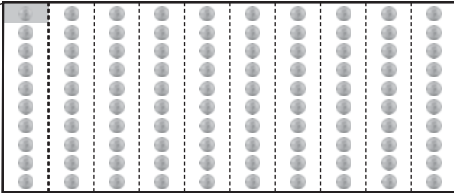
2. 1 Whole   
 5 equal parts   
 $\frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5}$   
 3 parts   $\frac{3}{5}$   
 3 of 5 equal parts

**Decimal** notation uses a decimal point to show places to the right of the ones place. The **tenths** place shows 1 whole (such as one dollar) divided into 10 equal parts. The **hundredths** place shows each tenth divided into 10 equal parts.

3.   
 $\frac{1}{10}$  1 of 10 equal parts  
 \$ 0.10 one dime or one tenth of a dollar  
 0.1 1 in the tenths place

4.   
 $\frac{1}{100}$  1 of 100 equal parts  
 \$0.01 one penny or one hundredth of a dollar  
 0.01 1 in the hundredths place

The **thousandths** place shows each hundredth divided into 10 equal parts.

5.   
 $\frac{1}{1,000}$  1 of 1,000 equal parts  
 \$0.001 one tenth of penny or one thousandth of a dollar  
 0.001 1 in the thousandths place

## ► Decimals as Equal Parts of Sets

Decimal numbers are read as if they are fractions.

$\frac{37}{100}$  and 0.37 are both said as *thirty-seven hundredths*.

Write each fraction as a decimal number, and then say the number.

6.  $\frac{7}{100}$  \_\_\_\_\_

7.  $\frac{16}{100}$  \_\_\_\_\_

8.  $\frac{4}{10}$  \_\_\_\_\_

9.  $\frac{9}{10}$  \_\_\_\_\_

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

11.  $\frac{54}{1,000}$  \_\_\_\_\_

12.  $\frac{81}{100}$  \_\_\_\_\_

13.  $\frac{409}{1,000}$  \_\_\_\_\_

14.  $\frac{2}{10}$  \_\_\_\_\_

15.  $\frac{3}{100}$  \_\_\_\_\_

16.  $\frac{16}{1,000}$  \_\_\_\_\_

17.  $\frac{67}{100}$  \_\_\_\_\_

18. Discuss the patterns you can see in the exercises above. Then explain how to say any decimal number.

\_\_\_\_\_

\_\_\_\_\_

**Solve.**

*Show your work.*

19. If you cut a lemon into 10 equal pieces, what decimal number would 3 pieces represent?

\_\_\_\_\_

20. A bag of pretzels contains 100 pretzels. What decimal number would 28 pretzels represent? What decimal number would 5 pretzels represent?

\_\_\_\_\_

21. A beehive is home to 1,000 bees. If 235 bees are out gathering pollen, what decimal number do those bees represent?





\_\_\_\_\_

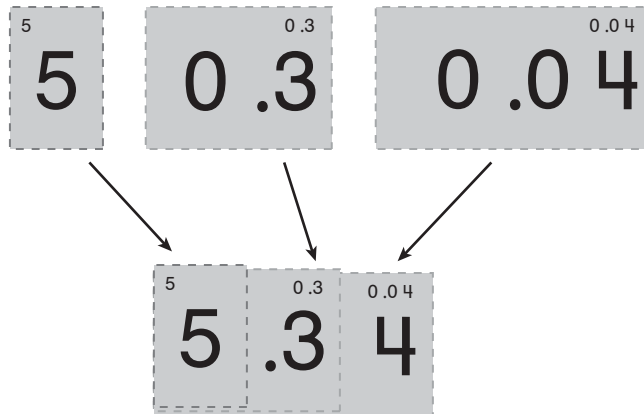
22. What decimal number is represented by answering 92 of 100 test questions correctly?

\_\_\_\_\_

## ► Place Value Chart

Discuss the patterns you see in the Place Value Chart below.

× 10 (Larger)			Place Value Chart	÷ 10 (Smaller)		
Thousands	Hundreds	Tens	ONES	Tenths	Hundredths	Thousandths
1,000.	100.	10.	1.	0.1	0.01	0.001
$\frac{1,000}{1}$	$\frac{100}{1}$	$\frac{10}{1}$	$\frac{1}{1}$	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1,000}$
\$1,000.00	\$100.00	\$10.00	\$1 	\$0.10 	\$0.01 	\$0.001 






Use your Secret-Code Cards to make numbers on the frame.

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Thousands	Hundreds	Tens	ONES	Tenths	Hundredths	Thousandths

and

<span style="border: 1px solid black; padding: 2px;">\$1,000</span>	<span style="border: 1px solid black; padding: 2px;">\$100</span>	<span style="border: 1px solid black; padding: 2px;">\$10</span>	<span style="border: 1px solid black; padding: 2px;">\$1</span>			
				dime	penny	tenth of a penny



**VOCABULARY**  
 standard form  
 word form  
 expanded form  
 powers of 10

## ► Represent Numbers Different Ways

In our place value system, numbers can be expressed different ways. For example, four different ways to represent the number 35.026 are shown below.

<b>standard form</b>	35.026
<b>word form</b>	thirty-five and twenty-six thousandths
<b>expanded form</b>	$30 + 5 + 0.02 + 0.006$
<b>expanded form (powers of 10)</b>	$(3 \times 10) + (5 \times 1) + (2 \times \frac{1}{100}) + (6 \times \frac{1}{1,000})$

Write each number in three different ways.

1. 12,402

word form \_\_\_\_\_

expanded form \_\_\_\_\_

expanded form (powers of 10) \_\_\_\_\_

2. eight and three hundred five thousandths

standard form \_\_\_\_\_

expanded form \_\_\_\_\_

expanded form (powers of 10) \_\_\_\_\_

3.  $70 + 2 + 0.4 + 0.03$

standard form \_\_\_\_\_

expanded form (powers of 10) \_\_\_\_\_

word form \_\_\_\_\_

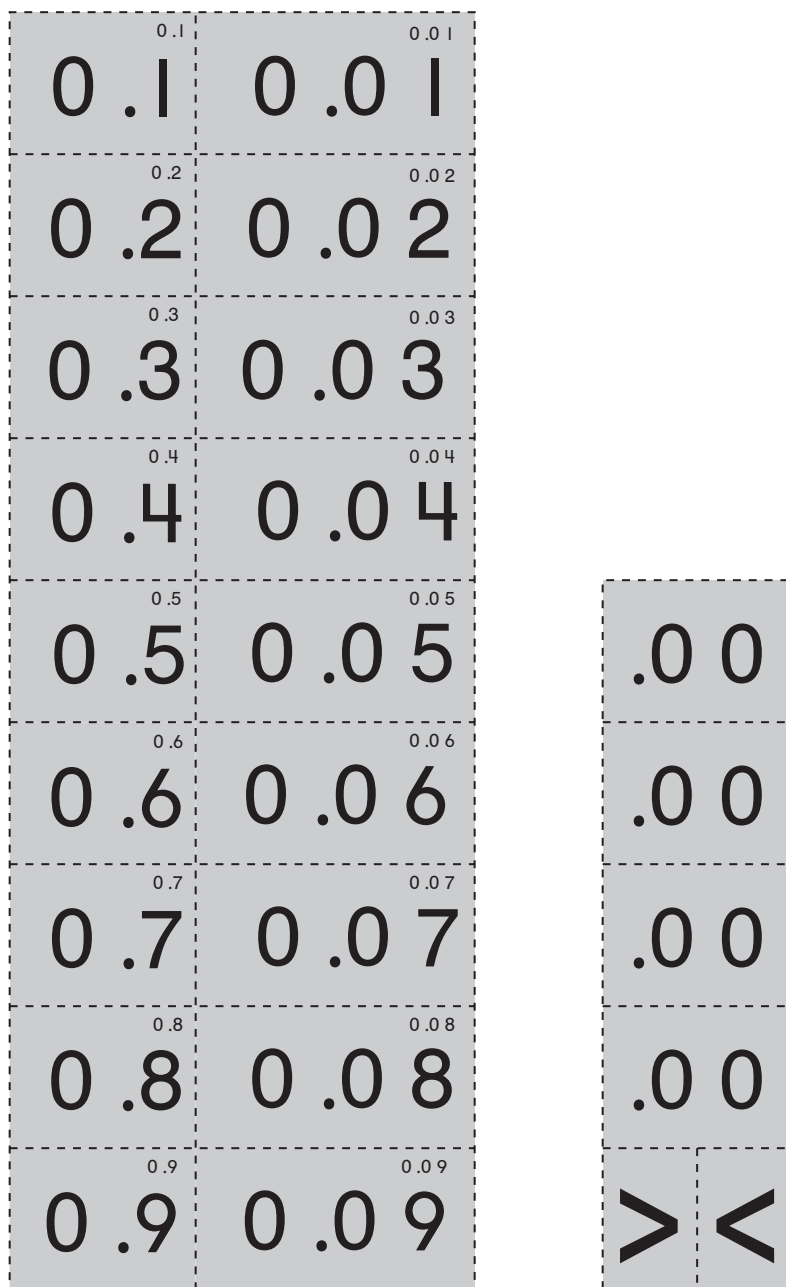
4.  $(4 \times 10,000) + (2 \times 1,000) + (3 \times 10) + (5 \times 1) + (2 \times \frac{1}{10}) + (2 \times \frac{1}{1,000})$

standard form \_\_\_\_\_

word form \_\_\_\_\_

expanded form \_\_\_\_\_

## ► Decimal Secret Code Cards



## ► Decimal Secret Code Cards





## ► Decimal Secret Code Cards

1,000	1, 0 0 0	0.001	0 .0 0 1
2,000	2, 0 0 0	0.002	0 .0 0 2
3,000	3, 0 0 0	0.003	0 .0 0 3
4,000	4, 0 0 0	0.004	0 .0 0 4
5,000	5, 0 0 0	0.005	0 .0 0 5
6,000	6, 0 0 0	0.006	0 .0 0 6
7,000	7, 0 0 0	0.007	0 .0 0 7
8,000	8, 0 0 0	0.008	0 .0 0 8
9,000	9, 0 0 0	0.009	0 .0 0 9

.000  
000.  
000.  
000.

## ► Decimal Secret Code Cards

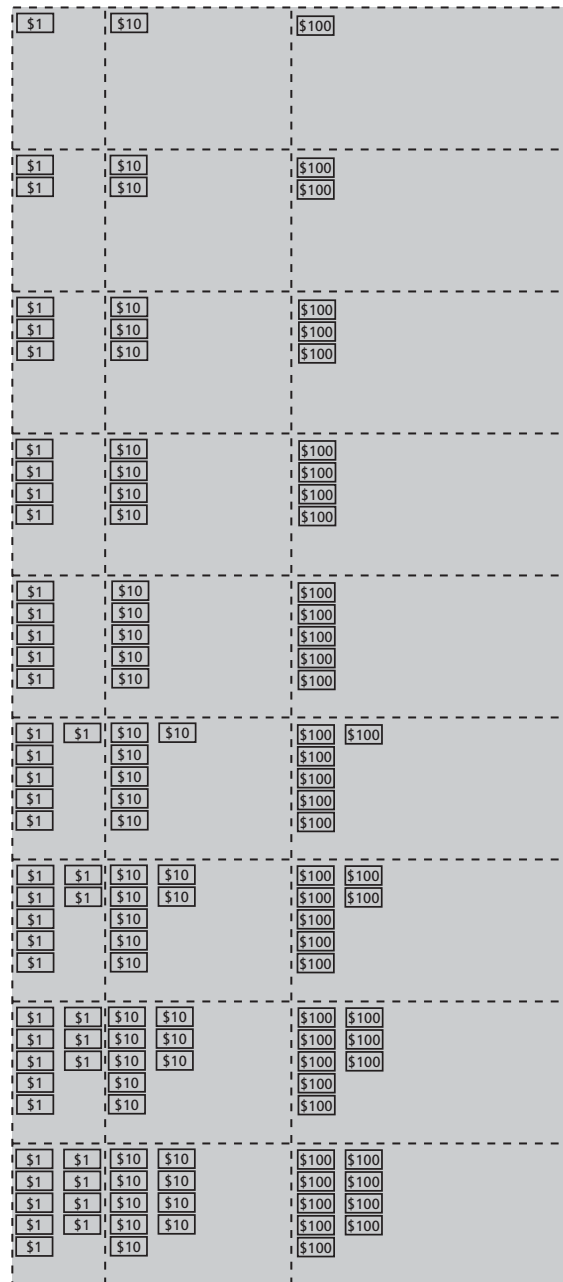


	▷	\$1,000	
	▷▷	\$1,000 \$1,000	
	▷▷▷	\$1,000 \$1,000 \$1,000	
	▷▷▷▷	\$1,000 \$1,000 \$1,000 \$1,000	
	▷▷▷▷▷	\$1,000 \$1,000 \$1,000 \$1,000 \$1,000	
	▷▷▷▷▷▷	\$1,000 \$1,000 \$1,000 \$1,000 \$1,000	\$1,000
	▷▷▷▷▷▷▷	\$1,000 \$1,000 \$1,000 \$1,000 \$1,000	\$1,000 \$1,000
	▷▷▷▷▷▷▷▷	\$1,000 \$1,000 \$1,000 \$1,000 \$1,000	\$1,000 \$1,000 \$1,000
	▷▷▷▷▷▷▷▷▷	\$1,000 \$1,000 \$1,000 \$1,000 \$1,000	\$1,000 \$1,000 \$1,000 \$1,000

## ► Secret Code Cards

100	1 0 0	10	1 0	1
200	2 0 0	20	2 0	2
300	3 0 0	30	3 0	3
400	4 0 0	40	4 0	4
500	5 0 0	50	5 0	5
600	6 0 0	60	6 0	6
700	7 0 0	70	7 0	7
800	8 0 0	80	8 0	8
900	9 0 0	90	9 0	9

## ► Secret Code Cards



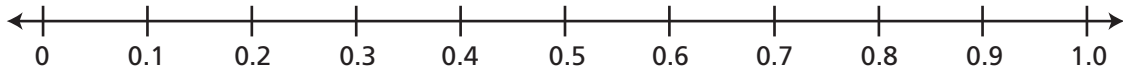
## ► Visualize with Other Models

1. The bar below represents one whole or 1.



- a. Shade 6 tenths and then shade 2 hundredths.  
 b. **Discuss** Why does the drawing show  $0.6 + 0.02 = 0.60 + 0.02 = 0.62$ ?

2. The number line below is labeled by tenths from 0 to 1.



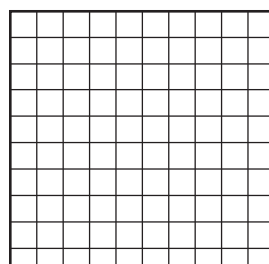
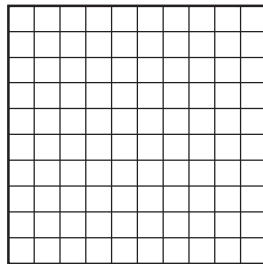
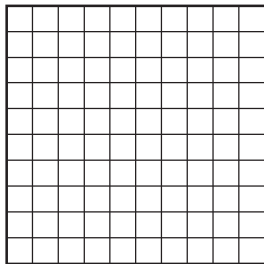
- a. Begin at 0 and circle a distance to show  $0.28 = 0.2 + 0.08 = 0.20 + 0.08$ .  
 b. Circle a new distance to show  $0.74 = 0.7 + 0.04 = 0.70 + 0.04$ .

3. Shade the grids to show each amount.

a.  $0.4 = 0.40$

b.  $0.36 = 0.3 + 0.06$

c. 0.001



4. Use a sketch of money, a bar representing one whole, a number line, or one or more grids to prove that each statement below is true.

a.  $0.3 = 0.30$

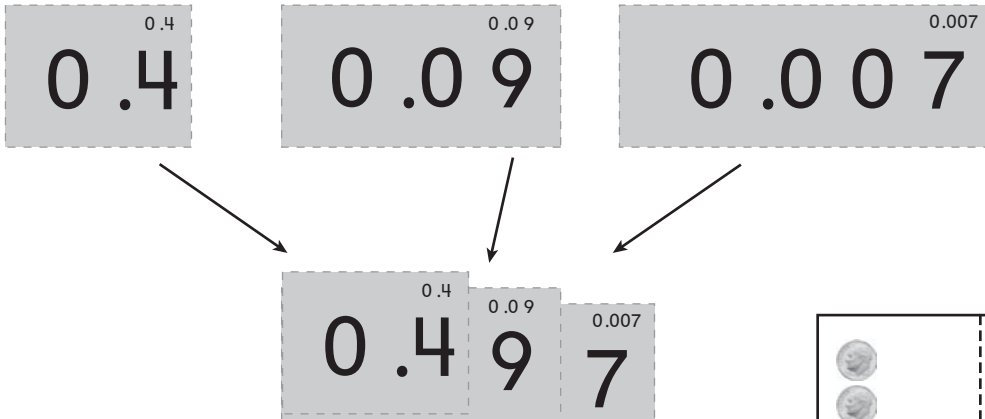
b.  $0.070 = 0.07$

5. **Discuss** **Equivalent decimals** represent the same value.

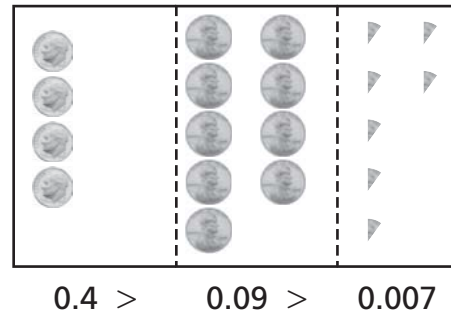
Why does writing zeros to the right of a decimal number not change the value of the number?

### ► Practice Comparisons

We can use Secret-Code Cards to compare decimal numbers.  
For example, these cards show that  $0.4 > 0.09$  and  $0.09 > 0.007$ .



We can also use dimes to represent tenths and pennies to represent hundredths to show that the value of a dime is greater than the value of a penny and the value of a penny is greater than the value of a tenth of a penny.



Choose any method and use it to complete the following comparisons. Write  $>$ ,  $<$ , or  $=$ .

- |                           |                          |                           |                          |
|---------------------------|--------------------------|---------------------------|--------------------------|
| 6. $0.7 \bigcirc 0.700$   | 7. $0.070 \bigcirc 0.07$ | 8. $0.07 \bigcirc 0.7$    | 9. $0.007 \bigcirc 0.7$  |
| 10. $0.8 \bigcirc 0.62$   | 11. $0.06 \bigcirc 0.3$  | 12. $0.475 \bigcirc 0.62$ | 13. $0.3 \bigcirc 0.29$  |
| 14. $0.38 \bigcirc 0.038$ | 15. $0.4 \bigcirc 0.38$  | 16. $0.38 \bigcirc 0.380$ | 17. $0.7 \bigcirc 0.71$  |
| 18. $0.50 \bigcirc 0.5$   | 19. $0.21 \bigcirc 0.2$  | 20. $0.111 \bigcirc 0.11$ | 21. $0.4 \bigcirc 0.404$ |

22. Describe a method for comparing decimal numbers.

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

## ► Explore Metric Measures of Length

Use your paper ruler to answer each question.

- How many decimeters equal one meter? \_\_\_\_\_
- How many millimeters equal one centimeter? \_\_\_\_\_
- How many millimeters equal one decimeter? \_\_\_\_\_
- How many millimeters equal one meter? \_\_\_\_\_
- How many centimeters equal one decimeter? \_\_\_\_\_
- How many centimeters equal one meter? \_\_\_\_\_

The last row of the Place Value Chart shows metric measures of length. The most common measurement units are **meter** (m), **decimeter** (dm), **centimeter** (cm), and **millimeter** (mm).

- Use the meaning of *deci* (one tenth), *centi* (one hundredth), and *milli* (one thousandth) to fill in the right hand side of the chart below.
- Use the meaning of the Greek words *kilo* (thousand), *hecto* (hundred), and *deka* (ten) to fill in the left side of the chart.

← × 10 (Larger)			Place Value Chart	÷ 10 (Smaller) →		
Thousands	Hundreds	Tens	ONES	Tenths	Hundredths	Thousandths
1,000.	100.	10.	1.	0.1	0.01	0.001
$\frac{1,000}{1}$	$\frac{100}{1}$	$\frac{10}{1}$	$\frac{1}{1}$	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1,000}$
\$1,000.00	\$100.00	\$10.00	\$1.00	\$0.10	\$0.01	\$0.001
_____ m kilometer km	_____ m hectometer hm	_____ m dekameter dam	_____ m meter m	_____ m decimeter dm	_____ m centimeter cm	_____ m millimeter mm

## ► Real World Problems with Metric Lengths

Read each measurement below. Say the number of meters, decimeters, centimeters, and millimeters.

For example, 7.284 m is 7 meters, 2 decimeters, 8 centimeters, and 4 millimeters.

9. 7.284 m

10. 45.132 m

11. 29.16 m

12. 304 m

13. 16.02 m

Write an equation. Then solve

14. Tori had fabric that was 6.2 meters long. She used some and now has 1.45 meters. How much did she use?

\_\_\_\_\_

15. Matt is competing in the long jump event. His first jump was 3.56 m. So far, the longest jump in the event is 4.02 m. How much farther must Matt jump to be in first place?

\_\_\_\_\_

16. Patrick ran 53 meters away from Marty and then ran 16.02 meters directly back towards him. How far was Patrick from Marty then?

\_\_\_\_\_

17. Sarita has some ribbon. After she used 23.8 cm of it, she had 50 cm left. How much ribbon did Sarita start with?

\_\_\_\_\_

Write your own problems.

18. Write an addition word problem using the measurements in Exercises 11 and 13.

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



## ► Addition Problems

When adding, remember to align the place values of the numbers.

Dear Math Students,

I am ordering a CD from a catalog. The price of the CD is \$15 and the tax is \$0.15. Altogether, then, I will have to pay \$30 for this CD. The tax makes the cost twice as much! Doesn't this seem unreasonable to you? Or have I made some kind of a mistake?

Your friend,  
Puzzled Penguin



1. Write a response to Puzzled Penguin.

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**Add. Try to solve mentally.**

2.  $\$28 + 32¢ =$  \_\_\_\_\_      3.  $\$42.05 + 63¢ =$  \_\_\_\_\_      4.  $56¢ + \$8.27 =$  \_\_\_\_\_

5.  $43 + 0.26 =$  \_\_\_\_\_      6.  $57.3 + 0.89 =$  \_\_\_\_\_      7.  $92.17 + 1.6 =$  \_\_\_\_\_

8.  $4 \text{ m} + 0.03 \text{ m} =$  \_\_\_\_\_      9.  $2.5 \text{ m} + 0.08 \text{ m} =$  \_\_\_\_\_      10.  $6 \text{ m} + 0.007 \text{ m} =$  \_\_\_\_\_

11. Explain how to add two decimal numbers. Give an example.

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► Practice

Add each pair of numbers.

$$\begin{array}{r} 12. \quad 4.78 \\ + 5.23 \\ \hline \end{array}$$

$$\begin{array}{r} 13. \quad 37.56 \\ + 2.78 \\ \hline \end{array}$$

$$\begin{array}{r} 14. \quad 203.05 \\ + 48.9 \\ \hline \end{array}$$

$$\begin{array}{r} 15. \quad \$8.59 \\ + \$0.78 \\ \hline \end{array}$$

$$16. \quad 9.53 + 0.7$$

$$17. \quad 605.4 + 0.89$$

$$18. \quad 0.37 + 0.15$$

$$19. \quad 91 + 0.51$$

$$\begin{array}{r} 20. \quad 876.2 \\ + 5,274.2 \\ \hline \end{array}$$

$$\begin{array}{r} 21. \quad 95,238.77 \\ + 78.41 \\ \hline \end{array}$$

$$\begin{array}{r} 22. \quad 332.28 \\ + 91.36 \\ \hline \end{array}$$

$$\begin{array}{r} 23. \quad 66,488.82 \\ + 124,507.09 \\ \hline \end{array}$$

Write an equation. Then solve.

*Show your work.*

24. When Bill got his kitten, Missy, she weighed 807.39 grams. She now weighs 1,918.7 grams more than she did when Bill first brought her home. How much does Missy weigh now?

\_\_\_\_\_

25. Ajit is tracking how much rainfall falls at his house. The first day 1.45 centimeters of rain fell. The second day 2.3 centimeters of rain fell. On the third day, 1.68 centimeters of rain fell. How many centimeters of rain fell in all over the three days?

\_\_\_\_\_

26. Walt is running for exercise. He ran around Lake Blue and then ran 2.75 miles home. He ran for a total of 4.25 miles. How far did he run around Lake Blue?

\_\_\_\_\_

## ► Subtraction with Ungrouping

Ungrouping allows you to subtract greater numbers from lesser numbers.

Dear Math Students,

I measured the depth of the snow on my iceberg and it was 40.15 cm deep. Last week the snow was 36.84 cm deep. I subtracted to find out how much it had changed and got a difference of 14.31 cm. That isn't what the meteorologist said. Can you help me find my mistake?

Your friend,  
Puzzled Penguin



1. Write a response to Puzzled Penguin.

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## ► Practice

Subtract. Use addition to check your answers.

$$\begin{array}{r} 2. \quad 168.75 \\ - 59.82 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 6,222.01 \\ - 48.04 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 1.09 \\ - 0.7 \\ \hline \end{array}$$

$$5. \quad 100,561.78 - 814.99$$

$$6. \quad 0.91 - 0.88$$

$$7. \quad 37,000 - 2.73$$

$$8. \quad 80,615 - 74,468.63$$

$$9. \quad 610,716 - 9.45$$

$$10. \quad 909,015.5 - 90,901.55$$

► Real World Problems

Write an equation. Then solve.

11. One year, the Sahara Desert received 0.79 inches of rain. That same year the rain forest in Brazil received 324 inches. How much more rain fell in the rain forest that year than in the desert?

\_\_\_\_\_

12. A newborn kangaroo measures about 0.02 meter in height. If the newborn kangaroo grows to be an adult that is 2.7 meters tall, how much will the baby kangaroo have grown?

\_\_\_\_\_

► Practice

Add or subtract.

$$\begin{array}{r} 13. \quad 2,333.56 \\ + \quad 81.09 \\ \hline \end{array}$$

$$\begin{array}{r} 14. \quad 0.08 \\ + \quad 0.97 \\ \hline \end{array}$$

$$\begin{array}{r} 15. \quad 610,877.50 \\ - \quad 22,948 \\ \hline \end{array}$$

$$\begin{array}{r} 16. \quad 24 \\ - \quad 0.18 \\ \hline \end{array}$$

$$\begin{array}{r} 17. \quad 555,222 \\ + \quad 178,109.50 \\ \hline \end{array}$$

$$\begin{array}{r} 18. \quad 9.28 \\ + \quad 1.76 \\ \hline \end{array}$$

$$19. \quad 90.44 - 1.37$$

$$20. \quad 4,822 - 0.08$$

$$21. \quad 667,087.6 + 4,055.75$$

$$22. \quad 807 + 3.48$$

$$23. \quad 77.08 - 25$$

$$24. \quad 2,004 - 5.43$$

**VOCABULARY**

 Commutative Property of Addition  
 Associative Property of Addition

## ► Practice with Regrouping and Reordering

The **Commutative Property** and **Associative Property** can help you add.

### Properties

**Commutative Property of Addition**  $a + b = b + a$

**Associative Property of Addition**  $(a + b) + c = a + (b + c)$

You can sometimes group or reorder numbers to help you use mental math more quickly. Explain how you could use the Commutative and Associative Properties to help you add mentally.

1. 
$$\begin{array}{r} 30,000 \\ 20,000 \\ 80,000 \\ 49,000 \\ + 70,000 \\ \hline \end{array}$$
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

2. 
$$\begin{array}{r} 1.500 \\ 1.200 \\ 1.300 \\ + 1.678 \\ \hline \end{array}$$
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

3. 
$$\begin{array}{r} 5.75 \\ 5.4 \\ 5.25 \\ 5.17 \\ + 5.6 \\ \hline \end{array}$$
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

4. 
$$\begin{array}{r} \frac{1}{6} \\ \frac{5}{5} \\ \frac{11}{11} \\ \frac{3}{4} \\ \frac{5}{6} \\ + \frac{1}{4} \\ \hline \end{array}$$
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

5. 8 million + 39 million + 2 million

\_\_\_\_\_

\_\_\_\_\_

6. 40 hundredths + 8 and 56 hundredths + 60 hundredths

\_\_\_\_\_

\_\_\_\_\_

7.  $\frac{8}{9} + 5\frac{1}{5} + \frac{1}{9}$

\_\_\_\_\_



**VOCABULARY**  
**Distributive**  
**Property of**  
**Multiplication**  
**over Addition**

The **Distributive Property** can also help you compute mentally.

<b>Distributive Property</b>	$a \times (b + c) = (a \times b) + (a \times c)$
------------------------------	--

Discuss how you could use the **Distributive Property** to write each problem with only two factors. Then solve the problems mentally.

8.  $(7 \times 25) + (7 \times 75) =$  \_\_\_\_\_

9.  $(800 \times 9) + (200 \times 9) =$  \_\_\_\_\_

10. Use what you know about the Commutative Property to solve for  $n$ .  
 $968.73 + 532.15 = 532.15 + n$

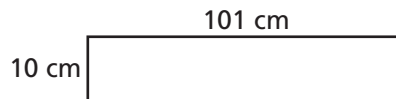
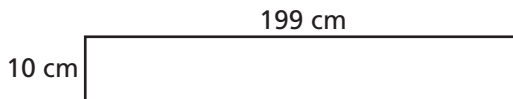
\_\_\_\_\_

Find each answer by using the **Associative Property**.

11.  $(749 + 600) + 400 =$  \_\_\_\_\_

12.  $3.20 + (2.80 + 1.37) =$  \_\_\_\_\_

13. Use the Distributive Property to help you find the combined area of these rectangles.



\_\_\_\_\_

\_\_\_\_\_

## ► Properties and Real World Situations

Which property best describes each situation below:  
**Commutative, Associative, or Distributive?**

14. Miranda cannot add  
 $(\$56.73 + \$8.00) + \$2.00$  very easily.  
 So, she regroups the problem  
 as  $\$56.73 + (\$8.00 + \$2.00)$ .

15. Brady did not know the answer to  
 $2 \times 403$ . So, he broke a factor into  
 two addends and multiplied each  
 addend by the other factor. Then, he  
 added the two products together:  
 $(2 \times 400) + (2 \times 3)$ .

\_\_\_\_\_

\_\_\_\_\_



## ► Round Decimal Numbers

**Solve.**

1. A number changed to 12.6 after it was rounded. To what place was the number rounded? Explain how you know.

---



---

2. A number changed to 3.25 after it was rounded. To what place was the number rounded? Explain how you know.

---



---

3. A number changed to 193 after it was rounded. To what place was the number rounded? Explain how you know.

---



---

**Round to the nearest whole number.**

4. 31.75 \_\_\_\_\_

5. 6.49 \_\_\_\_\_

6. 11.5 \_\_\_\_\_

7. 0.97 \_\_\_\_\_

8. 319.1 \_\_\_\_\_

9. 9.086 \_\_\_\_\_

**Round to the nearest hundredth.**

10. 4.051 \_\_\_\_\_

11. 16.686 \_\_\_\_\_

12. 0.994 \_\_\_\_\_

13. 51.202 \_\_\_\_\_

14. 775.115 \_\_\_\_\_

15. 4,258.999 \_\_\_\_\_

**Round to the nearest tenth.**

16. 51.16 \_\_\_\_\_

17. 8.55 \_\_\_\_\_

18. 147.67 \_\_\_\_\_

19. 0.84 \_\_\_\_\_

20. 29.20 \_\_\_\_\_

21. 0.182 \_\_\_\_\_

► Estimate Sums and Differences

Estimate each sum or difference.

$$\begin{array}{r} 22. \quad \$17.25 \\ - \$11.79 \\ \hline \end{array}$$

$$\begin{array}{r} 23. \quad \$8.90 \\ + \$5.80 \\ \hline \end{array}$$

$$\begin{array}{r} 24. \quad \$3.52 \\ - \$1.54 \\ \hline \end{array}$$

$$\begin{array}{r} 25. \quad \$6.36 \\ + \$6.81 \\ \hline \end{array}$$

$$\begin{array}{r} 26. \quad 0.716 \\ - 0.698 \\ \hline \end{array}$$

$$\begin{array}{r} 27. \quad 10.239 \\ + 9.062 \\ \hline \end{array}$$

Solve.

28. Rick thinks the total cost of a \$89.95 soccer goal and a \$9.99 soccer ball is \$90.94. Write your estimate of the total cost; then write the exact cost.

Estimate \_\_\_\_\_ Exact Cost \_\_\_\_\_

Was Rick's answer reasonable? Explain why or why not.

\_\_\_\_\_

29. Marti has 20.15 m of red and blue fabric. Of that, 9.28 m is red, the rest is blue. Marti calculated that she has 10.87 m of blue fabric.

Is Marti's answer reasonable? Explain why or why not.

\_\_\_\_\_

30. In a video racing game, Lee completed one lap in 47.32 seconds. Donna completed one lap in 45.41 seconds.

Which lap was faster? \_\_\_\_\_

How many seconds faster was the lap?

Estimate \_\_\_\_\_ Exact Answer \_\_\_\_\_

Is your exact answer reasonable? Explain why or why not.

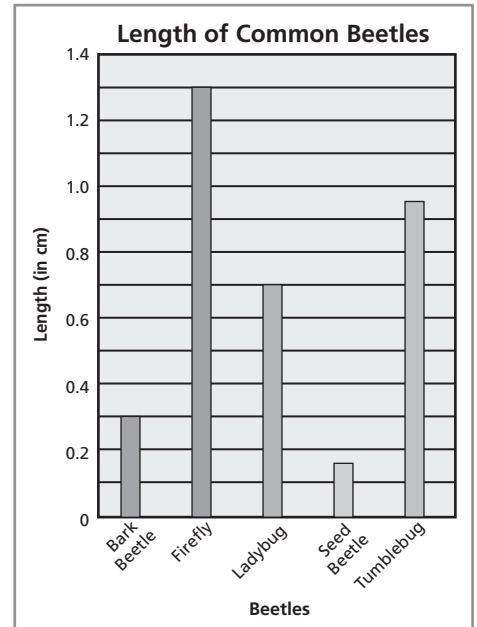
\_\_\_\_\_



## ► Graphs with Decimal Numbers

This bar graph shows the length of some common beetles.

1. What is the length of a bark beetle?  
\_\_\_\_\_
2. How much longer is a firefly than a bark beetle?  
\_\_\_\_\_
3. Estimate the length of a tumblebug in hundredths of a centimeter.  
\_\_\_\_\_
4. The actual length of one beetle shown is 0.150 centimeters. Which beetle is that?  
\_\_\_\_\_



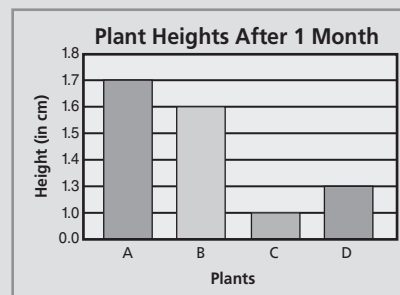
5. A June bug is about 2.5 centimeters in length. About how many times as tall as the tumblebug bar would the June bug bar be? (Hint: Round the lengths to whole numbers to help you estimate the height of the June bug's bar.)  
\_\_\_\_\_

## ► What's the Error?

Dear Math Students,

For the Science Fair, I recorded the heights of several plants a month after I put different fertilizers on them. I made a bar graph of the data. Did I make my graph correctly? If not, how can I fix it?

Your friend,  
Puzzled Penguin



6. Write an answer to Puzzled Penguin.  
\_\_\_\_\_  
\_\_\_\_\_

### ► Make a Bar Graph with Decimal Numbers

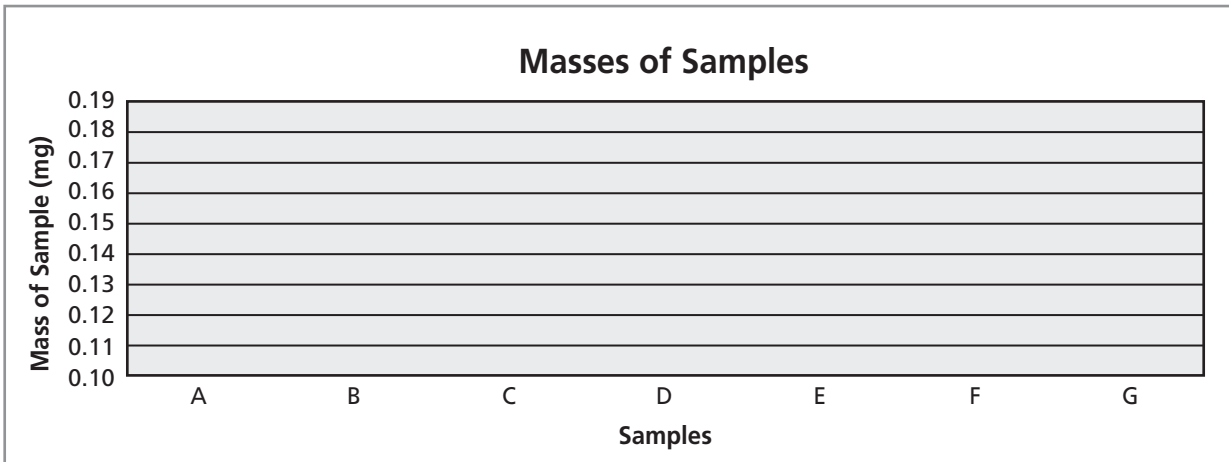
Last week, a chemist kept track of the masses of the different samples he tested. The box on the left shows the information.

7. Use the box on the right to make a list that shows each mass rounded to the nearest hundredth of a milligram.

Sample A	0.136 mg
Sample B	0.168 mg
Sample C	0.129 mg
Sample D	0.117 mg
Sample E	0.179 mg
Sample F	0.162 mg
Sample G	0.109 mg

Sample A	
Sample B	
Sample C	
Sample D	
Sample E	
Sample F	
Sample G	

8. Which sample had the greatest mass? \_\_\_\_\_
9. Which sample had the least mass? \_\_\_\_\_
10. Estimate the total mass of the samples to the nearest tenth. \_\_\_\_\_
11. Make a bar graph to show these masses rounded to the nearest hundredth.

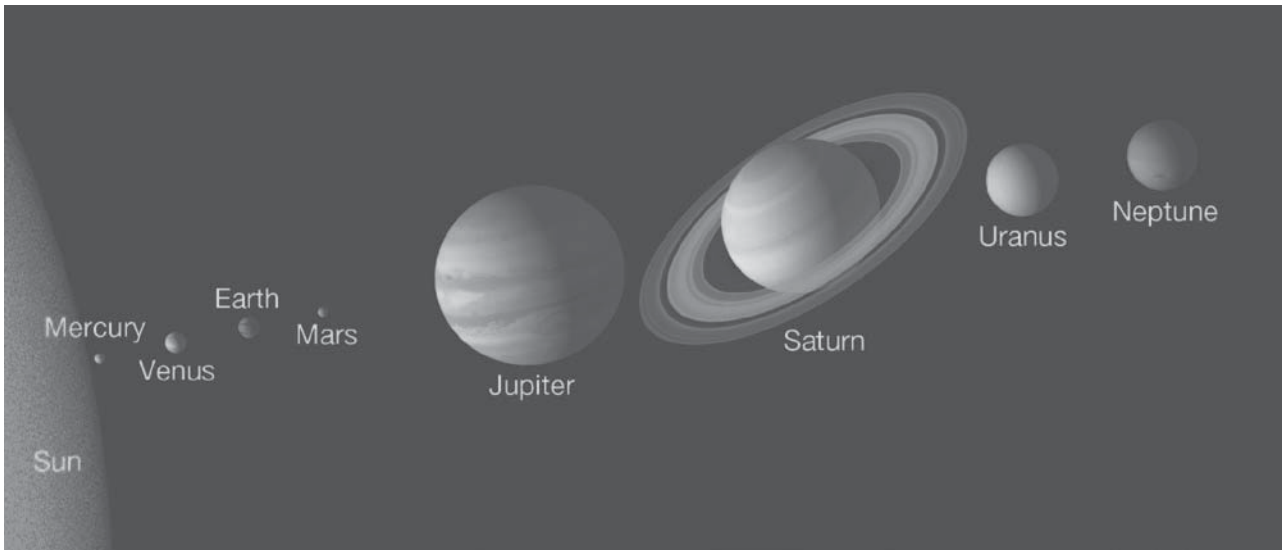
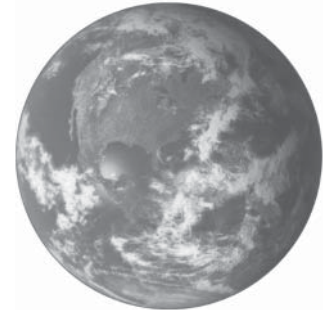


12. Write the samples' masses in order from least to greatest.
- \_\_\_\_\_

## ► Math and Our Solar System

To describe distances on Earth, you do not need to use units of measure greater than thousands of miles. In space, however, distances are vast, and greater units of measure are used to describe those distances.

Distances between objects in our solar system usually involve many millions of miles.



Scientists express the distances in astronomical units (AU). One AU is the distance from the Earth to our Sun, which is about 93 million miles.

$$1 \text{ AU} \approx 93,000,000 \text{ miles}$$

When you work with distances in our solar system, it is easier to add and subtract astronomical units than it is to add and subtract numbers in the millions.

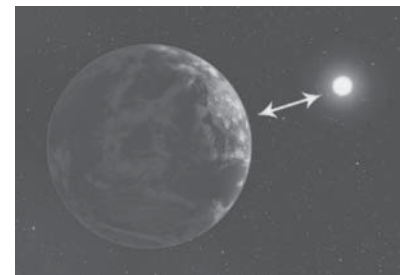
### Solve.

- Venus orbits 0.72 AU from the Sun. Mercury's orbit is 0.33 AU closer. Explain why subtraction is used to find the distance of Mercury's orbit from the Sun. Then find the distance.

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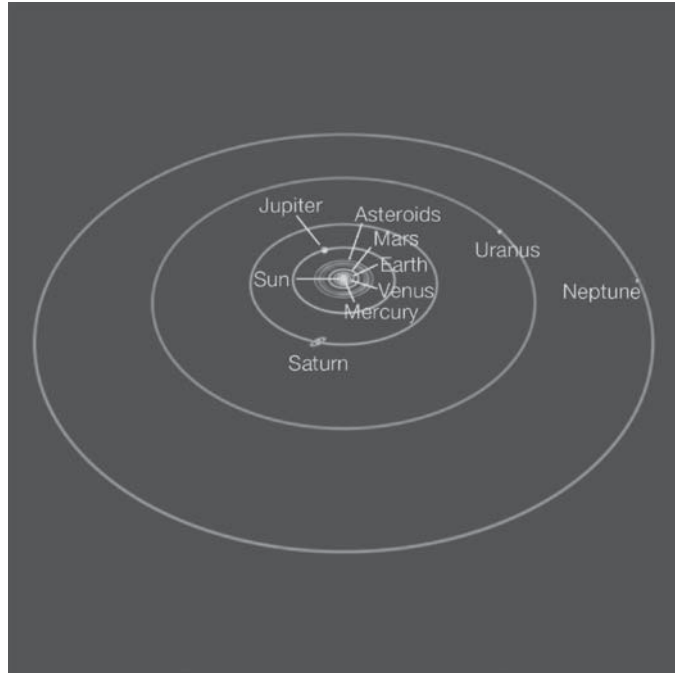


1 AU

*Show your work.*

The table below shows the distances in astronomical units (AU) of the planets from our Sun. Since the planets Mercury and Venus are closer to the Sun than Earth, their distance from the Sun is less than 1 AU. Outer planets such as Jupiter and Neptune have distances greater than 1 AU.

Planet	Orbital Distance from the Sun (in AU)
Mercury	0.39
Venus	0.72
Earth	1.0
Mars	1.5
Jupiter	5.2
Saturn	9.5
Uranus	19.2
Neptune	30.1



**Solve.** Compute the distance between the planets' orbits.

*Show your work.*

- Venus and Earth \_\_\_\_\_ AU
- Earth and Mars \_\_\_\_\_ AU
- Jupiter and Saturn \_\_\_\_\_ AU
- Mercury and Neptune \_\_\_\_\_ AU
- Write Mercury's orbital distance (in AU) from the Sun as a fraction.  
\_\_\_\_\_
- The sum of the orbital distances from the Sun of which four planets is closest to the orbital distance from the Sun to Neptune?  
\_\_\_\_\_

1. Use the Associative Property to add. Explain how the Associative Property helps you add mentally.

$$2.57 + 1.7 + 5.3$$

2. Use the Associative Property to add. Show your work.

$$3.25 + (7.75 + 4.89)$$

3. Select the number in which the digit 8 is ten times the value of the digit 8 in 4.381. Mark all that apply.

- |                               |                               |
|-------------------------------|-------------------------------|
| <input type="radio"/> A 183.9 | <input type="radio"/> D 9.548 |
| <input type="radio"/> B 3.458 | <input type="radio"/> E 0.184 |
| <input type="radio"/> C 56.82 | <input type="radio"/> F 1.83  |

4. Use the numbers and decimal to write a number in which the digit 2 is one tenth the value of the digit 2 in 8.524.

4	2	8	5	.
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5. Write 247.903 in expanded form.

6. Write seventeen thousand and one hundred six thousandths in standard form.



## Review/Test

7. Write 9.57 in word form.

8. Jon is not sure how to write 81.402 in expanded form using powers of ten. Write the number in each box that will correctly complete the expanded form of the number.

$$(8 \times \boxed{\phantom{00}}) + (1 \times 1) + (4 \times \boxed{\phantom{00}}) + (2 \times \boxed{\phantom{00}})$$

9. Write  $(2 \times 100) + (9 \times 1) + (7 \times \frac{1}{10}) + (8 \times \frac{1}{1,000})$  in standard form.

10. In which number is the value of the digit 5 greater? Write the number in the box.

3.514

25

11. Select the number that shows the digit 4 with a value of 0.04. Mark all that apply.

A 3.104

D 145.6

B 4.541

E 1.743

C 8.412

F 0.441

Choose the symbol from the box to compare the numbers.

12. 113  2.135

13. 0.2  0.20

14. 0.3  0.030

15. 1.143  0.485

16. Round 17.641 to the nearest whole number.

17. Choose the digits that show 3.096 rounded to the nearest hundredth.

2	.	0	.	0
3		1		7
4		2		8
				9

18. Write the letter for the place value in the box next to the number that shows 143.649 rounded to that place value.

- (A) tenths  143.65
- (B) hundreds  100
- (C) ones  144
- (D) tens  143.6
- (E) hundredths  140

**Add or subtract.**

19. 
$$\begin{array}{r} 276.25 \\ + 13.87 \\ \hline \end{array}$$

20. 
$$\begin{array}{r} 4.72 \\ - 3.93 \\ \hline \end{array}$$

**Estimate the sum or difference.**

21. 
$$\begin{array}{r} \$44.31 \\ - \$12.35 \\ \hline \$ \end{array}$$

22. 
$$\begin{array}{r} 21.95 \\ + 3.04 \\ \hline \end{array}$$



23. The distance around a park is 308.94 meters. Nikki runs around the park twice to catch her dog. How many meters does she run? Explain why your answer is reasonable and draw a model to show how you solved the problem..

24. Rey buys a skateboard for \$89.98 and a helmet for \$44.85 on tax-free day at a sports store. The store clerk gives Rey a discount of \$18.50 for both items. Rey gives the clerk \$150. How much change should he receive? Explain why your answer is reasonable.

25. At Bryan's school, the two fastest runners in the 100-yard dash had race times of 12.19 seconds and 12.38 seconds. Estimate and then find how much faster the first place runner was than the second place runner. Explain how you found your answers.

26. For numbers 26a–26e, choose Yes or No to indicate whether the number is correctly rounded to the given place value.

- 26a. 245.6 rounded to the ones is 246                       Yes     No
- 26b. 723.14 rounded to the hundreds is 720                       Yes     No
- 26c. 1,341.45 rounded to the tens is 134                       Yes     No
- 26d. 45.932 rounded to the tenths is 45.9                       Yes     No
- 26e. 219.934 rounded to the hundredths  
is 219.93                       Yes     No



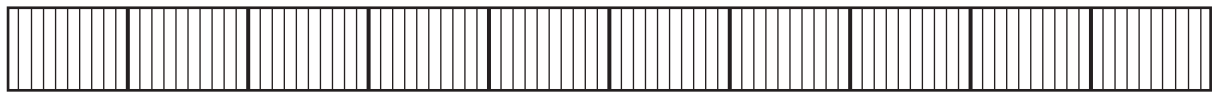
27. Shayna takes measurements of rainfall for a week. She measures 0.24 centimeters on Monday, 0.32 centimeters on Tuesday, and 0.18 centimeters on Friday. The rest of the days had no rain.

**Part A**

Complete the data table.

Day	Rainfall (cm)
Sunday	0
Wednesday	0
	0
Saturday	

**Part B**



The bar represents one centimeter of rainfall. Shade the bar to show the total rainfall Shayna measured.

28. A lizard's body is 2.45 feet long. The lizard's tail is 1.82 feet long.

**Part A**

How long is the lizard? \_\_\_\_\_ feet

**Part B**

How much longer will the lizard need to grow to be 5 feet long? \_\_\_\_\_ feet



29. While working at a yard sale, Ying helps a customer who buys items that cost \$5, \$2, \$2.50, and \$0.25. The customer hands Ying \$3 and says to keep the \$0.18 change.

**Part A**

How much did the customer think the total was? Show your work.

**Part B**

What mistake did the customer make? Show your work and explain your answer.

30. For numbers 30a–30d, select True or False for the sum or difference.

$\begin{array}{r} 2.58 \\ +0.75 \\ \hline 3.33 \end{array}$	<input type="radio"/> True	<input type="radio"/> False
---	----------------------------	-----------------------------

$\begin{array}{r} 12.967 \\ + \quad 55 \\ \hline 13.022 \end{array}$	<input type="radio"/> True	<input type="radio"/> False
--	----------------------------	-----------------------------

$\begin{array}{r} 12.25 \\ +15.86 \\ \hline 27.01 \end{array}$	<input type="radio"/> True	<input type="radio"/> False
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$\begin{array}{r} 105.5 \\ + \quad 4.2 \\ \hline 109.7 \end{array}$	<input type="radio"/> True	<input type="radio"/> False
---	----------------------------	-----------------------------