

## ► The Place Value Parade

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

← × 10 (Larger)			Place Value Parade	÷ 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

Answer each question.

- Look at the money values for tenths, hundredths, and thousandths. How can they help you remember which are larger, tenths or hundredths?

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- Are thousandths smaller than hundredths? \_\_\_\_\_ Why?

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- If this whole bar is 1, circle one tenth of the bar. Then circle one hundredth of the bar. Use a line to show one thousandth of the bar.



- Circle on this one-whole bar 6 tenths and 2 hundredths. Discuss why your drawing shows these equations:  $0.6 + 0.02 = 0.60 + 0.02$  and  $0.6 + 0.02 = 0.62$ .



We usually write 0.6 so we can tell that the . is really a decimal point.

### ► Identify Decimal Amounts

Say each decimal number aloud.

- |           |          |           |          |           |
|-----------|----------|-----------|----------|-----------|
| 5. 0.237  | 6. 0.56  | 7. 0.03   | 8. 0.9   | 9. 0.007  |
| 10. 0.082 | 11. 2.04 | 12. 0.016 | 13. 13.2 | 14. 0.306 |

Write each amount as a decimal number.

- |                             |                            |                           |
|-----------------------------|----------------------------|---------------------------|
| 15. 4 tenths _____          | 16. 5 thousandths _____    | 17. 15 hundredths _____   |
| 18. 12 thousandths _____    | 19. $\frac{7}{100}$ _____  | 20. $3\frac{1}{10}$ _____ |
| 21. $\frac{81}{1000}$ _____ | 22. $7\frac{3}{100}$ _____ | 23. 2 cents _____         |

### ► Write Decimals for Real-World Situations

Solve.

*Show your work.*

24. If you cut a lemon into 10 equal pieces, what decimal number would 3 pieces represent?
- \_\_\_\_\_
25. A bag of pretzels holds 100 pretzels. What decimal number would 28 pretzels represent? 5 pretzels?
- \_\_\_\_\_
26. There are 1,000 bees living in a hive. If 235 bees are out gathering pollen, what decimal number does that represent?
- \_\_\_\_\_
27. If a test has 100 questions and you get 92 of them right, what decimal number would that represent?
- \_\_\_\_\_
28. If you had a dollar and spent 8 cents, what decimal amount would that represent? What decimal amount would you have left?
- \_\_\_\_\_



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 to include large numbers and decimals;
2. to help students add and subtract decimals and whole numbers;
3. to develop estimating and rounding skills as students engage in graphing activities;
4. to have students apply place-value concepts in a variety of real-world situations.

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 of whole numbers and decimals 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. Students will also be taught a method of *safe estimating* to prepare them for real-world situations. Ask your child to explain how this method works.

Finally, students will solve real-world problems that require 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



## 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 con más profundidad.

Los objetivos principales de esta unidad son

1. ayudar a los estudiantes a ampliar su comprensión del valor posicional para incluir los números grandes y los decimales;
2. ayudar a los estudiantes con la suma y la resta de decimales y números enteros;
3. desarrollar destrezas de estimación y redondeo al hacer actividades con gráficas;
4. hacer que los estudiantes apliquen el concepto de valor posicional a una variedad de situaciones de la vida diaria.

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.

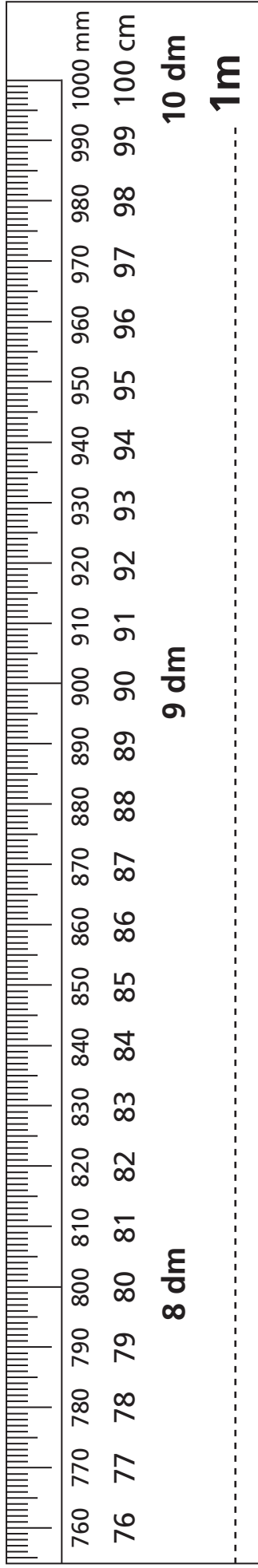
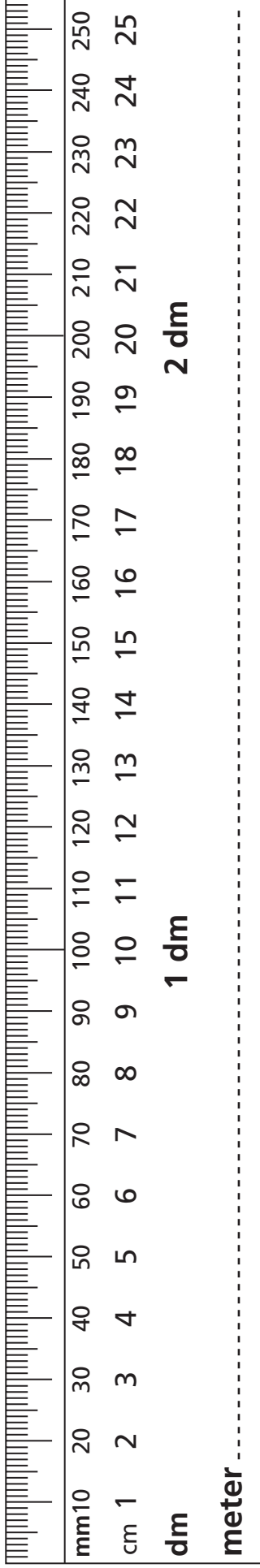
Los estudiantes lograrán el segundo objetivo utilizando varios métodos de agrupación. Los estudiantes pueden usar el método que prefieran, mientras comprendan por qué funciona y puedan explicarlo. Para sumar y restar con exactitud los estudiantes necesitan alinear correctamente los dígitos de los números enteros y los decimales. 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. También se les enseñará un método de *estimación segura* para prepararlos para situaciones de la vida diaria. Pídale a su niño que le explique cómo funciona este método.

Finalmente, los estudiantes resolverán problemas de la vida diaria que requieren la suma y resta de números grandes y decimales.

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

**Atentamente,**  
**El maestro de su niño**





**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 Parade shows metric measures of length. The most common units of measures are **meter** (m), **decimeter** (dm), **centimeter** (cm), and **millimeter** (mm).

- Use your meter ruler to fill in the cells of the last row.

← × 10 (Larger)			Place Value Parade				→ ÷ 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			
_____ kilometer km	_____ hectometer hm	_____ dekameter dkm	_____ meter m	_____ decimeter dm	_____ centimeter cm	_____ millimeter mm			

- In Greek kilo means “thousand,” hecto means “hundred,” and deka means “ten.” Use a whole number to write in the bottom row how many meters make a dekameter, a hectometer, and a kilometer.

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

14. Measure two objects in your classroom using a metric ruler.

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15. Add the lengths of the two objects you measured.

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Create your own problems.

16. Write an addition word problem using the measurements in exercises 8 and 9.

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17. Write a subtraction word problem using the measurements in exercises 10 and 12.

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Cut out the two parts and tape them together.

Patterns From Billions to Billionths									
billions	hundred millions	ten millions	millions	hundred thousands	ten thousands	thousands	hundreds	tens	ONES
1,000,000,000	100,000,000	10,000,000	1,000,000	100,000	10,000	1,000	100	10	1
-----									
ONES	tenths	hundredths	thousandths	ten thousandths	hundred thousandths	millionths	ten millionths	hundred millionths	billionths
1	0.1	0.01	0.001	0.0001	0.00001	0.000001	0.0000001	0.00000001	0.000000001
	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1,000}$	$\frac{1}{10,000}$	$\frac{1}{100,000}$	$\frac{1}{1,000,000}$	$\frac{1}{10,000,000}$	$\frac{1}{100,000,000}$	$\frac{1}{1,000,000,000}$

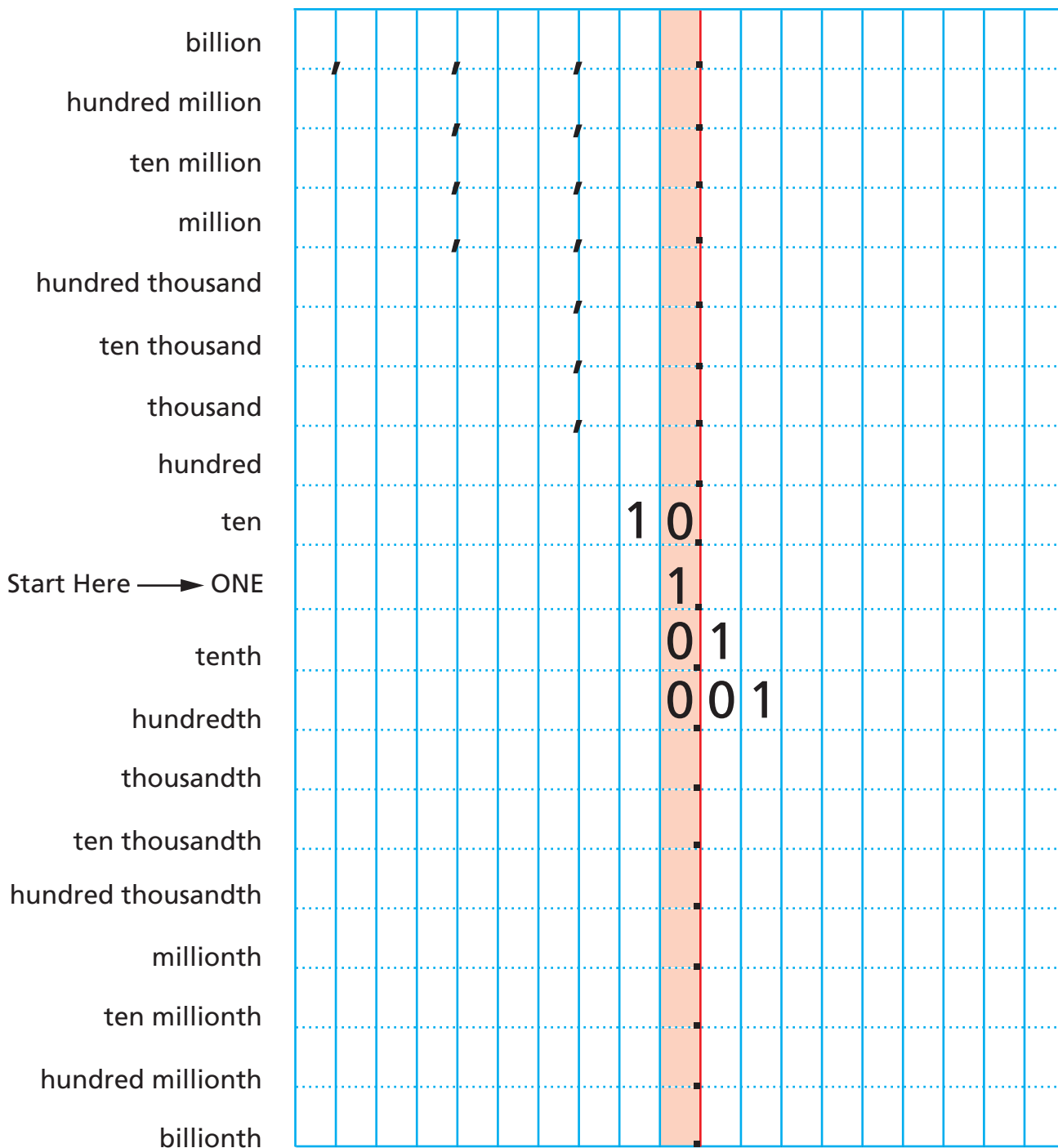




### ► One Billion to One Billionth

Look for patterns after you complete problem 1.

1. Write the numbers. Discuss the patterns.

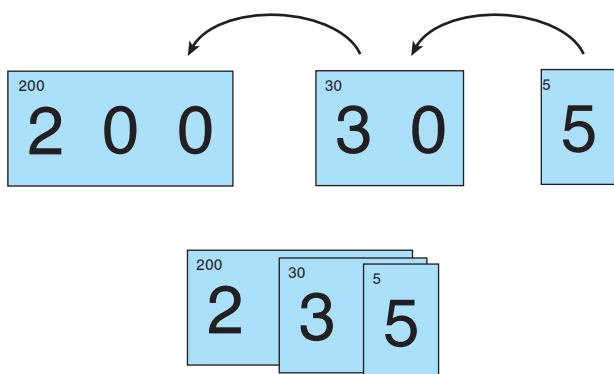




## ► Build Numbers with Secret Code Cards

When you build numbers with Secret Code Cards, you can see how hundreds, tens, and ones repeat to make millions and billions.

- The Secret Code Cards are found on the next page.  
Cut out the cards in Set A. Then build the number 235.



$$200 + 30 + 5 = 235$$

- Use the frame at the right for numbers through billions.
- Say the numbers out loud.

### Whole Numbers

52,361

468,297

6,092,135

98,765,470

123,586,904

8,500,624,003

2,001,837,005

### Decimal Numbers

4,120.5

60,345.01

789,261.003

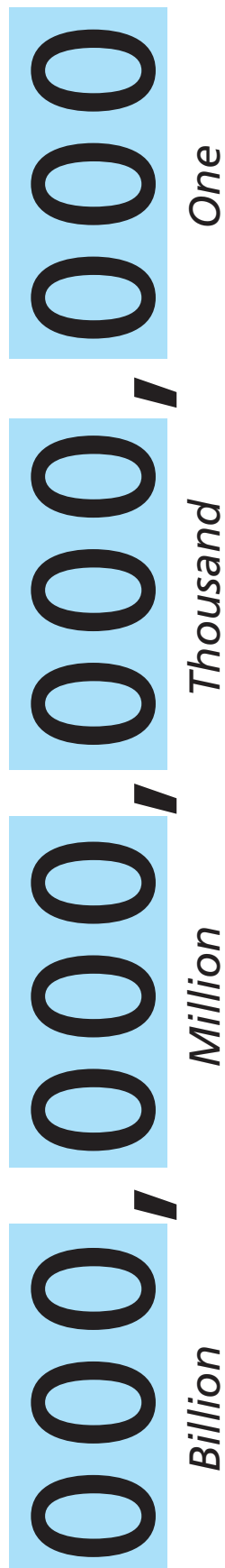
56,007.042

184,309.005

983,002.067

2,500,000.90

Reminder:  
When you reach the decimal point, say "AND."  
To read the decimal part, say the number and the decimal name for the last place.



► **Secret Code Cards**

Set A

200	30	5
200	30	5

Cut on the  
dotted lines.

Set B

300	40	7
300	40	7
400	50	9
400	50	9
900	20	8
900	20	8
800	60	2
800	60	2
500	70	6
500	70	6
700	90	4
700	90	4
600	80	3
600	80	3





## Going Further

### ► Different Systems of Numeration

There are many systems for writing numbers.

The numbers 1 to 10 are shown below using five different systems.

#### Tally System

| || ||| |||| ||||| ||||| ||||| ||||| ||||| |||||

#### Mayan Numerals

• •• ••• \_\_\_\_\_ • •• ••• ••• =

#### Grouped Tally System

| || ||| |||| ||||| ||||| ||||| ||||| ||||| ||||| |||||

#### Chinese Rod Numerals

| || ||| |||| ||||| T TT TTT TTTT \_\_\_\_\_

#### Roman Numerals

I II III IV V VI VII VIII IX X

1. List some similarities you see in the number systems.

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2. List some differences you see in the number systems.

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3. How might the symbol for 5 in the Roman system have come from a picture of a hand?

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4. What might the Roman symbol for 10 come from?

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-  5. **On the Back** Write an addition or subtraction equation using one set of symbols.

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Name \_\_\_\_\_

Date \_\_\_\_\_

20 horizontal blue lines for writing.

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**Vocabulary**

digit  
increase  
decrease

## ► Mental Math with Place Value

You can use your understanding of place value to change numbers.

Start with the number in the box for each problem.

4,374.56

1. **Increase** the number by 2,000.

\_\_\_\_\_

2. **Decrease** the number by 0.03.

\_\_\_\_\_

3. Make 2 more in the tens place.

\_\_\_\_\_

46,795.8

4. Increase the number by 10,000.

\_\_\_\_\_

5. Decrease the number by 0.7.

\_\_\_\_\_

6. Make 4 more in the thousands place.

\_\_\_\_\_

915,042.723

7. Increase the number by 0.005.

\_\_\_\_\_

8. Decrease the number by 100,000.

\_\_\_\_\_

9. Make 7 more in the hundreds place.

\_\_\_\_\_

7,218,396,405

10. Increase the number by 2 billion.

\_\_\_\_\_

11. Decrease the number by 1 million.

\_\_\_\_\_

12. Make 4 more in the tenths place.

\_\_\_\_\_

Answer each question.

13. What is the largest 3-digit whole number you can make with the **digits** 4, 9, and 1?

\_\_\_\_\_

14. What is the smallest 3-digit whole number you can make with these same digits?

\_\_\_\_\_

15. What is the largest 9-digit whole number that uses all the digits 1 through 9?

\_\_\_\_\_

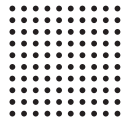
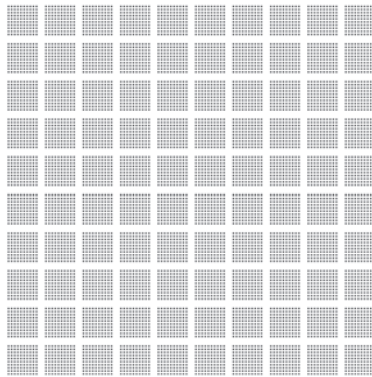
16. What is the smallest 9-digit whole number that uses all the digits 1 through 9?

\_\_\_\_\_

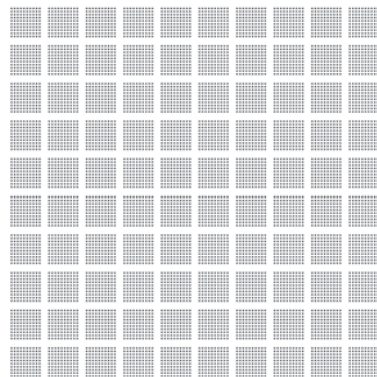
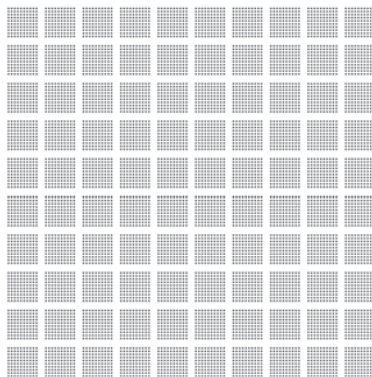
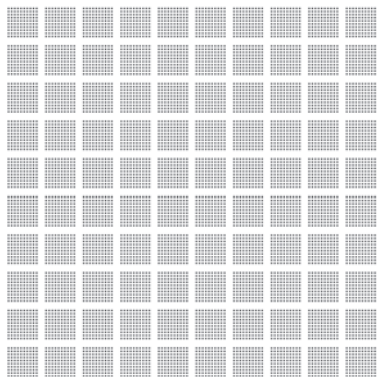
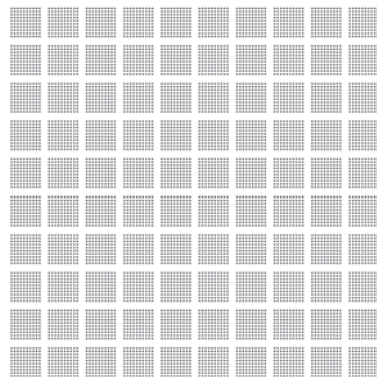
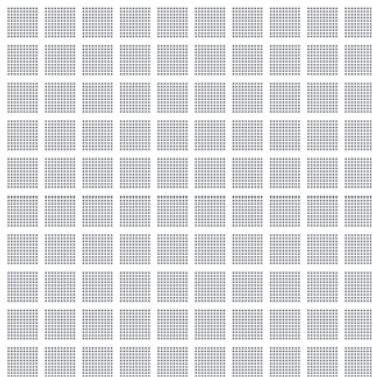
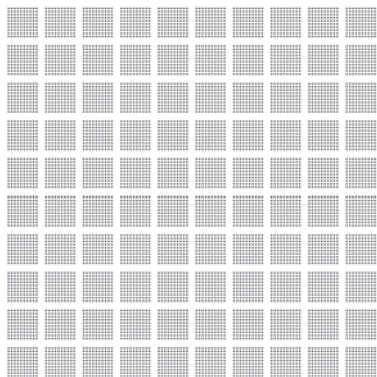
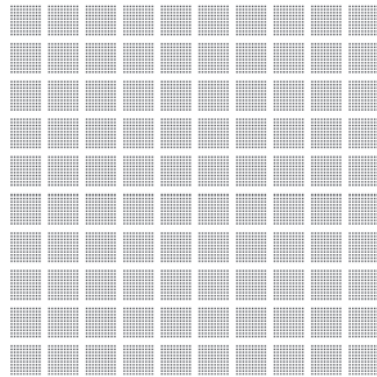
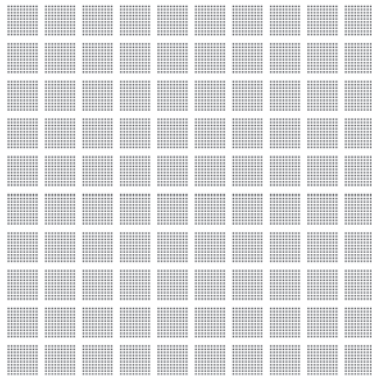
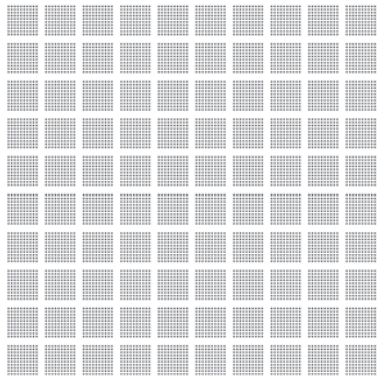


### ► Visualize Numbers

This dot array helps you to visualize large numbers.



Close-up View



## ► 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?

Thank you.

Puzzled Penguin



1. Write a response to the Puzzled Penguin.

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**Add. Try to solve mentally.**

2.  $\$28 + 32¢ = \underline{\hspace{2cm}}$

3.  $\$42.05 + 63¢ = \underline{\hspace{2cm}}$

4.  $56¢ + \$8.27 = \underline{\hspace{2cm}}$

5.  $43 + 0.26 = \underline{\hspace{2cm}}$

6.  $57.3 + 0.89 = \underline{\hspace{2cm}}$

7.  $92.17 + 1.6 = \underline{\hspace{2cm}}$

8.  $4\text{ m} + 0.03\text{ m} = \underline{\hspace{2cm}}$

9.  $2.5\text{ m} + 0.08\text{ m} = \underline{\hspace{2cm}}$


10.  $6\text{ m} + 0.007\text{ m} = \underline{\hspace{2cm}}$

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

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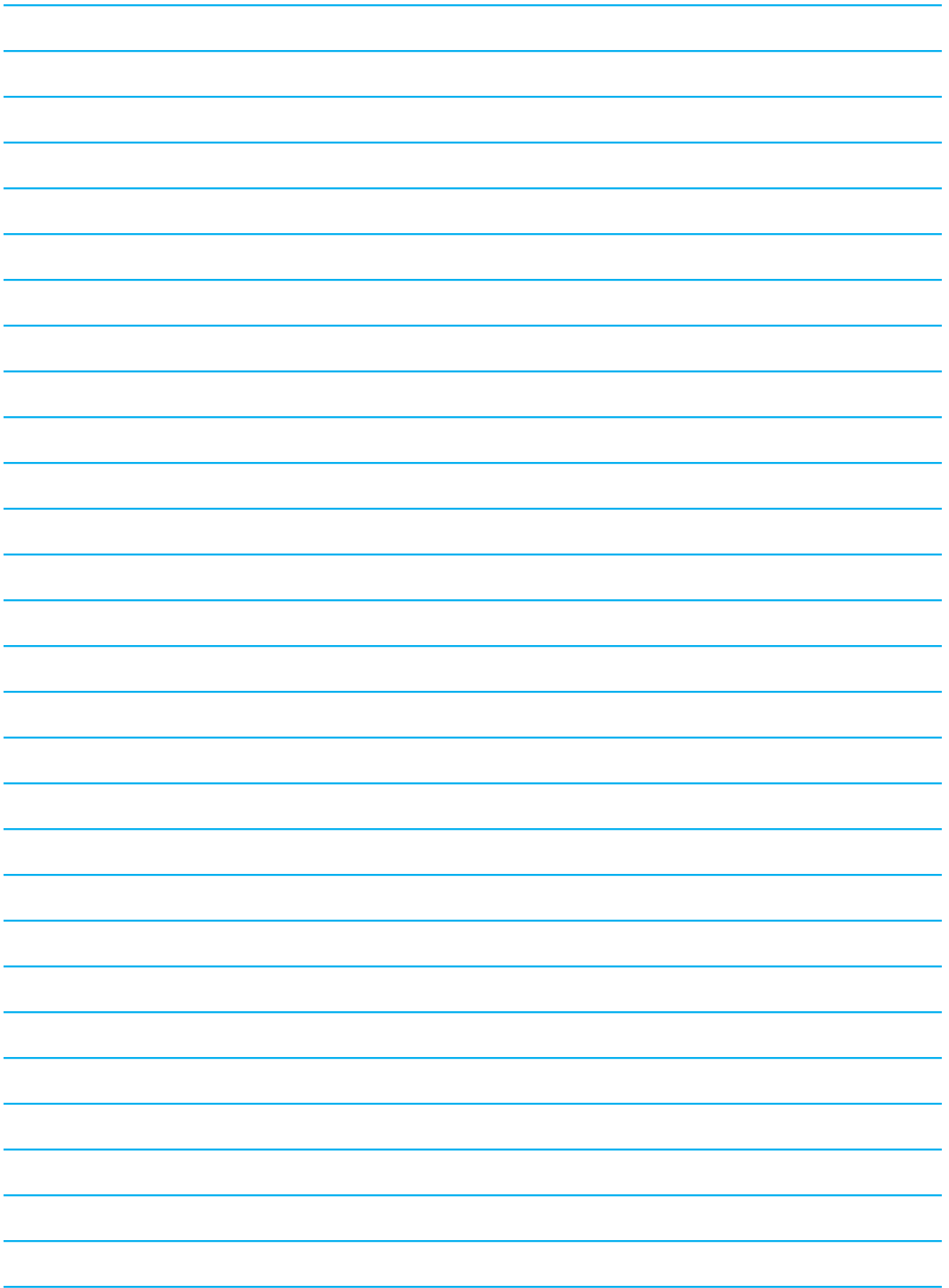


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-  12. **On the Back** Write a problem about adding measurements or adding decimals. Then solve the problem.

Name \_\_\_\_\_

Date \_\_\_\_\_



## ► Compare Different Methods

There are many ways to add numbers. These methods each show the new groups in a different way. Each method has its own advantages and disadvantages.

### New Groups Below

Step 1	Step 2	Step 3	Step 4	Step 5	Step 6
787.608	787.608	787.608	787.608	787.608	787.608
+561.739	+561.739	+561.739	+561.739	+561.739	+561.739
<u>      1</u>	<u>      1</u>	<u>      1 1</u>	<u>      1 1</u>	<u>      1 1 1</u>	<u>      1 1 1</u>
7	47	347	9.347	49.347	1,349.347

### New Groups Above

Step 1	Step 2	Step 3	Step 4	Step 5	Step 6
1	1	1 1	1 1	1 1 1	1 1 1
787.608	787.608	787.608	787.608	787.608	787.608
+561.739	+561.739	+561.739	+561.739	+561.739	+561.739
<u>      7</u>	<u>      47</u>	<u>      347</u>	<u>      9.347</u>	<u>      49.347</u>	<u>      1,349.347</u>

### Subtotal Method

Step 1	Step 2	Step 3	Step 4	Steps 5 & 6	Step 7
787.608	787.608	787.608	787.608	787.608	787.608
+561.739	+561.739	+561.739	+561.739	+561.739	+561.739
<u>1,200.000</u>	<u>1,200.000</u>	<u>1,200.000</u>	<u>1,200.000</u>	<u>1,200.000</u>	<u>1,200.000</u>
	140.000	140.000	140.000	140.000	140.000
		8.000	8.000	8.000	8.000
			1.300	1.300	1.300
				0.030	0.030
				0.017	+0.017
					<u>1,349.347</u>



## ► Use a Preferred Method

Each exercise can be completed by using the New Groups Above, New Groups Below, or Subtotal Method.

Use any method to add.

1.  $7,473,265 + 2,873,498$

\_\_\_\_\_

2.  $0.385 + 476.9$

\_\_\_\_\_

3.  $275.382 + 79.8365$

\_\_\_\_\_

4.  $43,675.329 + 4,693.94$

\_\_\_\_\_

5.  $375.038 + 2,473.69$

\_\_\_\_\_

6.  $8,092,375.62 + 78,396.705$

\_\_\_\_\_

## ► Two Ways to Ungroup in Subtraction

Ungrouping allows you to subtract larger numbers from smaller numbers. You can ungroup in either direction.

### Left to Right

$$\begin{array}{r} 0 \cancel{1} 3 \\ \cancel{1} \cancel{3} \cancel{5} 3 \\ - 769 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ 0 \cancel{1} \cancel{3} 15 \\ \cancel{1} \cancel{3} \cancel{5} 3 \\ - 769 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \cancel{1} 4 \\ 0 \cancel{1} \cancel{3} \cancel{5} 13 \\ \cancel{1} \cancel{3} \cancel{5} 3 \\ - 769 \\ \hline \end{array}$$

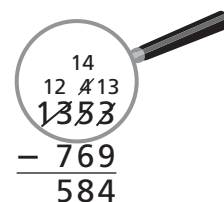
### Right to Left

$$\begin{array}{r} 4 \cancel{1} 3 \\ 1, \cancel{3} \cancel{5} \cancel{3} \\ - 769 \\ \hline \end{array}$$

$$\begin{array}{r} 14 \\ 2 \cancel{1} \cancel{3} \\ 1, \cancel{3} \cancel{5} \cancel{3} \\ - 769 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \cancel{1} 4 \\ 0 \cancel{1} \cancel{3} \cancel{5} 13 \\ \cancel{1}, \cancel{3} \cancel{5} \cancel{3} \\ - 769 \\ \hline \end{array}$$

You can draw a magnifying glass around the top number to see inside it to ungroup.



$$\begin{array}{r} 14 \\ 12 \cancel{1} \cancel{3} \\ \cancel{1} \cancel{3} \cancel{5} 3 \\ - 769 \\ \hline 584 \end{array}$$

Answer each question.

1. How do we know we are not changing the value of the top number when we ungroup?

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2. When the ungrouping is finished, in which direction do we subtract?

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3. How can we check the answer?

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$$\begin{array}{r} 1,353 \\ \swarrow \quad \searrow \\ 769 \quad 584 \end{array}$$

## ► Real-World Problems

Solve each problem.

4. One year the Sahara Desert received 0.791 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?

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5. A newborn kangaroo measures about 0.02 meters in height. An adult kangaroo can measure up to 2.7 meters in height. How much shorter is the baby kangaroo than the tallest adult?

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6. Jack and Lelia have each been saving money. Jack has \$136.83, and Lelia has nineteen dollars. How much less money does Lelia have than Jack?

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7. Colleen owns a tree nursery. Her tallest maple tree measures 2.32 meters, and her shortest measures 0.4 meters. What is the difference in their heights?

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*Show your work.*



## ► Place Value Problems

When solving word problems, you need to pay close attention to place values. Remember to only add and subtract like place values.

### Large Creatures

Dr. Magnuson is a scientist who studies whales and sharks. She and many other scientists think that sharks appeared on Earth about 395 million years ago, and whales appeared about 70 million years ago. They think that human beings appeared about 1,750,000 years ago.

1. About how much longer have sharks been on Earth than human beings?  
\_\_\_\_\_
2. About how much longer have whales been on Earth than human beings?  
\_\_\_\_\_
3. A baby blue whale weighs about 4,000 pounds. An adult blue whale weighs about 400,000 pounds. About how much weight does a blue whale gain as it grows up?  
\_\_\_\_\_
4. The largest living shark is the whale shark. It is about 1,200 cm long. The smallest living shark is the pigmy shark. It is about 25 cm long. How much longer is the whale shark than the pigmy shark?  
\_\_\_\_\_
5. Whales and dolphins are mammals from the same family. The average adult blue whale is about 2,620 cm long. The smallest dolphin, named Hector's dolphin, is about 125 cm long. How much longer is the blue whale than Hector's dolphin?  
\_\_\_\_\_

*Show your work.*

**Small Creatures**

*Show your work.*

6. Dr. Parvo is a scientist who studies butterflies and moths. He has learned that there are 15,000 kinds of butterflies and 100,000 kinds of moths. How many kinds of moths and butterflies are there altogether?

\_\_\_\_\_

7. The largest butterfly is the Queen Alexandra butterfly, which is 28 cm across. One of the smallest is the pygmy blue butterfly, which is 0.95 cm across. How much larger is the Queen Alexandra butterfly than the pygmy blue butterfly?

\_\_\_\_\_

8. When a monarch butterfly hatches, it is a tiny caterpillar 0.35 cm long. When the caterpillar is grown, it is about 5.1 cm long. How many centimeters does the monarch caterpillar grow?


\_\_\_\_\_

9. The egg of the elfin butterfly is 0.008 cm across. The egg of the zebra butterfly is 0.12 cm across. Which egg is smaller? How much smaller?

\_\_\_\_\_

**► Write Word Problems**

Make up an imaginary animal that is very large or very small. Give it a name. Decide on a length or height and a weight.

 **10. On the Next Page** Write an addition and subtraction word problem about this animal and the measurement you decided on. Share your problems with the rest of the class.



**► Is an Exact or Estimated Answer Needed?**

Some problems ask for an exact answer, but other problems only need an estimate to answer the question. To decide which kind of answer you need to find, study the question carefully. Look for certain key words, such as *about*, *approximately*, *almost*, *nearly*, and *enough*. Those words usually mean you can estimate.

**Example:** Tim has a \$10-bill. He wants to buy 29 red apples that cost \$3.68 and 13 green apples that cost a total of \$2.11. Both prices include sales tax.

Need Exact Answers	Need Estimated Answers
<b>Q:</b> How many apples does Tim want to buy? <b>A:</b> Tim wants to buy 42 apples.	<b>Q:</b> About how many apples does Tim want to buy? <b>A:</b> Tim wants to buy about 40 apples
<b>Q:</b> How much change should Tim receive? <b>A:</b> Tim should get back \$4.21.	<b>Q:</b> Does Tim have enough money to buy all the apples? <b>A:</b> Yes, Tim has enough money.

Tell whether each problem needs an *exact* answer or an *estimated* answer. Then solve the problem. Write your answer in a complete sentence.

- Kelly rode her bike on two trails this weekend. She rode 4.73 km on the Oak Trail and 3.42 km on the Pine Trail. Did she ride more than 8 km?

\_\_\_\_\_

- Ramiro and Suzy made 216 cookies for the bake sale. They had 37 cookies left over at the end of the sale. How many cookies did they sell?

\_\_\_\_\_

- Jamal wants to buy a book that costs \$7.99 and a magazine that costs \$3.75. He has two \$10-bills. Does Jamal have enough money to buy both items?

\_\_\_\_\_

\_\_\_\_\_

*Show your work.*

## ► 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.    30,000  
      20,000    \_\_\_\_\_  
      80,000    \_\_\_\_\_  
      49,000    \_\_\_\_\_  
+ 70,000    \_\_\_\_\_  
                  \_\_\_\_\_

2.    90,000  
      25,000    \_\_\_\_\_  
      75,000    \_\_\_\_\_  
      67,000    \_\_\_\_\_  
+ 10,000    \_\_\_\_\_  
                  \_\_\_\_\_

3.    5.75  
      5.4        \_\_\_\_\_  
      5.25      \_\_\_\_\_  
      5.17      \_\_\_\_\_  
+ 5.6        \_\_\_\_\_  
                  \_\_\_\_\_

4.    1.500  
      1.200    \_\_\_\_\_  
      1.300    \_\_\_\_\_  
+ 1.678    \_\_\_\_\_  
                  \_\_\_\_\_

5. 8 million + 39 million + 2 million

\_\_\_\_\_

\_\_\_\_\_

6. 40 billion + 856 billion + 60 billion

\_\_\_\_\_

\_\_\_\_\_

7. \$476.00 + \$50.00 + \$50.00

\_\_\_\_\_

\_\_\_\_\_

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

**Distributive Property**

$$a \times (b + c) = (a \times b) + (a \times c)$$

Discuss how you could use the **Distributive Property** to say 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 the Commutative Property to solve for  $n$ .

$$968.73 + 532.15 = 532.15 + n$$

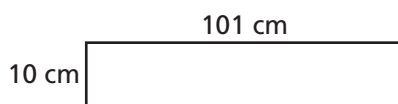
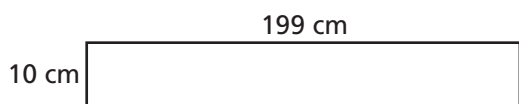
\_\_\_\_\_

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  $(\$56,703 + \$8,000) + \$2,000$  very easily. So, she regroups the problem as  $\$56,703 + (\$8,000 + \$2,000)$ .

\_\_\_\_\_

15. Brady did not know the answer to  $2 \times 403$ . So, he multiplied twice and then added the two answers together:  $(2 \times 400) + (2 \times 3)$ .

\_\_\_\_\_

## ► Use a Pictograph

A pictograph uses symbols or pictures to show a certain number of items. The key to a pictograph tells you how many items each symbol or picture represents.

Use the pictographs to answer each question.

The graph shows the number of each color of button made at a factory this month.

1. How many red buttons were made this month?  
How many blue buttons were made?

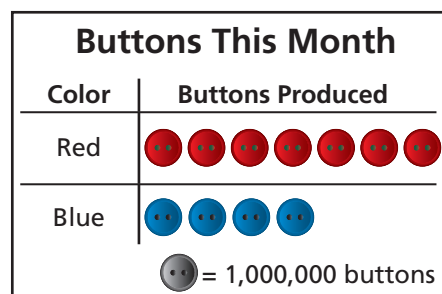
\_\_\_\_\_

2. How many more red buttons were made than blue buttons?

\_\_\_\_\_

3. Buttons are packaged in boxes of 100. How many boxes of buttons were produced?

\_\_\_\_\_



The graph shows the number of vehicles that traveled on Highway 25 in one week.

4. How many vans traveled on the highway that week?

\_\_\_\_\_

5. How many fewer motorcycles traveled on Highway 25 than cars in one week?

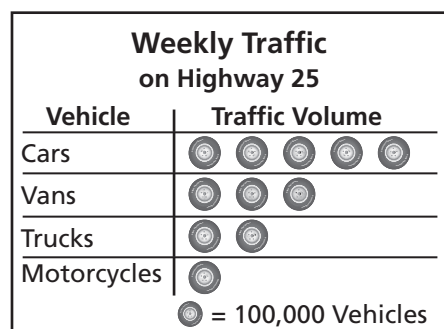
\_\_\_\_\_

6. Predict the number of trucks that might travel on Highway 25 in one month.

\_\_\_\_\_

7. Each truck driver pays \$10 a week in tolls. How much toll money is collected from truck drivers in one week?

\_\_\_\_\_



Use the pictograph to answer each question.

This graph has no key. The actual number of passengers at the Atlanta airport in one year was 80,171,035.

8. How many passengers does each person on the graph stand for?  
\_\_\_\_\_

9. About how many passengers were there at the Los Angeles airport in one year?  
\_\_\_\_\_

10. Which airport had 61,607,185 passengers in one year?  
\_\_\_\_\_

Airport	Traffic Volume
Atlanta	
Chicago	
Los Angeles	
London	

### ► Make a Pictograph

On a separate sheet of paper, draw a pictograph to show the information in each table. Each pictograph should have a title and a key.

11. The Steinberg Sports Factory makes tennis balls and golf balls. The number of balls produced in September is shown. Make a pictograph showing this information.

Number of Balls Produced in September

Ball	Number
Tennis balls	3,000
Golf balls	6,500

12. The table shows how many people speak the five most common languages spoken worldwide in the year 2000. Make a pictograph to show this information.

Number of Speakers of the Five Most Common Languages

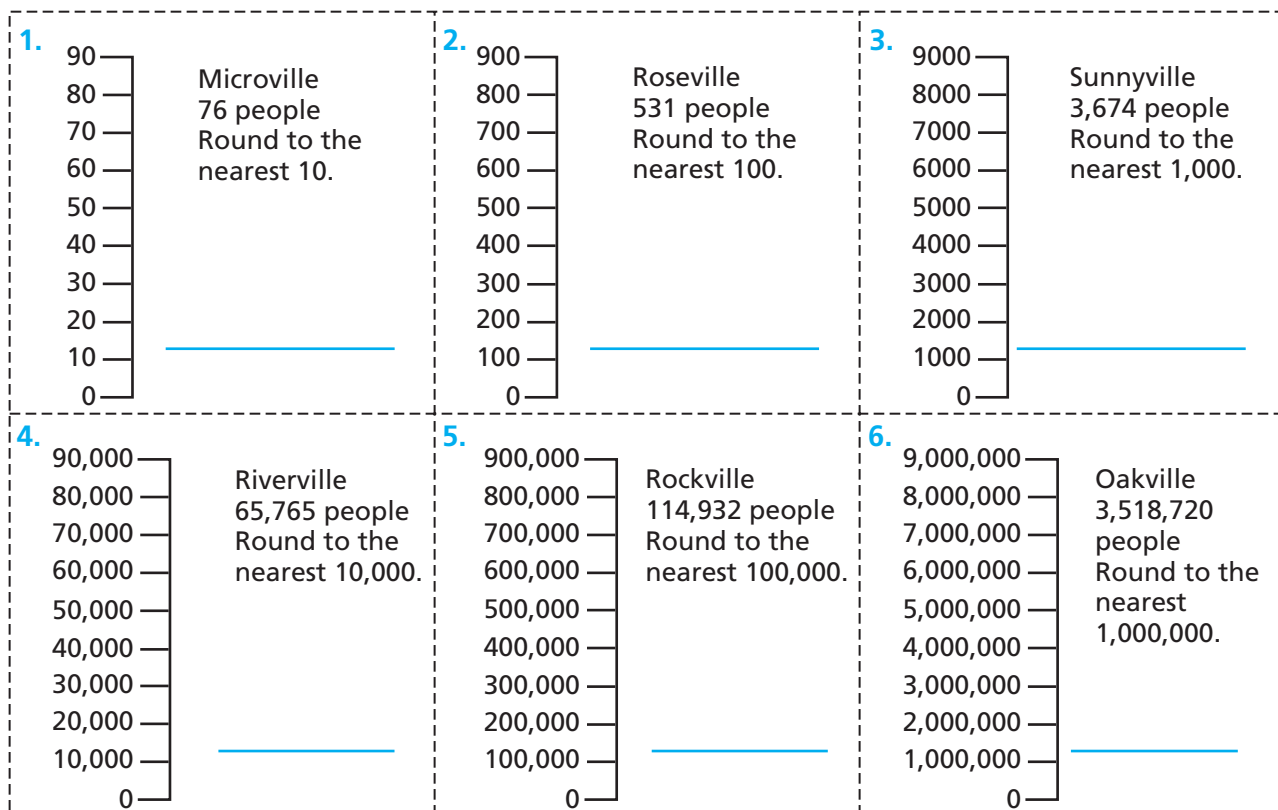
Language	Number of Speakers
Bengali	200,000,000
Chinese	900,000,000
English	300,000,000
Spanish	350,000,000
Hindi (India)	350,000,000



## ► Introduce Scales as a Visual Aid to Rounding

The kingdom of Plutonia has 9 cities. Every year the king counts the population in each city and rounds the number. Below are **scales** that show the rounding units he uses for each one. A scale has numbers arranged on a line with fixed distances between each number.

Write the rounded population of each city.



Write the rounded numbers that belong on the lines above and below each number. Then circle the correct answer.

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

7,581

\_\_\_\_\_

Rounded to  
the nearest  
1,000.

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

12,327

\_\_\_\_\_

Rounded to  
the nearest  
10,000.

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

293

\_\_\_\_\_

Rounded to  
the nearest  
100.

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

8,965,002

\_\_\_\_\_

Rounded to  
the nearest  
1,000,000.

► **Practice With Rounding**

Round to the nearest ten.

11. 23 \_\_\_\_\_

12. 75 \_\_\_\_\_

13. 156 \_\_\_\_\_

Round to the nearest hundred.

14. 291 \_\_\_\_\_

15. 1,610 \_\_\_\_\_

16. 834 \_\_\_\_\_

Round to the nearest thousand.

17. 2,315 \_\_\_\_\_

18. 10,987 \_\_\_\_\_

19. 15,204 \_\_\_\_\_

Round to the nearest 10 thousand.

20. 30,986 \_\_\_\_\_

21. 65,713 \_\_\_\_\_

22. 9,506 \_\_\_\_\_

► **Round to Estimate**

When you **estimate** you find a number that is close to the exact number.

Solve each problem by rounding.

23. Herminio has a stamp collection. He has 689 American stamps and 226 foreign stamps. About how many stamps does Herminio have in all?

\_\_\_\_\_

24. Karinne bought a glass of lemonade for 59 cents and a pretzel for 39 cents. Is \$1 enough to pay for both items?

\_\_\_\_\_

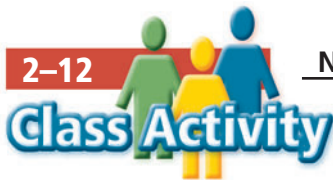
25. The Brown Owl Bookstore has 1,897 novels and 1,405 comic books. About how many more novels does the store have than comic books?

\_\_\_\_\_

26. Mebrahtom drove 47 miles before noon. He drove 52 miles after noon. He said he drove nearly 100 miles altogether. Is he right?

\_\_\_\_\_

*Show your work.*



Jenna has \$85. She wants to buy a sleeping bag for \$53 and a backpack for \$34. She rounds these numbers to the nearest ten and gets \$50 and \$30.

Added together, the numbers total \$80. She decides that she has enough money to buy both things. Is she right? Discuss why or why not.

---

---

---

Decide whether a *safe* estimate or an *ordinary* estimate is needed. Then estimate to find each answer.

*Show your work.*

27. Mrs. Jackson is catching a plane to Chicago. The last time she traveled, it took her 32 minutes to drive to the airport and another 21 minutes to park and get to the gate for check-in. How much total time should Mrs. Jackson allow herself to get from home to the check-in gate?

---

28. This summer Kurt read one book with 278 pages, another with 312 pages, and another with 104 pages. About how many pages did Kurt read in all?

---

29. Mr. Richfield plans to buy 2 cars for his business this year. He has \$30,000 in the bank. One car that he likes costs \$14,935. The other one costs \$13,295. About how much do the two cars cost altogether? Does he have enough money in the bank?

---

30. Jarod drove 379 miles on Monday and 422 miles on Tuesday. About how far did he drive altogether on these two days?

---

**Vocabulary**

elapsed time

Ungrouping:  
1 hr = 60 min

► **Elapsed Time**

**Elapsed time** is the amount of time that passes from the start of an event to its end. You can subtract or count up to find the elapsed time. You can also subtract or add the elapsed time to find when the event starts or ends.

**Examples:**

Two Ways to Find Elapsed Time		Find End Time
The show started at 7:30 P.M. and ended at 9:15 P.M. How long did the show last?		The show started at 8:50 P.M. and lasted for 1 hour and 25 minutes. What time did the show end?
<b>Subtracting</b>  $\begin{array}{r} 8 \quad 75 \\ 9 \text{ hr } 15 \text{ min} \leftarrow \text{end} \\ - 7 \text{ hr } 30 \text{ min} \leftarrow \text{start} \\ \hline 1 \text{ hr } 45 \text{ min} \leftarrow \text{elapsed} \end{array}$	<b>Counting Up</b>  $\begin{array}{l} 7:30 \text{ to } 8:00: 30 \text{ min} \\ 8:00 \text{ to } 9:15: \underline{1 \text{ hr } 15 \text{ min}} \\ \hline 1 \text{ hr } 45 \text{ min} \end{array}$	$\begin{array}{r} 8 \text{ hr } 50 \text{ min} \leftarrow \text{start} \\ + 1 \text{ hr } 25 \text{ min} \leftarrow \text{elapsed} \\ \hline 9 \text{ hr } 75 \text{ min} \leftarrow \text{end} \\ = 10 \text{ hr } 15 \text{ min} \end{array}$
The show lasted for 1 hour and 45 minutes.		The show ended at 10:15 P.M.

**Find each elapsed time.**

1. Start: 4:05 P.M.  
End: 6:35 P.M.

\_\_\_\_\_

2. Start: 8:45 A.M.  
End: 9:20 A.M.

\_\_\_\_\_

3. Start: 7:25 P.M.  
End: 10:32 P.M.

\_\_\_\_\_

**Find each start time.**

4. End: 10:41 P.M.  
Elapsed: 1 hr 20 min

\_\_\_\_\_

5. End: 9:30 A.M.  
Elapsed: 2 hr 19 min

\_\_\_\_\_

6. End: 11:55 P.M.  
Elapsed: 8 hr 25 min

\_\_\_\_\_

**Find each end time.**

7. Start: 3:50 A.M.  
Elapsed: 1 hr 15 min

\_\_\_\_\_

8. Start: 6:08 P.M.  
Elapsed: 3 hr 25 min

\_\_\_\_\_

9. Start: 7:15 A.M.  
Elapsed: 4 hr 20 min

\_\_\_\_\_



## ► Bar Graphs With Large Numbers

A **bar graph** uses vertical or horizontal bars to show data.

Use the graphs to answer each question.

1. The bar graph shows 4 movies that have made a lot of money. About how much money did *Star Fleet* make?

\_\_\_\_\_

2. The actual amount of money that one of these movies made was \$399,804,539. Which movie was that?

\_\_\_\_\_

3. John said *Super Heroes* brought in about \$265 more than *Voyage to Venus*. Is he right? Explain.

\_\_\_\_\_

A **double bar graph** uses vertical or horizontal bars to compare related data.

4. Every year a city has a carnival with an afternoon picnic and an evening concert. The graph shows the number of people who attended each event during the past 3 years. Look at the attendance numbers. Do you see a pattern?

\_\_\_\_\_

5. This year (Year 4) about 45,000 people attended the picnic. The mayor wants to know how many chairs are needed for the concert. What will you tell him? Explain your answer.

\_\_\_\_\_

\_\_\_\_\_

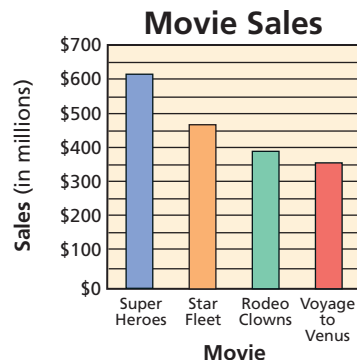
\_\_\_\_\_

6. Think about next year's carnival (Year 5). If the pattern continues, how many people can be expected to attend the picnic that year? How many people can be expected to attend the concert?

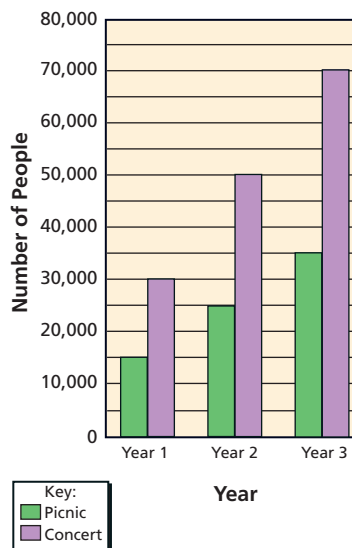
\_\_\_\_\_

### Vocabulary

**bar graph**  
**double bar graph**



### Attendance at Carnival

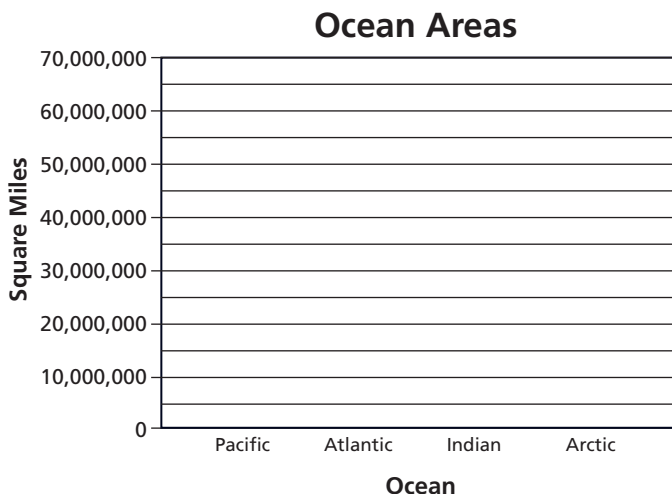


### ► Make a Bar Graph

7. This table shows the area in square miles of each ocean. Use this information to make a bar graph.

**The Oceans of the World**

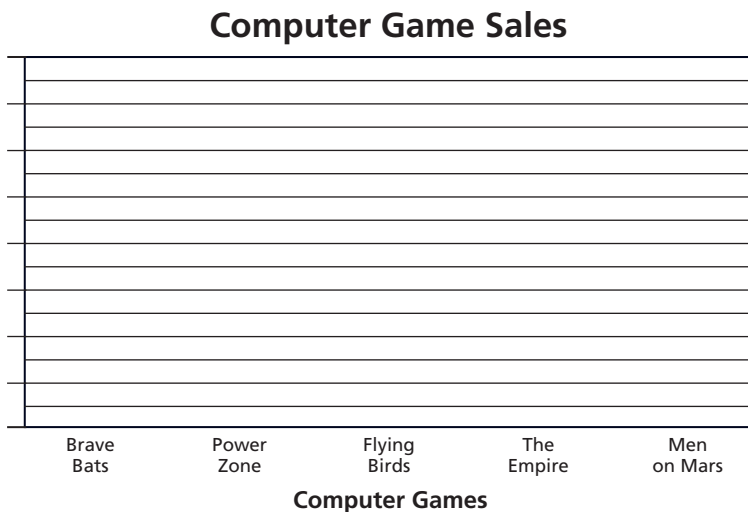
Pacific	64,200,000 sq mi
Atlantic	33,400,000 sq mi
Indian	28,400,000 sq mi
Arctic	5,100,000 sq mi



8. A big software company wants to use a bar graph to show the number of computer games that were sold this year. Use the information in the table to make your graph. This time you will need to decide on a scale.

**Computer Games Sold This Year**

Brave Bats	453,000
Power Zone	741,000
Flying Birds	318,000
The Empire	608,000
Men on Mars	97,000



**Vocabulary**

 bar graph  
 line graph

## ► Contrast Line Graphs and Bar Graphs

**Bar graphs** usually show numbers for several different items. For example, a population bar graph might show the population of several different cities.

**Line graphs** usually show numbers for just one item that changes over time. For example, a population line graph might show how the population of one city has changed over several years.

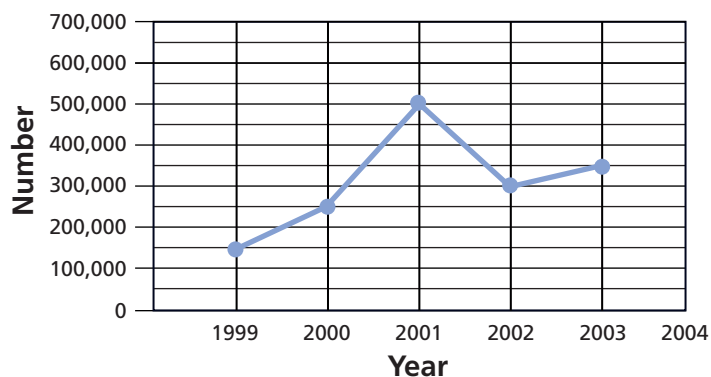
This line graph shows how many deer there were in a large national park over a 5-year period. The deer were estimated every year on December 31.

1. How many deer were in the park at the end of 2000?

\_\_\_\_\_

2. During which year did the deer population grow the most? By how much?

\_\_\_\_\_


**Deer Population in Midland Park**


Write *bar graph* or *line graph* for each situation.

3. A graph showing the height of 5 different trees

\_\_\_\_\_

4. A graph showing how much a tree has grown over 10 years

\_\_\_\_\_

5. A graph showing how the number of customers grew larger each year

\_\_\_\_\_

6. A graph comparing the number of customers at 8 different restaurants

\_\_\_\_\_

7. A graph showing how the price of gasoline has changed each week

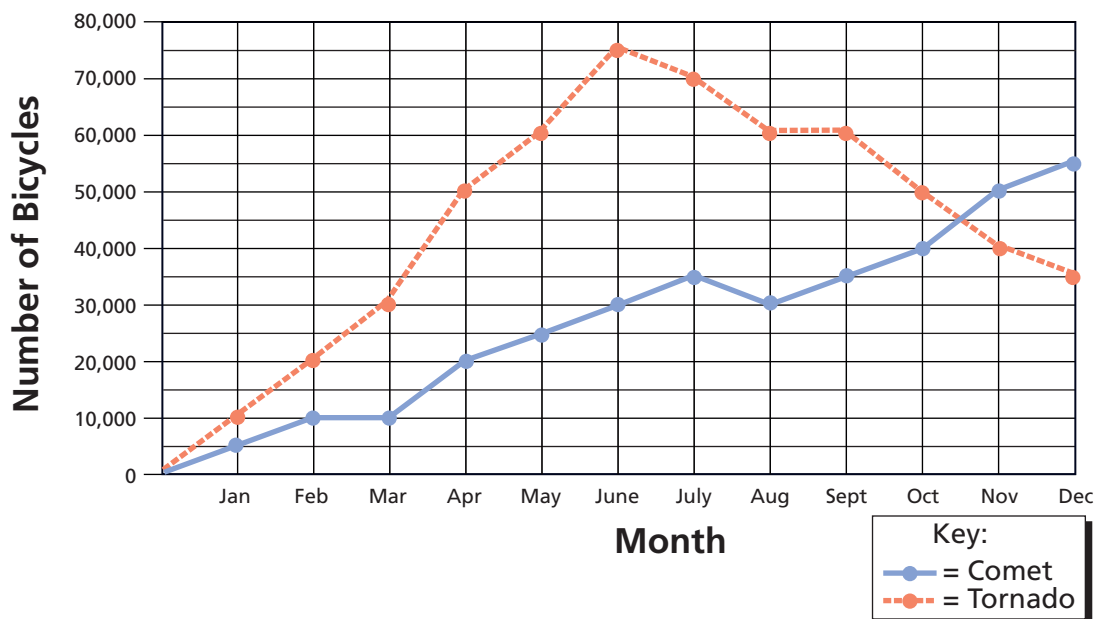
\_\_\_\_\_

## ► Double Line Graphs

In January of last year, a bicycle company introduced 2 new bicycles, the *Comet* and the *Tornado*. The line graph below shows how many of each were in stock at the end of each month.



### Number of Comets and Tornadoes Sold Last Year



8. How many Comets sold the first month?  
\_\_\_\_\_
9. How many Tornadoes sold the first month?  
\_\_\_\_\_
10. By April 1, how many more Tornadoes sold than Comets?  
\_\_\_\_\_
11. By how many did the sale of Comets change in November?  
\_\_\_\_\_
12. At the end of which two months were there more Comets sold than Tornadoes?  
\_\_\_\_\_
13. At the end of June, how many Tornadoes and Comets were sold altogether?  
\_\_\_\_\_





### ► Make A Line Graph

14. Line graphs are often used to track the value of a certain stock over time. Use the information below to make a line graph.

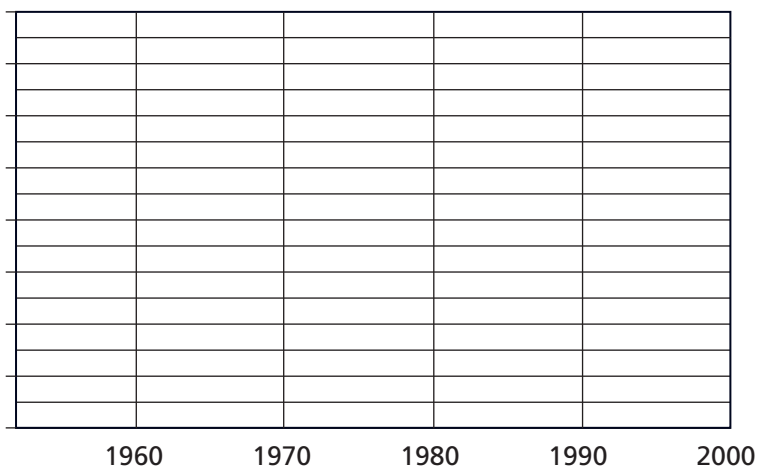
Stock Price	
January	\$25
February	\$30
March	\$45
April	\$50
May	\$40
June	\$55



15. The town of Bear Creek has grown in population every decade. Use the population information in the table to make a line graph. This time you decide on a scale and label your graph.

**The Population of Bear Creek**

1960	996 people
1970	2,009 people
1980	3,521 people
1990	6,145 people
2000	7,613 people



➡ 16. **On the Back** Write two word problems about your graph in exercise 15.

Name \_\_\_\_\_

Date \_\_\_\_\_

A series of 20 horizontal blue lines spaced evenly down the page, intended for writing.

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## ► Graphs With Decimal Numbers

Every year on her birthday, Ana's parents measure her height with a meter stick. The line graph shows her height at 4 different ages.

1. How much did Ana grow between her third birthday and her fourth birthday?

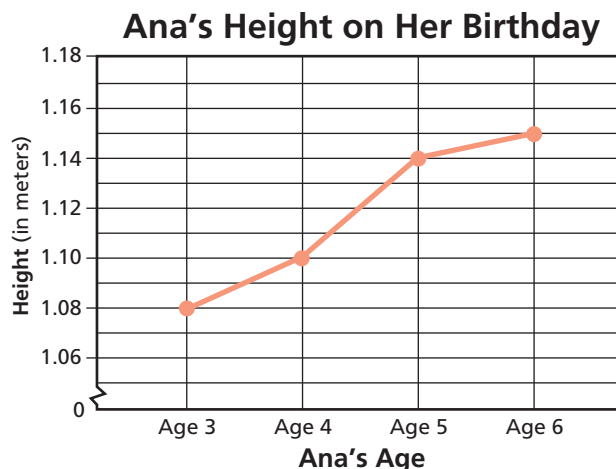
\_\_\_\_\_

2. How tall was Ana on her sixth birthday?

\_\_\_\_\_

3. A growth spurt is a period of very fast growth. Between which two birthdays did Ana have a growth spurt?

\_\_\_\_\_



This bar graph shows the length of some common beetles.

4. What is the length of a bark beetle?

\_\_\_\_\_

5. About how many bark beetles would have to line up end-to-end to be about as long as a tumblebug?

\_\_\_\_\_

6. Estimate the length of a tumblebug in hundredths of a centimeter.

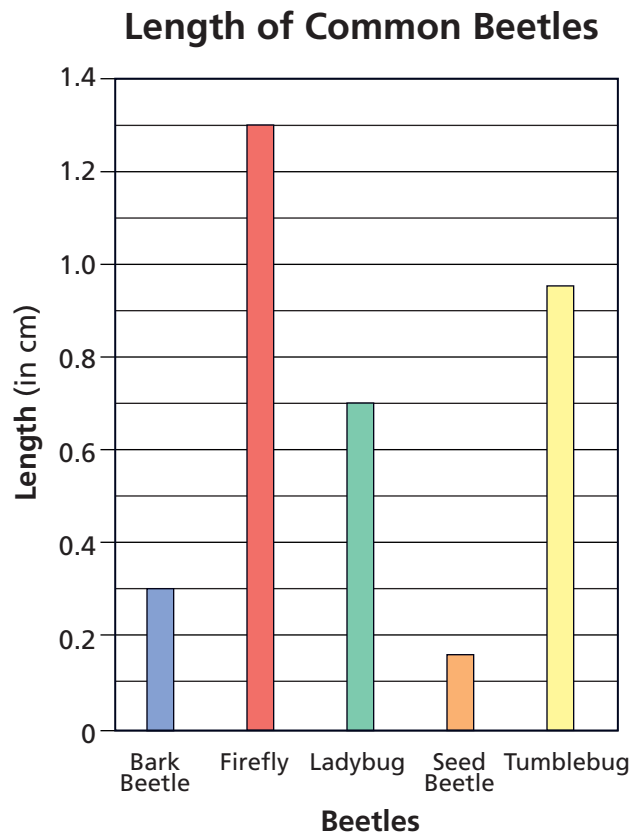
\_\_\_\_\_

7. The actual length of one beetle shown is 0.150 centimeters. Which beetle is that?

\_\_\_\_\_

8. A June bug is about 2.5 centimeters in length. About how many times as tall as the firefly bar would the June bug bar be?

\_\_\_\_\_



► **Make a Bar Graph With Decimal Numbers**

Last year, a car dealer kept track of the portion of car buyers who bought each color of car. The box on the left shows the information.

9. Use the box on the right to make a list that shows each number rounded to the nearest hundredth.

Black	0.136
Blue	0.168
Green	0.129
Red	0.117
Silver	0.179
White	0.162
Yellow	0.109

Black	
Blue	
Green	
Red	
Silver	
White	
Yellow	

10. Which color was most popular? \_\_\_\_\_
11. Which was least popular? \_\_\_\_\_
12. If you added all of these decimal numbers together, what should the total be? \_\_\_\_\_
13. Make a bar graph to show these rounded numbers.

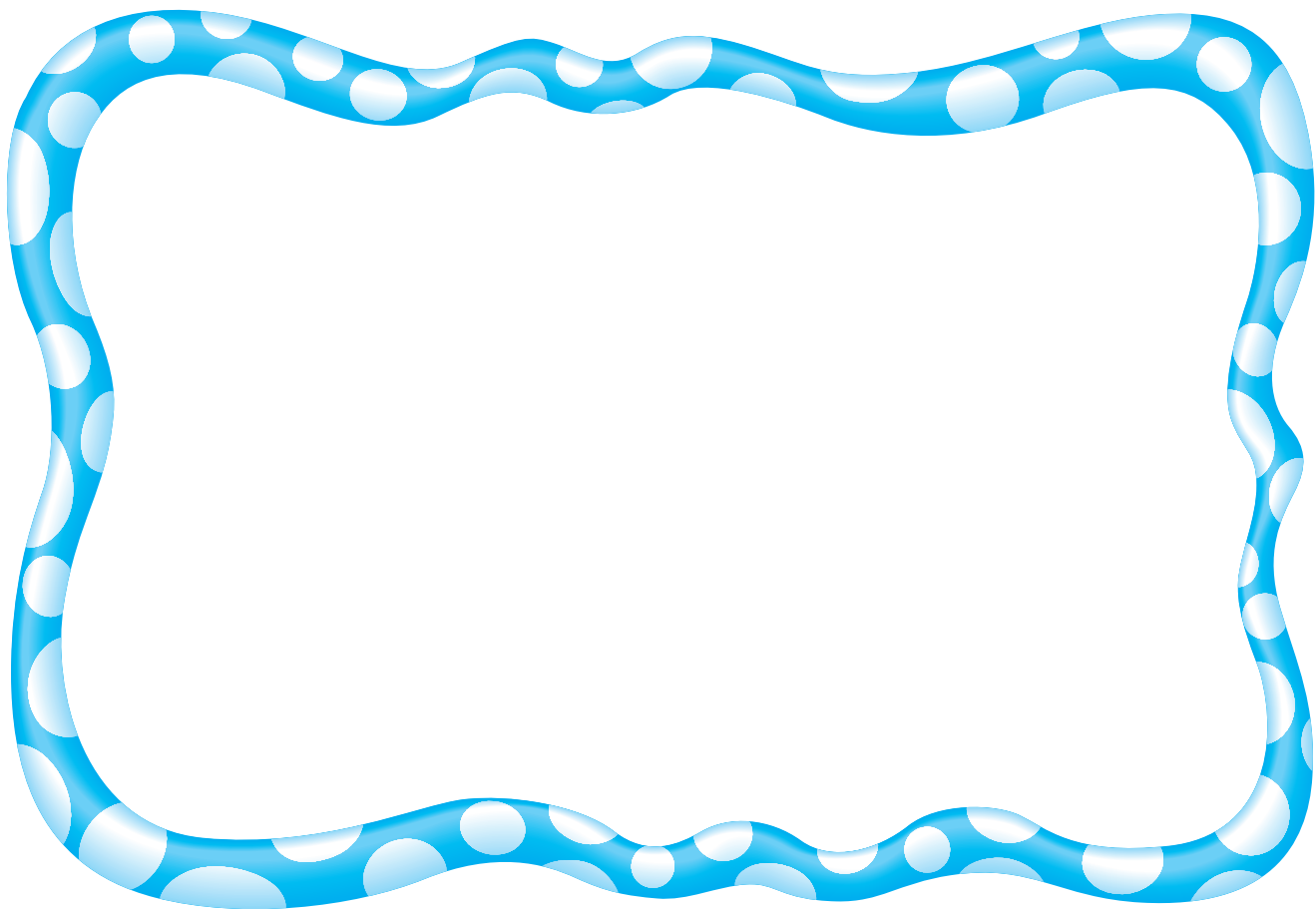
**Most Popular Colors**



- 14. **On the Next Page** Draw a graph with decimal numbers. Write a problem about your graph.

Name \_\_\_\_\_

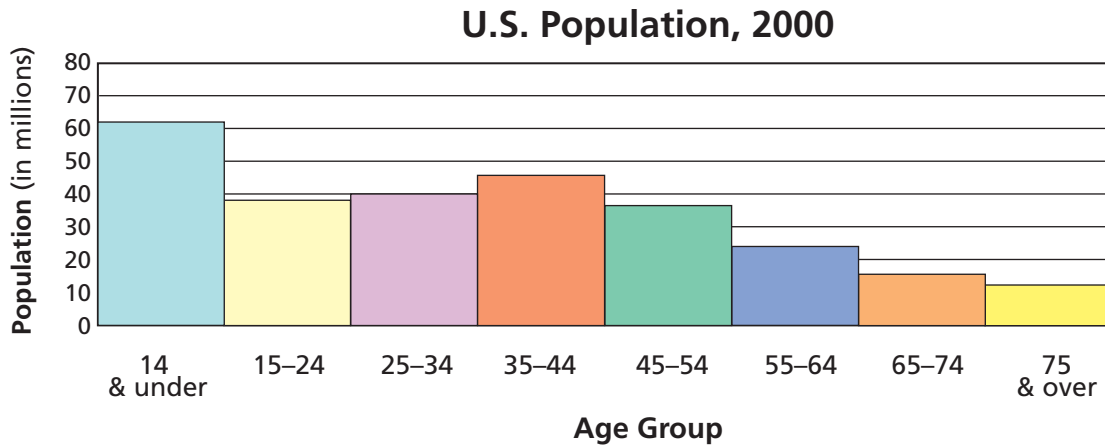
Date \_\_\_\_\_



Handwriting practice lines consisting of 12 horizontal blue lines.

► **Read a Histogram**

Discuss how this graph is like and different from a bar graph.



A **histogram** is used when we need to group data. The groups are called ranges or intervals. The groups are often the same size. The bars touch because together they cover all of the numbers.

Use the histogram above to answer each question.

1. Which age group has the most people? \_\_\_\_\_
2. Which age group has the fewest people? \_\_\_\_\_
3. Which age groups have nearly the same number of people?  
\_\_\_\_\_
4. Which age group has about 45 million people? \_\_\_\_\_
5. About how many people are between the ages of 55 and 64?  
\_\_\_\_\_
6. About how many people are 65 years old or older?  
\_\_\_\_\_
7. About how many people are younger than 25? \_\_\_\_\_

## ► Situations in Word Problems

Change situations can be change plus situations or change minus situations.

Write a situation equation using an unknown.

### Change Situations

#### Change Plus

$$9 + 4 = 13$$

#### Unknown Result

1. Dan had 9 cherries. Then he picked 4 more. How many does he have now?

\_\_\_\_\_

#### Unknown Change

2. Dan had 9 cherries. Then he picked some more. Now he has 13 cherries. How many did he pick?

\_\_\_\_\_

#### Unknown Start

3. Dan had some cherries. Then he picked 4 more. Now he has 13 cherries. How many did he start with?

\_\_\_\_\_

#### Change Minus

$$13 - 4 = 9$$

#### Unknown Result

4. Dan had 13 cherries. Then he ate 4 of them. How many does he have now?

\_\_\_\_\_

#### Unknown Change

5. Dan had 13 cherries. Then he ate some of them. Now he has 9 cherries. How many did he eat?

\_\_\_\_\_

#### Unknown Start

6. Dan had some cherries. Then he ate 4 of them. Now he has 9 cherries. How many did he start with?

\_\_\_\_\_

7. Choose a problem type. Write your own problem. Then write a situation equation and solve the problem.

\_\_\_\_\_

\_\_\_\_\_

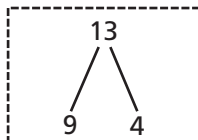
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Collection situations can have an unknown total or an unknown partner.

Make a Break-Apart drawing and write a situation equation.

Use a variable for the unknown.

### Collection Situations



#### Unknown Total

*Put Together*

8. Ana put 9 dimes and 4 nickels in her pocket. How many coins did she put in her pocket?

\_\_\_\_\_

*Take Apart*

9. Ana put 9 coins in her purse and 4 coins in her bank. How many coins did she have in the beginning?

\_\_\_\_\_

*No Action*

10. Ana has 9 dimes and 4 nickels. How many coins does she have in all?

\_\_\_\_\_

#### Unknown Partner

*Put Together*

11. Ana put 13 coins in her pocket. Nine are dimes and the rest are nickels. How many nickels are in her pocket?

\_\_\_\_\_

*Take Apart*

12. Ana had 13 coins. She had 9 dimes and the rest were nickels. She put all 9 dimes in her purse and all the nickels in her bank. How many nickels did she put in her bank?

\_\_\_\_\_

*No Action*

13. Ana has 13 coins. She has 9 dimes and the rest are nickels. How many are nickels?

\_\_\_\_\_

14. Choose a problem type. Write your own problem. Then write an equation and solve the problem.

\_\_\_\_\_

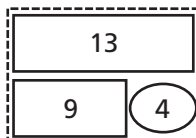
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Additive comparison situations ask how many more or how many fewer. They can have an unknown quantity or an unknown difference.

**Make a Break-Apart drawing and write an equation for each situation.**

Comparison Situations


**Unknown Difference**

*How Many More?*

- 15.** Ali has 9 balloons. Lisa has 13 balloons. How many more balloons does Lisa have than Ali?

\_\_\_\_\_

*How Many Fewer?*

- 16.** Ali has 9 balloons. Lisa has 13 balloons. How many fewer balloons does Ali have than Lisa?

\_\_\_\_\_

**Unknown Quantity**

*Leading Language*

- 17.** Ali has 9 balloons. Lisa has 4 more than Ali. How many balloons does Lisa have?

\_\_\_\_\_

*Misleading Language*

- 18.** Ali has 9 balloons. He has 4 fewer than Lisa. How many balloons does Lisa have?

\_\_\_\_\_

- 19.** Write a comparison problem with an unknown difference. Draw comparison bars, write an equation, and solve.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

- 20.** Write a comparison problem with an unknown quantity. Draw comparison bars, write an equation, and solve.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## ► Additive and Multiplicative Comparison

You can use comparison bars to represent quantities in additive and multiplicative comparison situations.

**Solve.**

21. Two speedboats entered the harbor. One was 9 feet long, and the other was 3 feet longer. What was the length of the longer boat?
- \_\_\_\_\_
22. Later, two sailboats entered the harbor. One was 9 feet long. The other was 3 times as long. What was the length of the longer boat?
- \_\_\_\_\_
23. Ramona spent \$72 at the theme park last week. Alicia spent \$8 less than Ramona. How much money did Alicia spend?
- \_\_\_\_\_
24. Jamie spent \$72 during the soccer trip. Troy spent  $\frac{1}{8}$  as much as Jamie spent. How much money did Troy spend?
- \_\_\_\_\_
25. The length of a field is 123 meters. That is 17.2 meters more than the width. What is the width of the field?
- \_\_\_\_\_
26. Alex and Martin played video games last night. Alex scored 8,000 points and Martin scored 2,845 points. How many fewer points did Martin score?
- \_\_\_\_\_

*Show your work.*

9	
9	3

9			
9	9	9	

## ► Situation Equations

A situation equation shows the relationship between known quantities and an unknown quantity in the situation.

*Show your work.*

**Write a situation equation for each problem. Then solve the equation.**

1. There were 6 horses in the barn. More horses came into the barn. Now there are 10 horses. How many horses came into the barn?

\_\_\_\_\_

2. There were 9 horses in the barn. Then some of them went out to the pasture. Now there are 4 horses left in the barn. How many are out in the pasture?

\_\_\_\_\_

3. There were some horses in the barn. Then 3 more came in. Now there are 8. How many horses were in the barn to start with?

\_\_\_\_\_

4. There were some horses in the barn. Then 7 of them went out. Now there are 3 left in the barn. How many horses were in the barn at the beginning?

\_\_\_\_\_

## ► Situation Equations With Larger Numbers

In a solution equation, the unknown quantity is by itself on one side of the equals sign.

**Write a situation equation for each problem. Then write a solution equation and solve the equation.**

5. There were 642 horses in the barn. More horses came in. Now there are 839 horses. How many horses came in?

Situation equation: \_\_\_\_\_

Solution equation and solution: \_\_\_\_\_

6. There were 935 horses in the barn. Then some of them went out to the pasture. Now there are 428 horses left in the barn. How many are out in the pasture?

Situation equation: \_\_\_\_\_

Solution equation and solution: \_\_\_\_\_

7. There were some horses in the barn. Then 347 more came in. Now there are 736. How many horses were in the barn to start with?

Situation equation: \_\_\_\_\_

Solution equation and solution: \_\_\_\_\_

8. There were some horses in the barn. Then 196 of them went out. Now there are 510 left in the barn. How many horses were in the barn at the beginning?

Situation equation: \_\_\_\_\_

Solution equation and solution: \_\_\_\_\_






*Show your work.*

## ► Word Problem Applications

Workers at the Burlington Balloon Factory make a chart each day to keep track of the number of balloons. Today someone spilled juice on the chart. Some of the numbers cannot be read.

9. Write an equation you can solve to find each unknown number. Then solve the equation.

**The Burlington Balloon Factory**

Color of Balloon	Number at Beginning	Number made today	Number at end of day	Equation	Solution
Yellow	2,498	3,261			
Red	1,945		4,147		
Blue		5,172	8,365		
Pink	498		1,498		
White	3,456	500			

Write the situation equation. If needed, write the solution equation. Then solve the problem.

*Show your work.*

10. Vance's desk drawer had 1,427 pictures in it. Today Vance got some more pictures from his grandmother. Now he has 2,198 pictures. How many pictures did Vance get from his grandmother?

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11. Emma has a big sticker collection. Today she gave 100 stickers to her friend Kyra. Now Emma has 6,100 stickers. How many did Emma have at the start?

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12. There were some people at the theater early last night, and then 2,197 more people arrived. Then there were 3,256 people in the theater. How many arrived early?

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13. Luisa took \$10,000 out of her bank account. Now she has \$15,000 left in the account. How much money was in her account to begin with?


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14. Mr. Daniels has a collection of 2,146 stamps. He bought some more stamps. Now he has 3,125. How many stamps did he buy?

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-  15. **On The Back** Write a change word problem that has large numbers. Then, write the situation and solution equations and solve the problem.

Name \_\_\_\_\_

Date \_\_\_\_\_

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## ► The Jump Rope Contest

Comparison problems can ask you to find an unknown difference or an unknown quantity. Draw comparison bars when needed.

**Solve.**

*Show your work.*

1. Julia jumped rope 1,200 times. Samantha jumped 1,100 times. How many more jumps did Julia do?  
\_\_\_\_\_
2. Ahanu jumped 1,050 times. Rolando jumped 1,080 times. How many fewer jumps did Ahanu do than Rolando?  
\_\_\_\_\_
3. Altogether the Blue Team jumped 11,485 times. The Red Team did 827 more jumps than the Blue Team. How many jumps did the Red Team do?  
\_\_\_\_\_
4. Altogether the Green Team jumped 10,264 times. The Yellow Team did 759 fewer jumps than the Green Team. How many jumps did the Yellow Team do?  
\_\_\_\_\_
5. Ted jumped 1,300 times. He did 100 more jumps than Mario. How many jumps did Mario do?  
\_\_\_\_\_
6. Isaac jumped 987 times. Carlos needs to do 195 more jumps to tie with Isaac. How many jumps has Carlos done so far?  
\_\_\_\_\_
7. Altogether the fourth graders jumped 345,127 times. If the fifth graders had done 2,905 fewer jumps, there would have been a tie. How many jumps did the fifth graders do?  
\_\_\_\_\_



## ► Solve Mixed Word Problems

*Show your work.*

8. Last night 45,239 people attended the soccer game. This is 5,856 more people than were at the baseball game. How many people attended the baseball game?

\_\_\_\_\_

9. Eva earned \$1,268 over the summer. That was \$145.60 less than Daria earned. How much did Daria earn?

\_\_\_\_\_

10. A chef has 935 plates for a banquet with 1,086 guests. How many more plates does he need?

\_\_\_\_\_

11. Ramon worked 1,910 hours this year. His sister worked 45.5 fewer hours than Ramon did. How many hours did Ramon's sister work?

\_\_\_\_\_

## ► Solve With Mental Math

Say and write the answer.

12.  $7,000 + 10 =$  \_\_\_\_\_

13.  $7,000 - 10 =$  \_\_\_\_\_

14.  $20,000 + 5,000 =$  \_\_\_\_\_

15.  $20,000 - 5,000 =$  \_\_\_\_\_

16. 500 thousand + 1,000 = \_\_\_\_\_

17. 500 thousand + 10 = \_\_\_\_\_

18. 40 million + 1 = \_\_\_\_\_

19. 40 million - 1 = \_\_\_\_\_

## ► Challenging Comparison Problems

20. The hottest temperature recorded on Earth is  $132^{\circ}\text{F}$ . The temperature on the sun is  $720,000,000^{\circ}\text{F}$ . How much hotter is the sun than the hottest place on Earth?

\_\_\_\_\_

21. An inch is 2.54 centimeters. That is about 27.46 centimeters less than a foot. About how many centimeters are in a foot?

\_\_\_\_\_

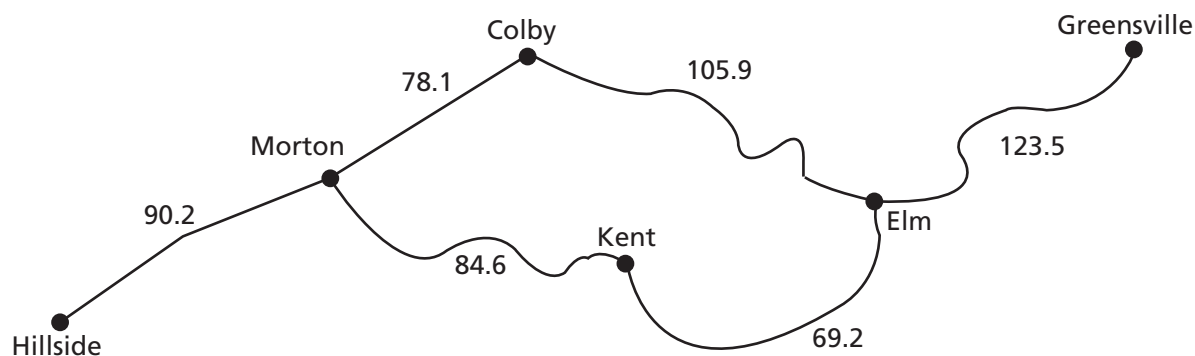


## ► Two-Step Word Problems

Solve.

- Yesterday a factory made 256,000 cotton balls. The cotton balls were packed in bags of 1,000 each. A drugstore bought 180 bags. How many bags of cotton balls were left?  
  
\_\_\_\_\_
- Langston can usually swim 100 meters in 51.34 seconds. Today he swam 0.09 second faster than his usual time. He learned that the world record is 47.79 seconds. What is the difference between Langston's time today and the world record?  
  
\_\_\_\_\_
- A cactus was 38.2 centimeters tall in January. By June it had grown 0.45 centimeters. By December it had grown another 0.51 centimeters. How tall was the cactus in December?  
  
\_\_\_\_\_
- A coin collector bought 10 rare coins for \$5,450 each and sold them later for \$6,125 each. How much money did the coin collector make on these 10 coins altogether?  
  
\_\_\_\_\_

- The map below shows several towns and the distances in miles between them. Use the map to help you write word problems with two steps for the class to solve. Write your problems on a separate sheet of paper.



**Vocabulary**

range  
median  
mode

**► Range, Median, and Mode**

The **range** is the difference between the greatest and least values in a data set. The **median** is the middle value in a data set when the values are listed in order. The **mode** is the value or values that occur most often in a data set.

1. Discuss each step below in finding the range, median, and mode of a data set.
2. Discuss why it is helpful to make a list of the values in order from least to greatest.

<b>Data Set: 12, 15, 9, 13, 10, 15, 17</b>	<b>Data Set: 4, 7, 3, 6, 10, 4, 9, 8, 1, 8</b>
<b>Order: 9, 10, 12, 13, 15, 15, 17</b>	<b>Order: 1, 3, 4, 4, 6, 7, 8, 8, 9, 10</b>
17 - <u>    </u> = 8 <b>Range = 8</b>	10 - 1 = 9 <b>Range = 9</b>
9, 10, 12, 13, <b>15, 15</b> , 17 <b>Mode = 15</b>	1, 3, <b>4, 4</b> , 6, 7, <b>8, 8</b> , 9, 10 <b>Modes = 4 and 8</b>
<del>9, 10, 12, 13, 15, 15, 17</del> <b>Median = 13</b>	<del>1, 3, 4, 4, 6, 7, 8, 8, 9, 10</del> The median is halfway between 6 and 7. <b>Median = 6.5</b>

**Find the range, median, and mode of each data set.**

3. Data Set: 11, 15, 19, 13, 12, 11, 14,

Range \_\_\_\_\_ Mode \_\_\_\_\_ Median \_\_\_\_\_

4. Data Set: 25, 30, 36, 42, 31, 25, 27, 24

Range \_\_\_\_\_ Mode \_\_\_\_\_ Median \_\_\_\_\_

5. Data Set: 105, 175, 160, 148, 120, 132, 150

Range \_\_\_\_\_ Mode \_\_\_\_\_ Median \_\_\_\_\_

6. Data Set: 4.5, 3.5, 6.5, 7.5, 3.5

Range \_\_\_\_\_ Mode \_\_\_\_\_ Median \_\_\_\_\_