Lesson 1 Whole Numbers and Powers of 10

Problem Solving: Reading Data and Graphs

Whole Numbers and Powers of 10

Vocabulary
base-10

What is a base-10 number system?

Our number system is a **base-10** number system. We see this by using a place-value chart.

In a base-10 number system, each place value is a multiple of 10.

Millions			Thousands			Ones		
Hundred millions	Ten millions	Millions	Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Ones
			9	6	8	2	5	3

Let's look at the value of each digit of the number 968,253.

	968,253
9 represents	900,000
6 represents	60,000
8 represents	8,000
2 represents	200
5 represents	50
3 represents	3

How do we break down numbers to powers of 10?

A systematic way to break down a number to a power of 10 is to break it down to 10s, 100s, and 1,000s. Example 1 shows how to rewrite numbers that are in the thousands using a power of 10. This means if you divide the number by 10, there is no remainder.

Example 1

Rewrite the numbers using a power of 10.

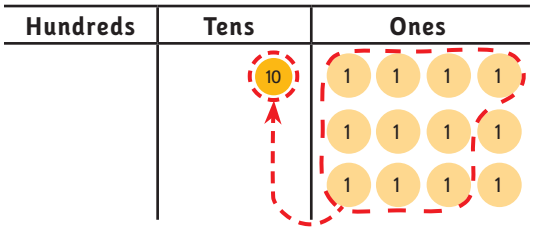
	_____ • 10	_____ • 100	_____ • 1,000
1,000	100 • 10	10 • 100	1 • 1,000
7,000	700 • 10	70 • 100	7 • 1,000
9,000	900 • 10	90 • 100	9 • 1,000

Each number can be divided by a power of 10 with no remainder.

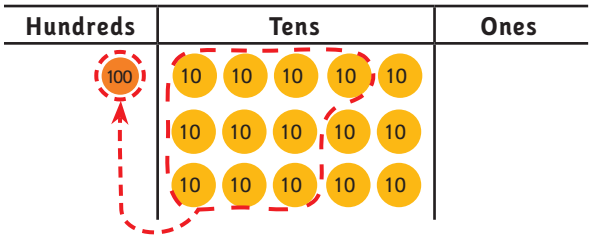
Understanding the place-value system will help when regrouping. Example 2 shows how 10 ones are regrouped to make one 10 using place-value coins. We also see 10 tens regrouped to make one 100. This process goes on forever.

Example 2

Use place-value coins to show regrouping.



Ten 1s regrouped into one 10



Ten 10s regrouped into one 100

Apply Skills
Turn to ***Interactive Text***, page 2.

mBook Reinforce Understanding
Use the ***mBook Study Guide*** to review lesson concepts.

Problem Solving: Reading Data and Graphs

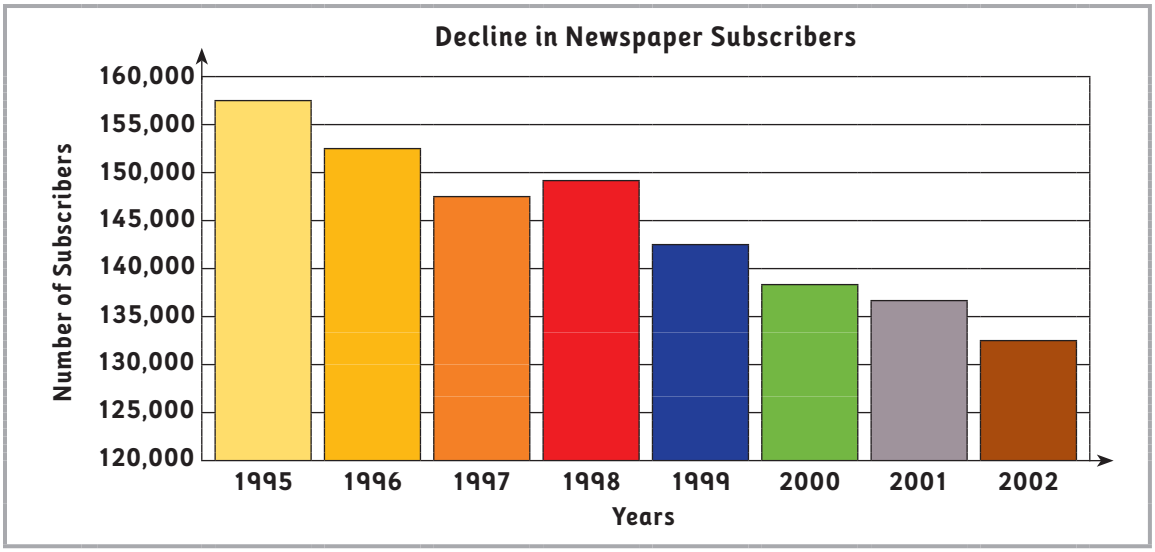
Vocabulary
bar graph trend

How do we use bar graphs to display data?

We use **bar graphs** to display data. Bar graphs show data using colored blocks, or bars, and are an effective way to show relationships and **trends** over time. Remember that trends are patterns we see in a graph.

The following bar graph shows changes in the number of people who have subscribed to a newspaper. The graph shows two things:

- The number of subscribers in each year.
- Trends over time.



We can compare different years to see if one year has more subscribers than another year. We can see the trend over time. In this graph, the number of newspaper subscribers is going down.

Problem-Solving Activity
Turn to ***Interactive Text***, page 3.

mBook Reinforce Understanding
Use the ***mBook Study Guide*** to review lesson concepts.

Homework

Activity 1

Tell the value of the underlined digit in each number.

1. 60<u>4</u>,250
2. 13,<u>8</u>71
3. 2,0<u>9</u>8,473
4. 1<u>0</u>7
5. 55,3<u>4</u>1
6. 4,300,<u>0</u>01

Activity 2

Fill in the missing numbers in the table.

Starting Number	_____ • 10	_____ • 100	_____ • 1,000
6,000	600 · 10	60 · 100	6 · 1,000
8,000	(a)	(b)	(c)
(d)	(e)	(f)	4 · 1,000
(g)	(h)	30 · 100	(i)
(j)	700 · 10	(k)	(l)
9,000	(m)	(n)	(o)

Activity 3 • Distributed Practice

Solve.

1. $\begin{array}{r} 367 \\ +\ 209 \\ \hline \end{array}$
2. $\begin{array}{r} 478 \\ -\ 229 \\ \hline \end{array}$
3. $\begin{array}{r} 76 \\ \times\ \ 4 \\ \hline \end{array}$
4. $\begin{array}{r} 87 \\ \times\ \ 9 \\ \hline \end{array}$
5. $3\overline{)663}$