

Understand Place Value



Dear Family,

This week your child is exploring place value in numbers.

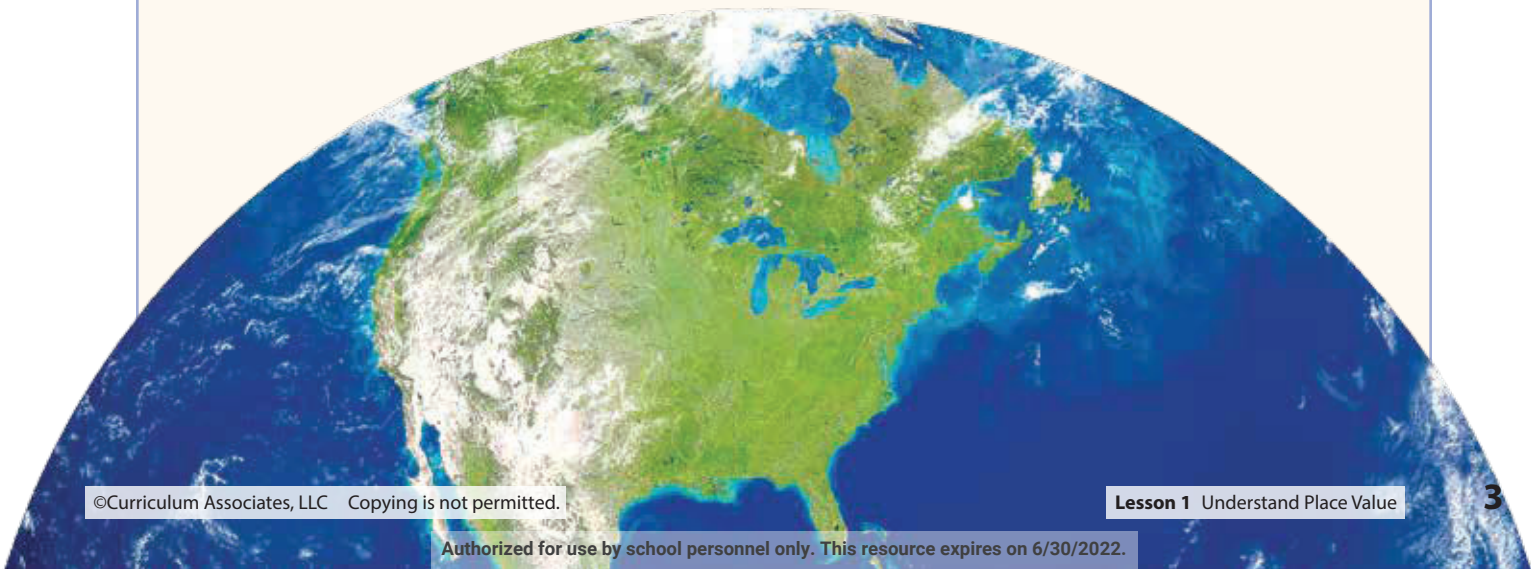
Our number system is based on a pattern of tens. The value of a digit in a number is based on the place where the digit appears in the number.

A digit in one place has 10 times the value that the same digit would have in the place to its right.

Thousands Period			Ones Period		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
7	4	2	5	5	9

This number in standard form:	742,559
This number in word form:	Seven hundred forty-two thousand, five hundred fifty-nine
This number in expanded form:	$700,000 + 40,000 + 2,000 + 500 + 50 + 9$

Invite your child to share what he or she knows about place value by doing the following activity together.



ACTIVITY PLACE VALUE

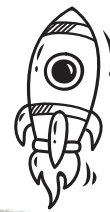
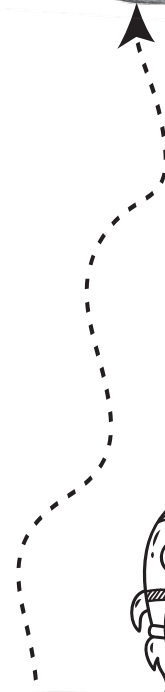
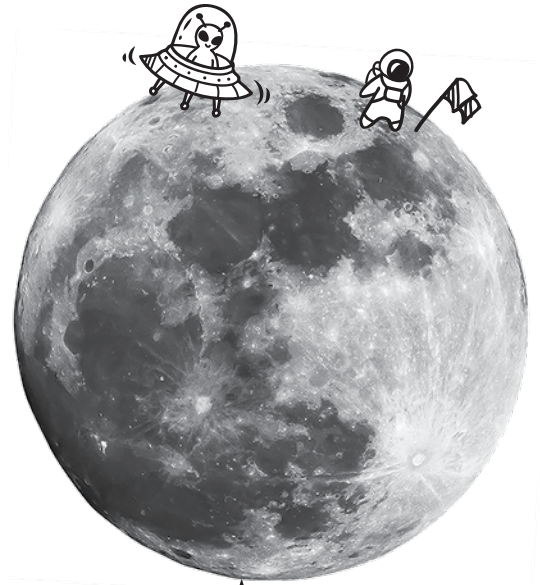
Do this activity with your child to explore place value.

The distance from Earth to the moon is about 238,855 miles.

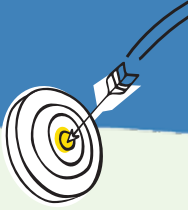
This number in standard form: 238,855.

This number in word form: two hundred thirty-eight thousand, eight hundred fifty-five.

- Write the number 238,855 on a sheet of paper. Show your child the number and have your child read the number aloud in word form (two hundred thirty-eight thousand, eight hundred fifty-five).
- Cover the standard form of the number so that your child cannot see it. Read the number aloud (in word form) and have your child write the number in standard form.
- Now have your child write a six-digit number in standard form without showing you the number. Then have your child tell you the number in word form while you write it in standard form.
- Compare the number you wrote with the number your child wrote.
- Repeat this activity several times, alternating between you and your child giving the six-digit number.



Explore Place Value



Learning Targets

- Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.
- Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.

SMP 1, 2, 3, 4, 5, 6, 7

What exactly does place value mean?



MODEL IT

Complete the statements below.

- 1 You can use place-value charts to understand greater numbers. Place value is the value of a digit based on its position in a number. You have seen place-value charts for numbers up to 999. Look at the chart showing 11,111.

Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
	1	1	1	1	1

Describe how each place is related to the place next to it.

- 10 ones is 1
 - 10 tens is 1
 - 10 hundreds is 1
 - 10 is 1 ten thousand.
- 2 Use the number in the place-value chart to solve the problems.

Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
		3	3	3	3

- The 3 in the tens place has a value of
- The 3 in the tens place has a value that is times the value of the 3 in the place.



DISCUSS IT

- Do you and your partner see the same pattern in place values next to each other?
- I think each place value is related to the one next to it because ...

MODEL IT

Complete the statements below.

- 3 Numbers with more than three digits have a comma to separate groups of three digits. Digits in groups of three places are called **periods**.

Thousands Period			Ones Period		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
4	6	7	8	8	2

Write the number shown above in **standard form** (the way you usually see it).

..... /

- 4 Use expanded form and word form to understand greater numbers.

a. To say or write the **word form** of a number, you read each group of three digits followed by the period name. You do not say the period name for the ones period.

The word form for the number you wrote in problem 3 is:

four hundred sixty-seven

.....

b. Expanded form is a way to write a number to show the place value of each digit. Complete the expanded form below for the number in the place-value chart above.

.....00,000 +0,000 + ,000 +00 +0 +

5 REFLECT

How are the standard form, word form, and expanded form of a number alike and different?

.....

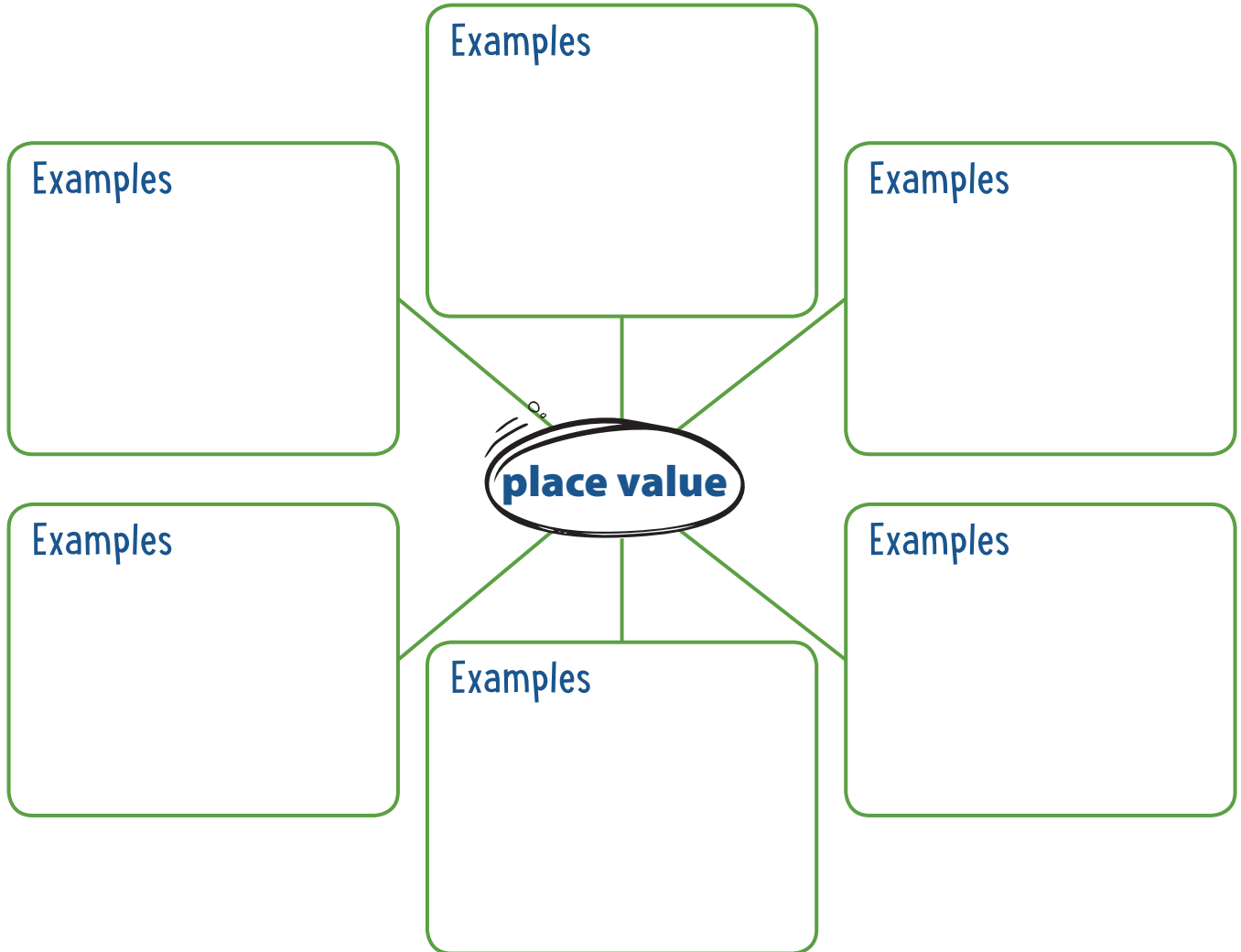


DISCUSS IT

- How did you and your partner decide how to complete the word form and expanded form of the number?
- A place-value chart helps you read numbers because ...

Prepare for Place Value

- 1 Think about what you know about place value. Fill in each box. Use words, numbers, and pictures. Show as many ideas as you can.



- 2 Circle a digit in the place-value chart. What is the value of the circled digit?

Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
1	5	6	8	9	3

Solve.

- 3 Numbers with more than three digits have a comma to separate groups of three digits. Digits in groups of three places are called periods.

Thousands Period			Ones Period		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
2	8	4	3	7	1

Write the number shown above in standard form (the way you usually see it).

.....,

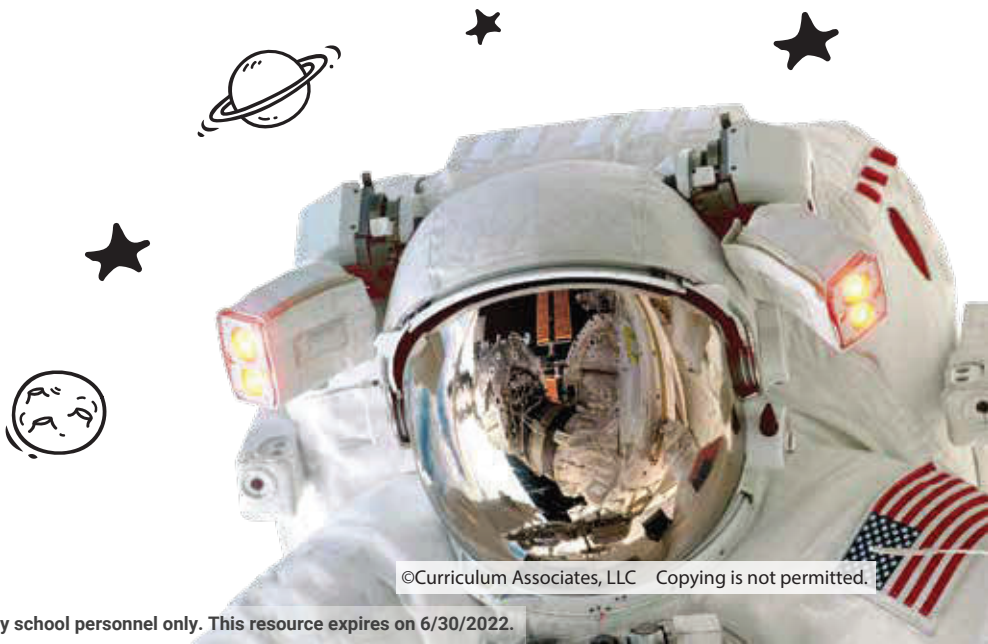
- 4 Use expanded form and word form to understand greater numbers.
- a. To say or write the word form of a number, you read each group of three digits followed by the period name. You do not say the period name for the ones period.

Complete the word form for the number you wrote in problem 3.

two hundred eighty-four,

- b. Expanded form is a way to write a number to show the place value of each digit. Complete the expanded form below for the number in the place-value chart above.

.....00,000 +0,000 + ,000 +00 +0 +



Develop Understanding of Place Value

MODEL IT: PLACE-VALUE CHARTS

Try these two problems.

- 1 Use a place-value chart to think about greater numbers.
 - a. Write the number 25,049 in the place-value chart.

Thousands Period			Ones Period		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

- b. Write the value of each digit.

2:

4:

5:

9:

0:

- 2 Think about how the values of the digits change from problem 1.
 - a. Write the number 250,490 in the place-value chart.

Thousands Period			Ones Period		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

- b. Write the value of each digit.

2:

4:

5:

9:

0:

0:



DISCUSS IT

- Describe how the values of the digits 2, 5, 0, 4, and 9 in problem 2 compare to their values in problem 1.
- I think a place-value chart helps you understand numbers because . . .

MODEL IT: EXPANDED FORM

Use expanded form to understand place value.

- 3 Complete to show the expanded form of 25,049.

$$25,049 = \dots\dots \text{ten thousands} + \dots\dots \text{thousands} + \dots\dots \text{hundreds} + \\ \dots\dots \text{tens} + \dots\dots \text{ones}$$

- 4 Complete to show different ways you can expand and show 25,049.

$$25,049 = \dots\dots \text{thousands} + \dots\dots \text{hundreds} + \dots\dots \text{tens} + \dots\dots \text{ones}$$

$$25,049 = \dots\dots \text{thousands} + \dots\dots \text{ones}$$

$$25,049 = \dots\dots\dots \text{ones}$$



DISCUSS IT

- How does each of the ways in problem 4 show 25,049?
- I think you can show numbers in different ways because . . .

CONNECT IT

Complete the problems below.

- 5 What do the expanded form and a place-value chart tell you about a number such as 25,049? How are they alike and different?

- 6 Complete the expanded form of each number. Think about the value of each digit to help you.

a. $40,389 = 40,000 + 300 + \dots\dots + \dots\dots$

b. $682,902 = \dots\dots\dots + \dots\dots\dots + \dots\dots\dots + \\ \dots\dots\dots + \dots\dots$

Practice Using Place Value

Study how the Example uses a place-value chart to show the value of the digits in a number. Then solve problems 1–9.

EXAMPLE

Look at the place-value chart below. What is the value of the 3?

Then use place value to explain the value of the 3 if it were in the ten-thousands place.

Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
2	0	3	5	5	4

Standard form: 203,554

Expanded form: $200,000 + 3,000 + 500 + 50 + 4$

Word form: two hundred three thousand, five hundred fifty-four

The 3 is in the thousands place, so it has a value of 3,000.

If 3 were in the ten-thousands place, its value would be 30,000.

- 1 Write 70,681 in the place-value chart at the right.

Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

- 2 Write 70,681 in expanded form and word form.

- 3 What would be the value of 7 if it were in the thousands place?

- 4 What is the value of the 6 in 70,681? Explain how you know.

5 Write six hundred ten thousand, twenty-nine in standard form.

6 Write 44,910 in expanded form. Do any digits in the number have a value 10 times the value of another digit? Explain.

7 Show some different ways you can make 7,502.

..... hundreds + tens + ones

..... tens + ones

..... ones

8 What are three different ways to make the number 15,638 with only hundreds, tens, and ones?

9 Solve the following riddle:

I have 30 ones, 2 thousands, 4 hundred thousands, 60 tens, and 100 hundreds.
What number am I?

Show your work.

Refine Ideas About Place Value

APPLY IT

Complete these problems on your own.

1 EXPLAIN

Emma wrote thirty-six thousand, forty-two as 3,642. Explain what she did wrong. Then write the number correctly.



2 DEMONSTRATE

Suppose you only have hundreds, tens, and ones blocks. What are two different ways you could make the number 1,718?

3 COMPARE

Write 55,555 in expanded form. How does the value of each 5 compare to the value of the 5 to its right?

PAIR/SHARE

Discuss your solutions for these three problems with a partner.

Use what you have learned to complete problem 4.

4 You are playing a game that includes the following cards.



Part A Choose six cards. Circle the cards you choose.

- i Make the greatest number possible using each card once.
Write your answer in standard form and expanded form.

Standard Form:

Expanded Form:

- ii Make the least number possible using the same six cards.
If you have a 0 card, do not use it as the first digit.
Write your answer in standard form and expanded form.

Standard Form:

Expanded Form:

Part B Look at the standard form of your answers to Part A. Circle a digit that you used in both numbers. Did the value of the digit change between the two numbers? Explain.

5 MATH JOURNAL

Choose a six-digit number. Write the number in standard form, expanded form, and word form.