

## General Information

### Lesson Parts & Duration

Total Duration: 1 hour

- Place Value: Writing Numbers in Expanded Form

### Subject(s)

- Place Value Through the Hundred- Thousands Place: Value of Digits; Expanded Form (4.NBT.2a)

### Objective

- Students will write numbers in expanded form through the hundred-thousands place.
- Students will use expanded form to explain place value through the hundred-thousands place.

### Materials

- blank paper (graph paper if possible)
- pencils
- document camera or whiteboard
- **Optional:** printable “Exit Slip” (page 6)
- **Optional:** printable “Place Value: Expanded Form” (page 7)
- **Optional:** printable “Break Up Your Day” brain/movement break ideas (page 8)

### Instructional Setting

- Students should be seated with or near another student for partner work.

#### Throughout this lesson, you will find:

- ☀ **Scripted Text** indicates things that need to be said directly. Bullets starting with a “T” followed by *italicized* type indicate scripted text
- ☀ **Clarifiers** within scripted text are in orange
- ☀ **Teacher Directions** indicate things you should be doing
- ☀ **Side notes** provide helpful hints, ELL strategies, differentiation and information
- ☀ **Break Up Your Day** (Brain/Movement Breaks) are in green boxes (at the end)

#### Remember!

Quality over quantity. All components do not have to be accomplished; lessons may be ended at any time and resumed later.

## Instructional Plan: 60 minutes

### Introduction

- T** All digits have a “place” which shows the digit’s quantity. Numbers can be compared when you know the digit’s place value.
- T** Place value happens in real life.
- T** For example, if you had 9 one dollar bills, 7 ten dollar bills, and 5 one-hundred dollar bills you could count the bills in their place values and calculate the amount of cash.
- T** 1-hundred-dollar bill has a value of \$100, so 5 one-hundred dollar bills has a value of \$500.
- T** 1 ten-dollar bill has the value of \$10, so 7 ten-dollar bill have a value of \$70
- T** And finally, a 1 dollar bill has a value of \$1, so 9 one dollar bills have a value of \$9 9
- T** If I were to add all of those up, how much money would I have? **Call on students. Answer \$579.**
- T** I would have \$579, we were able to figure that out by adding all the values together.
- T** Today we will be using what we know about place value and how it affects the value of a digit in a number to write out numbers in expanded value form.

### Setting up the Paper

**Pass out a piece of paper to each student. Graph paper if possible to help in creating a place value chart.**

- T** Write your name and date in the top right hand corner of your paper. **See example & model so students can follow.**
- T** Then title your paper “Place Value” and below it write: “I can read and write whole numbers and put them in expanded form.” **See example & model so students can follow.**
- T** Next, we will define 2 key vocabulary terms.
- T** The first is expanded form.
- T** We will define this as: “write a number to show the value of each digit.” **See example & model so students can follow.**
- T** The next important term is digit.
- T** A digit is any number 0 to 9. **See example & model so students can follow.**
- T** Only 1 digit fits in each place on a place value chart.
- T** Let’s write an example number to start with, please write the number 145,206. **See example & model so students can follow.**
- T** We are going to start by creating a place value chart through the hundred-thousands place. **See example & model so students can follow.**
- T** This is going to help us to determine the value of different digits within a number.

**Allow time for students to complete their chart on their notes page before moving on. Monitor students and provide assistance as needed.**

Place Value						Name & Date
I can read and write whole numbers in expanded form.						
<b>Expanded Form</b> write a number to show the value of each digit.						
<b>Digit:</b> Any number 0 to 9						
<b>Example:</b> 145, 206						
Hundred-Thousands	Ten-Thousands	Thousands	,	Hundreds	Tens	Ones
1	4	5		2	0	6

- T** Now that we have created our place value chart, let's see if you can place the digits from the number 145,206 in the correct places on this chart.
- T** Raise your hand once you have put your numbers on your chart so that I can quickly check your work.
- T** Remember, only 1 digit can be in each place.

**Allow time for students to complete filling in the numbers on their place value chart. Check their work once they raise their hand and provide assistance as needed.**

- T** Now starting in the ones place we will use one new row per digit to identify the value.

- T** Let me show you what I mean.

- T** There is a 6 in the ones place, what is the value of the digit 6 if it is in the ones place? **Call on a student.**

**Answer: The value is 6.**

- T** Let's record a 6 on the next row. **See example & model so students can follow.**

- T** There is a 0 in the ones place, what is the value of the digit 0 if it is in the tens place? **Call on a student.**

**Answer: The value is 0.**

- T** Let's record a 0 in the tens place and a 0 in the ones place on the next row. **See example & model so students can follow.**

- T** There is a 2 in the hundreds place, what is the value of the digit 2 if it is in the hundreds place? **Call on a student.** **Answer: The value is 200.**

- T** Let's record a 2 in the hundreds place, a 0 in the tens place and a 0 in the ones place on the next row. **See example & model so students can follow.**

- T** There is a 5 in the thousands place, what is the value of the digit 5 if it is in the thousands place? **Call on a student.** **Answer: The value is 5,000.**

- T** Let's record a 5 in the thousands place, then a comma, a 0 in the hundreds place, a 0 in the tens place and a 0 in the ones place on the next row. **See example & model so students can follow.**

- T** There is a 4 in the ten-thousands place, what is the value of the digit 4 if it is in the ten-thousands place? **Call on a student.** **Answer: The value is 40,000.**

- T** Let's record a 4 in the ten-thousands place, a 0 in the thousands place, then a comma, a 0 in the hundreds place, a 0 in the tens place and a 0 in the ones place on the next row. **See example & model so students can follow.**

- T** There is a 1 in the hundred-thousands place, what is the value of the digit 1 if it is in the hundred-thousands place? **Call on a student.** **Answer: The value is 100,000.**

- T** Let's record a 1 in the hundred-thousands place, a 0 in the ten-thousands place, a 0 in the thousands place, then a comma, a 0 in the hundreds place, a 0 in the tens place and a 0 in the ones place on the next row. **See example & model so students can follow.**

- T** Now we have identified the value of each digit in our number.

- T** Turn and tell a person next or near you what pattern you notice when looking at each of these values.

**Allow time for students to discuss with a partner. Monitor students and ensure they are on topic.**

- T** Who would like to share the pattern that they noticed with the class? **Call on students to share.** **Answer: the digits to the right are all 0's.**

- T** So, we can notice that the digits to the right of the one we are addressing become a 0.

- T** When we are writing out a number in expanded form, we are simply pulling the number apart digit by digit, but still showing that all the values go together by writing it as an addition problem.

- T** On our chart, you may have noticed we started in the ones place.

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I can read and write whole numbers in expanded form.						
<b>Expanded Form</b> write a number to show the value of each digit.						
<b>Digit:</b> Any number 0 to 9						
<b>Example:</b> 145, 206						
Hundred-Thousands	Ten-Thousands	Thousands	,	Hundreds	Tens	Ones
1	4	5		2	0	6
						6
					0	0
				2	0	0
		5	,	0	0	0
	4	0	,	0	0	0
1	0	0	,	0	0	0

- T** When we are writing a number in expanded form, we always start at the greatest or largest value and work our way down to the least or smallest value.
- T** So, in this case we will start in the hundred-thousands place.
- T** Below our chart, let's use the values of each digit we just identified to create an addition problem.
- T** Let's all write the number "145, 206 =" below our chart. **See example & model so students can follow.**
- T** Starting in the hundred-thousands place, what is the first value in our addition problem to show expanded form? **Call on a student. Answer: 100,000.**
- T** Next, we will write a plus sign and then move to the next digit to the right, which is the 4.
- T** What as the value of the digit in the ten-thousands place? **Call on a student. Answer: 40,000.**
- T** Please write down 40,000 and then a plus sign.
- T** Now we need to indicate the value of the digit in the thousands place.
- T** What is the value of the digit in the thousands place? **Call on a student. Answer: 5,000.**
- T** Please write down 5,000 and then a plus sign.
- T** Moving over another place to the right we have the hundreds place.
- T** What is the value of the digit in the hundreds place? **Call on a student. Answer: 200**
- T** Please write down 200 and then a plus sign.
- T** Now, onto the tens place, what is the value of the digit in the tens place? **Call on a student. Answer: 0**
- T** To record this we can either write a 0 in our equation or we can skip that place.
- T** Last, we need to write the value of the digit in the ones place.
- T** What is the value of the 6 in the ones place?
- T** Please write down 6.
- T** So, the expanded form for 145,206 should look like "145,206 = 100,000 + 40,000 + 5,000 + 200 + 6."

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I can read and write whole numbers in expanded form.						
<b>Expanded Form</b> write a number to show the value of each digit.						
<b>Digit:</b> Any number 0 to 9						
<b>Example:</b> 145, 206						
Hundred-Thousands	Ten-Thousands	Thousands	,	Hundreds	Tens	Ones
1	4	5		2	0	6
						6
					0	0
				2	0	0
		5	,	0	0	0
	4	0	,	0	0	0
1	0	0	,	0	0	0
145,206 = 100,000 + 40,000 + 5,000 + 200 + 6						

## Value of Digits and Expanded Form Practice

- T** We will need a partner for to help us practice.
- T** Please count up the number of letters in your first name.
- T** I would like you to find a partner whose name has the same amount of letters.
- T** If you are unable to find a partner I will pair you up.

**Allow students to find a partner, if they are unable to find a partner, simply pair them up. You may need to check in with the partners to be sure they really found someone with the same number of letters and they are not just picking someone they would like to work with.**

- T** With your partner, you will practice identifying values of digits within a number and writing numbers in expanded form.

**Pass out the "Place Value: Expanded Form" sheet to each student or project it for students to copy onto a sheet of blank paper. Allow 10-15 minutes to complete. If time allows you may want to review the answers as a whole class before moving onto the assessment component.**

### Differentiation:

**Struggling Students:** Pull groups of students who are having difficulty and work with them as a small group.

**Early Finishers:** Have them flip their papers over any test their partner on the value of digits in different numbers.

Name: **ANSWER KEY** Date: \_\_\_\_\_

**Place Value: Expanded Form**

**Directions:** Expand the number in bold by indicating the value of each digit.

	Digit	=	Hundred-Thousand's Place	+	Ten-Thousand's Place	+	Thousand's Place	+	Hundred's Place	+	Ten's Place	+	One's Place
1)	<b>6,243</b>	=	0	+	0	+	6,000	+	200	+	40	+	3
2)	<b>78,258</b>	=	0	+	<b>70,000</b>	+	8,000	+	<b>200</b>	+	<b>50</b>	+	<b>8</b>
3)	<b>14,583</b>	=	<b>0</b>	+	10,000	+	<b>4,000</b>	+	<b>500</b>	+	<b>80</b>	+	<b>3</b>
4)	<b>5,902</b>	=	<b>0</b>	+	<b>0</b>	+	<b>5,000</b>	+	<b>900</b>	+	<b>0</b>	+	<b>2</b>
5)	<b>189,242</b>	=	100,000	+	<b>80,000</b>	+	<b>9,000</b>	+	<b>200</b>	+	<b>40</b>	+	<b>2</b>
6)	<b>25,081</b>	=	<b>0</b>	+	<b>20,000</b>	+	<b>5,000</b>	+	<b>0</b>	+	<b>80</b>	+	<b>1</b>
7)	<b>3,002</b>	=	<b>0</b>	+	<b>0</b>	+	<b>3,000</b>	+	<b>0</b>	+	<b>0</b>	+	<b>2</b>
8)	<b>986,437</b>	=	<b>900,000</b>	+	<b>80,000</b>	+	<b>6,000</b>	+	<b>400</b>	+	<b>30</b>	+	<b>7</b>
9)	<b>39,161</b>	=	<b>0</b>	+	<b>30,000</b>	+	<b>9,000</b>	+	<b>100</b>	+	<b>60</b>	+	<b>1</b>
10)	<b>763,322</b>	=	<b>700,000</b>	+	<b>60,000</b>	+	<b>3,000</b>	+	<b>300</b>	+	<b>20</b>	+	<b>2</b>

\*You may use the exit slip at the end of this lesson as a quick assessment of student understanding. Either print them out (page 6), or simply have students copy the problems on a half sheet of paper.



Now is a great time to take a break and get students re-energized.  
See our list of engaging movement and brain break ideas to get your students moving and ready to refocus! (see page 8)

Name: **ANSWER KEY** Date: \_\_\_\_\_

**Exit Slip:**

**Place Value: Expanded Form**

**Directions:** Expand the number in bold to indicate the value of each digit.

		=	Hundred - Thousand's Place	+	Ten-Thousand's Place	+	Thousand's Place	+	Hundred's Place	+	Ten's Place	+	One's Place
1)	<b>595,300</b>	=	<b>500,000</b>	+	<b>90,000</b>	+	<b>5,000</b>	+	<b>300</b>	+	<b>0</b>	+	<b>0</b>
2)	<b>89,724</b>	=	<b>0</b>	+	<b>80,000</b>	+	<b>9,000</b>	+	<b>700</b>	+	<b>20</b>	+	<b>4</b>
3)	<b>323,185</b>	=	<b>300,000</b>	+	<b>20,000</b>	+	<b>3,000</b>	+	<b>100</b>	+	<b>80</b>	+	<b>5</b>
4)	<b>5,902</b>	=	<b>0</b>	+	<b>0</b>	+	<b>5,000</b>	+	<b>900</b>	+	<b>0</b>	+	<b>2</b>

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Exit Slip:

**Place Value: Expanded Form**

**Directions:** Expand the number in bold to indicate the value of each digit.

		=	Hundred - Thousand's Place	+	Ten- Thousand's Place	+	Thousand's Place	+	Hundred's Place	+	Ten's Place	+	One's Place
1)	<b>595,300</b>	=		+		+		+		+		+	
2)	<b>89,724</b>	=		+		+		+		+		+	
3)	<b>323,185</b>	=		+		+		+		+		+	
4)	<b>5,902</b>	=		+		+		+		+		+	

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Exit Slip:

**Place Value: Expanded Form**

**Directions:** Expand the number in bold to indicate the value of each digit.

		=	Hundred - Thousand's Place	+	Ten- Thousand's Place	+	Thousand's Place	+	Hundred's Place	+	Ten's Place	+	One's Place
1)	<b>595,300</b>	=		+		+		+		+		+	
2)	<b>89,724</b>	=		+		+		+		+		+	
3)	<b>323,185</b>	=		+		+		+		+		+	
4)	<b>5,902</b>	=		+		+		+		+		+	

Name: \_\_\_\_\_ Date: \_\_\_\_\_

### Place Value: Expanded Form

**Directions:** Expand the number in bold by indicating the value of each digit.

	Digit	=	Hundred- Thousand's Place	+	Ten- Thousand's Place	+	Thousand's Place	+	Hundred's Place	+	Ten's Place	+	One's Place
1)	<b>6,243</b>	=	0	+	0	+	6,000	+	200	+	40	+	3
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3)	<b>14,583</b>	=		+	10,000	+		+		+		+	
4)	<b>5,902</b>	=		+		+		+		+		+	
5)	<b>189,242</b>	=	100,000	+		+		+		+		+	
6)	<b>25,081</b>	=		+		+		+		+		+	
7)	<b>3,002</b>	=		+		+		+		+		+	
8)	<b>986,437</b>	=		+		+		+		+		+	
9)	<b>39,161</b>	=		+		+		+		+		+	
10)	<b>763,322</b>	=		+		+		+		+		+	

## Make sure to “Break Up Your Day!”

These can be used in the middle of a lesson or at the end of your lesson.

Here are a few engaging movement and brain break ideas to get your students moving and ready to refocus!



### Break Up Your Day: Notation Kid!



- Challenge students to write as many expanded notation 5-digit numbers (to the ten thousands place) as possible in one minute. (example:  $15,432 = 10,000 + 5,000 + 400 + 30 + 2$ , etc.)
- Students trade papers with a shoulder buddy and the buddy counts the correct expanded notations.
- Whoever has the most correct expanded notations may share their facts with the class (if document camera is available) or they simply become the new Notation Kid!



### Break Up Your Day: Math Outside



- Students take scratch paper/pencil and find inverse operations outside.
- Students draw and label objects that can be expanded. (examples: 24 trees =  $20 + 4$ , 118 students =  $100 + 10 + 8$ , etc.)



### Break Up Your Day: Thumbs Up!



- Student is called on to state their favorite number from 1 to 20, use name cards or equity cards if available.
- Other students signify whether they see that number somewhere in the classroom.
- Tally their responses.
- The number with the most votes or Thumbs Up is the winner for the activity!