

Grade 4 · Place Value to One Million · Lesson

Common Core 4.NBT.A.1, 4.NBT.A.2 · mathovore.fr

Place value means the value of a digit depends on where it sits in a number. Each place is worth ten times the place to its right, so in 345,678 the digit 3 stands for 300,000. Grade 4 students use place value to read, write, and compare whole numbers up to 1,000,000.

Grade 4 Common Core: 4.NBT.A.1 · 4.NBT.A.2

Key facts:

- A digit in any place is worth 10 times as much as the same digit one place to its right.
- The places from right to left are ones, tens, hundreds, thousands, ten thousands, hundred thousands, and millions.
- A number can be written as a numeral, as a number name, and in expanded form.
- To compare two numbers, find the first place from the left where the digits differ.
- Ten hundred thousands make one million, written 1,000,000.

What is place value?

Every digit in a number has a value that depends on its **place**. Look at 345,678. The digit 3 sits in the hundred thousands place, so it is worth 300,000. The digit 4 is in the ten thousands place, so it is worth 40,000.

Thousands period			Ones period		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
3	4	5	6	7	8
300,000	40,000	5,000	600	70	8

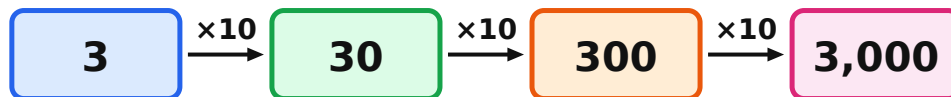
The digit 3 sits in the hundred thousands place, so it is worth 300,000.

Place value

Place value is the value of a digit because of where it sits in a number. The places, from right to left, are ones, tens, hundreds, thousands, ten thousands, hundred thousands, and millions. A group of three places is a **period**: the ones period, the thousands period, and the millions period.

How does each place compare with the place next to it?

A digit in one place is worth **10 times** as much as the same digit one place to its right. Three ones is 3. Move the 3 one place left and it becomes 3 tens, or 30. Move it again and it becomes 300.



Each step to the left makes the value 10 times as great.

The same rule works inside one number. In 7,700 the left 7 is worth 7,000 and the right 7 is worth 700. Since $700 \times 10 = 7,000$, the left 7 is 10 times as much as the right 7.

Thousands period			Ones period		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
		7	7	0	0

The left 7 is in the thousands place. The right 7 is in the hundreds place.

How do you read and write a multi-digit number?

A number can be written in three ways. Take 46,305.

Form	Example
Base-ten numeral	46,305
Number name	forty-six thousand three hundred five
Expanded form	$40,000 + 6,000 + 300 + 5$

Say the number in each period, then say the name of the period. A zero in a place means that place adds nothing, so it is skipped in the expanded form.

How do you compare two numbers?

1. Line up the two numbers by place value.
2. Start at the left, with the greatest place.
3. Find the first place where the digits are different.
4. The number with the greater digit in that place is the greater number.

Example. Compare 58,423 and 58,342. The ten thousands digits match (5 and 5) and the

thousands digits match (8 and 8). In the hundreds place, 4 is greater than 3. So $58,423 > 58,342$.

Thousands period			Ones period		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
	5	8	4	2	3
	5	8	3	4	2

Both numbers match until the hundreds place. There 4 is greater than 3.

A whole number with more digits is greater, because its leftmost digit is not zero. For example, 124,500 has six digits and 99,999 has five, so $124,500 > 99,999$. Use $>$, $<$, or $=$ to write the comparison.

Place Value to One Million: frequently asked questions

What is the value of a digit?

The value of a digit is the digit times its place. In 52,430, the 5 is in the ten thousands place, so its value is 50,000. The 3 is in the tens place, so its value is 30.

Why is each place worth ten times the place to its right?

Our number system groups by tens. Ten ones make one ten, ten tens make one hundred, and ten hundreds make one thousand. The pattern keeps going up to millions.

What is expanded form?

Expanded form writes a number as the sum of the value of each digit. For 8,206 it is $8,000 + 200 + 6$. A zero digit is left out because it adds nothing.

How do you compare numbers with different numbers of digits?

The number with more digits is greater, as long as neither starts with a zero. For example, 10,000 is greater than 9,999 because it has five digits and 9,999 has four.

How many hundred thousands make one million?

Ten hundred thousands make one million. In the same way, ten ten thousands make one hundred thousand, and ten thousands make ten thousand.