

Place Value and Rounding: math lesson, Grade 4 – download the PDF

How many fans fit in a stadium? How many people live in a big city? Numbers in the thousands and even in the hundred thousands are all around you. In this chapter you will learn how every digit gets its value from its position, how to read, write, compare and order big whole numbers, and how to **round** them to make quick, smart estimates.

1. Place value up to 1,000,000

D Place value

In our number system, the value of a digit depends on its **place** in the number. The digit 5 is worth 5 in the ones place, 50 in the tens place and 5,000 in the thousands place.

Our whole numbers are built from groups of three places called **periods**. The ones period holds the ones, tens and hundreds. The thousands period holds the thousands, ten thousands and hundred thousands. A comma separates the periods. The next place after hundred thousands is the **millions** place, so **1,000,000** is one million.

Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Ones
3	7	2	0	5	8
300,000	70,000	2,000	0	50	8
thousands period			ones period		

In **372,058**, the digit 3 is in the hundred thousands place, so it is worth **300,000**. The digit 0 in the hundreds place is a **placeholder**: it is worth 0, but it keeps the other digits in their correct places.

E

Example 1

What is the value of the digit 6 in **460,917**?

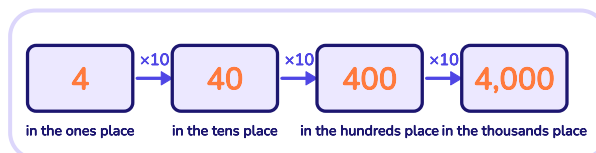
The digits from left to right are 4, 6, 0, 9, 1, 7, so the 6 is in the ten thousands place. Its value is $6 \times 10,000 = 60,000$.

2. The ten times relationship

P

Ten times rule

Each place is **10 times as much** as the place to its right, and one tenth of the place to its left. Moving one place to the left multiplies a digit's value by 10.



In the picture, the same digit 4 is worth 4, then 40, then 400, then 4,000. Each step to the left is a multiplication by 10. In the same way, the thousands place is 10 times the hundreds place, because $1,000 = 10 \times 100$.

E**Example 2**

In **88,000**, compare the two 8s.

The left 8 is in the ten thousands place: **80,000**. The right 8 is in the thousands place: **8,000**. Since **$80,000 = 10 \times 8,000$** , the left 8 is worth 10 times as much as the right 8.

**Careful!**

“10 times as much” is not the same as “10 more.” In **4,400**, the first 4 is worth **4,000** and the second 4 is worth **400**. The first is 10 times the second, not 10 more than it.

3. Standard form, word form and expanded form

A number can be written in three ways.

- **Standard form** uses digits: **306,420**.
- **Word form** uses words: three hundred six thousand, four hundred twenty.
- **Expanded form** shows the value of each digit as a sum: **$300,000 + 6,000 + 400 + 20$** .

M**How to read a big number**

1. Split the number into periods with the commas.
2. Read the number in the first period, then say the name of the period (thousand).
3. Read the ones period.
4. Do not say the word “and,” and use a hyphen for numbers from 21 to 99, as in twenty-three.

E**Example 3**

Write **723,049** in word form, then **90,805** in expanded form.

723,049 is seven hundred twenty-three thousand, forty-nine.

$90,805 = 90,000 + 800 + 5$. We skip the places that hold a zero.

4. Comparing numbers with $<$, $>$ and $=$

The symbol $<$ means “is less than,” $>$ means “is greater than,” and $=$ means “is equal to.” The open side of the symbol always faces the greater number.

M**How to compare**

1. Count the digits. A whole number with more digits is greater.
2. If both numbers have the same number of digits, line up the places and compare from the left.
3. The first place where the digits differ decides the answer.

E**Example 4**

Compare **48,319** and **48,391**.

Both have five digits. The ten thousands (4), the thousands (8) and the hundreds (3) match. In the tens place, 1 is less than 9. So **48,319 < 48,391**.

5. Ordering whole numbers

To order several numbers, compare them two at a time with the method above. We order from **least to greatest** (smallest first) or from **greatest to least** (largest first). A number line also helps: numbers farther to the right are greater.

E**Example 5**

Order **241,098**, **214,908**, **241,908** and **214,098** from least to greatest.

Two numbers start with 214 and two with 241, so the 214 numbers are smaller. Between **214,098** and **214,908**, the hundreds digit decides: 0 is less than 9. The same reasoning works for the 241 pair.

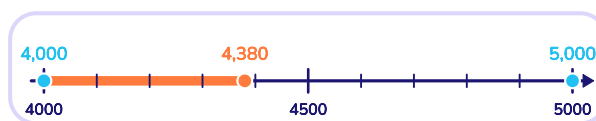
214,098 < 214,908 < 241,098 < 241,908.

6. Rounding to any place**D****Rounding**

To **round** a number is to replace it with a nearby number that ends in zeros at the place you choose. The result is close to the original but easier to use.

M**Rounding steps**

1. Find the place you are rounding to and underline its digit.
2. Look at the digit just to its **right**.
3. If that digit is 0, 1, 2, 3 or 4, keep the underlined digit. If it is 5, 6, 7, 8 or 9, add 1 to the underlined digit.
4. Change every digit to the right of the rounding place to 0.



On the number line, **4,380** sits between **4,000** and **5,000**. The midpoint is **4,500**. Because **4,380** is to the left of the midpoint, it is closer to **4,000**, so it rounds to **4,000** to the nearest thousand.

E**Example 6**

Round **748,560** to the nearest ten thousand.

The ten thousands digit is 4. The digit to its right is 8, which is 5 or more, so the 4 becomes 5. The digits after it become zeros: **750,000**.

A**When a 9 rounds up**

Round **7,962** to the nearest hundred. The hundreds digit is 9 and the tens digit is 6, so the 9 goes up to 10. That carries into the thousands: **7,962** rounds to **8,000**, not **7,100**.



Zyro's tip

Only look at ONE digit when you round: the one right next to the place you are rounding to. The digits farther right do not matter!

7. Estimating with rounding

Sometimes you do not need an exact answer. An **estimate** is a number close to the exact answer, and you can find it quickly by rounding the numbers first and then computing in your head. Estimates are also a great way to check that an exact answer is reasonable.



Example 7

Estimate $4,862 + 3,174$ by rounding to the nearest thousand.

$4,862 \approx 5,000$ and $3,174 \approx 3,000$, so the sum is about $5,000 + 3,000 = 8,000$. The exact sum is $8,036$, which is very close.



Example 8

Estimate $52,380 - 19,640$ to the nearest thousand.

$52,380 \approx 52,000$ and $19,640 \approx 20,000$, so the difference is about $52,000 - 20,000 = 32,000$. The exact difference is $32,740$.

The place you choose matters. Rounding to a bigger place is faster but less precise, while rounding to a smaller place takes more work but gives a closer estimate.

Key takeaways

- A digit's value depends on its place: in **372,058**, the 7 is worth **70,000**.
- Each place is 10 times the place to its right.
- Numbers can be written in standard form, word form and expanded form.
- To compare, count digits first, then compare from the left; use $<$, $>$ or $=$.
- To round, look at the digit to the right of the rounding place: 0 to 4 stays, 5 to 9 goes up, then write zeros.
- Round first, then compute, to estimate and to check answers.



Test yourself: quick challenge for Grade 4

[Change level](#)

Level : **Grade 4**

6 random questions, instant feedback.



Start the challenge



Speed drill for Grade 4: how many in 60 seconds?

 Keep exploring with Zyro

 Math practice

Place Value and Rounding: math practice, Grade 4

 Math tests

Place Value and Rounding: math test, Grade 4

 Math quizzes

Place Value and Rounding: math quiz, Grade 4

 Math practice

Adding and Subtracting Whole Numbers: math practice, Grade 4

 Math practice

 Math tests

Multiplicative Comparison and Factors:
math practice, Grade 4

Adding and Subtracting Whole
Numbers: math test, Grade 4

Zyro vous emmène sur nos sites partenaires

Embarquez pour d'autres planètes du savoir et leurs applis.

Décollage