

Place Value and Rounding: math lesson, Grade 3 – download the PDF

Every number you write is built from digits, and the spot where a digit sits tells you how much it is worth. In this chapter you will read, write, compare, order and round whole numbers up to 1,000 like a champion.

1. Digits and place value

We use only ten digits to write every number: 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9. A digit can be worth a little or a lot, depending on its **place**. In a three-digit number there are three places: the **hundreds** place, the **tens** place and the **ones** place.

D Place value

The **place value** of a digit is the value that the digit has because of its position in the number. Ten ones make one ten, ten tens make one hundred, and ten hundreds make one thousand (1,000).

Hundreds	Tens	Ones
4	7	2
$4 \times 100 = 400$	$7 \times 10 = 70$	$2 \times 1 = 2$

In the number 472, the 4 is in the hundreds place, so it is worth 400. The 7 is in the tens place, so it is worth 70. The 2 is in the ones place, so it is worth 2.

Digit	Place	Value
4	hundreds	$4 \times 100 = 400$
7	tens	$7 \times 10 = 70$
2	ones	$2 \times 1 = 2$



Same digit, different value

In 535, the two 5s are not worth the same. The first 5 is worth 500 and the last 5 is worth only 5. Always look at the place before you say how much a digit is worth.

2. Reading and writing numbers

To read a three-digit number, start on the left. Say the hundreds first, then the tens and ones together. To write a number in digits, put each part in its own place.



How to write a number from its name

1. Find the word “hundred” and write the digit before it in the hundreds place.
2. Write the tens and ones that come after it. For example, “sixty-four” means 6 tens and 4 ones.
3. If a place is not named, write 0 there. A zero is a **placeholder**: it keeps the other digits in the right places.

E**Example 1**

Write “seven hundred eight” in digits. There are 7 hundreds, no tens, and 8 ones, so the number is **708**. The zero in the tens place is a placeholder. Without it we would write 78, which is a very different number.

Now write 463 in words: **four hundred sixty-three**.

Remember that the numbers from 13 to 19 end in “-teen” and the tens end in “-ty”: twenty, thirty, forty, fifty, sixty, seventy, eighty and ninety. When you write a two-digit number from 21 to 99, put a hyphen between the tens word and the ones word, like “eighty-one”.

3. Expanded form

The **expanded form** of a number shows the value of each digit, added together. It breaks the number apart by place.

E**Example 2**

Write 806 in expanded form. The 8 is worth 800, the tens place holds a 0, and the 6 is worth 6.

$$806 = 800 + 0 + 6 = 800 + 6$$

Check: $800 + 6 = 806$. Yes, it matches.

You can also go the other way. If you see $300 + 50 + 9$, you can put each part in its place and read the number: **359**.

4. Comparing numbers

To compare two numbers, we use the symbols $<$ (is less than), $>$ (is greater than) and $=$ (is equal to).

M

How to compare two numbers

1. Line the numbers up, one place under the other.
2. Start on the left, at the biggest place, and compare those digits.
3. If they are different, the number with the larger digit is greater. If they are the same, move one place to the right and repeat.

E

Example 3

Compare 538 and 583. The hundreds are the same (5 and 5). Now look at the tens: 3 tens and 8 tens. Since $3 < 8$, we get **538** $<$ **583**. We can also write **583** $>$ **538**.

!

Zyro's tip

On my planet we say that the symbol is a hungry mouth: it always opens toward the greater number. So **583** $>$ **538** has its mouth open to 583!

5. Ordering numbers

To **order** numbers means to put them in a list. From **least to greatest**, the list starts with the smallest number. From **greatest to least**, it starts with the largest one.

E**Example 4**

Put 614, 164, 641 and 461 in order from least to greatest.

- The hundreds digits are 6, 1, 6 and 4. So 164 is the least, then 461, then the two numbers with 6 hundreds.
- Compare 614 and 641 by their tens: 1 ten < 4 tens, so **614 < 641**.

The order is **164, 461, 614, 641**.

6. Rounding to the nearest 10

Rounding means replacing a number by a nearby number that is easier to use. When you round to the nearest 10, you find the closest multiple of 10. This is useful when you only need an estimate.

M**How to round to the nearest 10**

1. Underline the digit in the tens place.
2. Look at the digit to its right, the ones digit.
3. If the ones digit is 0, 1, 2, 3 or 4, keep the tens digit and change the ones digit to 0. This is rounding **down**.
4. If the ones digit is 5, 6, 7, 8 or 9, add 1 to the tens digit and change the ones digit to 0. This is rounding **up**.



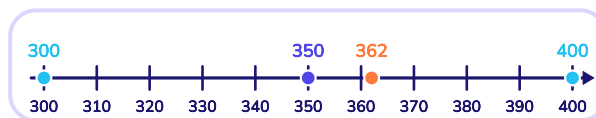
E**Example 5**

Round 347 to the nearest 10. The tens digit is 4 and the ones digit is 7. Since 7 is 5 or more, round up: 347 is closer to 350 than to 340, so 347 rounds to **350**.

Round 62 to the nearest 10: the ones digit is 2, so we round down to **60**. Round 998 to the nearest 10: the ones digit is 8, so we round up to **1,000**.

7. Rounding to the nearest 100

Rounding to the nearest 100 works the same way, but now you look at the **tens** digit. The number lands on a multiple of 100, such as 200, 300 or 900. A number exactly halfway between two hundreds, like 350, is rounded up.

**M****How to round to the nearest 100**

1. Underline the digit in the hundreds place.
2. Look at the tens digit to its right.
3. If the tens digit is 0 to 4, keep the hundreds digit. If it is 5 to 9, add 1 to the hundreds digit.
4. Write 0 in the tens and ones places.

P Rounding rule

A number rounds to the multiple of 10 (or 100) that is closest to it. When it is exactly halfway, we round up.

E Example 6

Round 362 to the nearest 100. The hundreds digit is 3, and the tens digit is 6. Since 6 is 5 or more, the 3 becomes 4: 362 rounds to **400**. The number line agrees, because 362 is to the right of the halfway point 350.

Round 438: the tens digit is 3, so the answer is **400**. Round 450: the tens digit is 5, so the answer is **500**. Round 951: the answer is **1,000**.

A Look at one digit only, and round only once

To round 349 to the nearest 100, look only at the tens digit, which is 4. The answer is 300. Do not round 349 to 350 first and then to 400, because rounding twice gives a wrong answer.

Number	Nearest 10	Nearest 100
283	280	300
715	720	700
450	450	500
996	1,000	1,000

Key takeaways

- The value of a digit depends on its place: in 472, the 7 is worth 70.
- Ten ones make a ten, ten tens make a hundred, and ten hundreds make 1,000.
- Expanded form shows each place value: **472 = 400 + 70 + 2**.
- To compare, start at the left and compare the first digits that differ.
- To round to the nearest 10, look at the ones digit. To round to the nearest 100, look at the tens digit.
- A digit of 0 to 4 rounds down, a digit of 5 to 9 rounds up.



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