

## G4 Playlist: Rounding Numbers

Aligns with *CCSS.MATH.CONTENT.4.NBT.A.3*: Use place value understanding to round multi-digit whole numbers to any place.

### Related Standards

- *CCSS.MATH.CONTENT.3.NBT.A.1*: Use place value understanding to round whole numbers to the nearest 10 or 100.
- *CCSS.MATH.CONTENT.4.NBT.A.1*: 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. For example, recognize that  $700 \div 70 = 10$  by applying concepts of place value and division.
- *CCSS.MATH.CONTENT.4.NBT.A.2*: 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.
- *CCSS.MATH.CONTENT.5.NBT.4*: Use place value understanding to round decimals to any place.



## Objectives

In this module, you will learn and practice the following skills:

- Apply understanding of place-value in multi-digit numbers.
- Round multi-digit numbers to any place.

Let's get started!

## Key Terms

- A digit's **place** is its position in a number.
- **Rounding** a number means to replace it with a number it is close to but easier to use.
- The **target place** is the place a number is rounded to.
- **Place value** is the value of a digit in a number based on its position in the number.



## Welcome

Sometimes it is important to use exact numbers. At other times, an estimate might be good enough. When you estimate, you use numbers that are close to the exact numbers, but are easier to work with. One way to estimate is to use round numbers. Rounding to places with greater values generally gives an estimate that is farther from the exact number, while rounding to places with lesser values generally gives an estimate that is closer to the exact number. You can round numbers to any place by thinking about which value the number is closer to.

Look at the number below. Is it closer to 320,000 or to 330,000?

326,548

In order to round numbers correctly, you will need to understand place value.

### Watch!

For a quick overview of rounding numbers, watch this video:

- <https://www.youtube.com/watch?v=SKGpMM55pIM>

### Focus: Place Value

**Place value** is the value of a digit based on its position in a number. Each place in a number has a value 10 times greater than the place to its right. Place-value charts can help you identify a particular place in a multi-digit number.

Find the value of each digit in 6,732,514.

Write the number in a place-value chart.

Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
6	7	3	2	5	1	4

- The 6 is in the millions place, so it is worth 6,000,000.
- The 7 is in the hundred thousands place, so it is worth 700,000.
- The 3 is in the ten thousands place, so it is worth 30,000.
- The 2 is in the thousands place, so it is worth 2,000.



- The 5 is in the hundreds place, so it is worth 500.
- The 1 is in the tens place, so it is worth 10.
- The 4 is in the ones place, so it is worth 4.

**Answers**

330,000

**Watch!**

For a quick overview of place value, watch this video:

- <https://www.youtube.com/watch?v=W9EgkmrLCL0>

How can you use place-value to round multi-digit numbers?

**Explore**

When you **round** a number, you replace it with a number it is close to but easier to use. You can round a multi-digit number to any **place**; for example, the nearest ten, hundred, thousand, million, and so on.

To round a number to a particular place, look at the digit to the right of that place. If the digit is 5 or greater, round up by increasing the digit in the target place by 1 and replacing the digits to the right with 0s. If the digit is less than 5, round down by keeping the digit in the **target place** and replacing the digits to the right with 0s.

On a number line, if the digit to the right of the target place is 5 or greater, the number is at least halfway to the next interval, so the number is rounded up because it is closer to the **place-value** of the next digit in the target place. If the digit to the right of the target place is less than 5, the number is less than halfway to the next interval, so the number is rounded down because it is closer to the place-value of the current digit in the target place.

For example, the number line shows the location of 46,293.



The point on the number line is closer to 46,000 than to 47,000, so 46,293 rounds to 46,000.



Take another look at the number from the beginning of the lesson.

326,548

How can you round this number to the nearest ten, hundred, thousand, ten thousand, hundred thousand and million?

Target Place	THINK:	Rounded Number
Tens	The place to the right of the tens place is the ones place. The digit in the ones place is 8. $8 > 5$ , so round up.	326,550
Hundreds	The place to the right of the hundreds place is the tens place. The digit in the tens place is 4. $4 < 5$ , so round down.	326,500
Thousands	The place to the right of the thousands place is the hundreds place. The digit in the hundreds place is 5. $5 = 5$ , so round up.	327,000
Ten thousands	The place to the right of the ten thousands place is the thousands place. The digit in the thousands place is 6. $6 > 5$ , so round up.	330,000
Hundred thousands	The place to the right of the hundred thousands place is the ten thousands place. The digit in the ten thousands place is 2. $2 < 5$ , so round down.	300,000
Million	The place to the right of the millions place is the hundred thousands place. The digit in the hundred thousands place is 3. $3 < 5$ , so round down.	0

### Watch!

For a more information about rounding numbers, watch these videos:

- <https://www.opened.com/video/rounding-whole-numbers-1-khan-academy/117619>
- <https://www.opened.com/video/rounding-whole-numbers-2-khan-academy/180936>
- <https://www.opened.com/video/rounding-whole-numbers-3-khan-academy/180970>
- <https://www.opened.com/video/rounding-numbers-using-the-number-line/48792>



**Practice!**

You can practice rounding numbers by completing these activities:

- <https://www.opened.com/homework/4-nbt-3-use-place-value-understanding-to-round-multi-digit/3690860?run=true>
- [https://www.khanacademy.org/math/pre-algebra/order-of-operations/rounding\\_whole\\_numbers/e/rounding\\_whole\\_numbers](https://www.khanacademy.org/math/pre-algebra/order-of-operations/rounding_whole_numbers/e/rounding_whole_numbers)
- <http://mrnussbaum.com/halfcourt>
- <http://mrnussbaum.com/thousand/>
- <https://www.opened.com/game/rounding-to-the-nearest-ten-thousand/213044>
- <https://www.opened.com/game/rounding-to-the-nearest-hundred-thousand/213045>
- <https://www.opened.com/game/rounding-to-the-nearest-million/213046>
- <https://www.ixl.com/math/grade-4/rounding>

