



**THIRD SPACE
LEARNING**

Math Intervention Pack

Reading and writing decimals
in numeral, word, and
expanded forms

Grade 5

How to use the resources

1. Title Slide

Use this slide to activate prior knowledge needed for lesson. Students should be encouraged to initially attempt the question presented independently.

2. Let's Learn

Use this slide to introduce the concept. Tutors should work with the student to explore the concept together, usually using diagrams to support understanding.

3. Follow Me + Your Turn

The tutor should work through the follow me slide, modeling the process and explaining their thinking out loud.

Students should use the your turn slide as an opportunity to work through a question similar to the follow me questions. They should apply the method modeled by the tutor in the follow me slide. Students should be encouraged to explain their thinking out loud.

4. You Do

Students should work through a range of questions that build in complexity.

Tutors can offer support but students should initially be encouraged to attempt these questions independently.

5. Go Further

Use this slide to allow students to apply their understanding to a more challenging question in an unfamiliar context.

6. Support for Slides

The support slide is used to support students during the lesson. In the tutor notes, there will be guidance as to when to use the support slide.

7. Check Your Understanding

Tutors should use this slide to assess the student's knowledge and whether or not they have mastered the concept within the lesson.

Standard

5.NBT.3.a - Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$.

Key Mathematical Ideas

1. Use place value understanding to read and write decimals in different forms.
2. Understand how to read and write decimals in using base-ten numerals, also known as standard form.
3. Understand how to read and write decimals using number names, also known as word form.
4. Understand how to read and write decimals in expanded form, also known as expanded notation.

Overview

Terminology

- **Decimal:** A number made of a whole and a fractional part, which are separated by a decimal point (.)
- **Thousandths:** The thousandths place is a place value that comes after the hundredths place. One hundredth = ten thousandths
- **Base-ten numerals:** Base-ten numerals are the digits 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9. When we write a number using base-ten numerals, we write the digit of each place value. This is also called standard form.
- **Number names:** When we write a number using number names, we write the number in words. This is also called word form.
- **Expanded form:** When we write a number using expanded form, we show the value of each place value being added together. We partition the number by place value and then expand it to show the value of each digit. This is also called expanded notation.

Overview

Sentence Stems

- Expanded form: digit x place value + digit x place value + digit x place value, etc.
This continues according to the amount of digits in the number.

Common Misconceptions

Common Misconceptions	Tutoring Strategies	Checks for Understanding
Students may struggle with the purpose of the zero in a number. In standard form, the zero needs to be included within a number, but in expanded form it does not.	Discuss the purpose of expanded form and how it is simply an addition equation representing the value of the number.	Ask students if a number in standard form would change if we took out the zero. Then ask if the number in expanded form would change if we removed the zero. Ask: Why do we include the zero in standard form? Why don't we need to include it in expanded form?

Title Slide

If stuck

- Review the place value chart first and what place value each column represents

Questions

- Why do we need the zero in the tenths place? Could we just leave it blank? Why or why not?

Answers

- 2.038
- two and thirty eight thousandths

Let's Learn

If stuck

- Help students determine what number is being shown in the place value chart first before discussing how to show it in other forms.
- For word form, ask students to read the word aloud first, then write the remaining part of the number.

Questions

- Part of the word form of the number has been written for you. What part of the number does this represent?
- What do you notice about the expanded form of the number? What do the bold numbers represent?

Watch out for

- Students omitting the zero in the ones place when they write the standard form of the number. Discuss with them why we need to include it in standard form but not in expanded form.

Answers

- 140.193
- one hundred ninety three thousandths

Follow Me

Modeling prompts

- To write the number in standard form, let's look at how many dots are shown in each place value and write the digit in the correct place. We have to remember that if we have a blank place value that does NOT come at the beginning of the number, we must write a zero for its digit.
- Let's read our number out loud before we write it in word form.
- To write the number in expanded form, let's look at the digit shown in each place value, one at a time. There are five hundreds, so we write that as 5×100 , then continue to the next place value.
- In expanded form, we're adding the value of each digit together, so since the zero in the tens place has no value, we don't need to include that in our expanded form.

Answers

- a) 501.823
- b) five hundred one and eight hundred twenty three thousandths
- c) $5 \times 100 + 1 \times 1 + 8 \times 0.1 + 2 \times 0.01 + 3 \times 0.001$

Your Turn

If stuck

- Have students use the “follow me” side as a reference for each number form. It should help them to see the examples.

Questions

- Why does it help us to say the number out loud before we write it in word form?

Watch out for

- Students do not need to add the zero in expanded form.

Answers

a) 47.014

b) forty seven and fourteen thousandths

c) $4 \times 10 + 7 \times 1 + 1 \times 0.01 + 4 \times 0.001$

You Do

If stuck

- For each row, suggest that students find the standard form of the number first before filling in the other blank.

Questions

- What form was easiest to read when trying to determine the number? Which is easiest to write?
- How do the three forms relate?

Watch out for

- Be sure students are interpreting and reading the form correctly before attempting to write another form.

Answers

Standard Form	Word Form	Expanded Form
608.329	six hundred eight and three hundred twenty nine thousandths	$6 \times 100 + 8 \times 1 + 3 \times 0.1 + 2 \times 0.01 + 9 \times 0.001$
204.937	two hundred four and nine hundred thirty seven thousandths	$2 \times 100 + 4 \times 1 + 9 \times 0.1 + 3 \times 0.01 + 7 \times 0.001$
25.31	twenty five and thirty one hundredths	$2 \times 10 + 5 \times 1 + 3 \times 0.1 + 1 \times 0.01$
1,210.57	one thousand ten hundred ten and fifty seven hundredths	$1 \times 1,000 + 2 \times 100 + 1 \times 10 + 5 \times 0.1 + 7 \times 0.01$

Go Further

If stuck

- Help students start off their number. Be sure they understand that if the number must be between one and two hundred, then the digit in the hundreds place has to be a 1. Then, they just need to use different digits from there.
- Allow students to go back to previous slides to view the examples they've already done.

Questions

- If our number must be between one and two hundred, what digit must be in the hundreds place?

Watch out for

- Be sure students understand the directions and have filled out the place value chart accordingly before they answer the questions.

Answers

a) 132.087

b) one hundred thirty two and eight seven thousandths

c) $1 \times 100 + 3 \times 10 + 2 \times 1 + 8 \times 0.01 + 7 \times 0.001$

Support for Slide(s)

This slide supports the Your turn and You do slides.

If stuck

- Expanded form (expanded notation) can be difficult for students at first; use this slide to help them understand the concept behind expanded form and how to write it.

Answers

- 500
- 0
- 1
- $500 + 1 + 0.2 + 0.06 + 0.004$
- $5 \times 100 + 1 \times 1 + 2 \times 0.1 + 6 \times 0.01 + 4 \times 0.001$
- 0.2
- 0.06
- 0.004

Check Your Understanding

Correct answers

- b) Sixty thousandths
- a) Six thousandths = 0.006, and six hundredths = 0.06. Six thousandths is $\frac{1}{10}$ the size of six hundredths.
- b) B is the correct answer. Sixty thousandths = $\frac{60}{1000}$ or 0.060 and six hundredths = $\frac{6}{100}$ or 0.06. Since the 6 is in the hundredths place in both numbers, the two numbers are actually equal in value.
- c) Sixty tenths = $\frac{60}{10}$ or 6.0, which is 6 ones, not 6 hundredths.
- d) Six hundred thousandths = 0.600 which is the same as 6 tenths, not 6 hundredths.

Today you will learn about



Reading and writing decimals in numeral, word, and expanded forms

Warm-up question

What number is shown on the place value chart?

What is the value of each digit?

0	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1,000}$
2	0	3	8

Let's learn

We can write decimals using **base ten numerals**, **number names**, and **expanded form**.

Th	H	T	O	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1,000}$
	●	● ● ● ●		●	● ● ● ● ● ● ● ● ●	● ● ●

Let's look at the place value chart. What number does it represent?

Let's write the number using base ten numerals by writing the digit in each place value.

This is also called **standard form**.

.....

We can also write the number using the names of the numbers.

This is called **word form**.

one hundred forty and

.....

We can write the number in expanded form by adding up the value of each digit.

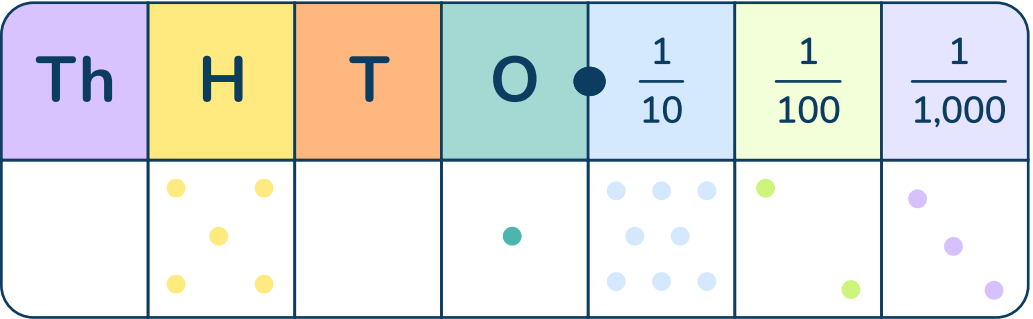
This is also called **expanded notation**.

$$1 \times 100 + 4 \times 10 + 1 \times 0.1 + 9 \times 0.01 + 3 \times 0.001$$

Follow me



Look at the number on the place value chart.

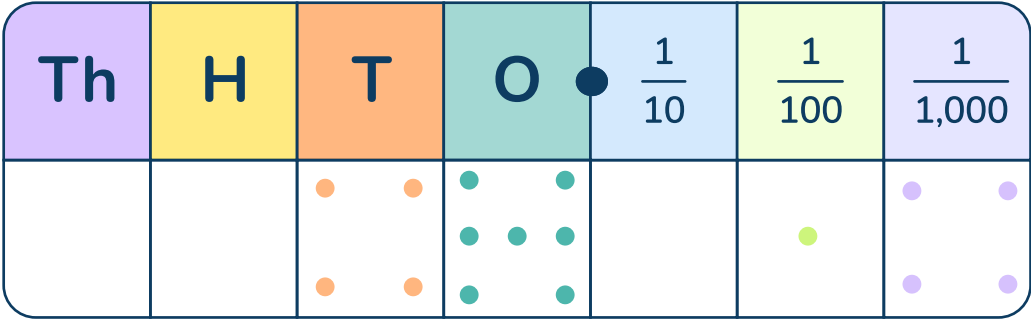


- a Let's write the number in standard form.
.....
- b Let's write the number in word form.
.....
- c Let's write the number in expanded form.
.....

Your turn



Look at the number on the place value chart.



- a Write the number in standard form.
.....
- b Write the number in word form.
.....
- c Write the number in expanded form.
.....

Standard Form	Word Form	Expanded Form
		$6 \times 100 + 8 \times 1 + 3 \times 0.1 + 2 \times 0.01 + 9 \times 0.001$
	two hundred four and nine hundred thirty seven thousandths	
25.31		
		$1 \times 1,000 + 2 \times 100 + 1 \times 10 + 5 \times 0.1 + 7 \times 0.01$

Create a decimal between one hundred and two hundred and write it in the place value chart. All of its digits must be different and it must go to the thousandths place.

Th	H	T	O	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1,000}$

- a

Write the number in standard form.
- b

Write the number in word form.
- c

Write the number in expanded form.

Let's explore this more

To write a number in expanded form, or expanded notation, we need to look at the value of each digit.

Th	H	T	O	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1,000}$
	5	0	1	2	6	4

What is the value of the digit in the...

hundreds place?

tenths place?

tens place?

hundredths place?

ones place?

thousandths place?

Once we find the value of each digit, we add them together.

..... + + + +

Then, we can expand even further.

..... x + x + x + x + x
digit place value

Check your understanding

Which number has the same value as six hundredths?

a

Six thousandths

b

Sixty thousandths

c

Sixty tenths

d

Six hundred thousandths




Why do I need to try this question on my own first?

- To show your tutor what you understand
- To give you more practice
- To show your teacher how you are doing



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“We just had our first session and it went great! The kids really liked it and felt like they were learning! One even said he finally felt like math was making sense.”



Michelle Craig, Instructional Coach,
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