



stage 25: decimals to thousandths

Big Idea: Hierarchical Groupings with Parts-to-Whole of Equal Groupings

In Symphony Math, the topics of decimals and fractions are linked, as reflected in Stage 24. They share visual models, and they are shown to represent the same concept. Thus students can use fractions and decimals interchangeably. While fractions and decimals represent the same idea, decimal numbers depend on hierarchical groupings.

Because Symphony Math makes sure the student has learned the prerequisites for each step in the progression of new skills, decimal values to thousandths builds on previous work with fractions, expanded notation, and a deeper understanding of place value.

Using the Symphony Mat visual models, students extend their understanding of decimals notation for fractions and addition of fractions with denominators of 10 and 100 to decimals to 1000ths. They identify, read, and compare decimal numbers as well as write them in fractional form in expanded notation. Stage 25 guides students to an understanding of equivalence of decimals ($20.4 = 20.40$, $5 = 5.0$).

Why are These Concepts Important?

The Part-to-Whole combinations in Stage 25 highlight the structure of decimal numbers. Extending the idea that 1 whole can also be ten tenths or one hundred hundredths, students see how decimal numbers are constructed as they extend the base-ten number system. A natural extension of this big idea is that a whole can be divided into 10 parts or 50 parts or, in Stage 25, 1000 equal parts. And that 1000 of those parts will equal the same whole. Students build on foundational place value understandings from Stage 24 as they consider expanded notation to thousandths, and thus, the relationship of adjacent whole number and fractional number quantities. Expanded notation further displays the number of zeros and placement of the decimal point.



Stage 25 Learning Progression

Concept	Standard	Example	Description
25.1: Decimal Notation	5.NBT.3	$2 \times 100 + 3 \times 1 + 5 \times (1/10)$	Students look at fraction numbers with denominators of 10, 100 and 1000 and express them as decimal numbers. They may see $52/1000$, use the visual models, create 0.052 as an equivalency; and vice versa, decimals to fractions. The calibrated number line helps students see decimals and fractions together, as both are labeled to show their identical locations.
25.2: Add and Subtract Decimals	5.NBT.7	$4.09 + 3.4 = ?$	Students expand their use of the Standard Algorithm to work with decimals. The alignment and magnitude of the visual models helps students understand the purpose of 'aligning the decimal point.'
25.3: Decimal Comparison	5.NBT.3	$3.56 ? 3.5$	When considering the same whole, students compare decimal numbers to thousandths. Students can reason about their size by using visual models. When confronted with a comparison like 0.56 and 0.509, students apply lessons from Stage 25 to reason about their relative size, rather than be fooled into thinking more digits signifies a higher value.

Using the Guided Practice Materials

When students struggle with a concept, you will see suggested Guided Practice materials in your HELP data view of your Symphony Math Dashboard. These materials provide extended practice using the Multiple Ways of Knowing from the Symphony Math program:

Worksheet	Purpose	Instructions
Manipulatives	Use a visual model to represent the concept.	Create bars, dot cards, or number lines for each item.
Bridge	Connect symbols to their visual representations.	Create objects, numbers, and symbols to complete each item.
Symbols	Understand the concept at the abstract level.	Create numbers and symbols to complete each item.
Apply	Extend understanding to real-life problem solving.	<ol style="list-style-type: none"> 1) Read the story presented at the top of the page. 2) Create a number model of the full solution. 3) Write the number sentence that matches the model.

Group Learning

The Symphony Math Extra Practice materials are designed to promote a conversation about the Big Ideas in math. One-on-one or small group instruction with the materials is recommended for students who need more time to make connections between the mathematical concepts in the Stage and the application of those concepts in their math curriculum.



Stage Checkpoint

When students complete a Stage, they come to a Checkpoint. Checkpoints provide students an opportunity to draw and create models in their offline journals. When they are done, you can evaluate their work and make sure they are ready to move on in the Symphony Math curriculum. Here is a short checklist to guide your evaluation:

- All Checkpoint steps have been attempted
- Student demonstrates understanding of models
- Solutions are correct, or intervention has led to self-correction
- Student can talk about their work using mathematical language

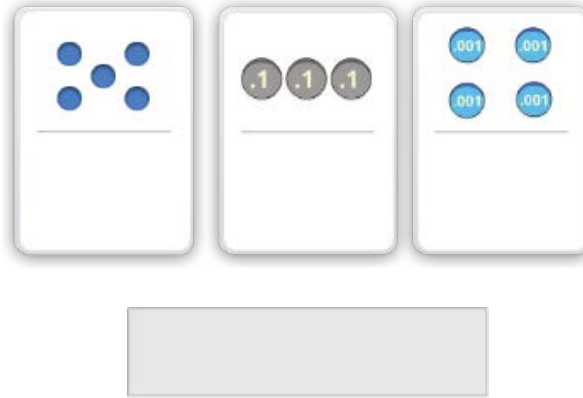
Students' math understanding is evolving. Their work at Checkpoints gives them a chance to transfer their new skills to another context (an offline journal). It is also an opportunity for reflection. Be sure to allow students to create more pages if they need it. When you are confident they are ready, accept the student checkpoint from your Symphony Dashboard.



Stage 25: Teacher Reference

Draw the dot cards and write the number below:

Example A:



Write these descriptions and the number they represent:

Example B:

$8 \times 100 + 7 \times (1/10) + 7 \times (1/100) + 9 \times (1/1000)$	
twenty one and 17 hundredths	

Create Your Own:

Use these digits: 8 9 0 3 4 5


Use all the digits to write a number to the thousandths place: _____

Use all the digits to write a number to the hundredths place: _____

Use all the digits to write a number to the tenths place: _____

This number is the greatest: _____

This number is the smallest: _____





Name: _____ Date: _____



Stage 25: Decimals to Thousandths

Example 1:

Example 2:

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Name: _____ Date: _____



MY OWN:

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