



# stage 9: hundreds

## Big Idea: Hierarchical Groupings

Hierarchical Groupings is the idea that amounts can be grouped into a system of sets and subsets. We count 11 objects and group them into 1 ten and 1 one, or we can call them 11 ones. Seventy five represents 7 tens and 5 ones.

Stages 1-8 in Symphony Math emphasize combinations to 20, and then the underlying structure of numbers to 100. Before students move on to numbers 100 and beyond, they are developing an understanding of the composition of numbers, their inter-relatedness, and the hierarchical organization of tens and ones. Such underpinnings are vital to a student's ability to flexibly and fluently apply organization and meaning to future work and operations with larger numbers.

After successfully developing an understanding of tens, students progress to the hundreds. Stage 8 follows the similar succession of tasks as previous levels do, when 1s and 10s are introduced. With a parallel pedagogical structure, Symphony Math aims for students to think of one hundred in much the same way they think of ten; with one hundred being a natural extension of ten.

## Why are Hierarchical Groupings Important?

The idea that a group is also a single unit is a complex one. Progressing from learning to count one number for one object, then, that ten objects are called one thing, and now, that ten things, or even one hundred things, are also a singular unit, is a complex one. Because Symphony Math ensures that students actively participate in making meaning for quantities up to 100, their first encounter with 100 is built on a foundation for which it makes sense and is solid.

Stage 9 is the introduction to the 3-digit number. Children see how a number like 500 may be 5 hundreds, 50 tens, and 500 ones all at the same time. The Symphony Math visual environments allow them to experience how 3-digit numbers are organized and thus lay further foundational support for future manipulations with these quantities.

## Stage 9 Learning Progression

Concept	Standard	Example	Description
9.1: Identifying 100s	2.NBT.1	Create '500'	In Stage 7 student show their recognition of how varying bundles of ten combine to make multiples of ten up to ninety. In 9.1, students do the same with bundles of 100 up to 900. They experience that three digits create a number in the hundreds, after they see that 10 bundles of ten, or 100 ones create one hundred. They explore the idea that numbers such as 100, 200, 300, etc., are groups of hundreds with zero tens and zero ones.
9.2: Making 100s	2.NBT.2	200, 300, ?	Building on number sense, students work on the order of numbers in the hundreds when counting by one hundred. The sequence is presented first beginning with 100, and then from any number no higher than 900 when students demonstrate they do not have to begin with 100. Sequences of the hundreds have one value missing, and then two values missing. The idea is to demonstrate their knowledge that counting by 100 means that values increase by the quantity of 100.



9.3: Counting Forward and Backward by 100s	2.NBT.2	70, 60, 50, ?	Using the same order of task presentations as 9.2, students are asked to count the hundreds backwards by 100s, with numbers 100-900.
9.4: Find '100 more'	2.NBT.1	Make '100 more' than 500	Relative magnitude is explored as students determine, and then know without counting, numbers 'one hundred more' than any given multiple of hundreds 100-900.
9.5: Find '100 less'	2.NBT.2	Make '100 less' than 400	Relative magnitude is explored as students determine, and then know without counting, numbers 'one hundred less' than any given multiple of hundreds 100-900.
9.6: Related 1s, 10s, and 100s combinations	2.MD.6	$2 + 5 = ?$ $20 + 50 = ?$ $200 + 500 = ?$	While not all students have mastered their combinations to 10, they work on larger combinations even so. In 7.6, their familiarity and variety of experiences with these smaller combinations come to bear as they consider what happens when adding related pairs that are 10 times larger. Students are expected to use mental strategies when adding and subtracting, one of which is creating easier or known sums to solve a problem with larger numbers. 7.6 allows the students to see how related smaller parts that create a whole come into play when they are ten times larger and therefore create a whole that is ten times larger. Such proportional parts and wholes will come in to play as students work with larger numbers and more advanced mathematics.
9.7: Adding 2-Digit and 1-Digit Numbers	2.MD.6	$730 + 50 = ?$	The combinations to 20 are called on as students see the behavior of a 2-digit number added to a 1-digit number. One he knows $5 + 3 = 8$ , he can use this part-whole pairing to quickly calculate $15 + 3$ , $65 + 3$ or $95 + 3$ . Stage 9.7 shows him that the tens remain a constant grouping, and the ones combine in the same way each time. After many experiences, beginning with the visual representation of this action, the part-part-whole may be automatic.
9.8: Comparing 100s	2.NBT.1	$300 ? 500$	Comparing two multiples of 100 shows an understanding of quantities of one hundred. In order to successfully say which of two numbers is larger, smaller, or same, children examine the amounts of hundreds and use the greater than ( $>$ ) and less than ( $<$ ) and equal sign appropriately. 9.8 requires children to identify the number of hundreds in 3-digit multiples of 100. They explore the idea that numbers such as 100, 200, 300, etc., are groups of hundreds with zero tens and zero ones.

## 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 Multiples 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"> <li>1) Read the story presented at the top of the page.</li> <li>2) Create a number model of the full solution.</li> <li>3) Write the number sentence that matches the model.</li> </ol>

## 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:

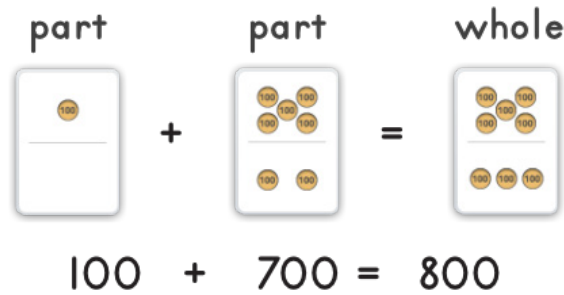
- All Checkpoint steps have been attempted
- Student demonstrates understanding of models
- Solutions are correct, or intervention has led to self-correction
- Student can talk about their work using mathematical language

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.

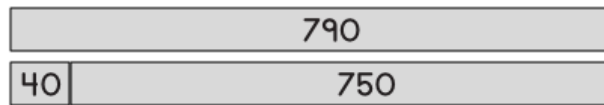


## Stage 9: Teacher Reference

Dot Cards:

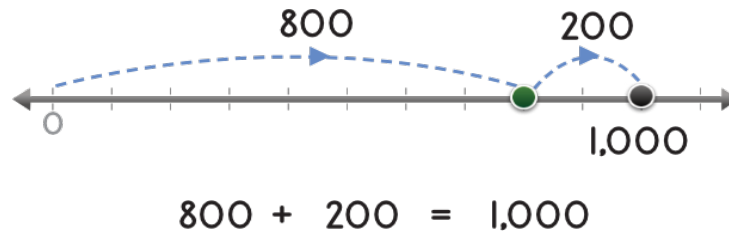


Number Bars:



$$790 = 40 + 750$$

Number Line:



Create Your Own:

Read the story.

Jim read a book for 22 minutes. Donna read for 5 minutes.  
How many minutes did they read altogether?


My number model:

\_\_\_\_\_

\_\_\_\_\_

My number sentence:

\_\_\_\_\_

 Solution: \_\_\_\_\_





