

Math: Grade 2, Lesson 16, 3-Digit Addition and Subtraction

Lesson Focus: Add 3-digit numbers with no regrouping

Practice Focus: Students will focus on practicing drawing place value mats and building number models in order to add 2 3-digit numbers.

Objective: Students will use base ten blocks to model 2 3-digit numbers with a focus on adding without regrouping.

Key Vocabulary: ones, tens, hundreds, place value mat, addition, combine

TN Standards: 2.NBT.B.7

Teacher Materials:

- Whiteboard, markers, eraser
- Place value mat, base ten blocks
- Paper, pen, and paper to model base ten blocks
- Student Practice Packet

Student Materials:

- Paper
- Pencil

Teacher Do	Student Do
<p><u>Opening</u> (1 min)</p> <p>Hello! Welcome to Tennessee's At Home Learning Series for math! Today's lesson is for all our 2nd graders out there, though all children are welcome to tune in. This lesson is the sixteenth in our series.</p> <p>My name is ____ and I'm a ____ grade teacher in Tennessee schools! I'm so excited to be your teacher for this lesson! Welcome to my virtual classroom!</p> <p>If you didn't see our previous lesson, you can find it on the TN Department of Education's website at www.tn.gov/education. You can still tune in to today's lesson if you haven't see any of our others. But, it might be more fun if you first go back and watch our other lessons since we'll be talking about things we learned previously.</p> <p>Today we will be learning about adding 3-digit numbers in mathematics! Before we get started, to participate fully in our lesson today, you will need:</p> <ul style="list-style-type: none">• Paper• Pencil• The student packet for Math, Grade 2, Lesson 16 which can be found at www.tn.gov/education <p>Ok, let's begin!</p>	
<p><u>Intro</u> (5 minutes)</p>	

Today, we are going to practice adding numbers by drawing models. Remember that we have drawn lots of models together! We will be using place value mats and base ten blocks to help some friends figure out their math problems!

Please read Manuel's problem on your own and then we will read it together. [Pause.]

Manuel read 45 pages in a book. Then he read 31 more pages. How many pages did Manuel read?

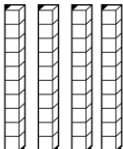

Hmm... in week one, we solved problems by drawing models. Let's use that strategy now. Please draw a place value mat with me. You will need a large rectangle with a line drawn down the middle to divide it into 2 spaces. We will label the column on the left as "Ones" and the column on the right as "Tens". [Pause, then show the model.]

Tens	Ones

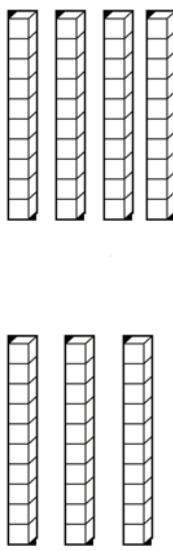

Now, we will model the pages that Manuel read. How many did he read first? [Pause.] Excellent! Manuel read 45 pages. Please draw that model while I show it with base ten blocks and then draw a model like yours. [Pause, show with base ten blocks, and then show with a drawing.]

Students read.

Students draw model.

Tens	Ones
	

Do you have 4 tens and 5 ones? [Pause.] **Wonderful. Now we'll add 31 to our model because Manuel read 31 more pages. Hold your model up so we can compare when you are finished.** [Pause.]

Tens	Ones
	

You are working so hard! Great job adding 31 more pages. If we are trying to figure out the total number of pages, we will need to combine, or add these together.

How many tens do we have now? [Pause.] **Right! We have a total of 7 tens.**

Students model 45 with 4 tens and 5 ones.

Students compare model to teacher's blocks and model.

Students add 31, 3 tens and 1 one to their model.

Students answer.

<p>How many ones are in our model? [Pause.] Great counting. There are 6 ones in all. I am going to record the amounts in our model. We have 7 tens, which is the same as 70. We also have 6 ones, which has a value of 6. When we add $70 + 6$, we have 76 pages.</p> $\begin{array}{r} 7 \text{ tens} + 6 \text{ ones} \\ 70 + 6 = 76 \end{array}$ <p>Underneath your place value mat, please write an equation that matches our situation. [Pause.] We can write the equation $45 + 31 = 76$. Manuel has read a total of 76 pages so far.</p> <p>So far, we have used tens and ones for our models. Remember that a ten rod is made up of 10 ones. Watch as I model. [Lay 10 ones beside 1 ten to show equivalency.] We can trade 1 ten in for 10 ones because they are equal. Using 10 rods helps us count quicker!</p> <p>Just like we can trade in 10 ones to make 1 ten, we can ALSO trade in 10 tens! Watch as I model this trade. [Model 10 tens and compare to a hundred flat.]</p> <p>Let's count all of our ten rods. Count with me. 10, 20, 30, 40, 50, 60, 70, 80, 80, 90, 100! [Count with students.] When we put 10 tens together, we have built the number 100. This 100 flat is made up of 100 ones. It is also made up of 10 tens. For this lesson and in future lessons, we will be using ones [show a one block], ten rods [show a 10 rod], and hundreds flats [show a hundred flat] to build numbers.</p>	<p>Students answer.</p> <p>Students write the equation.</p>
<p><u>Teacher Model</u> (6 minutes)</p> <p>Objective 1: Add 2 3-digit numbers without regrouping using base ten models. Students are building on their model work with 2 digits and are building towards regrouping with 3-digit addition.</p> <p>Today, we will be using several place value mats. To save time, we are going to draw all of our mats at once. Please grab your paper and your pencil and follow along with me.</p> <p>First, we'll draw a large rectangle. This time, we will need draw lines to divide the rectangle into 3 spaces. Watch me, then quick sketch yours. [Model.]</p>	<p>Objective 1: Add 2 3-digit numbers without regrouping using base ten models.</p>

Hundreds	Tens	Ones

Students sketch their place value mat.

We created 3 columns that we will label “Hundreds”, “Tens”, and “Ones”. You are welcome to label yours with those words, or you could use an “H” for hundreds, a “T” for tens, and an “O” for ones. [Pause, show your model.]

Please draw 4 more mats.

Let’s use one of our place value mats and models to help Esra figure out the total number of sea turtle eggs that she and her grandmother counted.

Students label their mat.

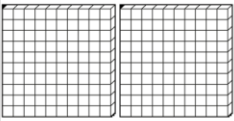
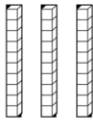
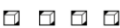
Please read along with me. [Read problem.]

Esra is helping her grandmother count eggs in sea turtle nests dug into the beach. On Saturday, they counted 234 eggs sea turtle eggs. On Sunday, they counted 141 more eggs. How many eggs did Esra and her grandmother count over the weekend?

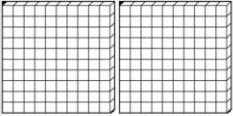
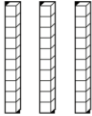
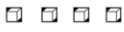
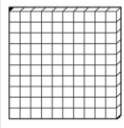
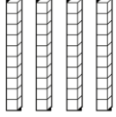

Students read the problem.

Esra and her grandmother count 234 eggs on Saturday. So let’s model that first. I am going to draw two 100 flats, 3 ten rods, and 4 one blocks. [Model with base ten blocks and draw on paper model.] Would you add that to your mat?

Students add 234 to their mat.

Hundreds	Tens	Ones
		

Let's go back to the text. Esra and her grandmother count **141 MORE** turtle eggs the next day. To show 141, I am going to draw 1 more hundreds flat, 4 more ten rods, and 1 more 1 more one block. [Model with base ten blocks and draw on paper model.] Please add 141 to your mat. Then hold it up so that we can compare. [Pause, then show your models again for comparison.]

Hundreds	Tens	Ones
		
		

To find the total, I am going to combine the hundreds, tens, and ones.

I have a total of 3 hundreds, 7 tens, and 5 ones. Our total can be written in these ways. [Show the ways.]

3 hundreds 7 tens 5 ones

$$300 + 70 + 5$$

375

We can also count by 100s, 10s, and 1s to find our value.

Count with me. [Count with students.] 100, 200, 300, 310, 320, 330, 340, 350, 360, 370, 371. 372, 373, 374, 375.

Grandmother and Esra counted 375 eggs over the weekend!

Objective 2: Write and connect an equation to the model and the context.

I can write an equation to match our situation.

$$234 + 141 = 375$$

They counted 234 eggs on Saturday [Point to the model and the equation.] and 141 eggs on Sunday [Point to the model and the equation.]. Together, they counted 375 eggs [Point to the model and the equation.]. Please write our equation under your place value mat. [Pause.] You are working very hard!

Students add 141 to their mat and compare their model to the teacher's model.

Objective 2: Write and connect an equation to the model and the context.

Students write the equation under their place value mat.

Guided Practice (14 minutes)

[I Do]

We just helped Esra figure out her turtle egg total with our model! Now we are going to help Sarah figure out how many strawberry plants she helped water on her family's farm.

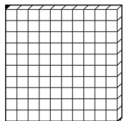
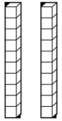

Read this problem with me.

Sarah helps out with her family's strawberry farm. She watered 125 plants this morning and then watered 330 more after lunch. How many plants did Sarah water?

Sarah watered how many plants first? [Pause and listen.]

Good reading! She watered 125 strawberry plants. So let's model that first.

Please find your second place value mat. I am going to draw 1 100 flat, 2 ten rods, and 5 one blocks. [Model with base ten blocks and draw on paper model.] **Would you add that to your mat?** [Pause.] **Let's compare.** [Pause.]

Hundreds	Tens	Ones
		

Let's go back to the text. Sarah watered 330 more plants after lunch. To show 330, I am going to draw 3 more hundreds flat, 3 more ten rods, and zero ones blocks. [Model with base ten blocks and draw on paper model.] **Please add 330 to your mat. Then hold it up so that we can compare.** [Pause, then show your models again for comparison.]

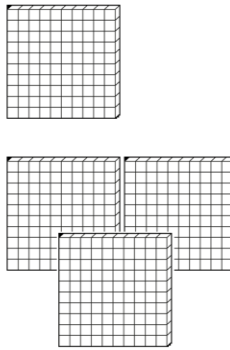
Students read the problem.

Students build 125.

Students compare.

Students build 33.

Students compare.

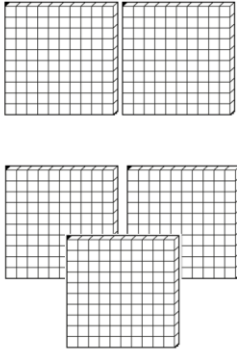
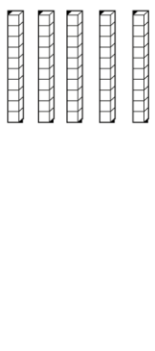
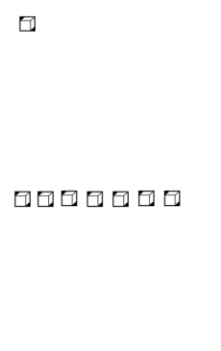
Hundreds	Tens	Ones	
			
<p>How are we going to figure out the total number of plants watered? [Pause and listen.] Oh! Good idea! We can combine all of the 100s, 10s, and 1s.</p>	Students skip count.		
<p>I have: [Show.] 4 hundreds, 5 tens, and 5 ones $400 + 50 + 5 = 455$</p>			
<p>We can also figure out our total by skip counting. Count with me: 100, 200, 300, 400, 410, 420, 430, 440, 450, 451, 452, 453, 454, 455.</p>			
<p>I can write an equation to match our situation. $125 + 330 = 455$</p>	Students write the equation.		
<p>Sarah watered 125 plants in the morning [Point to the model and the equation.] and 330 plants after lunch [Point to the model and the equation.]. In one day, Sarah watered 455 plants [Point to the model and the equation.]. Please write our equation under your place value mat. [Pause.] You are working very hard!</p>			
<p>[We Do]</p>			
<p>Sarah has been watering plants. Connor has been collecting sea shells with his family.</p>			
<p>Read this problem on your own, and then read it with me. [Pause and then read the problem.]</p>	Students read the problem.		
<p>Connor's family has been collecting sea shells this week. In the small bucket, they have 251 shells. The larger bucket holds 307 shells. How many shells are there in all?</p>			
<p>What do you think we should do now? [Pause and listen.] Good idea! We can build models of the sea shell numbers. How many were in the small bucket? [Pause and listen.] Great reading! The text tells us that there were 251 shells in the smaller bucket.</p>	Students respond. Students respond.		

How many were in the large bucket? [Pause and listen.]

Right, again! The larger bucket held 307 shells.

Let's build both of those numbers on our place value mat.

You build 251 and 307 on your own. I'll build the same numbers and then we will compare our models. [Pause and compare.]

Hundreds	Tens	Ones
		

Hold up your models for me. [Pause.] **They look great!**

How do you think that we can find the total number of shells? [Pause and listen.] **Good idea! Let's combine all of the hundreds, and then put the tens together, and then add the ones.**

We have 5 hundreds, 5 tens, and 8 ones. We can write that as: [Show.] **5 hundreds, 5 tens, and 8 ones or**

$$500 + 50 + 8$$

$$558$$

We could also figure out the total by skip counting. Count with me: [Point.] **100, 200, 300, 400, 500, 510, 520, 530, 540, 550, 551, 552, 553, 554, 555, 556, 557, 558**

Write the equation under your place value mat and then we will compare. [Pause, then compare.]

$$251 + 307 = 558$$

Or
$$307 + 251 = 558$$

Great job!!!

[You Do]

Let's practice another problem together!

Students respond.

Students build models.

Students compare models.

Students respond.

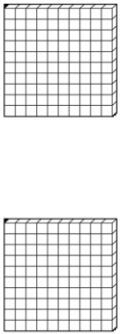
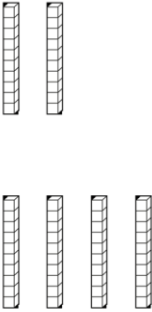

Students count along.

Students write equation.

Read this on your own.

There are 125 poems in Carrie's book and 143 poems in Angie's book. How many poems are in these two books?

Draw a quick picture to solve and then we will compare.
[Pause and then compare.]

Hundreds	Tens	Ones
		

To find the total, we will combine the flats, rods, and blocks. Hold up your fingers.... How many hundreds? [Pause and look]. **2 hundreds, or 200. That's right!**
How many tens? **Hold up your fingers.** [Pause and look]. **Excellent! There 6 tens, or 60.**
How many ones? **Hold up your fingers.** [Pause and look]. **Right again! We have 8 ones. What number is 200 + 60 + 8?**
[Pause and listen]. **Yes! We have 268 poems in the two books.**

Now, write the equation below your model and then we will compare. [Pause then compare.]

$$125 + 143 = 268$$

125 poems in Carrie's book plus 143 poems in Angie's book gives us a total of 268 poems!

Additional Problems (if needed):

#1

Read this on your own.

A farmer sold 456 tomatoes and 131 sweet potatoes. How many vegetables were sold?

Students read the problem.

Students compare.

Students respond.

Students respond.

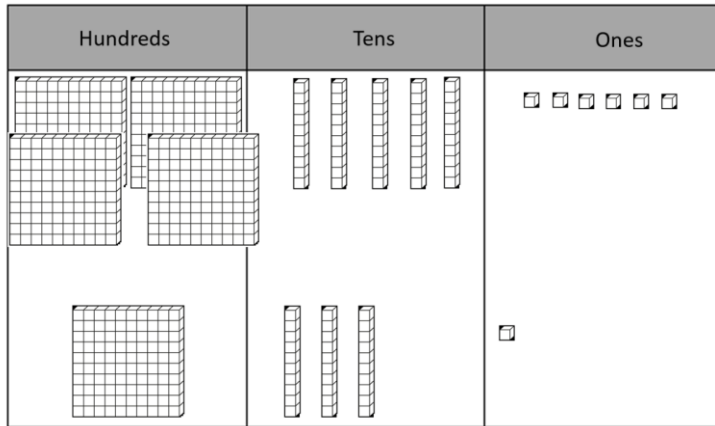
Students respond.

Students write the equation.

Students read the problem.

Draw a quick picture to solve and then we will compare.

[Pause and then compare.]



Students model the numbers.

To find the total, we will combine the flats, rods, and blocks.

Hold up your fingers.... How many hundreds? [Pause and look]. **5 hundreds, or 500. That's right!**

How many tens? **Hold up your fingers.** [Pause and look]. **Excellent! There 8 tens, or 80.**

How many ones? **Hold up your fingers.** [Pause and look].

Right again! We have 7 ones. What number is $500 + 80 + 7$? [Pause and listen]. **Yes! The farmer sold 587 vegetables.**

Students respond.

Students respond.

Students respond.

Now, write the equation below your model and then we will compare. [Pause then compare.]

$$456 + 131 = 587$$

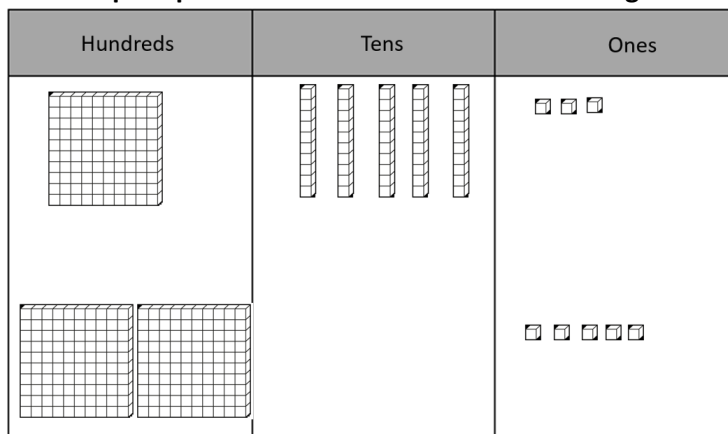
456 tomatoes plus 131 sweet potatoes gives us a total of 587 vegetables!

Students respond.

Students write equation and compare.

#2

Use this quick picture to find the two numbers being added.



<p>Write the two numbers that are being added on your paper and then we will compare. [Pause and compare.]</p> <p style="text-align: center;">143 + 205</p> <p>Great job! We are adding 143 and 205.</p> <p>How many hundreds are there? [Pause and listen.] Right! We have 3 hundreds, or 300.</p> <p>How many tens? [Pause and listen.] Way to count! We have 4 tens, or 40.</p> <p>How many ones? [Pause and listen.] Correct, again! There are 8 ones, or 8.</p> <p>Please write the equation on your page. [Pause.] [Show.] 143 + 205 = 348</p>	<p>Students write the two numbers being added.</p> <p>Students respond.</p> <p>Students respond.</p> <p>Students respond.</p> <p>Students write the equation.</p>
<p><u>Independent Practice</u> (1 minute)</p> <p>Great work, math friends! Today, we solved 3-digit addition problems using base ten blocks.</p> <p>You sure did a great job! After the video, you will have some problems to practice on your own. I will show you the independent practice problems now, or you can find them in the student practice for this lesson posted on our website, www.tn.gov/education. [Teacher shows student practice page under document camera or camera zooms in on student practice page.]</p> <p>Good luck and do your best!</p>	
<p><u>Closing</u> (1 min)</p> <p>Friends, I enjoyed reviewing using base ten models with you to solve adding problems with 3 digits! Thank you for inviting me into your home. I look forward to seeing you in our next lesson in Tennessee's At Home Learning Series! Bye!</p>	

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