

Math: Grade 2, Lesson 19, 3-Digit Addition with Regrouping

Lesson Focus: Solving contextual addition problems within 1000, focused on regrouping tens and using drawings of base-ten blocks and place value charts.

Practice Focus: Students will focus on practicing drawing models of base-ten blocks and place value charts in order to solve contextual addition problems within 1000, focused on regrouping tens independently.

Objective: Students will use math mats and base-ten blocks to model 3-digit addition problems with a focus on regrouping tens.

Key Vocabulary: addition, sum, regrouping

TN Standards: 2.NBT.B.7

Teacher Materials:

- Multi-use Place Value Mat/Chart
- Base-Ten Blocks
- Student Independent Practice Packet

Student Materials:

- 5 Pieces of Paper
- Paper
- Pencil

Teacher Do	Student Do
<p><u>Opening</u> (1 minute)</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 nineteenth lesson 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 and regrouping tens 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 19 which can be found at www.tn.gov/education	

Ok, let's begin!

Intro (6 minutes)

We have been adding 3-digit numbers. I'm excited to continue our work.

Before we begin, we will need to draw 5 place value charts, so grab your paper and pencil and follow along.

First, we'll draw a large rectangle. This time, we will need to draw lines to divide the rectangle into 3 spaces. Watch me, then quick sketch yours. [Model.]

Hundreds	Tens	Ones

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. [Long pause.]

Great job listening!

In our last lesson we learned how to bundle or trade ones blocks for tens rods. We also called this something else.

What did we call it? [Pause] That's right, trading 10 ones for a tens rod is called regrouping.

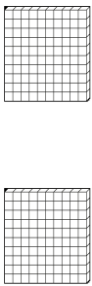


Let's warm up with a problem that has numbers in the ones place that can be bundled or regrouped when we build our 3-digit models. Are you ready? [Pause] Me too! Let's go!

Let's start with this problem. Read it with me please.

On Friday night, a football quarterback passed the football a total of 126 yards during the game. The next Friday night he passed the football a total of 115 yards during the game. How many total yards did the quarterback pass the ball over the two games?

Let's start by modeling both numbers on one of our place value charts. You quick sketch and model these numbers while I am building the numbers with the base ten blocks and drawing a model.

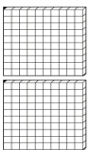


[Model with base ten blocks and sketch a picture in a place value mat.]

Hundreds	Tens	Ones
		

[Show your place value chart.] **Does your chart match mine?**

[Point to the base ten blocks and drawing as you speak the next part.] **Our first number, 126, is made up of 1 hundred, 2 tens, and 6 ones. The second number, 115, is made up of 1 hundred, 1 ten, and 5 ones. Now, let's combine and model. You quick sketch your model as I model with my base-ten blocks and draw.**

[Combine your base-ten blocks and draw the model.]

Hundreds	Tens	Ones
		

[Show your model.] **This is what my model looks like when I combine my two numbers. Does yours look the same?**

[Pause] **Ok. You know, I think I see something.** [Slight pause.]

Do you see what I see? [Pause] **I see where we might need to regroup.** [Slight pause.] **Where?** [Pause to listen.] **Right, I think we will be able to regroup the ones blocks. Let's count and see.**

[Point to the ones blocks and count as you speak the next part.]

I have 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, and 11 ones. I have a total of 11 ones. Can I have 11 ones or do I need to regroup. [Pause]

You are right! I cannot have 11 ones without having to regroup because 11 is more than 9. So, how do we regroup our ones blocks? [Pause] **If you said we should bundle or trade 10 ones for 1 tens rod, give yourself a pat on the back because that is right.** [Pause]

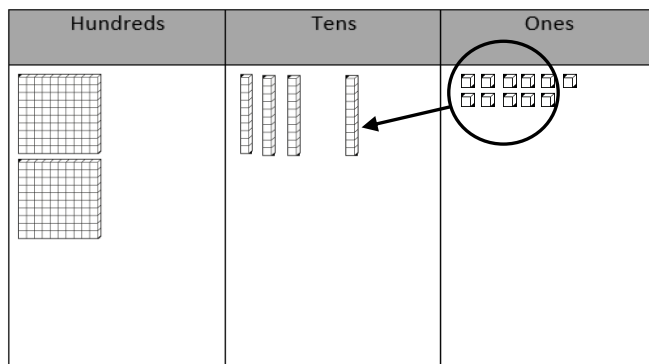
[You will be drawing in the next section to match the image below.]

Remind me what we do first? [Pause] **Right!** [Draw as you speak the next part.] **We draw a circle around ten of the ones.**

[Pause for students to draw.] **What does the circle mean?**

[Pause] **Correct. It shows us the ones we will bundle or trade for a tens rod.** [Draw as you speak the next part.] **Now let's draw our arrow pointing to our new tens rod and I will draw my new tens rod here.** [Pause for students to draw.] [Show your place value chart.]

Does your chart match mine?

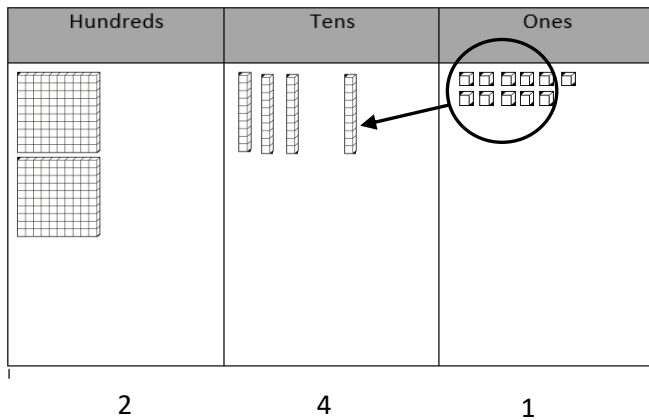


Now, after we trade 10 ones blocks for a 1 tens rod, how many ones blocks do we have left? [Pause] **Right! We have just 1 ones block left. We had 11 ones blocks we bundled and traded 10 of them for 1 tens rod which left us with this** [Point to model.] **1 ones block. Great job!**

Now, I will write the number 1 below my ones column.

[Write the number 1 similar to image below and then point to it.] **Will you add the number 1 to your chart as well please?**

[Pause] **Thank you.**



So, now I will move on to count and combine my tens. [Point to the tens rods and count as you speak the next part.]

I have 1, 2, 3, and 4, tens. I have a total of 4 tens. Can I have 4 tens without having to regroup because 4 is less than 9.

Good job! Now, I will write 4 below my tens column. [Write the number 4 similar to image below and then point to it.]

Will you add 4 to your chart as well please? [Pause] **Thank you.**

How many hundreds do we have? [Point as you count and speak the next part.] **1, and 2. We have 2 hundreds. Great job!**

Now let's write 2 under our hundreds column together. [Pause]

How are we going to figure out the total number of yards the quarterback passed the football? [Pause and listen.] **Right!**

We will combine all of the 100s, 10s, and 1s.

I have: [Point to the model as you speak the next part.] **2 hundreds, 4 tens, and 1 ones block.**

$$200 + 40 + 1 = 241$$

Over the last two games the quarterback passed the football a total of 241 yards. Awesome job!

Teacher Model (8 minutes)

Objective 1: Add 2 3-digit numbers with regrouping using base ten models. Students are building on their model work with 3 digits, regrouping ones and toward regrouping tens with 3-digit addition.

You did a great job reviewing how to add 3-digit numbers with regrouping ones. Today, we are going to talk about adding 3-digit numbers and regrouping tens.

Objective 1: Students will add 2 3-digit numbers with regrouping of tens using base ten models on place value mats.

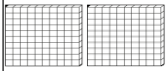


Let's use another one of our place value mats we drew at the beginning of class to help a zoo keeper figure out the total number of children that visited the tiger cage over two days.

Get your place value mat. [Pause]

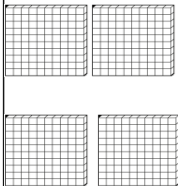
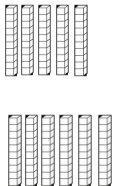

Please read along with me. [Read the problem.]

A zoo has a new tiger cage with a beautiful new tiger. The zoo keeper wants to know how many children have visited the tiger cage over two days. On Monday, 253 children visited the tiger cage at the zoo. On Tuesday, 264 children visited the tiger cage. How many children visited the tiger cage those two days?

We know 253 children visited the tiger cage at the zoo. So let's model that first. I am going to draw two 100 flats, 5 ten rods, and 3 one blocks. [Model by drawing base-ten blocks on your paper model.] Would you add that to your mat please?

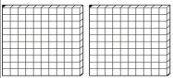


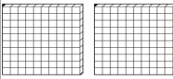


Hundreds	Tens	Ones
		

Let's go back to the text. On Tuesday, 264 children visited the tiger cage. To show 264, I am going to draw 2 more hundreds flat, 6 more ten rods, and 4 one blocks. [Draw the base ten blocks on your paper model.] Please add 264 to your mat. Then hold it up so that we can compare. [Pause, then show your models again for comparison.]

Hundreds	Tens	Ones
		

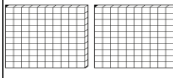
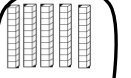

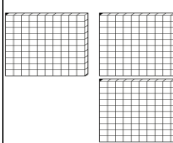


Like we did in our last lesson, we are going to find the total by first combining the ones to determine if I need to regroup and then on to the tens and hundreds.

So, I will count and combine my ones. [Point to the ones blocks and count as you speak the next part.]
I have 1, 2, 3, 4, 5, 6 and 7 ones. I have a total of 7 ones. Can I have 7 ones or do I need to regroup. [Pause] **Correct! I can have 7 ones without having to regroup because 7 is less than 9. Good job! Now, I will write 7 below my ones column.**
 [Write the number 7 similar to the image below and then point to it.] **Will you add 7 to your chart as well please?**
 [Pause] **Thank you.**

Hundreds	Tens	Ones
		
		

7

Now, let's combine and count our tens. [Point to the tens rods and count as you speak the next part.] **Count with me. 1 ten, 2 tens, 3 tens, 4 tens, 5 tens, 6 tens, 7 tens, 8 tens, 9 tens, 10 tens, and 11 tens. Uh oh! Can I have 11 tens?**
 [Pause] **Well what did we do when we had more than 9 ones in our warmup today?** [Pause] **That's right we regrouped our ones by trading 10 ones for 1 tens rod. So, what do you think we will do if we have more than 9 tens rods?** [Pause] **I think I heard you say we should regroup our tens rods and you are correct. Guess what?** [Slight pause.] **We are going to do it just like we did with regrouping our ones. We are going to trade 10 tens rods for a what?** [Pause] **You are good! We are going to trade 10 tens rods for 1 hundred flat. We are also going to model this similar to regrouping our ones. Watch me as I model regrouping tens on my paper.** [Draw as you speak the next part.] **I will draw a circle around 10 tens rods and draw an arrow along with my new hundred flat.**

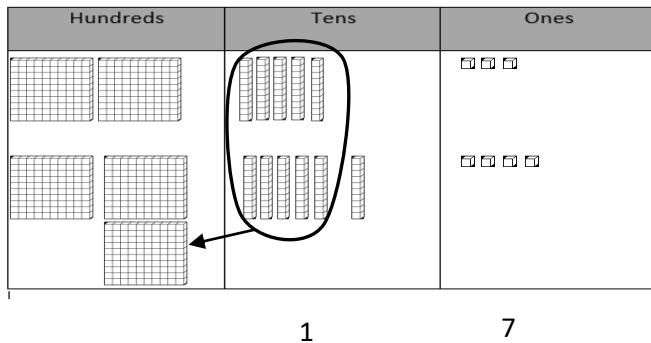
Hundreds	Tens	Ones
		
		

7

Please add your circle, arrow and new hundred flat to your paper. Then hold it up so that we can compare. [Pause, then show your model again for comparison.]

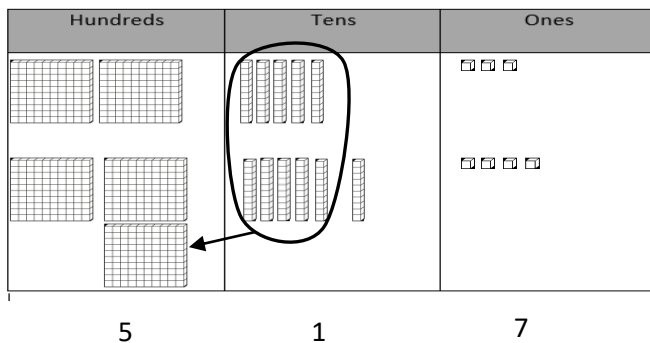
Now, after we trade 10 tens rods for a hundred flat, how many tens rods do we have left? [Pause] Right! We have just 1 tens rod left. We had 11 tens rods we traded 10 of them for a hundred flat which left us with this [Point to model.] 1 tens rod. Great job!

Now, I will show the 1 ten under the tens column and will write the 1 ten under your column as well. [Write the number 1 similar to image below and then point to it.] Will you add the number 1 to your chart as well please? [Pause] Thank you.



Now let's count our hundreds. [Point as you count and speak the next part.] Count with me. 100, 200, 300, 400, and 500. We have 5 hundreds. Great job!

Now, I will write 5 below of my hundreds column. [Write the number 5 similar to image below and then point to it.] Will you add the 5 hundreds to your chart as well please? [Pause] Thank you.



How are we going to figure out the total number of children that visited the tiger cage? [Pause and listen.] Oh! Good idea! We can combine all of the 100s, 10s, and 1s.

I have: [Point to the model as you speak the next part.] 5 hundreds, 1 ten, and 7 ones

$$500 + 10 + 7 = 517$$

We can also figure out our total by skip counting. Count with me: 100, 200, 300, 400, 500, 510, now watch carefully, 511, 512, 513, 514, 515, 516, and 517.

$$253 + 264 = 517$$

Over the two days 517 children visited the new tiger at the zoo.

Objective 2: Write and connect an algorithm to the model and the context of the problem.

Similar to our previous lesson, we can show the regrouping in our problem below: [Fill in a blank template with the numbers as you go.]

Hundreds	Tens	Ones
<div>□</div>		
+		

We still have hundreds, tens and ones. When we combine the 5 tens + 6 tens, the answer is 11 tens. In our model [Point] we grouped 10 tens into 1 hundred flat and moved it to the hundreds place. In this problem, we show the regrouping of 11 tens by moving 1 hundred to the hundreds place, also. [Point.]

Objective 2: Write and connect an algorithm to the model and the context of the problem to show regrouping of tens.

Hundreds	Tens	Ones
1		
2	5	3
2	6	4
+		
5	1	7

Just like in the model, we added the ones together to get 7 ones. Then we added the tens together... 5 tens + 6 tens is 11 tens. We moved a group of 10 tens, which is a 100 flat, to the hundreds place. Now we can combine our hundreds. 1 hundred + 2 hundred + 2 hundred = 5 hundreds.

You are working very hard! Give yourself a big tiger roar like this [Mimic a tiger claw with your hand and roar at the screen.] **to show what a ferocious mathematician you are! Go ahead and roar!** [Pause] [Shy away from the camera like you are scared.] **Ooo! I got a little scared there. You are a ferocious mathematician!**

Guided Practice (15 minutes)

[I Do]

We just helped the zookeeper figure out how many students visited the new tiger in its cage over two days, but now that same zoo keeper wants to know how many pounds of meat the new tiger eats in two weeks.

Read this problem with me.

The new tiger at the zoo ate 160 pounds of fresh meat the first week he was at the zoo and the second week he ate a whopping 183 pounds of fresh meat. How many pounds of fresh meat did the tiger eat over two weeks at the zoo?

Use another one of the place value mats you created earlier and let's model this problem.


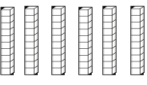
The tiger ate how many pounds of meat the first week?

[Pause and listen.] **Good reading! He ate 160 pounds of meat.**

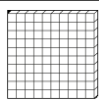
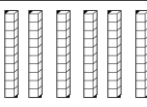
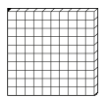
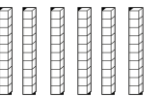

Let's model the number 160. [Draw your paper model as you speak the next part.] **I am going to draw 1 100 flat, 6 ten rods, and 0 one blocks. Would you add that to your mat?** [Pause.]

Let's compare. [Pause.]

[Pause to look at students' mats.] **Looking good!**

Hundreds	Tens	Ones
		

Ok, going back to the text now, we see that the tiger ate 183 pounds of meat the second week. To show 183, I am going to draw 1 more hundred flat, 8 more ten rods, and 3 ones blocks. [Draw your model on your paper model.] Please add model 183 on your chart. Then hold it up so that we can compare. [Pause, then show your models again for comparison.]

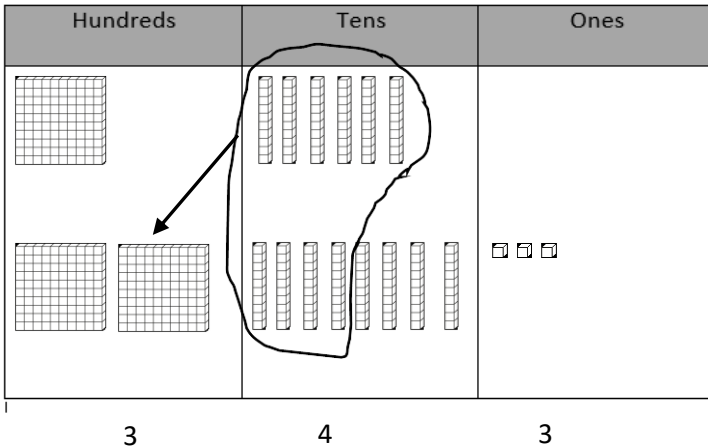
Hundreds	Tens	Ones
		
		

3

[Point to the ones blocks and count as you speak the next part.] **Ok, I look at my ones. I don't have anything to combine. I just count 1, 2, and 3 ones blocks. I have a total of 3 ones. Do I need to regroup?** [Pause] **Correct! There is no need to regroup because 3 is less than 9. Good job! Now, I will write 3 below my ones column.** [Write the number 3 similar to image above.]

Now, let's combine and count our tens. [Point to the tens rods and count as you speak the next part.] **Count with me. 1 ten, 2 tens, 3 tens, 4 tens, 5 tens 6 tens, 7 tens, 8 tens, 9 tens, 10 tens, 11 tens, 12 tens 13 tens, and 14 tens. Uh oh! 14 tens. Can't have it can we?** [Pause] **Nope. I feel some regrouping coming on! Ok, we are going to trade 10 of those tens rods for a what?** [Pause] **You are good! We are going to trade 10 tens rods for 1 hundred flat. Remember how we**

model that? [Pause] **I knew you would.** [Draw as you speak the next part.] **I will draw a circle around 10 tens rods and draw an arrow along with my new hundred flat.**



Now, after we trade 10 tens rods for a hundred flat, how many tens rods do we have left? [Pause] **Right! We have 4 tens rods left. We had 14 tens rods we traded 10 of them for a hundred flat which left us with these** [Point to model.] **4 tens rod. Great job!**

Now, I will write 4 tens below my tens column. [Write the number 4 similar to image above and then point to it.]

Now, I count my hundreds. [Point to the hundreds flats and count as you speak the next part.] **Count with me 100, 200, 300. I now have 3 hundreds. Remember, we bundled and traded 10 tens rods to give us this** [Point to model.] **1 hundred flat. When I combine it with the two hundred flats I already have, I end up with a total of 3 hundred flats.**

Now, what was it the zookeeper wanted to know? [Pause and listen.] **Yes! Good remembering! He wants to know how many pounds of fresh meat that new tiger ate over two weeks.**

I have: [Point to the model as you speak the next part.] **3 hundreds, 4 tens, and 3 ones**

$$300 + 40 + 3 = 343$$

Let's write a problem to match our situation below our place value mat. [Pause and model.]

Hundreds	Tens	Ones
1		
1	6	0
1	8	3
+		
3	4	3

Our problem matches our model. When we add our ones, 3 ones plus 0 ones gives us 3 ones. When we add 6 tens + 8 tens, we get 14 tens. In our model, [Point to model.] we traded in 10 tens for 1 hundred flat and moved it to the hundreds place, leaving 4 tens. We do the same thing here [Point to problem.] in our problem. 14 in the tens place is made up of a ten tens or 100 and 4 tens or 40. We move the hundred to the hundreds place [Point] just like our model. Please write 4 under the tens place and a 1 in the box in the hundreds place [Point to box.]. Now, we add the hundreds together, just like our model. [Point to problem.] 1 hundred plus 1 hundred plus 1 hundred gives us 3 hundreds.

Over the two weeks the new tiger ate 343 pounds of meat!
Wow! That is a lot of meat!

You are working very hard! Give yourself another big tiger roar to show what a ferocious mathematician you are! [Pause for students to roar.] [Shy away from the camera like you are scared.] Oh my! That still scares me!

[We Do]

Well, while the tiger has been eating fresh meat the sea lions in the water show have been eating dead fish.

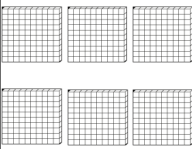
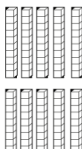


Read this problem on your own, and then read it with me.
[Pause and then read the problem.]

A trainer at the zoo feeds two sea lions fish as rewards for doing tricks during the water show. During one month the trainer used 351 fish as rewards for the sea lions. During the second month the trainer feed the sea lions 353 fish as rewards. Over the two months how many total fish did the trainer feed the sea lions?

Grab one more of your place value mats.

What do you think we should do now? [Pause and listen.]
Good idea! We will build models of the fish numbers. How many were fed the first month? [Pause and listen.] **Great reading! The text tells us the trainer fed 351 fish the first month. How many fish were fed to the sea lions the second month?** [Pause and listen.] **Right, again! The trainer fed the sea lions 353 fish in the second month.**

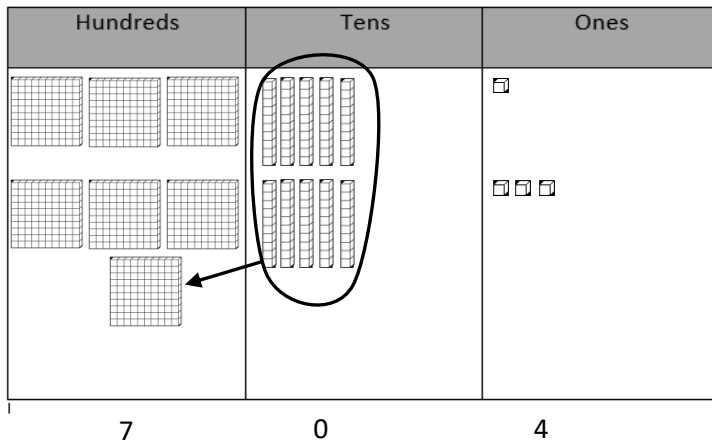
Let's build both of those numbers on our place value mat. You build 351 and 353 on your own. I'll build the same numbers and then we will compare our models. [Pause for modeling and then compare.]

Hundreds	Tens	Ones
		
		

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

How do we find the total number of fish? [Pause and listen.]
Good idea! Let's combine all of the ones, and then put the tens together, and then add the hundreds. Ok let's do that, but what do you think is going to happen when you start combining the tens? [Pause and listen.] **Can't trick you! Regrouping is right. Go ahead and work on combining the ones, tens and hundreds, along with regrouping the tens, and then we will compare charts again.** [Model and pause for the students to have plenty of modeling time.]

[Point to the model as you speak the next part.] **We combine our ones and we end up with 4 ones and I write that below the ones column. When we combine our tens we end up with 10 tens, we bundle those and trade them for 1 hundred flat and that left us with no tens. When we added that new hundred flat to the others we already had we ended up with 7 hundred flats.**



We can write that as: [Show]

7 hundreds, 0 tens, and 4 ones.

Our model shows [Point to model.] $700 + 0 + 4 = 704$

Please write our problem to match the model with me.

[Pause and model.]

Hundreds	Tens	Ones
<div>□</div>		
3	5	1
+	5	3

Now, please complete the problem on your own, checking to make sure it matches your model. We'll compare in a minute. [Pause for students to complete problem.]

Hundreds	Tens	Ones
<div>1</div>		
3	5	1
+	5	3
7	0	4

Let's compare. Let me see your problem. [Hold problem up to compare.]

In the first week the sea lions were fed 351 fish and in the second week they were fed 353 fish. This means the fish were fed a total of 704 fish over the two weeks. Wow!

Great job!!! Give yourself a sea lion clap like this [Look at the camera and clap your hands without bending your wrists while saying Arph, Arph, Arph, Arph.] **because you are a very seaworthy and awesome mathematician!**

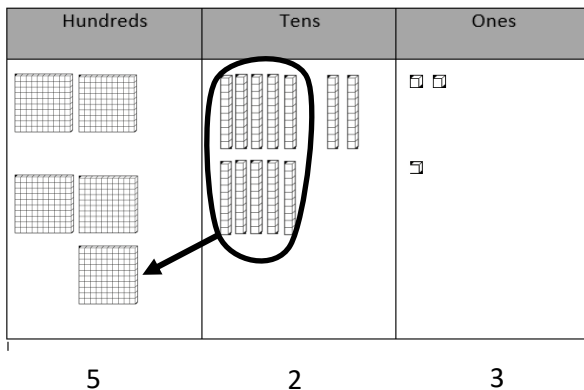
[You Do]

I want you to try one on your own.

Read this on your own.

There were 272 children that visited both the new tiger and the sea lions on Wednesday and only 251 children that visited both the tiger and the sea lions on Thursday. How many total children visited both the tiger and the sea lion show on Wednesday and Thursday?

Please build the two numbers on a place value mat that you created earlier. Add the numbers together, trading or regrouping of you need. When you are finished, we will compare models. [Long pause, then compare models.]



Our model shows $272 + 251 = 523$

Tell me how many ones? [Pause and listen.] **3 ones. That's right!**

Tell me how many tens at first? [Pause and listen.] **Excellent!**

There were 12 tens. Tell me how we regrouped. [Pause and listen.] **Awesome! We bundled ten of those tens and traded them for 1 hundred flat, so we were left with how many tens? Say it.** [Pause and listen.] **Too cool! We were left with 2 tens or 20.**

How many hundreds? Hold up your fingers. [Pause and look.] Right again! We have 5 hundreds. What number is $500 + 20 + 3$? [Pause and listen.] Yes! 523 There were 523 children that visited both the tiger and the sea lions in two days.

Write the problem that matches the model on your own. Please solve the problem and regroup where necessary. We will compare in a just a minute. [Pause and then compare.]

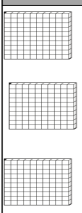
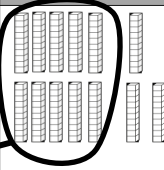
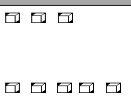
Hundreds	Tens	Ones
1		
2	7	2
2	5	1
+		
5	2	3

272 children that visited both the tiger and sea lions on Wednesday and 251 children that visited both the tiger and the sea lions on Thursday gives us a total of 523 children that visited both the tiger and the sea lions on those two days.

Additional Problems (if needed):

#1

Susan collects rocks. Last month she collected 163 rocks this month she collected 175 rocks how many rocks has she collected in all?

Hundreds	Tens	Ones
		
3	3	8

Susan collected a total $300 + 30 + 8$ or 338 rocks over the two months.

$$163 + 175 = 338$$

Hundreds	Tens	Ones
1		
1	6	3
1	7	5
+		
3	3	8

Independent Practice (1 minute)

Great work mathematicians! Today, we solved 3-digit addition problems while regrouping tens.

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.]

Good luck and do your best!

Closing (1 minute)

Friends, I enjoyed reviewing using base ten models with you to solve adding problems with 3 digits and regrouping tens! 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!

Copyright © by Houghton Mifflin Harcourt Publishing Company. All rights reserved. Reproduced by permission of the publisher, Houghton Mifflin Harcourt Publishing Company.

Content is made accessible by a Special School Closing Emergency License that is limited to the 2020 academic year and shall conclude on June 30 2020. Use does not imply affiliation with or endorsement by the third party.