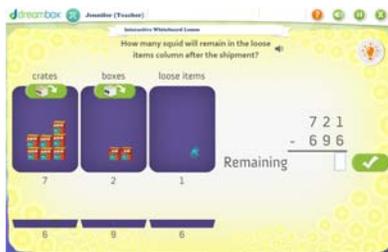


Subtraction Algorithm

The interactive white board tool for this lesson can be found on our website under Resources and Teacher Tools. (www.dreambox.com/teachertools)



Students use the standard subtraction algorithm and a place value workspace to solve subtraction problems involving up to two 3-digit numbers. After students have learned number line and constant difference strategies for subtraction, this DreamBox lesson engages students in learning the standard algorithm as another approach to solving subtraction problems. Using a context of shipping items from a warehouse, students have a concrete place value connection to the steps in the algorithm. Students learn and use appropriate notation while making sense of the algorithm.

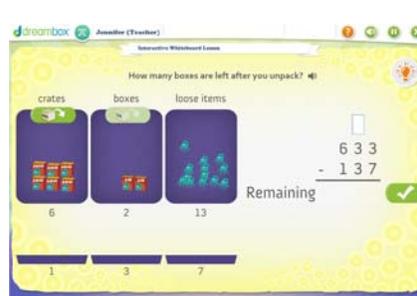
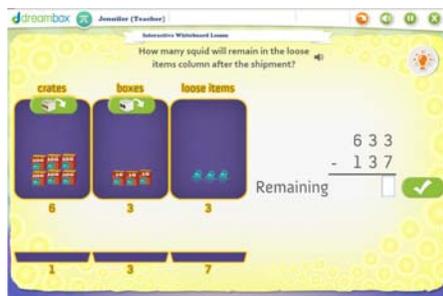
Sample Lesson

Objective: Students use the standard subtraction algorithm and a place value workspace to solve subtraction problems involving up to two 3-digit numbers.

Background: At this point, students should be able to represent numbers in multiple ways and understand that place determines value. Students have an understanding that:

95 = 9 tens and 5 ones as well as **95 = 8 tens and 15 ones**

Instruction:



1. Bring up the interactive whiteboard lesson and explain that we are managing deliveries from a warehouse or squid. We know how many crates, boxes and loose items we have available in the warehouse. We also know how many crates, boxes and loose items need to be shipped. Our mission is to know how many squid will remain in the warehouse after the shipment.
2. Ask the class to identify the areas of the “warehouse”, the “workspace,” and the “shipping platform.” Ask for volunteers to show the class how the workspace and the warehouse and shipping platform are related.

Sample student responses and explanations:

- a. “The warehouse has the entire inventory, that’s the top number in the workspace. The shipping platform is where all the items will be placed for delivery. That number is the second number in the workspace. “
 - b. “You can see that the number of crates in the warehouse is the same number in the hundreds column of the workspace. “ (The teacher may ask, “How many items do you think are in a crate? How many squid are packed into crates here?”
 - c. Students may also make connections between the boxes and loose items in relation to place value. Be sure to ask open ended questions to allow students to make connections to place value in the workspace and the squid in the warehouse.
3. After students have made connections between the warehouse and the workspace, begin by addressing the prompt on the screen, “How many squid will remain in the loose items column after the shipment?” Ask students, “How many loose items do we need to ship and do we have enough in the warehouse? Turn to your shoulder partner and discuss. In a moment we’ll ask for volunteers to share your responses.”

Sample student responses and explanations:

- a. You need 7 squids, but the warehouse doesn’t have enough. We can’t do that part.
 - b. You need 7 individual squid, and we don’t have enough, but we could open a box to make up for it. (This will lead to the next step)
 - c. You need 3 squid and they are in the warehouse. (Ask the student how he knows we have 3 squid and where he found his information for how many need to be shipped. Ask him to look at the workspace and the shipping platform to check his information)
 - d. We need 7 squid, but only 3 are in the warehouse. We could put 4 on backorder. (This is a realistic answer. Ask the class to consider if we need to make the customer wait for those loose items? Is there another way to get the customer what he needs?)
4. After students have discussed their options, ask one of the students who suggested unpacking a box to come to the board and select the box icon. Ask students to describe what happened when we unpacked the box.

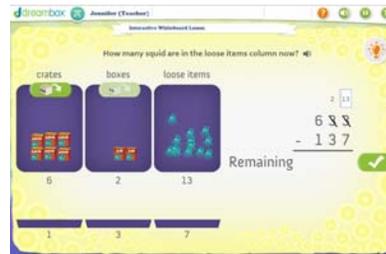
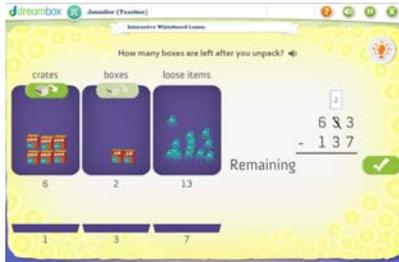


Sample student responses and explanations:

- a. “When he chose the button, one of the boxes was moved and a bunch of squid were placed in the loose items space.” (Ask if anyone notices anything about the amount of boxes or loose items.)
- b. “There are only two boxes of squid left and the open box of squid added 10 more individual squid to the loose items space.”
- c. “We still don’t have any items to ship.”

d. "There is a box above the tens place in the works space. I think this is because there aren't 3 boxes in that space anymore, we need to change it."

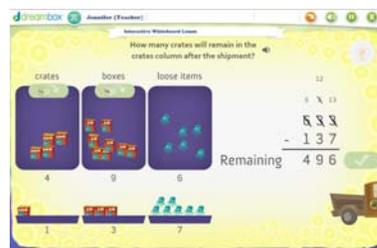
5. Once students have discovered that the workspace needs to be changed to reflect the warehouse inventory, ask for a student to make the correction in the workspace on the board. After one student corrects the tens column, as another student to correct the ones column.



6. Ask students again, "What is the purpose of our task today." Wait for someone to respond by saying that we need to know how many squid are left in the warehouse after the shipment. At that point ask, "Can we predict that now? If so, what do we need to do in the workspace next? Talk to your shoulder partner and prepare to share what you know."

Sample student responses:

- a. Yes! Now we have enough loose items to pack the shipment. We can go ahead and subtract. We'll have loose items left.
 - b. We can at least know how many individual squid will be left. That's easy, 6 because $13 - 7 = 6$.
 - c. We can find the individual squid, but now we don't have enough boxes to ship.
7. After students have discussed what we can predict, ask a volunteer to go up to the board and type the response in the box.
 8. Continue with the lesson using questioning and allow students to make connections with what happens in the warehouse and what happens in the workspace. Be sure that students realize that the number of boxes is in groups of 10. Ask students to record how many individual squid are in the boxes in the warehouse and as again about how many individual squid are in the crates. For example: If there are 12 boxes, then that means there are 120 squid or if there are 5 crates, that means that there are 500 individual squid. At the conclusion of this prompt, make certain that students remember what we had to determine, the number of squid that are left after the order has been filled.



9. Follow through with the lesson and select the blue Next button to replay a different warehouse scenario.

