

Addition with Tens on the Number Line



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

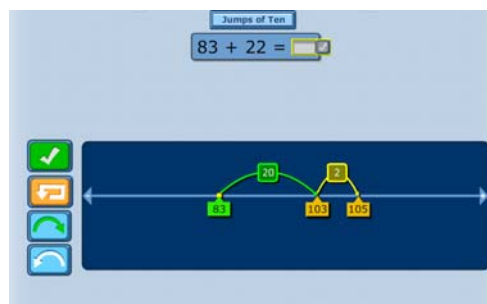
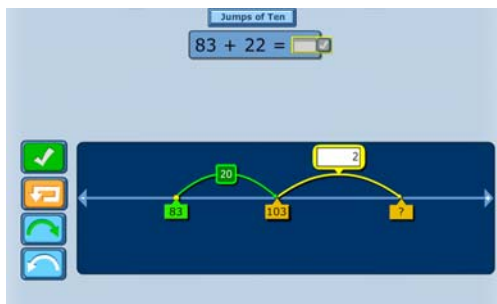
This lesson provides an open number line virtual manipulative for teachers to use in a variety of instructional contexts. In contrast to number lines where all the counting numbers are visible, the open number line displays only the starting points, change amounts, and resulting values. Teachers can use it to represent student strategies such as skip counting, adding on, or removal. Research shows this tool helps students move away from counting by ones.

Sample Lesson

Objective: Add and Subtract Landmark Numbers: Students add or subtract two numbers by first jumping by 10 or a multiple of 10 or to the nearest multiple of 10, then adding or subtracting additional tens and leftovers ($53+21$ becomes $53 +10+10+1$ or $53+7+10+4$ or $53+20+1$)

Background: In the jumps-of-ten strategy, one number is kept whole and jumps of ten are added to it. This thinking is easily represented on an open number line. Children often begin by adding only one ten at a time, although later all the tens are added at once.

Instruction:



1. Begin by listing the math string below one expression at a time. Ask students to find the sum in their head (mental math). Call on individual students to discuss their strategies before the subsequent problem is presented. $63+10$ $43+10$ $123+10$ $143+10$
2. Next, draw a number line on the chart paper to illustrate these “jumps.” Allow students to draw their own open number lines on paper to show their work.
3. Show the DreamBox open number line on the interactive white board and writes that problem on the chart paper. Ask, “How can we use a mental math strategy to solve this problem? Discuss your strategy with your partner and draw your own open number line.”
4. After students have discussed the strategy, ask for a volunteer for a starting point. That student types the number in the open number line. Ask, “Why did you start with that number?”

5. Ask another student, what would you do next?" You can ask that student as he is demonstrating, "How far would do we need to jump on the number line from 53? Are we going to go forward or go back? Why?"

Sample responses:

- a) "2 jumps of 10 forward because we are adding."
 - b) "Jump 20 forward because we are adding."
 - c) If a student responds " jump back," have students discuss that idea with their partner. Have pairs report out to explain whether their strategy their strategy will get closer to the sum.
 - d) Some students may move back on the number line from 53 to the landmark 50 and then add the 10s. This strategy is valid, and will require adding another jump of three later.
6. After the student has made two jumps of 10 or one jump of 20, ask, "What should the next tag on the number line read?" Invite individual students to respond and then ask them to describe how they arrived at an answer. Discuss their strategies.
Sample Responses:
 - a) "I skip counted by 10s from 53 like this: 53, 63, 73."
 - b) "I know $5+2=7$ so $50+20=70$ and then I added 3."
 - c) "I added 20 to 53 and got 73."
 - d) "I added one 10 to 53 and got 63, then I added another 10 and got 73."
 - e) "I jumped back 3 to 50 and then added two tens, to get 70, etc."
 7. Invite a student up to the board to label the tag.
 8. Ask students, "Are we finished?" If anyone says, "Yes," ask the class about the leftover '2' from 22. "What do we do with leftover '2'?" Call on students to explain and invite one student to demonstrate this last jump on the number line.
 9. Call on another student to fill in the last tag with the answer and transfer it to the algorithm.
 10. Click the "Next" button on the DreamBox open number line tool and begin a new problem. Engage all students in using the open number line to solve the problem and ask them to explain their thinking and justify their answers. Use the questions above when appropriate to scaffold as needed.