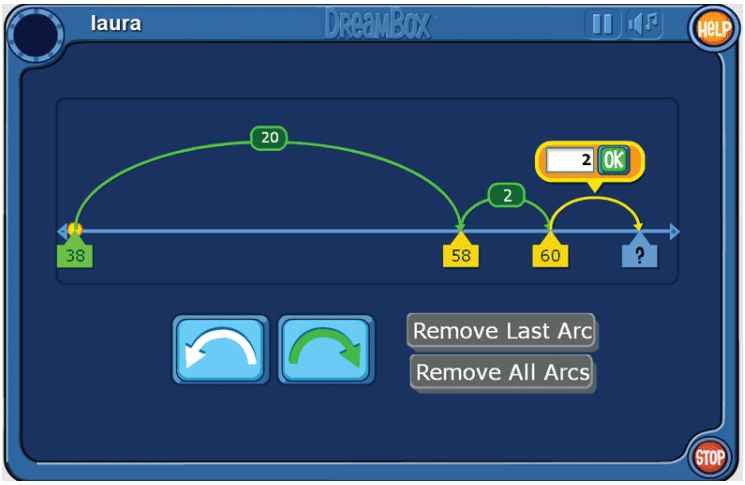
# Open Number Line: Developing Number Sense™

The virtual open number line can be used to support a number of mathematical ideas including counting, addition and subtraction, modeling situations, and representing student strategies. The ideas here can be used as stand-alone activities, as a supplement to an existing math curriculum, or incorporated into a professional development program for teachers.

## Getting to know the lesson:

This lesson provides an open number line virtual manipulative for teachers to use within a variety of instructional contexts. Note that in contrast to number lines where all the counting numbers are shown, the open number line only shows the result of operations. Teachers can use it to represent student strategies such as skip counting, adding on, removing, or difference. Research shows it helps students move away from counting one-by-one.[1]




## Getting to know the open number line manipulative:

The open number line supports students in envisioning numbers:

- as the magnitude of distances on a line,
- as equivalent quantities, and
- by their proximity to landmark numbers.

They are also able to explore operations (addition, subtraction, etc.) on the open number line to support the development of various efficient strategies for computational fluency.

## Ideas for using the open number line in the classroom:

Use the open number line to skip count.

- Invite students to share patterns they notice.
- Challenge students to use a pattern to predict the next end-point.
- Vary the activity by starting at numbers other than zero or counting backwards.

Use the open number line to model a situation.

- Whether it's a situation that comes up during a math lesson or a question that arises when students are on a field trip, the open number line can be used to model a number of mathematical situations.

Use the open number line to model students' strategies during mini-lessons using strings of related problems.[2]

- Invite students to share how their strategy is similar to or different than another strategy. Use the open number line to highlight the similarities and differences.
- Save a snapshot or copy of the screen using the student's name and date. This is a nice piece of evidence that can be used in a student's file or shared with parents.

[1] For more information on the open number line see Fosnot, C.T. (2007). *Measuring for the art show.* Portsmouth NH: Heinemann or Fosnot, C.T. and Dolk, M. (2001) *Young mathematicians at work: Constructing early number sense, addition and subtraction.* Portsmouth, NH: Heinemann.

[2] For suggestions of minilessons see Fosnot, C.T. and Uittenbogaard, W. (2007). *Minilessons for extending addition and subtraction.* Portsmouth NH: Heinemann.