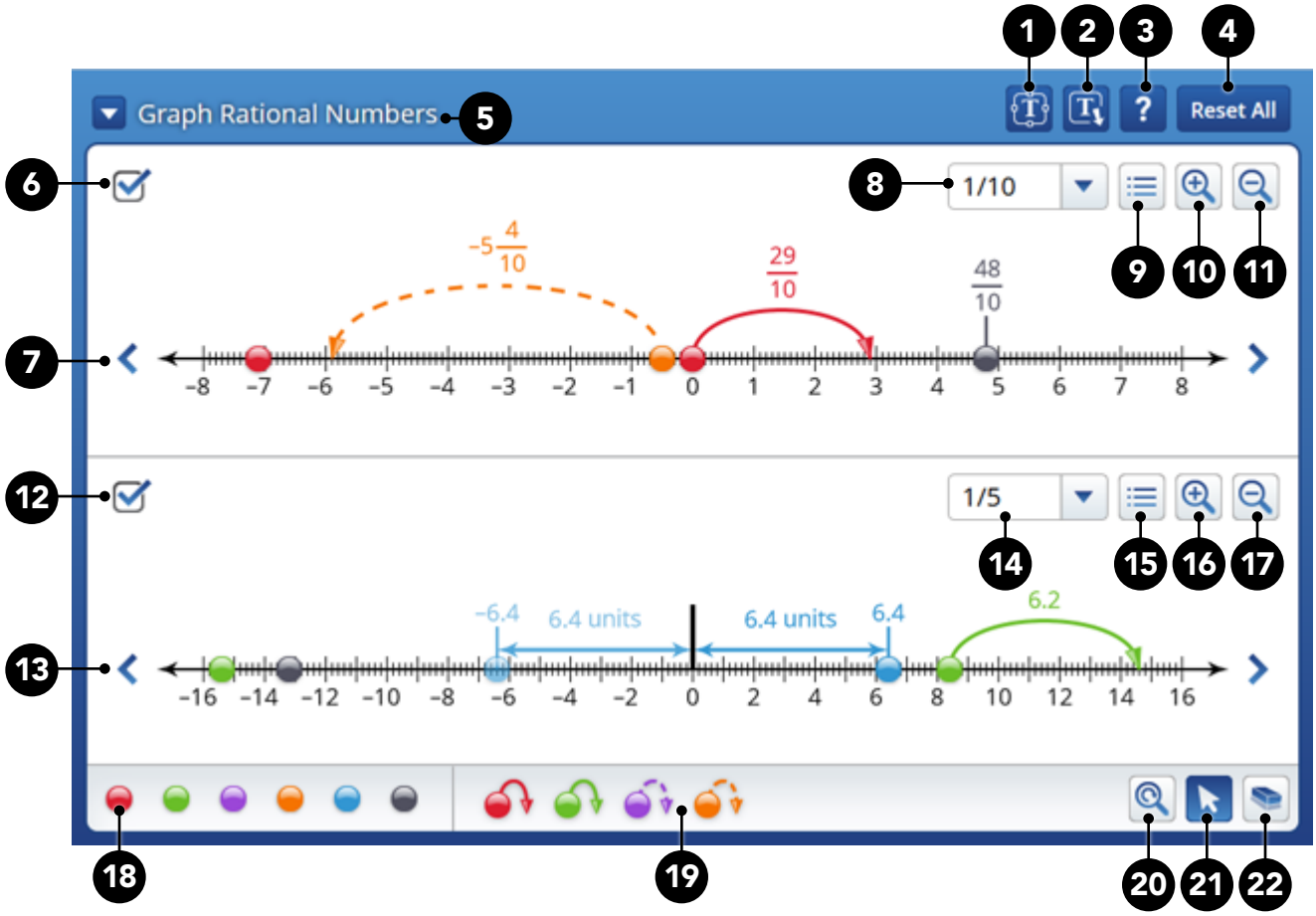
Number Lines

In this tool, you can graph integers, decimals, mixed numbers, fractions, and display their opposites and absolute values on a number line. You can model addition and subtraction of integers, decimals, mixed numbers and fractions. You can also graph single and compound inequalities.



1. **Textbox** Add comments to the activity area.
2. **Textbox with Arrow** Add comments to the activity area, using the arrow to focus attention on a particular area.
3. **Help** Launch a help file PDF for the tool.
4. **Reset All** Reset all current work in the activity area for the tool back to the default settings.
5. **Mode Drop-down** Shows all the available modes of the Number Line tool. Selecting a mode will open the tool in that mode and save any current work in the mode you were previously working in. There are five modes in the Number Line tool: Graph Rational Numbers, Add & Subtract Integers, Add & Subtract Decimals, Add & Subtract Fractions, and Graph Inequalities.
6. **Show/Hide Number Line 1 Checkbox** Allows you to show or hide number line 1. When the number line is hidden, any changes or updates to the number line will be saved unless the reset all button is selected.

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7. **Number Line 1** You can place points and arcs on the number line to model a situation. The number of tick marks on the number line is determined by the both interval and range of values you chose. When you add points or arcs to the number line, you can drag them freely along the number line. When you release the point or arc along the number line, it will snap to the nearest tick mark. You can also change the view of number line 1 by pressing and holding one of the tick mark values below the number line and then dragging it left or right.
8. **Interval Drop-down Menu 1** Using the interval drop-down menu, you can change the number of tick marks that appear between each of the integer values on number line 1 so that the difference in value between each tick mark is the value of the interval. For an interval value of one-hundredth, you will only see tick marks every one-tenth, but you can snap points or arcs at every hundredth.
9. **Set Range Button 1** Use the set range button, you can change both the minimum and maximum value of number line 1. Once you have determined the minimum and maximum values, you can press the set button to update the number line. The minimum value may be no less than -32, and the maximum value may be no greater than 32. There must be a difference of 1 unit between the minimum and maximum values when using the set range button.
10. **Zoom-in Button 1** You can change the zoom level of number line 1 by pressing the zoom-in button. Each press of the zoom-in button will change the view of the number line so that you are viewing half of the values on number line 1 from the previous zoom level.
11. **Zoom-out Button 1** You can change the zoom level of number line 1 by pressing the zoom-out button. Each press of the zoom-out button will change the view of the number line so that you are viewing twice the number of values on number line 1 from the previous zoom level.
12. **Show/Hide Number Line 2 Checkbox** Allows you to show or hide number line 2. When the number line is hidden, any changes or updates to the number line will be saved unless the reset all button is selected.
13. **Number Line 2** You can place points and arcs on the number line to model a situation. The number of tick marks on the number line is determined by the both interval and range of values you chose. When you add points or arcs to the number line, you can drag them freely along the number line. When you release the point or arc along the number line, it will snap to the nearest tick mark. You can also change the view of number line 2 by pressing and holding one of the tick mark values below the number line and then dragging it left or right.
14. **Interval Drop-down Menu 2** Using the interval drop-down menu, you can change the number of tick marks that appear between each of the integer values on number line 2 so that the difference in value between each tick mark is the value of the interval. For an interval value of one-hundredth, you will only see tick marks every one-tenth, but you can snap points or arcs at every hundredth.
15. **Set Range Button 2** Use the set range button, you can change both the minimum and maximum value of number line 2. Once you have determined the minimum and maximum values, you can press the set button to update the number line. The minimum value may be no less than -32, and the maximum value may be no greater than 32. There must be a difference of 1 unit between the minimum and maximum values when using the set range button.

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16. **Zoom-in Button 2** You can change the zoom level of number line 2 by pressing the zoom-in button. Each press of the zoom-in button with change the view of the number line so that you are viewing half of the values on number line 2 from the previous zoom level.
17. **Zoom-out Button 2** You can change the zoom level of number line 2 by pressing the zoom-out button. Each press of the zoom-out button with change the view of the number line so that you are viewing twice the number of values on number line 2 from the previous zoom level.
18. **Point Palette** You can drag points to place them on number line 1 or 2. You can add several different colored points, including red, green, purple, orange, blue, and black. You can add a total of 50 points to the number lines from the point palette in any combination of colors.
19. **Arc Palette** You can drag arcs to place them on number line 1 or 2. You can add several different colored arcs, including red, green, purple, and orange. By default, the arc length is 1, but you can drag the arc's arrow to any tick mark on the number line to set the distance between the point of the arc and the arrow. Each arc of the same color you use will be the same length, so changing one blue arc to a distance of 2 will change all the blue arcs to a distance of 2. You can add a total of 10 arcs of each color to the number lines.
20. **Zoom-reset** When you press the zoom-reset button, both number lines will return to the default range of -8 to 8.
21. **Pointer** Using the pointer, you can drag points and arcs to the number lines. Once added to the number line, you can freely move any of the points or arcs along the number line. By selecting a point or arc, you can bring up its menu, where you can choose to change its value to fractions, decimals, or mixed numbers. You can also choose whether to show or hide that value on the number line from within the menu.
22. **Eraser** Once the eraser is selected, each point or arc you press along the number lines will be removed.

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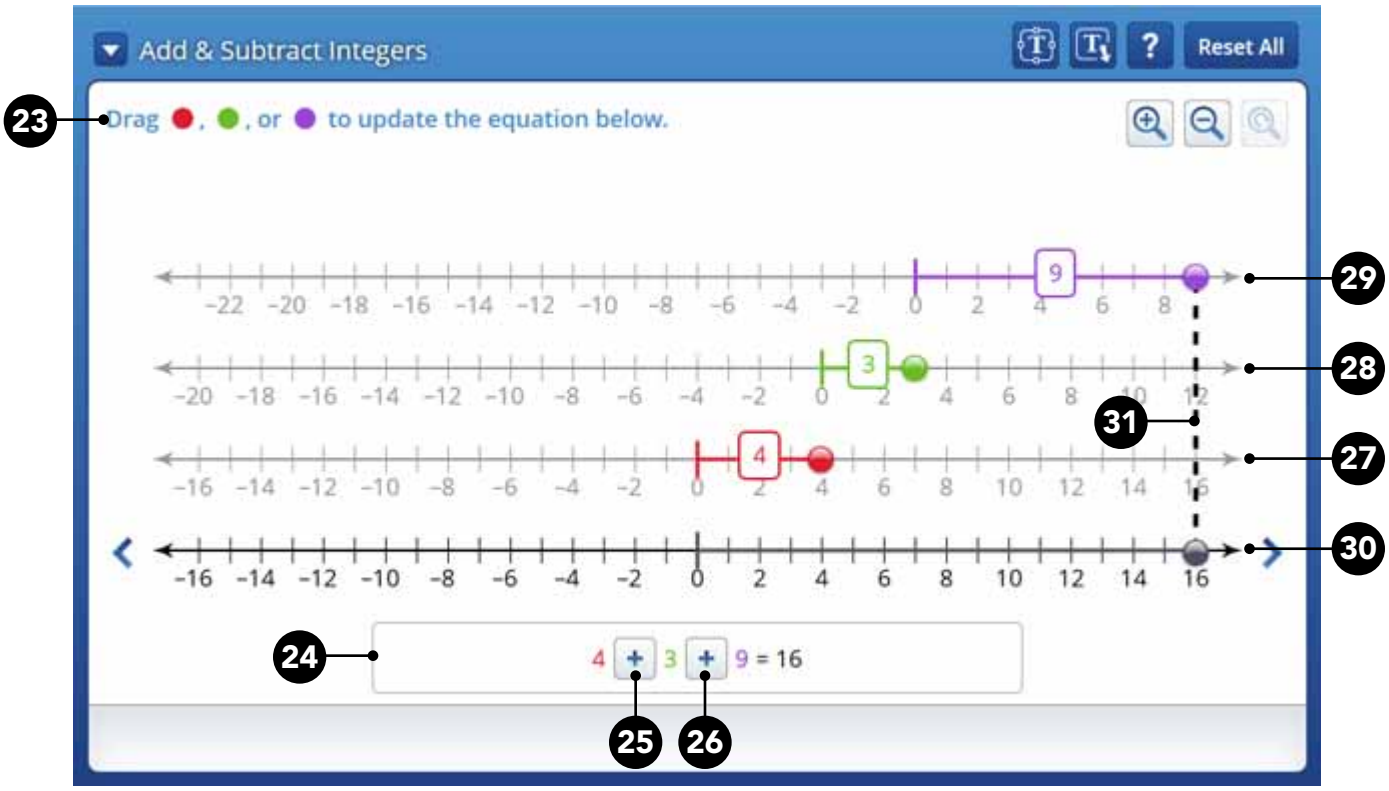
Number Lines

Add & Subtract Integers Mode



23. Direction Line Area As you open the tool mode, the direction line area will provide you with instructions on how to successfully add and subtract integers in this mode. The direction line area will update after each step you complete.

24. Equation Area Where you can see the equation of the problem you are trying to solve using the numbers you modeled on the number lines.

25. Operator Selection Menu 1 Once you have modeled the first number in your expression, you can choose whether to add or subtract the second number.

26. Operator Selection Menu 2 Once you have modeled two numbers in your expression, you can choose whether to add or subtract a third number, or set an equal sign to complete the equation.

27. Intermediate Number Line 1 Following the instructions from the direction line, you drag the red point along the number line to model your first number. The values on the number line are independent of all other number lines, and the point always starts at zero on the number line

28. Intermediate Number Line 2 Following the instructions from the direction line, you drag the green point along the number line to model your second number. The values on the number line are independent of all other number lines, and the point always starts at zero on the number line.

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29. **Intermediate Number Line 3** The third intermediate number line only appears is you select to add or subtract with the second operator. Following the instructions from the direction line, you drag the purple point along the number line to model your third number. The values on the number line are independent of all other number lines, and the point always starts at zero on the number line.

30. **Final Number Line** The final number line is where the cumulative total of the values of the numbers you have added and/or subtracted on the intermediate number lines is tracked. The black point represents the current total of the equation along the number line.

31. **Reference line** The reference line connects the current number line with the final value as you add and update each number.

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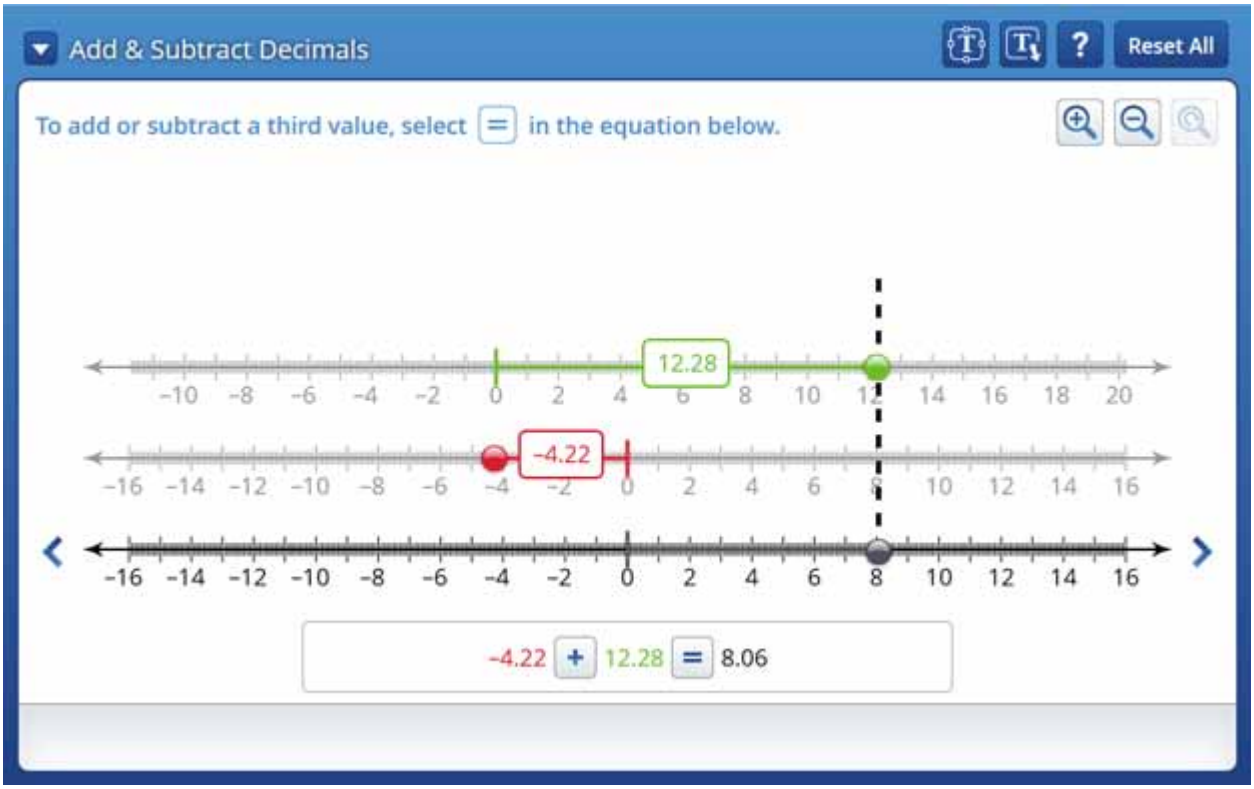
Number Lines

Add & Subtract Decimals Mode



In the Add & Subtract Decimals mode you can models numbers with up to two decimal places.

Note: The Add & Subtract Decimals mode works the same as the Add & Subtract Integers mode. Please see the explanations provided on pages 4–5 if you need to review those features.

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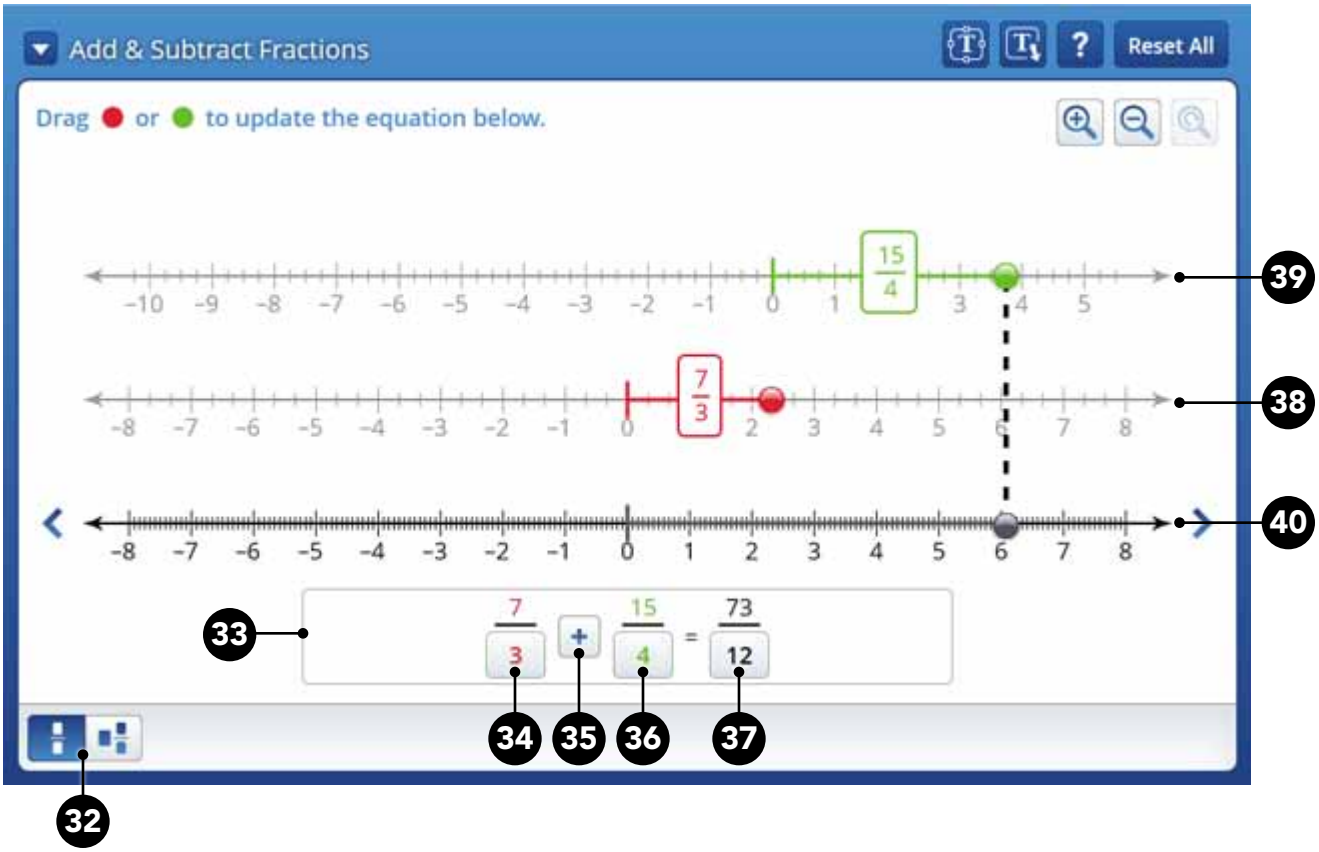
Number Lines

Add & Subtract Fractions Mode



32. Fraction/Mixed Number Buttons Where you can choose to view the values in the equation area and on the number numbers as fractions or mixed numbers.

33. Equation Area Where you can see the equation of the problem you are trying to solve using the numbers you modeled on the number lines.

34. Denominator Menu 1 Where you can choose the denominator of your first number. You can choose whole numbers up to 6 for the denominator.

35. Operator Selection Menu 1 Once you have modeled the first number in your expression, you can choose whether to add or subtract the second number.

36. Denominator Menu 2 Where you can choose the denominator of your second number. You can choose whole numbers up to 6 for the denominator.

37. Denominator Menu 3 Where you can choose the denominator of your answer. You can choose whole numbers up to 30 for the denominator. The final answer will not appear in the equation display unless you have chosen the correct common denominator of the first two numbers.

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38. Intermediate Number Line 1 Following the instructions from the direction line, you drag the red point along the number line to model your first number. The values on the number line are independent of all other number lines, and the point always starts at zero on the number line. The number of tick marks between each integer is determined by the denominator of the fraction of the first number.

39. Intermediate Number Line 2 Following the instructions from the direction line, you drag the green point along the number line to model your second number. The values on the number line are independent of all other number lines, and the point always starts at zero on the number line. The number of tick marks between each integer is determined by the denominator of the fraction of the second number

40. Final Number Line The final number line is where the cumulative total of the values of the numbers you have added and/or subtracted on the intermediate number lines is tracked. The black point represents the current total of the equation along the number line. The denominator you chose for the answer determines the number of tick marks on the number line between each integer.

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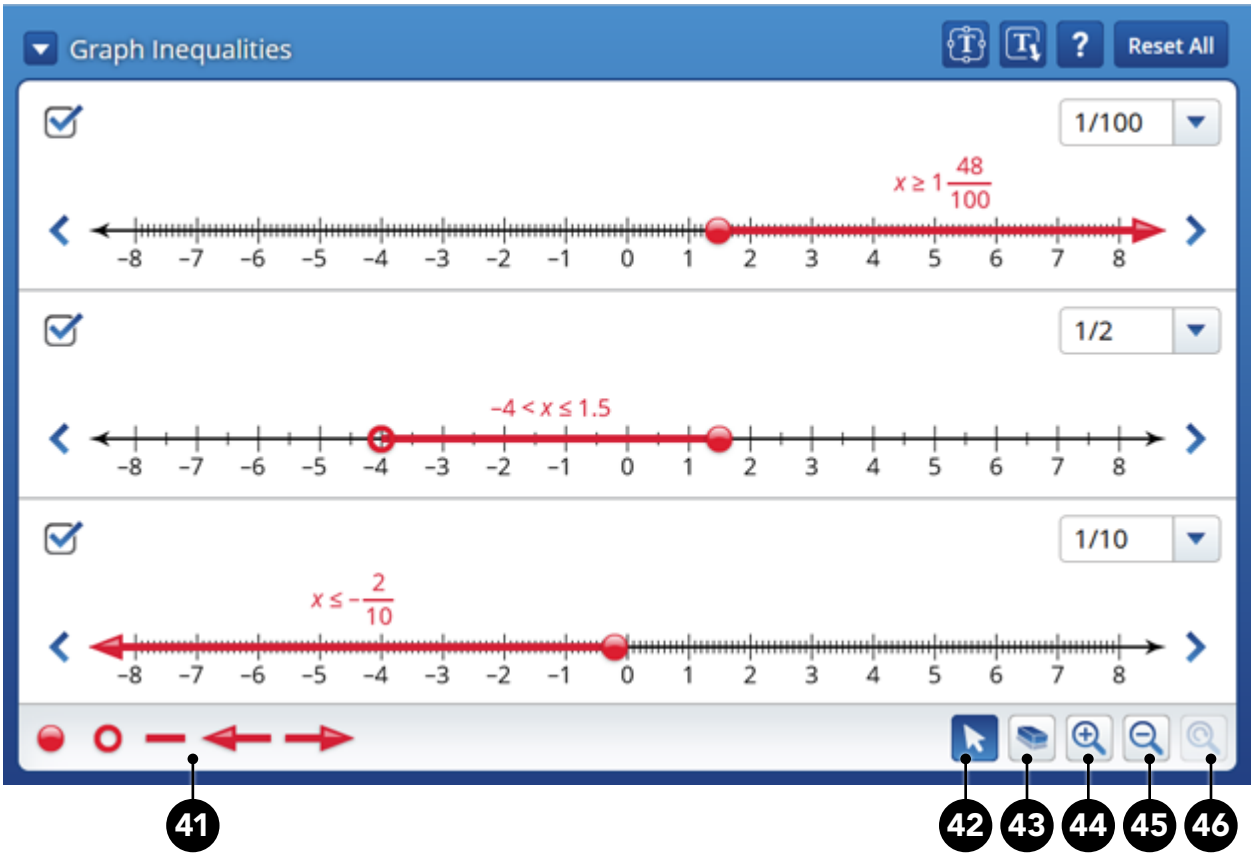
Number Lines

Graph Inequalities Mode



Note: For information on the number lines and the interval drop-down, please refer to the Graph Rational Numbers mode help.

41. Inequality Palette Where you can choose the parts to create an inequality graph on the number lines. You can choose from a closed point, an open point, a segment, a left-facing ray, or a right-facing ray.

42. Pointer Using the pointer, you can drag items from the inequality palette to the number lines to create your inequalities. First you should drag the point(s) you need for your inequality to a number line. Once you have placed your point(s) on the number line, you can add the segment or one of the rays to the point(s) to complete the inequality statement. To attach a segment or ray to a point, place the segment or ray on the number line and then slowly drag the non-arrow end toward the point. When you see a green plus symbol above the segment or ray, you can release it and it will snap to the point. By selecting a part of an inequality, you can bring up its menu, where you can choose to change its value to fractions, decimals, or mixed numbers. You can also choose whether to show or hide that the inequality statement within the menu.

43. Eraser Once the eraser is selected, each part of the inequality you press on the number lines will be removed. Any points and segments or rays that are attached will erase at the same time.

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44. **Zoom-in Button** You can change the zoom level of all the number lines at the same time by pressing the zoom-in button. Each press of the zoom-in button will change the view of the number lines so that you are viewing half of the values on the number lines from the previous zoom level.
45. **Zoom-out Button** You can change the zoom level of all the number lines by pressing the zoom-out button. Each press of the zoom-out button will change the view of the number lines so that you are viewing twice the number of values on the number lines from the previous zoom level.
46. **Zoom-reset** When you press the zoom-reset button, all number lines will return to the default range of -8 to 8.