



Variables on Both Sides

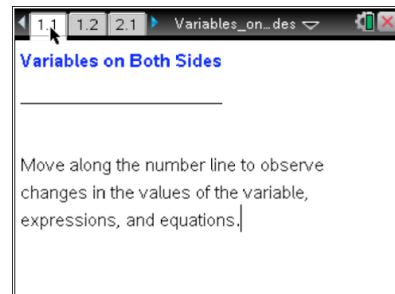
Student Activity

Name _____

Class _____

Open the TI-Nspire document *Variables_on_Both_Sides.tns*.

This activity lets you use a number line to compare the values of two variable expressions.



Move to page 1.2.

Press **ctrl** **▶** and **ctrl** **◀** to navigate through the lesson.

- As you grab the point and move the arrow beneath the number line, what changes? What stays the same?
- Describe the differences in the values of the expressions on the left side and the right side.
 - Move the arrow to try several new values for x . What is true about the difference in the values of the expressions?
- Gail says that if she were asked to solve the equation $2x + 4 = 2x + 1$, she could find a value of x that would be a solution. Eric says, "That's impossible." Who is correct? Justify your answer.

Move to page 2.1.

- Examine the expressions on the left and right sides. Describe the differences between the expressions and their values.
 - Find x so that the difference between the two expressions is 8.
 - Find x so that the difference between the two expressions is 4.



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- Gail says that if she were asked to solve the equation $2x + -4 = 3x + 1$, she could find a value of x that would be a solution. Eric says "That's impossible." Who is correct? Justify your answer.
- Predict what would happen if the 2 on the left side of the equation were a 3. Explain your reasoning. Change the 2 to a 3 and see if you are correct.

Move to page 3.1.

- As you move the arrow for point x , what changes? What stays the same?
- How many solutions are there to the equation $4x + 3 = 2(2x + 1) + 1$? Explain your reasoning.
- Simplify the right side of the equation by distributing and combining like terms. Does this support your response to #8?
- Describe the characteristics of an equation that would have the solution given below. (Hint: Review the equations that you have explored in this activity.) Also, write an example of an equation for each solution.
 - no solution (empty set)
 - one solution
 - infinitely many solutions