

The **Equality Explorer: Two Variables** simulation allows students to explore the conditions that result in equality and inequality when there are two variables present. Students can build a system of equations and develop a meaningful understanding of a system of equations.

The screenshot shows the PhET Equality Explorer: Two Variables simulation interface. At the top, the equation $y - 2 = -x + 3$ is displayed. Below it is a balance scale with a pink 'y' block on the left pan and three blue 'x' blocks on the right pan. A green arrow points upwards between the pans, indicating they are balanced. To the right, there are input fields for $x = 2$ and $y = 3$. Below these are 'Snapshots' of the current state, showing the equation and the variable values. At the bottom, there are toolbars for adding blocks (x, -x, y, -y, 1, -1) and a lock icon. A 'RESET' button is located at the bottom right.

OBSERVE the statement reflecting what is on the balance

LOCK the balance so that an operation occurs on both sides

CONTROL the variable value

RELOAD a snapshot

RESET the sim

Insights into Student Use

- Students naturally want to find balanced situations. Encourage them to find as many as possible.

Suggestions for Use

Sample Challenge Prompts

- Build a balanced situation using both x and y. Hide the variable values and trade computers with a partner. Can you determine the values of x and y?
- Create an equation using both x's and y's and take a snapshot. Keeping the variable values the same, build a *different* equation and take a snapshot. What do you notice about *both* snapshots? What happens when you substitute the x and y values into both equations?

See all published activities for Equality Explorer: Two Variables [here](#).

For more tips on using PhET sims with your students, see [Tips for Using PhET](#).