

# Equality Explorer: Two Variables

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.

**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

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PHET

## Customization Options

Query parameters allow for customization of the simulation, and can be added by appending a '?' to the sim URL, and separating each query parameter with a '&'. The general URL pattern is:

`...html?queryParameter1&queryParameter2&queryParameter3`

For example, in Equality Explorer: Two Variables, if you want to run the sim in Spanish (`locale=es`) and disable external links (`allowLinks=false`) use:

[https://phet.colorado.edu/sims/html/equality-explorer-two-variables/latest/equality-explorer-two-variables\\_all.html?locale=es&allowLinks=false](https://phet.colorado.edu/sims/html/equality-explorer-two-variables/latest/equality-explorer-two-variables_all.html?locale=es&allowLinks=false)

ⓘ Indicates this customization can be accessed from the Preferences menu within the simulation.

Query Parameter and Description	Example Links
<p> ⓘ <code>locale</code> - specify the language of the simulation using <a href="#">ISO 639-1</a> codes. Available locales can be found on the simulation page on the <a href="#">Translations tab</a>. Note: this only works if the simulation URL ends in ".all.html".</p>	<p><code>locale=es</code> (Spanish)  <code>locale=fr</code> (French)</p>

Query Parameter and Description	Example Links
<code>audio</code> - if muted, audio is muted by default. If disabled, all audio is permanently turned off.	<code>audio=muted</code> <code>audio=disabled</code>
<code>allowLinks</code> - when <code>false</code> , disables links that take students to an external URL. Default is <code>true</code> .	<code>allowLinks=false</code>
<code>supportsPanAndZoom</code> - when <code>true</code> , enables panning and zooming of the simulation using pinch-to-zoom or browser zoom controls.	<code>supportsPanAndZoom=false</code>

## 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](#).