

The **Equality Explorer: Basics** simulation allows students to explore the conditions that result in equality and inequality and play with the concept of a variable.

Basics Screen

In the Basics screen, students can discover equality relationships and create functional definitions of equality and inequality.

OBSERVE the statement reflecting what is on the balance

ORGANIZE objects on the balance

BUILD an equality by dragging objects on and off the balance

SAVE snapshots of the balance

RELOAD a snapshot

EXPLORE different sets of objects

Equality Explorer: Basics

Lab Screen

In the Lab screen, students can change the values of the objects and build unique equations.

HIDE the object values

CLEAR the balance

CONTROL the object values

SHOW/HIDE the object values for each snapshot

RESET the sim to its original state

Equality Explorer: Basics

Insights into Student Use

- Students naturally want to find balanced situations. Encourage them to find as many as possible.
- Students enjoy making extremely unbalanced situations. Challenge them to find the “most unbalanced” scenario. What were the values of the objects?

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: Basics, if you want to switch the first and second screens (`screens=2,1`), with the 2nd screen open by default (`initialScreen=2`) use:
https://phet.colorado.edu/sims/html/equality-explorer-basics/latest/equality-explorer-basics_all.html?screens=2,1&initialScreen=2

To run this in Spanish (`locale=es`), the URL would become:
https://phet.colorado.edu/sims/html/equality-explorer-basics/latest/equality-explorer-basics_all.html?locale=es&screens=2,1&initialScreen=2

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

Query Parameter and Description	Example Links
<code>screens</code> - specifies which screens are included in the sim and their order. Each screen should be separated by a comma. For more information, visit the Help Center .	<code>screens=1</code> <code>screens=2,1</code>
<code>initialScreen</code> - opens the sim directly to the specified screen, bypassing the home screen.	<code>initialScreen=1</code> <code>initialScreen=2</code>
⚙ <code>locale</code> - specify the language of the simulation using ISO 639-1 codes. Available locales can be found on the simulation page on the Translations tab . Note: this only works if the simulation URL ends in “_all.html”.	<code>locale=es</code> (Spanish) <code>locale=fr</code> (French)
⚙ <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>

Suggestions for Use

- Explore proportional relationships on the Basics screen.
- Build equations with different values for each shape.

Sample Challenge Prompts

- Find as many equations as possible using the objects on the Basics screen.
- Build an equation on the lab screen. What makes this an equation?
- Identify the values for the square and circle. What could these values represent about the square and circle?
- If a dog equals 1, what does a cat equal?
- Using the Lab screen, balance 2 squares with 3 triangles. What values for the square and triangle make this work? Compare with the class.

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

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