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

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

McGarry, July 2018

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?

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.

1 ⭐

VIEW original equation

Solve for x

$$\frac{7}{2}x - 2 = -\frac{179}{2}$$

VIEW current equation

$$x = -25$$

+ − × ÷ [7]

Next

APPLY operations to isolate x.

x

−25

COLLECT stars for each completed challenge

Snapshots

$$\frac{7}{2}x - 2 = -\frac{179}{2}$$

$$7x - 4 = -179$$

$$7x = -175$$

SAVE snapshots of each step to show progress

Equality Explorer

Basics   Numbers   Variables   Operations   Solve It!   +1⭐

PhET