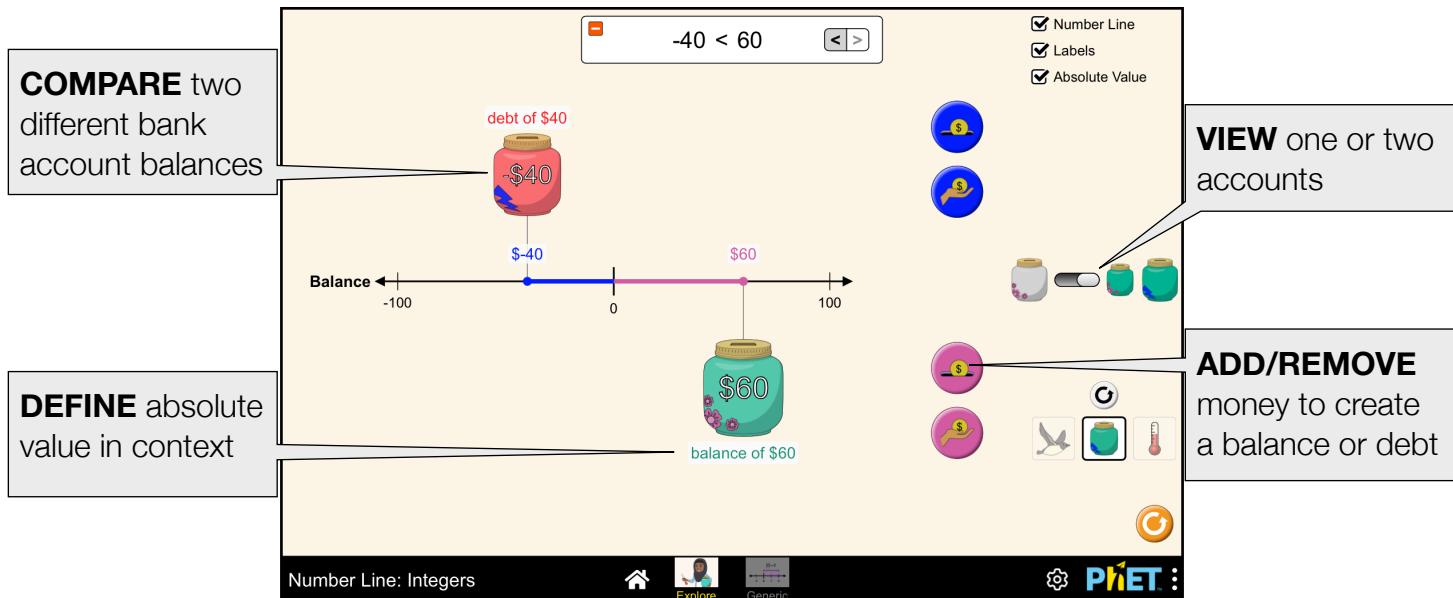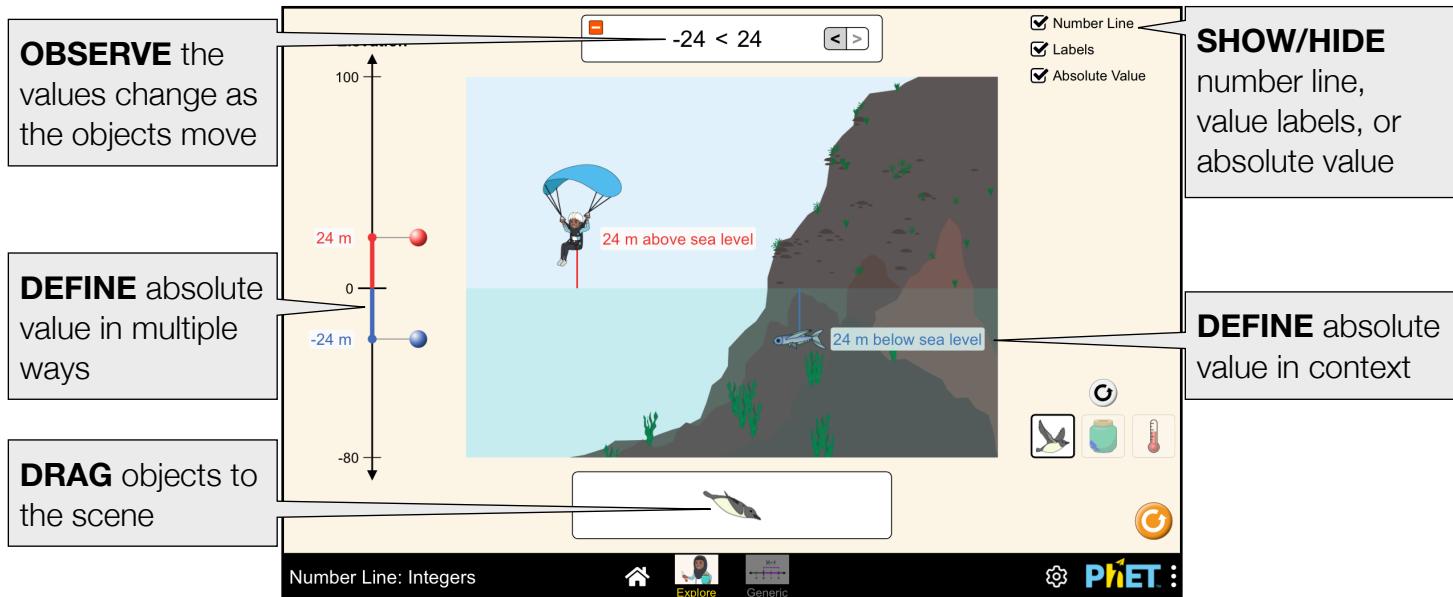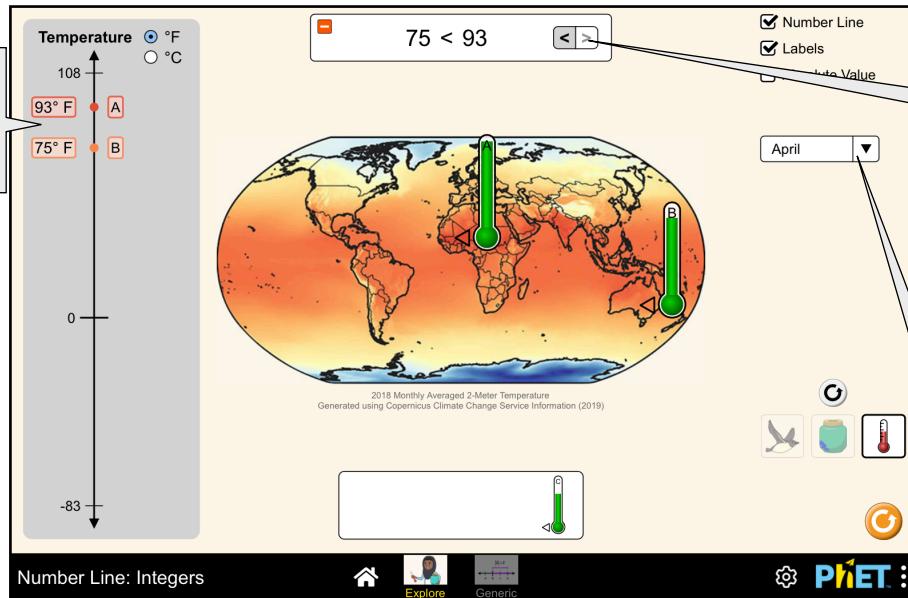In **Number Line: Integers**, students can explore multiple contexts that lend themselves to integer comparisons on a number line. After students explore altitude, bank accounts, and temperature, they can generalize about comparing integers and define absolute value.

Explore Screen

In the Explore screen, students can compare integers in multiple contexts.

OBSERVE the values change as the objects move

DEFINE absolute value in multiple ways

DRAG objects to the scene

SHOW/HIDE number line, value labels, or absolute value

DEFINE absolute value in context

COMPARE two different bank account balances

DEFINE absolute value in context

VIEW one or two accounts

ADD/REMOVE money to create a balance or debt

COMPARE temperatures of different locations

SWITCH the order of the comparison

CHOOSE month of real data to view

Generic Screen

In the Generic screen, students can compare integers generally, on different scales, and begin to define absolute value more generally.
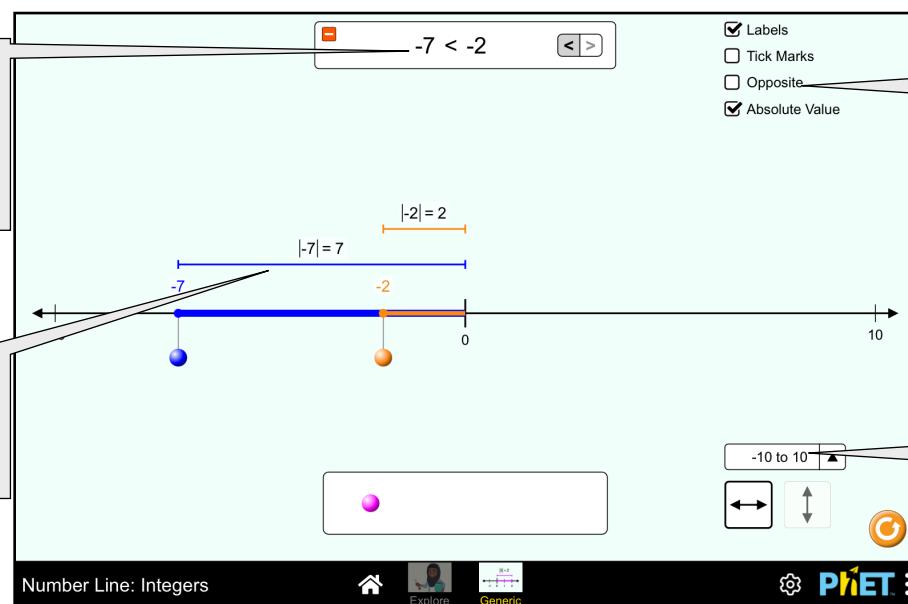

COMPARE values at different locations on the number line

VIEW the opposite value

DEFINE absolute value in a general context

CHANGE number line range

Suggestions for Use

- Use the Explore screen as an introduction to negative numbers, and later the Generic screen to reinforce the idea of opposites.
- Use both screens as an introduction to absolute value. Challenge students to come up with their definition of what they think "absolute value" means after playing with the simulation. Combine student ideas to come up with a classroom definition.

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 Number Line: Integers, if you only want to include the 1st screen (`screens=1`), with pan and zoom disabled (`supportsPanAndZoom=false`) use:

https://phet.colorado.edu/sims/html/number-line-integers/latest/number-line-integers_all.html?screens=1&supportsPanAndZoom=false

To run this in Spanish (`locale=es`), the URL would become:

https://phet.colorado.edu/sims/html/number-line-integers/latest/number-line-integers_all.html?locale=es&screens=1&supportsPanAndZoom=false

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

Query Parameter and Description	Example Links
`defaultCelsius` - starts the simulation with celsius as the default selection for temperature units.	`defaultCelsius`

`screens` - 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.	`screens=1`
	
	`screens=2,1`

`initialScreen` - opens the sim directly to the specified screen, bypassing the home screen.	`initialScreen=1` `initialScreen=2`
⚙ `locale` - 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".	`locale=es` (Spanish) `locale=fr` (French)
⚙ `regionAndCulture` - Select the portrayal of people, places, or objects in the sim. Images are not intended to represent the entire diversity of a region or culture. Possible values: `multi`, `usa`, `africa`, `africaModest`, `latinAmerica`, `oceania`, `asia`	`latinAmerica`
`allowLinks` - when `false`, disables links that take students to an external URL. Default is `true`.	`allowLinks=false`
`supportsPanAndZoom` - when `false`, disables panning and zooming using pinch-to-zoom or browser zoom controls. Default is `true`.	`supportsPanAndZoom=false`

See all published activities for Number Line: Integers here.
For more tips on using PhET sims with your students, see Tips for Using PhET.