Explore Screen

In this screen students can build any shape and explore the relationship between area and perimeter.

DRAG up squares to build your shape

SHOW background grid

SHOW dimensions

Area: 5
Perimeter: 12

MINIMIZE the information panel

TOGGLE between one and two boards
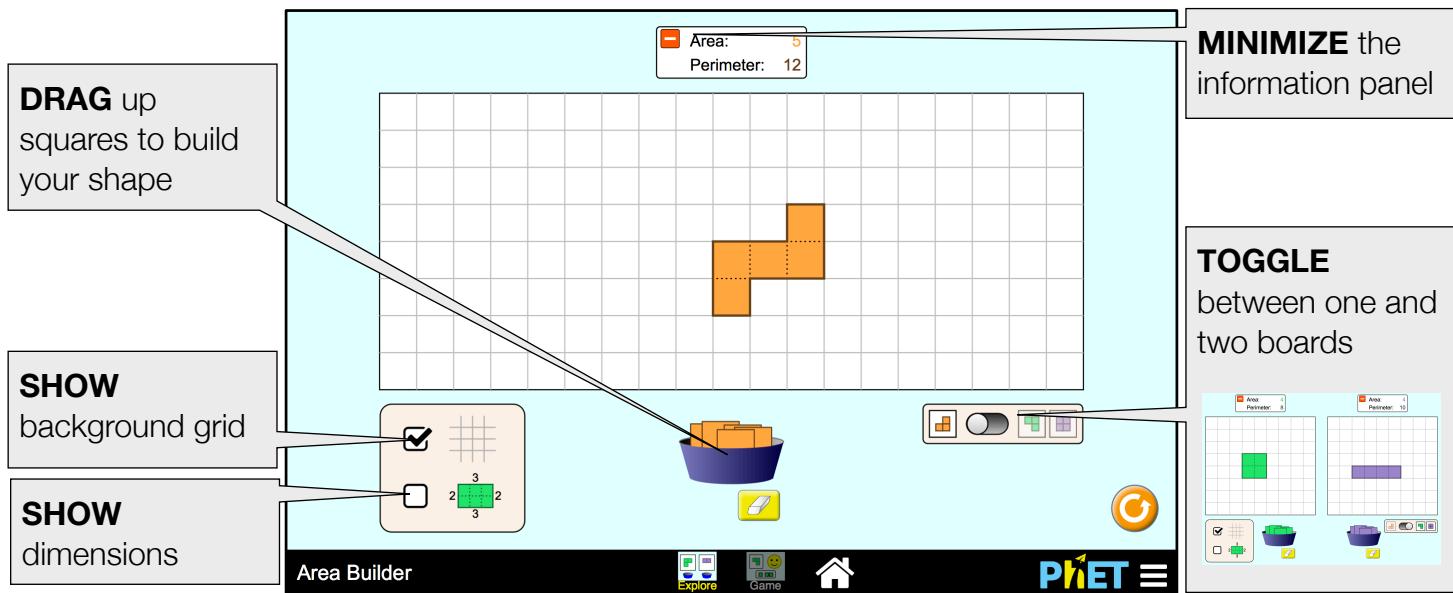
Game Screen

There are two kinds of challenges: Build a Shape and Find the Area. Each level contains challenges of increasing difficulty.

BUILD A SHAPE given area; **FIND THE AREA** of basic shapes

FIND THE AREA using limited tools

BUILD A 2-COLOR SHAPE given fractional areas

Choose Your Level!

1   2   3
4   5   6

BUILD A SHAPE given area and perimeter

FIND THE AREA of more difficult shapes

BUILD A TWO COLOR SHAPE given fractional area, perimeter
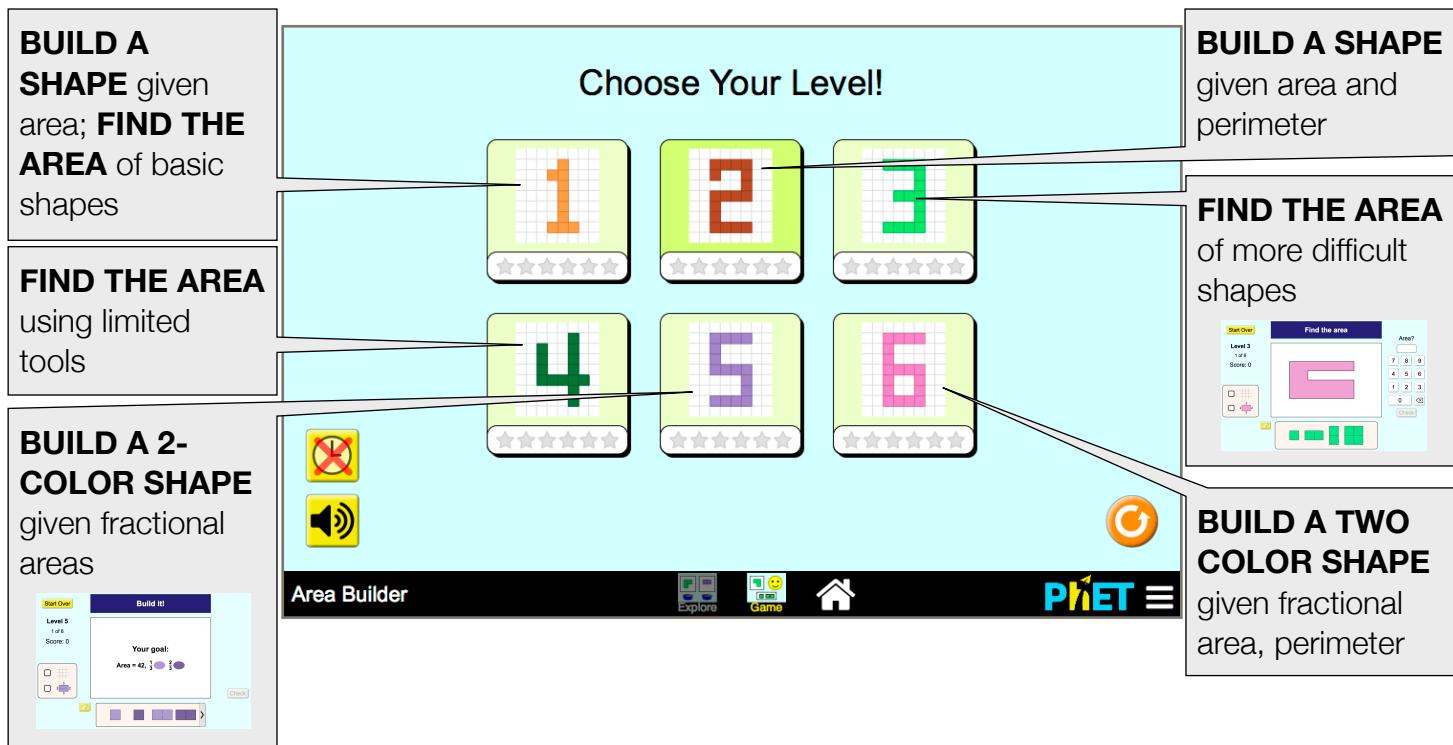
Customization Options

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 Area Builder, if you want to change the screen order (`screens=2,1`), with the 2nd screen open by default (`initialScreen=2`) use:

https://phet.colorado.edu/sims/html/area-builder/latest/area-builder_all.html?screens=2,1&initialScreen=2

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

https://phet.colorado.edu/sims/html/area-builder/latest/area-builder_all.html?locale=es&screens=2,1&initialScreen=2

Query Parameter and Description	Example Links

`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)
`allowLinks` - when `false`, disables links that take students to an external URL. Default is `true`.	`allowLinks=false`

Insights into Student Use

- The information panel may go unnoticed by students until they are prompted to use it in a task (see below for a sample task).

- In the game screen, after two incorrect answers on Build It! challenges, a "You built" panel appears to help students compare their solution to the goal (still stated in the prompt). Students can continue working to achieve the correct solution and watch the banner update.

Incorrect area and perimeter → Correct area, incorrect perimeter → Both area and perimeter are correct

McGarry, August 2023
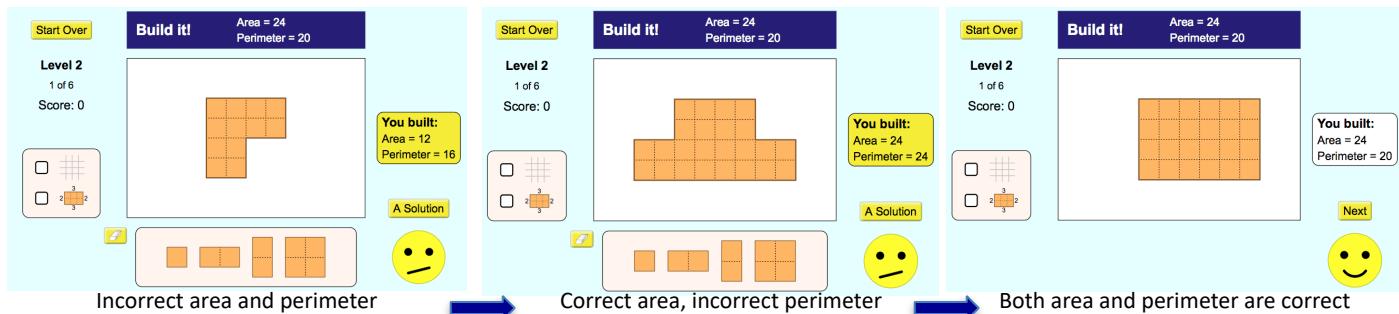
Suggestions for Use

Sample Challenge Prompts
- What is area? How is it calculated?
- What is perimeter? How is it calculated?
- How might you use the dimensions tool to calculate area and/or perimeter?
- Without adding/removing blocks, can you rearrange the blocks in a shape to form a different area? Can you form a different perimeter? What kind of shapes have a bigger perimeter? What kind of shapes have a smaller perimeter?

See all published activities for Area Builder here.

For more tips on using PhET sims with your students, see Tips for Using PhET.