The **Build a Fraction** simulation allows students to build fractions with differently sized pieces by playing a game or experimenting in the lab screen.

Build a Fraction Screen

In the Build a Fraction game, students can build fractions to match different targets. Some challenges have numeric targets, others have pictorial targets. This game is also found in Fractions: Intro.

RETURN to the level selection screen

RESET to get a new set of challenges

Level 4

$\dfrac{6}{}$

9

RETURN fraction to play area

$\dfrac{1}{1}$

$\dfrac{1}{4}$

BUILD fractions that match the targets

Build a Fraction | Build a Fraction | Mixed Numbers | Lab | **PhET**
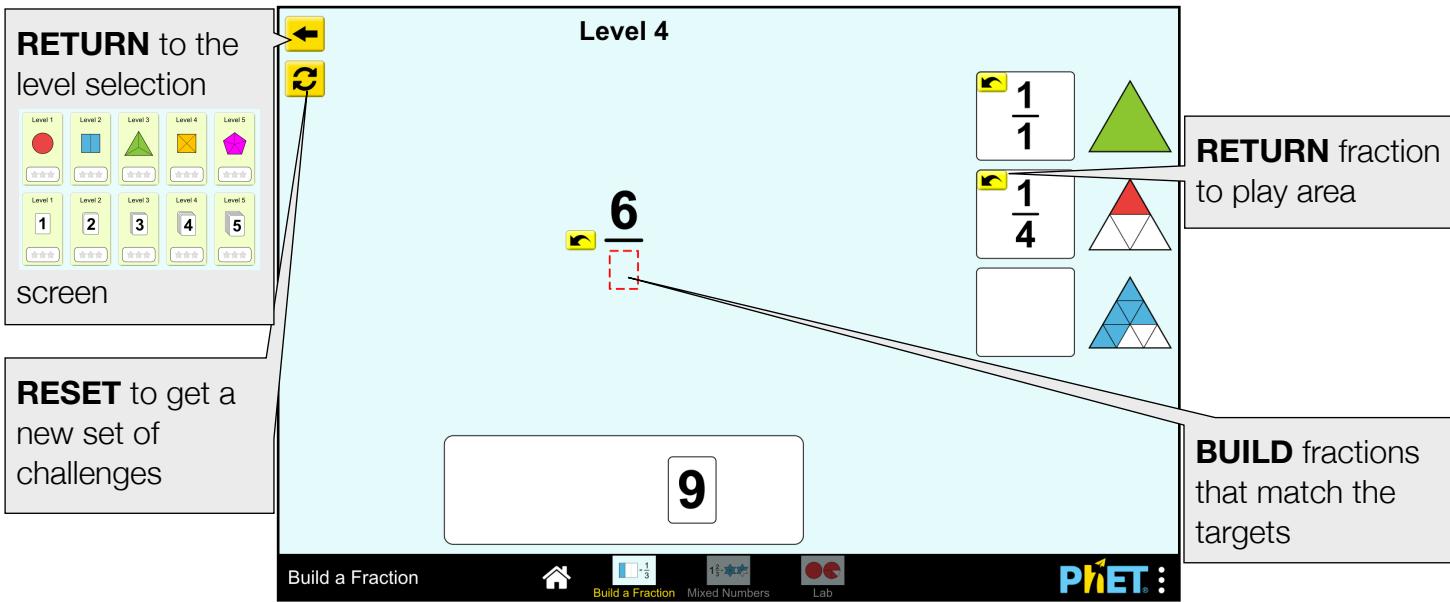
Mixed Numbers Screen

The Mixed Numbers game has similar sets of challenges as the previous screen, but all targets are over 1, and all fractions are in mixed number form. This game is also found in Fractions: Mixed Numbers.

RETURN to the level selection screen

BUILD fractions that match the targets

Level 8

$2\frac{1}{4}$

$3\frac{1}{3}$

$2\frac{2}{3}$

$1\frac{1}{6}$

ADD/REMOVE containers

PARTITION container

Build a Fraction | Build a Fraction | Mixed Numbers | Lab | **PhET**
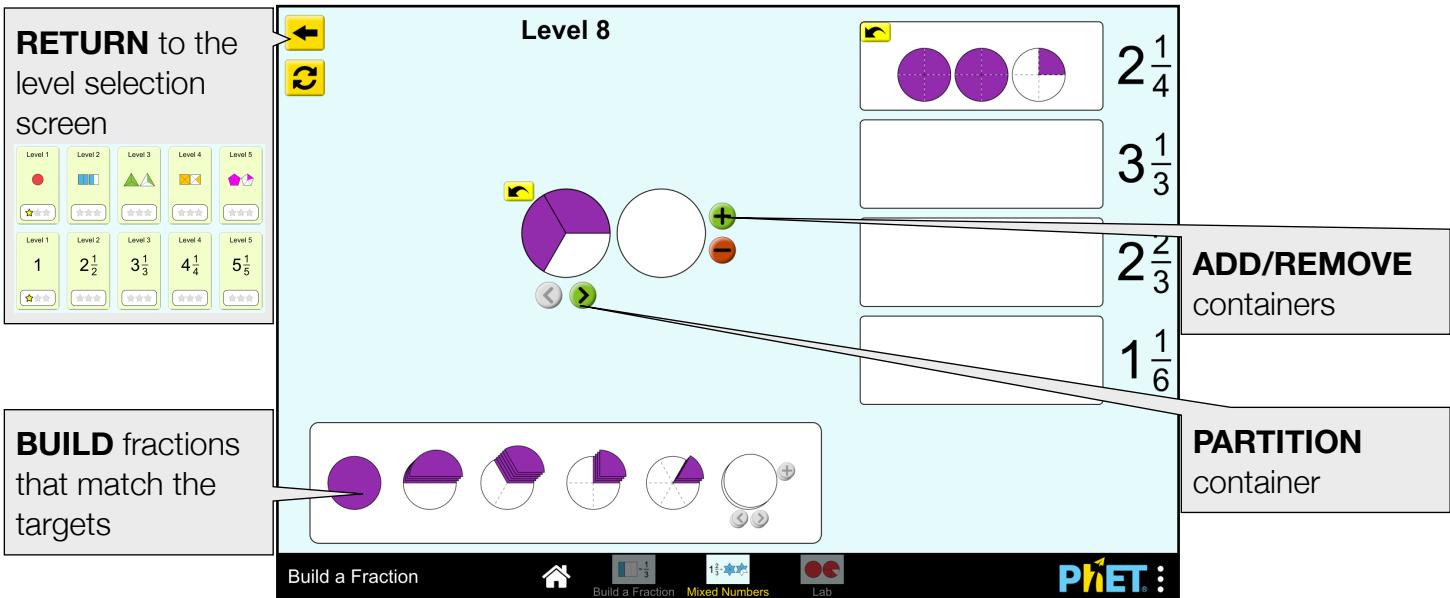
Lab Screen

The Lab screen is an open-ended environment for constructing fractions with differently sized pieces. This screen can also be found in the Fractions: Mixed Numbers simulation.

REMOVE most recently added piece

ADD fractional pieces or new containers

ADD/REMOVE containers

ADD numerals or new fraction container

PARTITION container
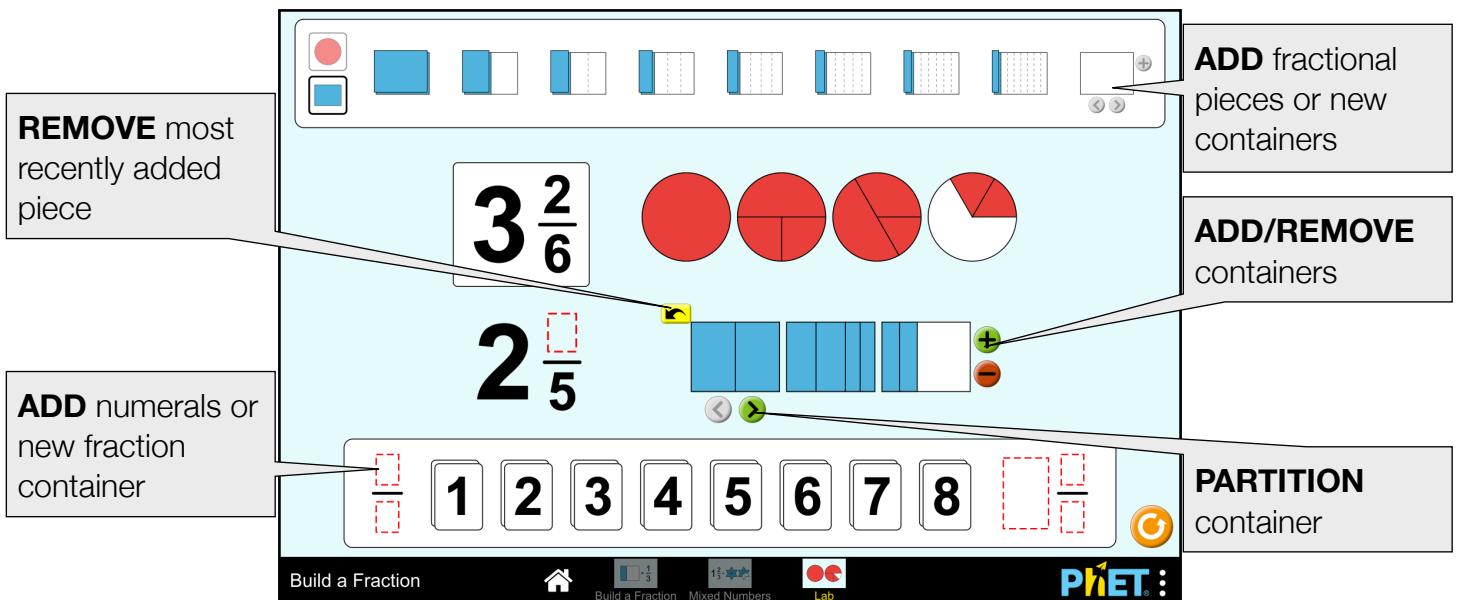
Suggestions for Use

- Assign specific Game levels to address your learning goals.
- Use this sim as a "station" in your classroom for students to practice building fractions.
- Use the Lab screen to facilitate a discussion around how to build fractions with differently sized pieces.

Sample Challenge Prompts
- Is there more than one way to answer those challenges correctly?
- Why can't you put any number in the denominator of a mixed number? Can you come up with a rule for mixed number form?
- Using the Lab screen, create multiple fractions that are equal. Challenge yourself to use differently sized pieces.

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 Build a Fraction, if you only want to include the 1st and 2nd screens (screens=1,2), with the 2nd screen open by default (initialScreen=2) use:

https://phet.colorado.edu/sims/html/build-a-fraction/latest/build-a-fraction_all.html?screens=1,2&initialScreen=2

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

https://phet.colorado.edu/sims/html/build-a-fraction/latest/build-a-fraction_all.html?locale=es&screens=1,2&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=3`
`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`

See all published activities for Build a Fraction here.
For more tips on using PhET sims with your students, see Tips for Using PhET.