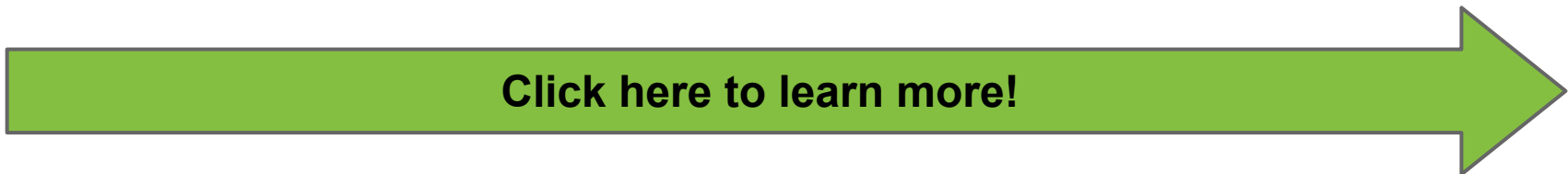


We are performing a research study using Graspable Math, a learning tool that puts math in motion, and we would love your participation!

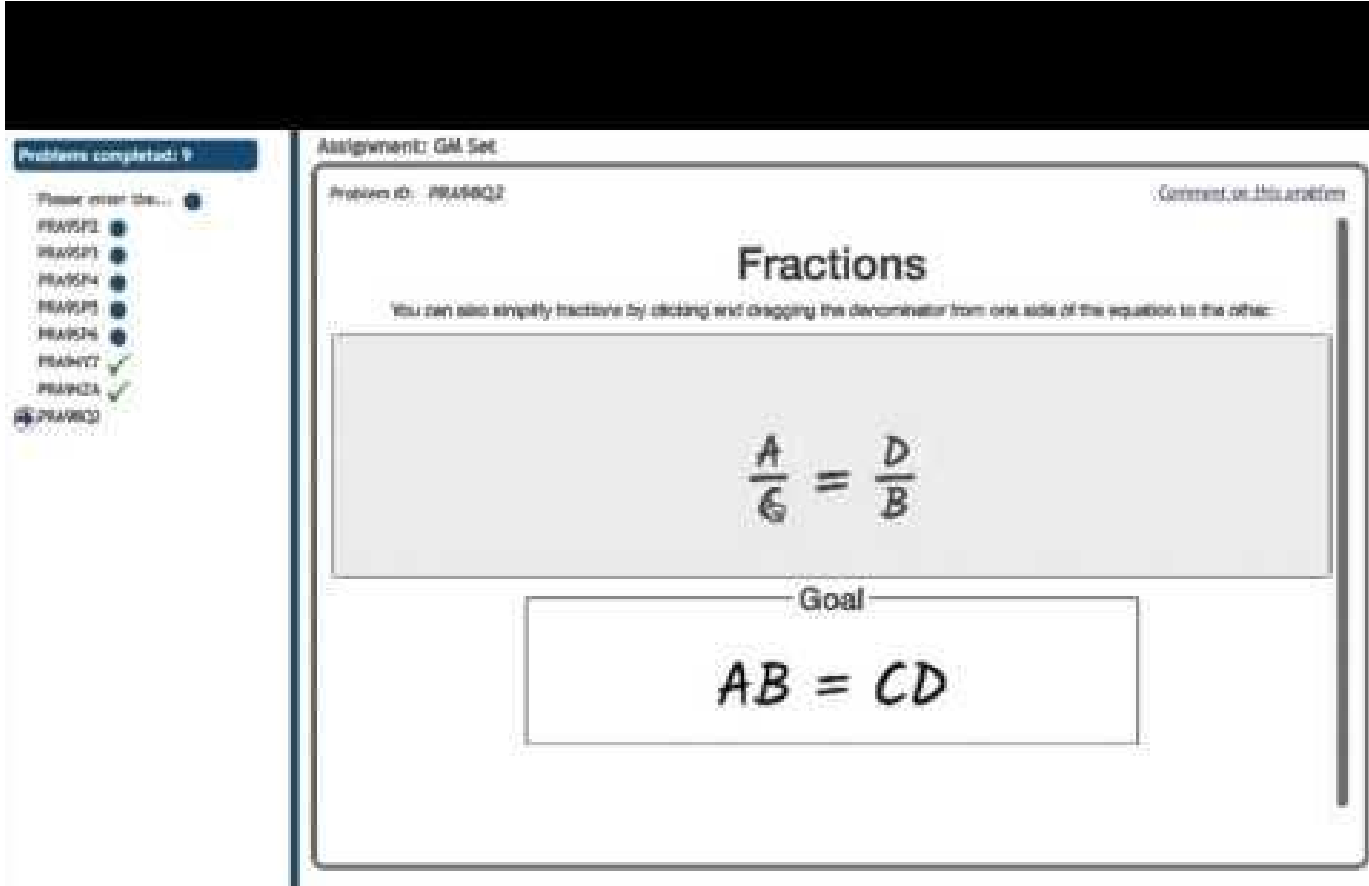
This assignment takes approximately 30 minutes to complete. It includes a 5 problem pretest, an 11 problem learning intervention in which students work on solving equations using either ASSISTments or Graspable Math, and a 5 problem posttest to assess learning gains. As necessary, students will receive Graspable Math tutorial problems.

Common Core	Content Topic	Problem Set ID
7.EE.B.4a	Solving Multi-Step Equations with Fractions	PSAYT8H



Want to assign without a preview? Click [here](#) to see how!

If you have questions, please e-mail assistments-research@wpi.edu



The screenshot shows the Graspable Math interface. On the left, a sidebar lists problems: PR195P1, PR195P2, PR195P3, PR195P4, PR195P5, PR195P6, PR195P7, PR195P8, and PR195Q1. PR195Q1 is selected. The main area is titled 'Assignment: GM Set' and 'Problem ID: PR195Q1'. It displays the title 'Fractions' and a hint: 'You can also simply fractionate by clicking and dragging the denominator from one side of the equation to the other:'. Below this is a large equation $\frac{A}{C} = \frac{D}{B}$. Underneath the equation is a 'Goal' box containing the equation $AB = CD$.

For more information on Graspable Math
[click here](http://www.graspablemath.com) or visit www.graspablemath.com

One quarter of students will learn with Graspable Math (Goal State)...

Assignment: Problem #PSA9W75

Problem ID: PRA9W75 [Comment on this problem](#)

$$15 = 7 + 4f$$

Goal

$$f = 2$$

For more information on Graspable Math
[click here](#) or visit www.graspablemath.com

One quarter of students will learn with Graspable Math (Free Work)...

Assignment: Problem #PSA9W8H

Problem ID: PRA9W8H

[Comment on this problem](#)

$$15 = 7 + 4f$$

Answer

Submit

For more information on Graspable Math
[click here](#) or visit www.graspablemath.com

One quarter of students will learn with ASSISTments (Feedback)...

Assignment: Problem #PSA9TDK

Problem ID: PRA9TDK [Comment on this problem](#)

$$15 = 7 + 4f$$

Type your answer below (numeric expression):

100% [?]

Combine like terms. Subtract 7 from both sides to combine all integers.

$$\begin{array}{r} 15 = 7 + 4f \\ -7 \quad -7 \\ \hline 8 = 4f \end{array}$$

Divide both sides by 4 to get f alone.

$$\begin{array}{r} \frac{8}{4} = \frac{4f}{4} \\ \hline 2 = f \end{array}$$

The answer is 2

[Comment on this hint](#)

[Comment on this hint](#)

In this condition, students are provided typical ASSISTments feedback.

And one quarter of students will learn with ASSISTments (Test Mode)

Assignment: Problem #PSA92UA

Problem ID: PRA92UA [Comment on this problem](#)

$$15 = 7 + 4f$$

Type your answer below (numeric expression):

100% ?

In this condition, students do not receive immediate feedback; all questions are in Test Mode. An answer key is provided following the 11th intervention question.

Answer Key		
Problem 1 $2 = f$	Problem 2 $9 = b$	Problem 3 $2 = q$
Problem 4 $b = -4$	Problem 5 $d = 2$	Problem 6 $6x + 12$
Problem 7 $\frac{-3}{2} = x$	Problem 8 $5 = b$	Problem 9 $a = -7$
Problem 10 $8x + 18$	Problem 11 $v = 4$	

Next Steps

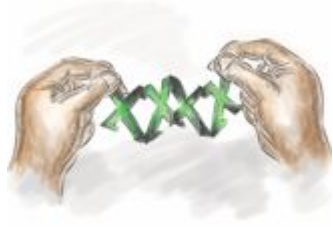
1. Determine if this content matches your current curriculum, or if it can be used as review.
2. Assign the problem set for your students to complete.
3. The problem set can be assigned using ID PSAYT8H.

Want More Information?

For more information on this study and more like it, please visit graspableresearch.com

Step-by-step instructions on how to run this study in your class are available under the “Studies” tab

What is Graspable Math?



Graspable Math's Capabilities

- Draw or type mathematical expressions onto a canvas
- Use gesture-based actions to transform expressions
- Interact with tangible equations
- Engage in deep playful mathematical thinking and problem solving
- Discover patterns in mathematics
- Receive immediate feedback about whether a transformation is legal
- Work and explore mathematics safely

Benefits for Teachers

- Spend more time teaching and less time writing on the board
- Clearer and more fluid instructions and examples
- Easier assessments that focus on the problem solving strategy and process
- Visualize the history of *how* students' get their answers, rather than *just* the answer
- Less time grading, more time exploring
- Mathematics becomes an interactive and fun activity for students

For more information on Graspable Math, visit www.graspablemath.com