

keep scrolling to get
a sneak peek!

Help your Algebra 2 students
practice **simplifying complex
fractions** with one variable.
Students will be eager to get
the self-checking benefits from
this circuit activity!

SIMPLIFYING COMPLEX FRACTIONS

Differentiated Circuit Worksheet

oy Date: _____

SIMPLIFYING COMPLEX FRACTIONS CIRCUIT

is a route that starts and ends at the same place. Start in the first box labeled 1 and solve the problem. Search through the remaining boxes for the answer you got for question 1. Continue until you have completed the questions and you are back to the original question. Record your path below.

4 → 9 → 2 → 8 → 5 → 3 → 10 → 7 → 1

$x + 1$	# 7	Previous Answer: $\frac{x^2 + 6x + 6}{x}$
$\frac{\frac{2}{x} + \frac{3}{x+1}}{\frac{1}{x+1}}$		2. Simplify. $\frac{(\frac{2}{x}) - \frac{1}{x}}{(\frac{1}{x}) - \frac{1}{x^2}}$
$\frac{2x+2+3x}{x(x+1)}$		
$\frac{5x+2}{x(x+1)}$		
	# 5	Previous Answer: $\frac{6}{3x-2}$
		4. Simplify. $\frac{x}{x+1} - \frac{1}{x+1}$

SIMPLIFYING COMPLEX FRACTIONS

Directions: A circuit is a route that starts and ends at the same place. Start in the first box labeled 1 and solve the problem. Search through the remaining boxes for the answer you got for question 1. Now complete that question. Continue until you have completed the questions and you are back to the original question. Record your path below.

1 → _____ → _____ → _____ → _____ → _____ → _____

Previous Answer: $x + 1$	# _____	Previous Answer: $\frac{x^2 + 6x + 6}{x}$
1. Simplify. $\frac{\frac{2}{x} + \frac{3}{x+1}}{\frac{1}{x+1}}$		2. Simplify. $\frac{4 - \frac{1}{x}}{16 - \frac{1}{x^2}}$
Previous Answer: $x^2 + 4x$	# _____	Previous Answer: $\frac{6}{3x-2}$
3. Simplify. $1 + \frac{1}{x^2}$		4. Simplify. $\frac{x}{x+1} - \frac{1}{x+1}$



2 versions + answer key included

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Why do you need this?



It's self-checking! Your students will know if they are correct or not.



2 differentiated versions for all students practice this essential math skill.

Simplifying Complex Fractions Circuit

Name: _____ Date: _____

SIMPLIFYING COMPLEX FRACTIONS CIRCUIT

Directions: A circuit is a route that starts and ends at the same place. Start in the first box labeled 1 and solve the problem. Search through the remaining boxes for the answer you got for question 1. Now complete that question. Continue until you have completed the questions and you are back to the original question. Record your path below.

1 → _____ → _____ → _____ → _____ → _____

Previous Answer: $x + 1$	# _____	Previous
1. Simplify. $\frac{\frac{2}{x} + \frac{3}{x+1}}{\frac{1}{x+1}}$		2. Simplify
Previous Answer: $x^2 + 4x$	# _____	Previous
3. Simplify. $\frac{1 + \frac{1}{x^2}}{1 - \frac{1}{x^2}}$		4. Simplify
Previous Answer: $\frac{x}{x^2 + 6x + 2}$	# _____	Previous
5. Simplify. $\frac{\frac{x+4}{x}}{\frac{1}{2x}}$		6. Simplify
Previous Answer: $\frac{1}{x}$	# _____	Previous
7. Simplify. $\frac{\frac{x^2}{x-2} + \frac{x}{x-2}}{\frac{1}{x-2}}$		8. Simplify.
Previous Answer: $\frac{x^2 + 6x + 9}{3x}$	# _____	Previous
9. Simplify. $\frac{1}{\frac{2x}{2} \cdot \frac{1}{x}}$		10. Simplify.
Previous Answer: $x^2 + 2x$	# _____	Previous
Previous Answer: $x + 3$	# _____	Previous
Previous Answer: $x^2 + 2x$	# _____	Previous

Helpful Hints: Use these hints to help you solve the problems.

When dividing by a fraction, multiply by the reciprocal.

$$\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \cdot \frac{d}{c}$$

To eliminate all small LCD (Least Common Denominator) multiply the complex fraction by the LCD.

Put parentheses around numerators and denominators to help keep you organized.

Simplifying Complex Fractions Circuit *includes:*

Challenge: Completely simplify. Show all steps.

$$\frac{\frac{1}{x} + \frac{1}{x+1}}{1 - \frac{1}{1-x}}$$

How are you feeling about this topic? Circle one:

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Helpful Hints: Use these hints to help you solve the problems.

When dividing by a fraction, multiply by the reciprocal.	To eliminate all small denominators, multiply the complex fraction by the LCD (Least Common Denominator).
$\frac{\frac{a}{b}}{\frac{c}{d}} = \frac{a}{b} \cdot \frac{d}{c}$	Put parentheses around numerators and denominators when you multiply to help keep you organized!

How are you feeling about this topic? Circle one:

- ✓ 10 self-checking problems
- ✓ a detailed answer key
- ✓ a standard version with an extension question
- ✓ a basic version with helpful hints section
- ✓ student self assessment

Simplifying Complex Fractions Circuit

standards covered:

CCSS: HSA-SSE.B.3

TEKs: A2.7.F

VA SOLs: EO.A11.1.a

SIMPLIFYING COMPLEX FRACTIONS CIRCUIT

Previous Answer: $\frac{x^2}{x+2}$ # **10**

7. Simplify.

$$\frac{\frac{x+1}{x^2+x} \cdot \frac{x}{x+2}}{\frac{x}{x+2} \cdot \frac{x+2}{x}}$$

$x+1$

Previous Answer: $\frac{x}{4x+1}$ # **2**

8. Simplify.

$$\frac{\frac{x}{x+2} \cdot \frac{x+2}{x+2} + \frac{1}{x} \cdot \frac{x+2}{x+2}}{\frac{x}{x+2} \cdot \frac{x+2}{x+2}}$$

$\frac{x}{x^2+5x+x+2}$

$\frac{x}{x^2+6x+2}$

$\frac{x}{x^2+6x+2}$

$\frac{x}{x^2+6x+2}$

Previous Answer: $x-1$ # **4**

9. Simplify.

$$\frac{\frac{x+2}{x} + \frac{1}{x+3} \cdot \frac{x}{x}}{\frac{1}{x+3}}$$

$\frac{x^2+5x+6+x}{x(x+3)}$

$\frac{x^2+6x+6}{x(x+3)}$

$\frac{x^2+6x+6}{x(x+3)}$

$\frac{x^2+6x+6}{x}$

Previous Answer: $\frac{x^2+1}{x^2-1}$ # **3**

10. Simplify.

$$\frac{\frac{x+1}{x+2} - \frac{1}{x+2}}{\frac{1}{x}}$$

$\frac{x}{x+2} \cdot \frac{x}{x}$

$\frac{x^2}{x+2}$

Challenge: Completely simplify. Show all steps.

Numerator: $\frac{1}{x+1} \cdot \frac{1}{x} + \frac{1}{x}$

Denominator: $1 - \frac{1}{x} \cdot \frac{1-x}{1-x}$

$\frac{1}{x(x+1)} + \frac{1}{x} \cdot \frac{x+1}{x+1}$

$1 - \frac{1-x}{1-x}$

$\frac{1}{x+1} + \frac{1}{x}$

$1 - 1$

how this circuit resource works

Then search for their answer on the worksheet. Once the answer is found, students complete the problem below it.

Students can track their path at the top.

Name: _____ Date: _____

SIMPLIFYING COMPLEX FRACTIONS CIRCUIT

Directions: A circuit is a route that starts and ends at the same place. Start in the first box labeled 1 and solve the problem. Search through the remaining boxes for the answer you got for question 1. Now complete that question. Continue until you have completed the questions and you are back to the original question. Record your path below.

1 → _____ → _____ → _____ → _____ → _____ → _____ → _____ → _____ → _____ → 1

Previous Answer: $x^2 + x$ # _____	Previous Answer: $\frac{1}{4}$ # _____
1. Simplify. $\frac{\frac{x+1}{x}}{2}$	2. Simplify. $\frac{x+2}{\frac{1}{x}}$
Previous Answer: $\frac{x+4}{2x}$ # _____	Previous Answer: $\frac{x+1}{x-1}$ # _____
3. Simplify. $\frac{\frac{x+3}{x+1}}{\frac{1}{x+1}}$	4. Simplify. $\frac{\frac{1}{x} + \frac{1}{3}}{\frac{1}{x+3}}$

Students start with the first question.

The last question they answer should lead back to problem #1 to "close" the circuit.

how to use this resource

This is a great activity to use when reviewing how to simplify complex fractions, or fractions within fractions with variable expressions.

It can be used right after teaching the concept or as homework.

This is also a **substitute-friendly** assignment!

Name: **Answer Key** Date: _____

SIMPLIFYING COMPLEX FRACTIONS CIRCUIT

Directions: A circuit is a route that starts and ends at the same place. Start in the first box labeled 1 and solve the problem. Search through the remaining boxes for the answer you got for question 1. Now complete that question. Continue until you have completed the questions and you are back to the original question. Record your path below.

1 → **6** → **4** → **9** → **2** → **8** → **5** → **3** → **10** → **7** → 1

Previous Answer: $x + 1$ # 7	Previous Answer: $\frac{x^2 + 6x + 6}{x}$ # 9
1. Simplify. $\frac{\frac{(x+1)2}{(x+1)x} + \frac{3}{x+1}}{\frac{1}{x+1}}$ $\frac{2x+2+3x}{x(x+1)}$ $\frac{5x+2}{x(x+1)}$ $\frac{5x+2}{x^2+x}$	2. Simplify. $\frac{x^2+6x+6}{x}$

SIMPLIFYING COMPLEX FRACTIONS CIRCUIT

Previous Answer: $\frac{1}{x}$ # 10	Previous Answer: $x^2 + 2x$ # 2
7. Simplify. $\frac{\frac{x^2}{x-2} + \frac{x}{x-2}}{\frac{1}{x-2}}$ $\frac{x^2+x}{x-2} \cdot \frac{x-2}{x-2}$ $\frac{x^2+x}{1}$ x^2+x	8. Simplify. $\left(\frac{x^2}{x^2}\right)1 + \frac{1}{x^2}$ $\frac{x^2+1}{x^2} \cdot \frac{1}{2}$ $\frac{x^2+1}{2x^2}$
Previous Answer: $\frac{x^2 + 6x + 9}{3x}$ # 4	Previous Answer: $x + 3$ # 3
9. Simplify. $\frac{\frac{1}{2x} \cdot \frac{x}{2}}{\frac{x}{2}}$ $\frac{\frac{1}{4}}{\frac{x}{2}}$ $\frac{1}{4} \cdot \frac{2}{x}$ $\frac{1}{2x}$	10. Simplify. $\frac{\frac{2}{x+1} - \frac{1}{x+1}}{\frac{x}{x+1}}$ $\frac{\frac{1}{x+1} \cdot \frac{x+1}{x+1}}{\frac{x}{x+1}}$ $\frac{1}{x+1} \cdot \frac{x+1}{x}$ $\frac{1}{x}$

Previous Answer: $x^2 + 4x$
3. Simplify. $\left(\frac{x^2}{x^2}\right)1 + \frac{1}{x^2}$ $\left(\frac{x^2}{x^2}\right)1 - \frac{1}{x^2}$ $\frac{x^2+1}{x^2} \cdot \frac{1}{x^2}$ $\frac{x^2+1}{2x^4}$
Previous Answer: $\frac{x}{x^2 + 6x + 2}$
5. Simplify. $\frac{x+4}{x} \cdot \frac{2x}{2x}$ $\frac{2x^2+8x}{2x}$ x^2+4x

You may also enjoy...

SIMPLIFYING COMPLEX FRACTIONS

Algebra 2 Guided Notes

Method 1

Method 2

Step 1: Find the LCM of all the denominators in the complex fraction.

Step 2: Multiply the numerator and denominator by the LCM.

Step 3: Simplify, if necessary.

Handwritten example: Simplify $\frac{1 + \frac{1}{x}}{1 - \frac{1}{x^2}}$

Method 1

Step 1: Create a single fraction in the numerator and denominator.

Step 2: Multiply the numerator by the reciprocal of the denominator, if necessary.

Step 3: Simplify.

Handwritten example: Simplify $\frac{1 + \frac{1}{x}}{1 - \frac{1}{x^2}}$

Method 2

Step 1: Find the LCM of all the denominators in the complex fraction.

Step 2: Multiply the numerator and denominator by the LCM.

Step 3: Simplify, if necessary.

Handwritten example: Simplify $\frac{1 + \frac{1}{x}}{1 - \frac{1}{x^2}}$

Answer key included

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MULTIPLYING & DIVIDING RATIONAL EXPRESSIONS

Algebra 2 Guided Notes

Method 1

Method 2

Step 1: Find the LCM of all the denominators in the complex fraction.

Step 2: Multiply the numerator and denominator by the LCM.

Step 3: Simplify, if necessary.

Handwritten example: Simplify $\frac{1 + \frac{1}{x}}{1 - \frac{1}{x^2}}$

Method 1

Step 1: Create a single fraction in the numerator and denominator.

Step 2: Multiply the numerator by the reciprocal of the denominator, if necessary.

Step 3: Simplify.

Handwritten example: Simplify $\frac{1 + \frac{1}{x}}{1 - \frac{1}{x^2}}$

Method 2

Step 1: Find the LCM of all the denominators in the complex fraction.

Step 2: Multiply the numerator and denominator by the LCM.

Step 3: Simplify, if necessary.

Handwritten example: Simplify $\frac{1 + \frac{1}{x}}{1 - \frac{1}{x^2}}$

Answer key included

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RATIONAL FUNCTIONS REVIEW

March Math-ness Stations

Station 2: DRIZZLE, DRIZZLE, SHOOT!

Station 3: FULL COURT GRAPH

Handwritten solutions for various rational equations and graphing tasks.

4 stations activities + Answer keys

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hey there!

My name is Malia and I'm passionate about making learning and practicing math fun. I love creating engaging math resources for my students and I hope your students enjoy this activity too!

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