

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.

Compound Inequalities Differentiated Circuit

Name: _____ Date: _____

SOLVING COMPOUND INEQUALITIES 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: $x > 4$ or $x \leq -1$ # _____	Previous Answer: _____
1. Solve and graph: $-12 \leq 3(x - 4) < 9$	2. Solve _____
Previous Answer: $x \geq -4$ # _____	Previous Answer: _____
3. Solve and graph: $-2(x + 3) \geq 4$ and $x - 1 \leq 7$	4. Solve _____
Previous Answer: $-3 < x \leq 4$ # _____	Previous Answer: _____
5. Solve and graph: $5x - 3 > 17$ or $3x + 4 \leq 1$	6. Solve _____
Previous Answer: $-1 \leq x < 6$ # _____	Previous Answer: $x \leq -2$ # _____
7. Solve and graph: $-3x > 6$ or $x + 4 \geq 7$	8. Solve and graph: $4x - 2 \geq 10$ and $-x < 5$
Previous Answer: $-4 < x \leq 1$ # _____	Previous Answer: $2 \leq x \leq 6$ # _____
9. Solve and graph: $-9 \leq 3x + 6 < 6$	10. Solve and graph: $2x - 7 > 5$ or $x \leq 6$

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

- Flip the inequality symbol when you multiply or divide by a negative number.
- "And" = intersection - solutions must satisfy both inequalities.
- "Or" = union - solutions satisfy at least one inequality.

AND
 \leq
 \geq

OR
 $<$
 $>$

Compound Inequalities Circuit *includes:*

Challenge: A catering company charges \$50 delivery fee and \$12 per guest. Write and solve a compound inequality for the number of guests, g , if the total cost must be between \$200 and \$350.

How are you feeling about this topic? Circle one:

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

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- "And" = intersection - solutions must satisfy both inequalities.
- "Or" = union - solutions satisfy at least one inequality.

AND	OR
\leq, \geq	$<, >$
●	○

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

Solving & Graphing Compound Inequalities

standards covered:

CCSS: HSA-CED.A.1, HSA-REI.B.3

TEKs: A1.5.B, A1.12.E

VA SOLs: EI.A.5.a

SOLVING COMPOUND INEQUALITIES CIRCUIT

Previous Answer: $-1 \leq x < 6$ # 1

7. Solve and graph:
 $-3x > 6$ or $x + 4 \geq 7$
 $\frac{-3x}{-3} > \frac{6}{-3}$ or $\frac{x}{-4} \geq \frac{7}{-4}$
 $x < -2$ or $x \geq 3$

Previous Answer: $x \leq -2$ # 3

8. Solve and graph:
 $4x - 2 \geq 10$ and $-x < 5$
 $\frac{4x - 2}{+2} \geq \frac{10}{+2}$ and $\frac{-x}{-1} < \frac{5}{-1}$
 $4x \geq 12$ and $x > -5$
 $\frac{4x}{4} \geq \frac{12}{4}$
 $x \geq 3$

Previous Answer: $-4 < x \leq 1$ # 4

9. Solve and graph:
 $-9 \leq 3x + 6 < 6$
 $\frac{-9 - 6}{3} \leq \frac{3x + 6 - 6}{3} < \frac{6 - 6}{3}$
 $-15 \leq 3x < 0$
 $\frac{-15}{3} \leq \frac{3x}{3} < \frac{0}{3}$
 $-5 \leq x < 0$

Previous Answer: $2 \leq x \leq 6$ # 6

10. Solve and graph:
 $2x - 7 > 5$ or $x \leq -3$
 $\frac{2x - 7}{+7} > \frac{5}{+7}$ or $x \leq -3$
 $2x > 12$
 $\frac{2x}{2} > \frac{12}{2}$
 $x > 6$ or $x \leq -3$

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

- Flip the inequality symbol when you multiply or divide by a negative number.
- "And" = intersection - solutions
- "Or" = union - solutions

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: _____

SOLVING COMPOUND INEQUALITIES 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: $x < 2$ or $x > 3$ # _____	Previous Answer: $-5 \leq x < 0$ # _____
1. Solve and graph: $-6 \leq 2x - 4 < 8$ ←—————→	2. Solve and graph: $3x + 5 > 11$ or $x - 4 \leq -2$ ←—————→
Previous Answer: $x > 6$ or $x \leq -3$ # _____	Previous Answer: $x < -2$ or $x \geq 3$ # _____
3. Solve and graph: $-4x + 3 \geq 11$ and $2x - 5 \leq 1$ ←—————→	4. Solve and graph: $-12 < 4x + 4 \leq 8$ ←—————→

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 solving and graphing compound inequalities.

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

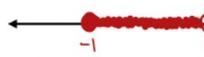
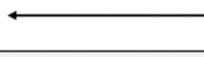
This is also a **substitute-friendly** assignment!

Name: **Answer Key** Date: _____

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

Previous Answer: $x < 2$ or $x > 3$ # 5	Previous Answer: $-5 \leq x < 0$ # 9
1. Solve and graph: $-6 \leq 2x - 4 < 7$ $+4 \quad +4$ $-2 \leq 2x < 11$ $\frac{2}{2}$ $-1 \leq x < 6$ 	2. Solve and graph: $5 - 11 < 4x - 4 \leq 6$ $-6 \quad -6$ $-1 < 4x \leq 10$ $\frac{4}{4}$ $-\frac{1}{4} < x \leq \frac{5}{4}$ $-\frac{1}{4} < x \leq 1.25$ 
3. Solve and graph: $-4x + 3 \geq 11$ and $2x - 3 < -3$ $-3 \quad -3$ $-4x \geq 8$ $\frac{-4}{-4}$ $x \leq -2$ 	7. Solve and graph: $-4x + 7 > 11$ or $x + 6 \leq 0$ $-7 \quad -7$ $-4x > 4$ $\frac{-4}{-4}$ $x < -1$ or $x \leq -6$ 
5. Solve and graph: $x + 7 > 10$ or $2x - 7 < 2$ $-7 \quad -7$ $x > 3$ or $\frac{2}{2}$ $x > 1$ 	8. Solve and graph: $6(x - 2) \leq 12$ and $3x + 4 > -5$ $6x - 12 \leq 12$ $+12 \quad +12$ $6x \leq 24$ $\frac{6}{6}$ $x \leq 4$ $3x > -9$ $\frac{3}{3}$ $x > -3$ $-3 < x \leq 4$ 
9. Solve and graph: $\frac{4x - 2}{2} \geq 5$ or $x < -2$ $\cdot 2 \quad \cdot 2$ $4x - 2 \geq 10$ $+2 \quad +2$ $4x \geq 12$ $\frac{4}{4}$ $x \geq 3$ or $x < -2$ 	10. Solve and graph: $-2(x - 1) \leq 10$ and $\frac{x}{2} > -3$ $-2 \quad -2$ $x - 1 \geq -5$ $+1 \quad +1$ $x \geq -4$ $\frac{x}{2} > -3$ $\cdot 2 \quad \cdot 2$ $x > -6$ 

Challenge: A catering company charges \$50 delivery fee and \$12 per guest. Write and solve a

Free Algebra Activities!

When you join my email list, I'll send you a free Algebra print & digital self-checking activities. There is an Algebra 1 and Algebra 2 version!

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check it out!

The image shows a collage of algebra worksheets and a digital tablet. The worksheets include:

- Answer Key** for **ADDING & SUBTRACTING RATIONAL EXPRESSIONS** and **SOLVING SYSTEMS OF EQUATIONS**.
- MULTIPLYING & DIVIDING RATIONAL EXPRESSIONS** worksheet with problems like $\frac{x-2}{x^2+2x+1}$.
- SOLVING SYSTEMS OF EQUATIONS** worksheet with problems like $2. 2x - 6y = -18$ and $x = 3y - 4$.

The digital tablet displays a self-checking activity titled **Rational Expression Operations - Addition & Subtraction**. The directions are: "Answer each question and type the question number with the matching answer in the answer column to the right." The activity consists of a table with 8 questions and 8 answers. A path is drawn through the table, starting from question 1, moving right to answer 1, then up to question 2, right to answer 2, up to question 3, right to answer 3, up to question 4, right to answer 4, up to question 5, right to answer 5, up to question 6, right to answer 6, up to question 7, right to answer 7, and finally up to question 8, right to answer 8. The path is colored in teal, yellow, and purple.

#	Question	Answer	Type the matching question numbers here
1	$\frac{5}{x} + \frac{3}{x+1}$	$\frac{2x+1}{x+2}$	
2	$\frac{2}{x+4} - \frac{x^2}{x^2-16}$	$-\frac{1}{x^2-1}$	
3	$\frac{x+2}{x^2+4x+4} + \frac{2x}{x+2}$	$\frac{2x^2+2x+5}{x^2+x-2}$	
4	$\frac{x}{x-2} + \frac{3}{x-1}$	$-\frac{x^2+2x-8}{x^2-16}$	
5	$\frac{x}{4x+8} - \frac{1}{x^2+2x}$	$\frac{8x+5}{x^2+1}$	
6	$\frac{x+2}{x-1} + \frac{x-1}{x+2}$	$\frac{x^2-3x+7}{x^2-4}$	
7	$\frac{2x+1}{x^2-4} + \frac{x-3}{x+2}$	$\frac{x^2+2x-6}{x^2-3x+2}$	
8	$\frac{x^2+2x}{x^2-1} - \frac{x+1}{x-1}$	$\frac{x-2}{4x}$	

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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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