

keep scrolling to
get a sneak peek!

Help your Algebra 2 students
practice **solving absolute
value equations**. Students will
be eager to get the self-
checking benefits from this
circuit activity!

SOLVING ABSOLUTE VALUE EQUATIONS

Differentiated Circuit Worksheet

Date: _____

ABSOLUTE VALUE EQUATIONS 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.

→ → → → → → → → → →

$x = -4, 4/3$	# _____	Previous Answer: $x = -5/2, 7/2$
$x - 4 + 2 = 6$		2. Solve: $\frac{ 2x + 4 }{2} + 1 = 7$
		Previous Answer: $x = -5/2, -1/2$
er: x	# _____	4. Solve: $ 2x + 3 = -7$

name: **Answer Key**

SOLVING ABSOLUTE VALUE EQUATIONS

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 → 9 → 5 → 7 → 2 → 10 → 4 → 8 →

Previous Answer: $x = -6, 10$	# 6	Previous Answer: $x = -4$
1. Solve: $ x - 5 = 9$ $x - 5 = 9$ $+5 +5$ $x = 14$		2. Solve: $ x + 3 = 7$ $x + 3 = 7$ $-3 -3$ $x = 4$
Previous Answer: $x = -4, 12$	# 8	Previous Answer: $x = -3, -2$
3. Solve: $ 3x - 2 = 7$ $3x - 2 = 7$		4. Solve:



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.

Solving Absolute Value Equations Circuit

Name: _____ Date: _____

SOLVING ABSOLUTE VALUE EQUATIONS 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, 4/3 # _____	Previous Answer: x = -12, 4 # _____
1. Solve: $ x - 4 + 2 = 6$	2. Solve: _____
Previous Answer: x = 0, 10 # _____	Previous Answer: x = -10, 4 # _____
3. Solve: $ 4 - 2(x + 1) = 10$	4. Solve: _____
Previous Answer: x = -5/2, 3/2 # _____	Previous Answer: x = -4, 14 # _____
5. Solve: $ 5x + 4 - 3 = 10$	6. Solve: _____
Previous Answer: No solution # _____	7. Solve: $ x + 6 = 10$
8. Solve: $ 4 - x = 8$	9. Solve: $3 x - 1 = 12$
10. Solve: $ 2x + 5 = 1$	

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

Helpful steps:
Step 1: Isolate the absolute value first.
Step 2: Split into two equations $|A| = B$ or $|A| = -B$
Check your answers for extraneous solutions.
Some equations cannot be equal.

Absolute Value Equations Circuit *includes:*

Challenge: Solve: $2|x - 3| = |5 - 2x| - 4$

How are you feeling about this topic? Circle one:

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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	OR
\leq, \geq	$<, >$
<input checked="" type="radio"/>	<input type="radio"/>

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 Absolute Value Equations

standards covered:

CCSS: HSA-REI.B.3

TEKs: A2.6.E, A2.6.F

VA SOLs: EI.All.3a

SOLVING ABSOLUTE VALUE EQUATIONS CIRCUIT

Previous Answer: No solution 7. Solve: # 5 $ x + 6 = 10$ $-6 \quad -6$ $ x = 4$ $x = 4$ $x = -4$	Previous Answer: $x = -12, 4$ 8. Solve: # 4 $ 4 - x = 8$ $4 - x = 8$ $4 - x = -8$ $-4 \quad -4$ $-4 \quad -4$ $-x = 4$ $-x = -12$ $x = -4$ $x = 12$
Previous Answer: $x = -4, 14$ 9. Solve: # 1 $\frac{3 x - 1 }{3} = \frac{12}{3}$ $ x - 1 = 4$ $x - 1 = 4$ $x - 1 = -4$ $+1 \quad +1$ $+1 \quad +1$ $x = 5$ $x = -3$	Previous Answer: $x = -10, 4$ 10. Solve: # 2 $ 2x + 5 = 1$ $2x + 5 = 1$ $2x + 5 = -1$ $-5 \quad -5$ $-5 \quad -5$ $2x = -4$ $2x = -6$ $\frac{\quad}{2}$ $\frac{\quad}{2}$ $x = -4$ $x = -3$

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

Helpful steps:
Step 1: Isolate the absolute value first.
Step 2: Split into two equations.

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.

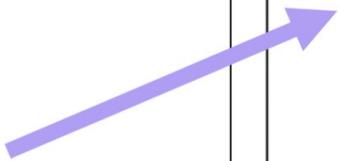
Name: _____ Date: _____

SOLVING ABSOLUTE VALUE EQUATIONS 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: $x = -4, 4/3$ # _____	Previous Answer: $x = -5/2, 7/2$ # _____
1. Solve: $ x - 4 + 2 = 6$	2. Solve: $\frac{ 2x + 4 }{2} + 1 = 7$
Previous Answer: $x = 0, 10$ # _____	Previous Answer: $x = -5/2, -1/2$ # _____
3. Solve: $ 4 - 2(x + 1) = 10$	4. Solve: $ 2x + 3 = -7$



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 absolute value equations.

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

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

Name: **Answer Key** Date: _____

SOLVING ABSOLUTE VALUE EQUATIONS 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 → **9** → **5** → **7** → **2** → **10** → **4** → **8** → **3** → **6** → 1

Previous Answer: $x = -6, 10$ # 6	Previous Answer: $x = -4, 4$ # 7
1. Solve: $ x - 5 = 9$ $x - 5 = 9$ $+5 +5$ $x = 14$	2. Solve:
Previous Answer: $x = -4, 12$	
3. Solve: $ 3x - 2 = 7$ $3x - 2 = 7$ $+2 +2$ $3x = 9$ $\frac{3x}{3} = \frac{9}{3}$ $x = 3$	
Previous Answer: $x = -3, 5$	
5. Solve: $ 2x - 1 = -3$ NO solution	
<h2>SOLVING ABSOLUTE VALUE EQUATIONS CIRCUIT</h2>	
Previous Answer: $x = -17/5, 9/5$ # 5	Previous Answer: No Solution # 4
7. Solve: $\frac{3}{2} 2x - 1 - 4 = 5$ $+4 +4$ $\frac{3}{2} 2x - 1 = 9$ $\cdot \frac{2}{3} \cdot \frac{2}{3}$ $ 2x - 1 = 6$ $2x - 1 = 6$ $+1 +1$ $2x = 7$ $\frac{2x}{2} = \frac{7}{2}$ $x = 7/2$ $2x - 1 = -6$ $+1 +1$ $2x = -5$ $\frac{2x}{2} = \frac{-5}{2}$ $x = -5/2$	8. Solve: $4 x - 5 = 20$ $\frac{4 x - 5 }{4} = \frac{20}{4}$ $ x - 5 = 5$ $x - 5 = 5$ $+5 +5$ $x = 10$ $x - 5 = -5$ $+5 +5$ $x = 0$
Previous Answer: $x = 0, -8$ # 1	Previous Answer: $x = -8, 4$ # 2
9. Solve: $\frac{1}{4} 8x + 4 + 2 = 6$ $-2 -2$ $\frac{1}{4} 8x + 4 = 4$ $\cdot 4 \cdot 4$ $ 8x + 4 = 16$ $8x + 4 = 16$ $-4 -4$ $8x = 12$ $\frac{8x}{8} = \frac{12}{8}$ $x = 3/2$ $8x + 4 = -16$ $-4 -4$ $8x = -20$ $\frac{8x}{8} = \frac{-20}{8}$ $x = -5/2$	10. Solve: $-\frac{1}{2} 4x + 6 + 5 = 3$ $-5 -5$ $-\frac{1}{2} 4x + 6 = -2$ $\cdot -2 \cdot -2$ $ 4x + 6 = 4$ $4x + 6 = 4$ $-6 -6$ $4x = -2$ $\frac{4x}{4} = \frac{-2}{4}$ $x = -1/2$ $4x + 6 = -4$ $-6 -6$ $4x = -10$ $\frac{4x}{4} = \frac{-10}{4}$ $x = -5/2$

You may also enjoy ...

SOLVING ABSOLUTE VALUE EQUATIONS & INEQUALITIES

Algebra 2 Guided Notes

SOLVING ABSOLUTE VALUE EQUATIONS

The absolute value of a number a , written $|a|$ and $|b|$.

Example: Solve $|x| = 5$. The distance

The equation $|ax + b| = c$ where $c \geq 0$ is equivalent to

$$|x + 4| = 16$$

$$|x + 21| = 6$$

SOLVING ABSOLUTE VALUE INEQUALITIES

$|ax + b| < c$

$|ax + b| > c$

"In the inequalities above, $<$ can be replaced with $>$ and $>$ can be replaced with $<$ "

Circle one: $|x - 8| + 10 \geq 15$ $|3|2x + 1| - 9 < 12$ Circle one:

AND OR AND OR

$-3|2 < \dots$

Answer key included

SOLVING ABSOLUTE VALUE EQUATIONS

Solving Absolute Value Equations

Directions: Answer each question and type the question number with the matching answer in the answer column to the right.

#	Question	Answer	Type the matching question numbers here
1	$ x - 3 = 7$	-16, -4	
2	$2 x + 1 = 16$	-17, -11	
3	$ x + 14 = 3$	-6, 1	
4	$-3 x - 5 = -15$	-2, 18	
5	$ 2x + 5 = 7$	-10/3, 4	
6	$ x + 10 - 7 = -1$	-9, 7	
7	$ 3x - 1 + 8 = 19$	-15, -9	
8	$-2 x + 12 = -6$	-7/3, 7	
9	$2 3x - 7 + 3 = 31$	-4, 10	

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Self-Checking

SOLVING ABSOLUTE VALUE EQUATIONS

FALL Collaborative Tessellation

Directions: Solve each absolute value equation. Based on your answer, use the key to color the corresponding leaf.

1. $ x + 3 = 7$	2. $ x - 9 = 0$	KEY for #1-4: If the sum of your answers is between: -5 to -3, brown -3 to 0, orange 0 to 3, blue 3 to 6, red 6 to 9, green 9 to 11, yellow
3. $ x - 5 - 3 = 1$	4. $ x + 2 + 3 = 11$	KEY for #5-8: If the sum of your answers is between: -10 to -16, pink -16 to -12, yellow -12 to -7, orange -7 to -3, red -3 to 0, orange 0 to 3, blue 3 to 6, green
5. $ x + 6 = 17$	6. $ 3x + 13 = 4$	KEY for #9-12: If the sum of your answers is between: -10 to -12, purple -12 to -8, orange -8 to -4, brown -4 to 0, blue 0 to 4, red 4 to 8, yellow 8 to 12, blue
7. $ x + 6 = 4$	8. $ 4x + 6 = 26$	
9. $ x - 9 = 13$	10. $ 4x + 6 = 26$	
	11. $ x + 6 = 4$	
	12. $ x + 6 = 4$	

Student work bulletin board

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!

You'll also be getting exclusive freebies and content to help your Algebra students be successful this school year!

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 $2. \frac{x}{x+4} \cdot \frac{x^2}{x^2-16}$.
- 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, with a path of colored lines connecting the questions to their correct answers.

#	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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