

keep scrolling to
get a sneak peek!

Help your Algebra students practice solving quadratic equations using the square roots method. Students will be eager to get the self-checking benefits from this circuit activity!

SOLVING QUADRATICS BY SQUARE ROOTS

Differentiated Circuit worksheet

SOLVING QUADRATIC EQUATIONS BY SQUARE ROOTS

Directions: A circuit is a route that starts and ends at the same place. Start in box 1 and solve the problem. Search through the remaining boxes for the answer to your problem. Complete that question. Continue until you have completed the question. Record your path below.

1 → 7 → 8 → 10 → 3 → 6 → 9 → 4

Previous Answer: $x = -1, 9$ # 7 Previous Answer: $x =$

1. Solve for x .

$$x^2 - 16 = 0$$
$$+16 +16$$
$$\sqrt{x^2} = \sqrt{16}$$
$$x = \pm 4$$

Previous Answer: $x = -1, 9$ # 5 Previous Answer: x

2. Solve for x .

$$x^2$$
$$\sqrt{x^2} =$$
$$x = \pm$$

Previous Answer: $x = 4, 10$ # 10 Previous Answer: $x = -2$

3. Solve for x .

4. Solve for x .



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 Quadratics by Square Roots Circuit

Name: _____ Date: _____

SOLVING QUADRATIC EQUATIONS BY SQUARE ROOTS 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: $x = -1, 9$ 1. Solve for x. $x^2 - 64 = 0$	# _____	Previous Answer: $x = -4, 4$ 7. Solve for x. $(x + 2)^2 = 81$
Previous Answer: $x = \sqrt{2} + 2, -\sqrt{2} + 2$ 3. Solve for x. $7x^2 - 50 = 0$	# _____	Previous Answer: $x = -2, 2$ 9. Solve for x. $(x + 1)^2 - 5 = -4$
Previous Answer: $x = \pm 2$ 5. Solve for x. $(x - 4)^2 = 25$	# _____	Previous Answer: $x = -11, 7$ 8. Solve for x. $(x + 5)^2 = 36$
		Previous Answer: $x = -11, 1$ 10. Solve for x. $(x - 7)^2 + 3 = 12$

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

Helpful steps:

- 1) Use inverse operations to isolate the the square of the equation.
- 2) Square root both sides
- Use inverse operations to isolate the variable.

$x^2 =$

Solving Quadratics by Square Roots *includes:*

Challenge: Determine the x-intercepts of the quadratic function $f(x) = 2(x - 4)^2 - 32$.

How are you feeling about this topic? Circle one:

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Helpful steps:

- 1) Use inverse operations to isolate the the squared term on one side of the equation.
- 2) Square root both sides
- 3) Use inverse operations to isolate the variable.

$(x - \square)^2 = \square$ $x^2 = \square$

How are you feeling about this topic? Circle one:

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- ✓ 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 Quadratics by Square Roots

standards covered:

CCSS HSA-REI.B.4

TEKs: A1.8.A

VA SOLs: EI.A.4.b

SOLVING QUADRATIC EQUATIONS BY SQUARE ROOTS CIRCUIT

Previous Answer: $x = -8, 8$ # **1**

7. Solve for x.

$$5(x+2)^2 = 10$$
$$\frac{5(x+2)^2}{5} = \frac{10}{5}$$
$$(x+2)^2 = 2$$
$$\sqrt{(x+2)^2} = \sqrt{2}$$
$$x+2 = \pm\sqrt{2}$$
$$x+2 = \sqrt{2}$$
$$x+2 = -\sqrt{2}$$
$$x = -2 + \sqrt{2}$$
$$x = -2 - \sqrt{2}$$

Previous Answer: $x = \sqrt{2} - 2, -\sqrt{2} - 2$ # **7**

8. Solve for x.

$$2(x+5)^2 + 3 = 35$$
$$2(x+5)^2 = 32$$
$$\frac{2(x+5)^2}{2} = \frac{32}{2}$$
$$(x+5)^2 = 16$$
$$\sqrt{(x+5)^2} = \sqrt{16}$$
$$x+5 = \pm 4$$
$$x+5 = 4$$
$$x+5 = -4$$
$$x = -1$$
$$x = -9$$

Previous Answer: $x = \sqrt{2} - 5, -\sqrt{2} - 5$ # **6**

9. Solve for x.

$$(x-1)^2 + 9 = 18$$
$$(x-1)^2 = 9$$
$$\sqrt{(x-1)^2} = \sqrt{9}$$
$$x-1 = \pm 3$$
$$x-1 = 3$$
$$x-1 = -3$$
$$x = 4$$
$$x = -2$$

Previous Answer: $x = -9, -1$ # **8**

10. Solve for x.

$$6(x-2)^2 + 12 = 24$$
$$6(x-2)^2 = 12$$
$$\frac{6(x-2)^2}{6} = \frac{12}{6}$$
$$(x-2)^2 = 2$$
$$\sqrt{(x-2)^2} = \sqrt{2}$$
$$x-2 = \pm\sqrt{2}$$
$$x-2 = \sqrt{2}$$
$$x-2 = -\sqrt{2}$$
$$x = 2 + \sqrt{2}$$
$$x = 2 - \sqrt{2}$$

Challenge: Determine the x-intercepts of the quadratic function $f(x) = 2(x-4)^2 - 32$

$$0 = 2(x-4)^2 - 32$$
$$+32$$
$$32 = 2(x-4)^2$$
$$16 = (x-4)^2$$
$$\sqrt{16} = \sqrt{(x-4)^2}$$
$$4 = x-4$$
$$x = 8$$
$$-4 = x-4$$
$$x = 0$$

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.

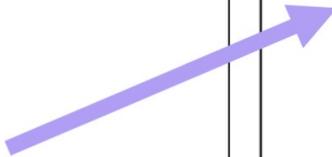
Name: _____ Date: _____

SOLVING QUADRATIC EQUATIONS BY SQUARE ROOTS 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: $x = -1, 9$ # _____	Previous Answer: $x = \sqrt{3} + 3, -\sqrt{3} + 3$ # _____
1. Solve for x. $x^2 - 64 = 0$	2. Solve for x. $2x^2 + 10 = 18$
Previous Answer: $x = \sqrt{2} + 2, -\sqrt{2} + 2$ # _____	Previous Answer: $x = \sqrt{3} + 1, -\sqrt{3} + 1$ # _____
3. Solve for x. $7x^2 - 50 = 0$	4. Solve for x. $2(x - 3)^2 = 18$



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 write quadratic equations in vertex form.

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

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

Name: **Answer Key** Date: _____

SOLVING QUADRATIC EQUATIONS BY SQUARE ROOTS 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** → **8** → **10** → **3** → **6** → **9** → **4** → **2** → **5** → 1

Previous Answer: $x = -1, 9$ # 5	Previous Answer: $x = \sqrt{3} + 3, -\sqrt{3} + 3$ # 4
1. Solve for x.	2. Solve for x.

$x^2 - 64 = 0$ $+64 +64$ $\sqrt{x^2} = \sqrt{64}$ $x = \pm 8$	<h3>SOLVING QUADRATIC EQUATIONS BY SQUARE ROOTS CIRCUIT</h3> <table border="1"> <tr> <td>Previous Answer: $x = -8, 8$ # 1</td> <td>Previous Answer: $x = \sqrt{2} - 2, -\sqrt{2} - 2$ # 7</td> </tr> <tr> <td>7. Solve for x. $5(x+2)^2 = 10$ $\frac{5(x+2)^2}{5} = \frac{10}{5}$ $(x+2)^2 = 2$ $\sqrt{(x+2)^2} = \sqrt{2}$ $x+2 = \pm\sqrt{2}$ $x+2 = -\sqrt{2}$ $-2 -2$ $x = -2 - \sqrt{2}$ $x+2 = \sqrt{2}$ $-2 -2$ $x = -2 + \sqrt{2}$ </td> <td>8. Solve for x. $2(x+5)^2 + 3 = 35$ $-3 -3$ $2(x+5)^2 = 32$ $\frac{2(x+5)^2}{2} = \frac{32}{2}$ $(x+5)^2 = 16$ $\sqrt{(x+5)^2} = \sqrt{16}$ $x+5 = \pm 4$ $x+5 = -4$ $-5 -5$ $x = -9$ $x+5 = 4$ $-5 -5$ $x = -1$ </td> </tr> <tr> <td>Previous Answer: $x = \sqrt{2} + 2,$</td> <td>Previous Answer: $x = \sqrt{2} - 5, -\sqrt{2} - 5$ # 6</td> </tr> <tr> <td>3. Solve for x. $7x^2 - 50 = 0$ $+50 +50$ $\frac{7x^2}{7} = \frac{50}{7}$ $x^2 = \frac{50}{7}$ $\sqrt{x^2} = \sqrt{\frac{50}{7}}$ $x = \pm \sqrt{\frac{50}{7}}$ </td> <td>Previous Answer: $x = -9, -1$ # 8</td> </tr> <tr> <td>Previous Answer: $x = \pm 2$</td> <td>9. Solve for x. $(x-1)^2 + 9 = 18$ $-9 -9$ $(x-1)^2 = 9$ $\sqrt{(x-1)^2} = \sqrt{9}$ $x-1 = \pm 3$ $x-1 = -3$ $+1 +1$ $x = -2$ $x-1 = 3$ $+1 +1$ $x = 4$ </td> </tr> <tr> <td>5. Solve for x. $\sqrt{(x-4)^2} = \sqrt{25}$ $x-4 = \pm 5$ $x-4 = -5$ $+4 +4$ $x = -1$ $x-4 = 5$ $+4 +4$ $x = 9$ </td> <td>10. Solve for x. $6(x-2)^2 + 12 = 24$ $-12 -12$ $6(x-2)^2 = 12$ $\frac{6(x-2)^2}{6} = \frac{12}{6}$ $(x-2)^2 = 2$ $\sqrt{(x-2)^2} = \sqrt{2}$ $x-2 = \pm\sqrt{2}$ $x-2 = -\sqrt{2}$ $+2 +2$ $x = 2 - \sqrt{2}$ $x-2 = \sqrt{2}$ $+2 +2$ $x = 2 + \sqrt{2}$ </td> </tr> </table>	Previous Answer: $x = -8, 8$ # 1	Previous Answer: $x = \sqrt{2} - 2, -\sqrt{2} - 2$ # 7	7. Solve for x. $5(x+2)^2 = 10$ $\frac{5(x+2)^2}{5} = \frac{10}{5}$ $(x+2)^2 = 2$ $\sqrt{(x+2)^2} = \sqrt{2}$ $x+2 = \pm\sqrt{2}$ $x+2 = -\sqrt{2}$ $-2 -2$ $x = -2 - \sqrt{2}$ $x+2 = \sqrt{2}$ $-2 -2$ $x = -2 + \sqrt{2}$	8. Solve for x. $2(x+5)^2 + 3 = 35$ $-3 -3$ $2(x+5)^2 = 32$ $\frac{2(x+5)^2}{2} = \frac{32}{2}$ $(x+5)^2 = 16$ $\sqrt{(x+5)^2} = \sqrt{16}$ $x+5 = \pm 4$ $x+5 = -4$ $-5 -5$ $x = -9$ $x+5 = 4$ $-5 -5$ $x = -1$	Previous Answer: $x = \sqrt{2} + 2,$	Previous Answer: $x = \sqrt{2} - 5, -\sqrt{2} - 5$ # 6	3. Solve for x. $7x^2 - 50 = 0$ $+50 +50$ $\frac{7x^2}{7} = \frac{50}{7}$ $x^2 = \frac{50}{7}$ $\sqrt{x^2} = \sqrt{\frac{50}{7}}$ $x = \pm \sqrt{\frac{50}{7}}$	Previous Answer: $x = -9, -1$ # 8	Previous Answer: $x = \pm 2$	9. Solve for x. $(x-1)^2 + 9 = 18$ $-9 -9$ $(x-1)^2 = 9$ $\sqrt{(x-1)^2} = \sqrt{9}$ $x-1 = \pm 3$ $x-1 = -3$ $+1 +1$ $x = -2$ $x-1 = 3$ $+1 +1$ $x = 4$	5. Solve for x. $\sqrt{(x-4)^2} = \sqrt{25}$ $x-4 = \pm 5$ $x-4 = -5$ $+4 +4$ $x = -1$ $x-4 = 5$ $+4 +4$ $x = 9$	10. Solve for x. $6(x-2)^2 + 12 = 24$ $-12 -12$ $6(x-2)^2 = 12$ $\frac{6(x-2)^2}{6} = \frac{12}{6}$ $(x-2)^2 = 2$ $\sqrt{(x-2)^2} = \sqrt{2}$ $x-2 = \pm\sqrt{2}$ $x-2 = -\sqrt{2}$ $+2 +2$ $x = 2 - \sqrt{2}$ $x-2 = \sqrt{2}$ $+2 +2$ $x = 2 + \sqrt{2}$
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SOLVING QUADRATICS BY SQUARE ROOTS

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Self-Checking

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Answer key included

QUADRATICS

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Algebra

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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, with a path of colored lines connecting the questions to their corresponding 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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