

keep scrolling to
get a sneak peek!

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

SOLVING QUADRATICS BY FACTORING

Differentiated Circuit worksheet

SOLVING QUADRATIC EQUATIONS BY FACTORING

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

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

Previous Answer: $x = -3, -4$

1. Solve for x.

$$x^2 + 10x + 16 = 0$$
$$(x + 8)(x + 2) = 0$$
$$\begin{array}{l} x + 8 = 0 \\ -8 - 8 \end{array} \quad \begin{array}{l} x + 2 = 0 \\ -2 - 2 \end{array}$$
$$\boxed{x = -8} \quad \boxed{x = -2}$$

Previous Answer: $x = -3, 2$

3. Solve for x.

Previous Answer: $x = -5$

2. Solve for x.

$$x^2 + 10x + 16 = 0$$
$$(x + 3)(x + 3) = 0$$
$$\begin{array}{l} x + 3 = 0 \\ -3 - 3 \end{array}$$
$$\boxed{x = -3}$$


2 versions + answer key included

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Why do you need this?

Solving Quadratics by Factoring Circuit



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.

Name: _____ Date: _____

SOLVING QUADRATIC EQUATIONS BY FACTORING 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: $x = -4, -3/5$ 1. Solve for x. $x^2 - 7x + 10 = 0$	# _____	Previous Answer: $x = 1, 2$ 8. Solve for x. $2x^2 + 14x + 24 = 0$
Previous Answer: $x = -8, -2$ 7. Solve for x. $3x^2 + 21x + 30 = 0$	# _____	Previous Answer: $x = 3/2, 5$ 10. Solve for x. $2x^2 - 13x + 15 = 0$
Previous Answer: $x = -4, 3/2$ 3. Solve for x. $3x^2 - 2x - 8 = 0$	# _____	Previous Answer: $x = 3/2, 5$ 9. Solve for x. $3x^2 - 9x + 6 = 0$
Previous Answer: $x = -2/3$ 5. Solve for x. $x^2 + 5x = 6$	# _____	Previous Answer: $x = 3/2, 5$ 6. Solve for x.

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

$a^2 - b^2 = (a - b)(a + b)$
 $a^2 + 2ab + b^2 = (a + b)^2$

Check for...
Factor b...

Solving Quadratics by Factoring *includes:*

- ✓ 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

Challenge: A rectangle's length is 4 meters longer than its width. The area of the rectangle is 60 square meters. Find the dimensions of the rectangle.

How are you feeling about this topic? Circle one:

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

$$a^2 - b^2 = (a - b)(a + b)$$
$$a^2 + 2ab + b^2 = (a + b)^2$$
$$a^2 - 2ab + b^2 = (a - b)^2$$

Check for a GCF
Factor by grouping

How are you feeling about this topic? Circle one:

Solving Quadratics by Factoring

standards covered:

CCSS: HSA-REI.B.4

TEKs: A1.8.A

VA SOLs: EI.A.4.b

SOLVING QUADRATIC EQUATIONS BY FACTORING CIRCUIT

Previous Answer: $x = 2, 5$ # **1**

7. Solve for x.

$$\begin{aligned} 4x^2 - 2x &= 2x - 1 \\ -2x + 1 &- 2x + 1 \\ 4x^2 - 4x + 1 &= 0 \\ (2x - 1)^2 &= 0 \\ 2x - 1 &= 0 \\ +1 &+1 \\ 2x &= 1 \\ \frac{2x}{2} &= \frac{1}{2} \\ x &= \frac{1}{2} \end{aligned}$$

Previous Answer: $x = -1, 6$ # **9**

8. Solve for x.

$$\begin{aligned} 5x^2 + 26x + 8 &= 3x - 4 \\ -3x + 4 &- 3x + 4 \\ 5x^2 + 23x + 12 &= 0 \\ 5x^2 + 20x + 3x + 12 &= 0 \\ 5x(x + 4) + 3(x + 4) &= 0 \\ (5x + 3)(x + 4) &= 0 \\ 5x + 3 = 0 & \quad x + 4 = 0 \\ -3 &-3 \\ 5x &= -3 \\ \frac{5x}{5} &= \frac{-3}{5} & \quad \frac{x + 4}{-4} &= \frac{0}{-4} \\ x &= -\frac{3}{5} & \quad x &= -4 \end{aligned}$$

Previous Answer: $x = -1, 4$ # **10**

9. Solve for x.

$$\begin{aligned} x^2 - 6 &= 5x \\ -5x &- 5x \\ x^2 - 5x - 6 &= 0 \\ (x - 6)(x + 1) &= 0 \\ x - 6 = 0 & \quad x + 1 = 0 \\ +6 &+6 & \quad -1 &-1 \\ x &= 6 & \quad x &= -1 \end{aligned}$$

Previous Answer: $x = -1, -1/3$ # **6**

10. Solve for x.

$$\begin{aligned} 3x^2 - 4x &= x^2 + 2x + 8 \\ -x^2 - 2x - 8 &- x^2 - 2x - 8 \\ 2x^2 - 6x - 8 &= 0 \\ 2(x^2 - 3x - 4) &= 0 \\ 2(x - 4)(x + 1) &= 0 \\ x - 4 = 0 & \quad x + 1 = 0 \\ +4 &+4 & \quad -1 &-1 \\ x &= 4 & \quad x &= -1 \end{aligned}$$

Challenge: A rectangle's length is 4 meters longer than its width. The area of the rectangle is 60 square meters. Find the dimensions of the rectangle.

w

$A = l \cdot w$

$60 = (w + 4)(w)$

$60 = w^2 + 4w$

$w^2 + 4w - 60 = 0$

$(w + 10)(w - 6) = 0$

$w + 10 = 0$

$w = -10$

$w - 6 = 0$

$w = 6$

$l = w + 4$

$l = 6 + 4$

$l = 10$

Dimensions: $6\text{ m} \times 10\text{ m}$

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 FACTORING 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: $x = -4, -3/5$ # _____	Previous Answer: $x = -6, 1$ # _____
1. Solve for x. $x^2 - 7x + 10 = 0$	2. Solve for x. $2x^2 + 5x - 12 = 0$
Previous Answer: $x = -4, 3/2$ # _____	Previous Answer: $x = 1/2$ # _____
3. Solve for x. $3x^2 - 2x - 8 = 0$	4. Solve for x. $9x^2 + 12x + 4 = 0$

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

Name: **Answer Key** Date: _____

SOLVING QUADRATIC EQUATIONS BY FACTORING 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** → **5** → **2** → **3** → **6** → **10** → **9** → **8** → 1

Previous Answer: $x = -4, -3/5$ # 8	Previous Answer: $x = -6, 1$ # 5
1. Solve for x. $x^2 - 7x + 10 =$ $(x-5)(x-2)$ $x-5=0$ $x-2=0$ $x=5$ $x=2$	2. Solve for x.

Previous Answer: $x = -4, 3/2$	Previous Answer: $x = 2, 5$ # 1	Previous Answer: $x = -1, 6$ # 9
3. Solve for x. $3x^2 - 2x - 8 =$ $3x^2 - 6x + 4x - 8 =$ $3x(x-2) + 4(x-2) =$ $(3x+4)(x-2) = 0$ $3x+4=0$ $x-2=0$ $-4-4$ $+2+2$ $3x=-4$ $x=2$ $x=-4/3$	7. Solve for x. $4x^2 - 2x = 2x - 1$ $-2x+1 -2x+1$ $4x^2 - 4x + 1 = 0$ $(2x-1)^2 = 0$ $2x-1=0$ $+1-1$ $2x=1$ $x=1/2$	8. Solve for x. $5x^2 + 26x + 8 = 3x - 4$ $-3x+4 -3x+4$ $5x^2 + 23x + 12 = 0$ $5x^2 + 20x + 3x + 12 = 0$ $5x(x+4) + 3(x+4) = 0$ $(5x+3)(x+4) = 0$ $5x+3=0$ $x+4=0$ $-3-3$ $-4-4$ $5x=-3$ $x=-4$ $x=-3/5$ $x=-4$
Previous Answer: $x = -1, 4$ # 10	Previous Answer: $x = -1, -1/3$ # 6	
4. Solve for x. $x^2 - 6 = 5x$ $-5x -5x$ $x^2 - 5x - 6 = 0$ $(x-6)(x+1) = 0$ $x-6=0$ $x+1=0$ $+6+6$ $-1-1$ $x=6$ $x=-1$	10. Solve for x. $3x^2 - 4x = x^2 + 2x + 8$ $-x^2 - 2x - 8 -x^2 - 2x - 8$ $2x^2 - 6x - 8 = 0$ $2(x^2 - 3x - 4) = 0$ $2(x-4)(x+1) = 0$ $x-4=0$ $x+1=0$ $+4+4$ $-1-1$ $x=4$ $x=-1$	
Previous Answer: $x = -2/3$		
5. Solve for x. $x^2 + 5x = 6$ $-6 -6$ $x^2 + 5x - 6 = 0$ $(x+6)(x-1) = 0$ $x+6=0$ $x-1=0$ $+6+6$ $-1-1$ $x=-6$ $x=1$		

Challenge: A rectangle's length is 11 meters longer than its width. The area of the rectangle is 60

This is a great activity to use when reviewing how to solve quadratic equations by factoring.

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

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

You may also enjoy ...

SOLVING QUADRATIC EQUATIONS BY FACTORING

#	Question	Answer
1	$x^2 - 7x + 6 = 0$	
2	$x^2 - 8x + 12 = 0$	
3	$8x^2 - 64x + 120 = 0$	
4	$4x^2 + 36x + 30 = -2$	
5	$6x^2 + 24x + 15 = -3$	
6	$x^2 = -14 + 9x$	
7	$10x^2 - 74x = -28$	
8	$5x^2 - 47x = -56$	
9	$x^2 - 9x + 42 = 4x$	
10	$x^2 + x - 31 = -7 + 3x$	

Directions: Solve each quadratic equation by factoring. Type your answer in least to greatest, separated by a comma, no spaces! Answer each question correctly and pixels will appear to reveal a picture!

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Math with Ms. Rivera

Self-Checking

SOLVING QUADRATICS BY FACTORING

Color by Number worksheet

Directions: Answer each question. Circle the answer from the given choices. Your answer determines how you color the grid page.

1. $x^2 + 10x + 16 = 0$	2. $x^2 - 5x - 36 = 0$
3. $x^2 - 7x + 12 = 0$	4. $x^2 + 2x - 63 = 0$
5. $x^2 - 7x + 12 = 0$	6. $3x^2 - 36x + 9 = 0$

Color key:

- $x = 2, 6$ dark blue
- $x = 0, 3$ purple
- $x = -2, -3$ yellow
- $x = -6, 9$ dark blue
- $x = 1, 4$ red
- $x = -3, 6$ light gray
- $x = 3, 4$ light gray
- $x = -1, 8$ dark green
- $x = -4, 2$ black
- $x = -$ light blue

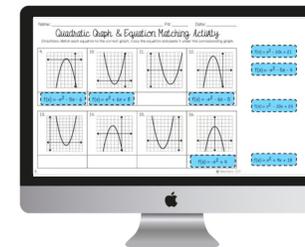
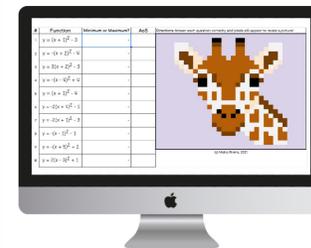
ANSWER KEY INCLUDED

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QUADRATICS

Digital Activity Bundle

Algebra



Math with Ms. Rivera

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check it out!

Answer Key
Name: _____ Date: _____
ADDING & SUBTRACTING RATIONAL EXPRESSIONS
Directions: Add or subtract the rational expressions. Show your work.

Solving Systems of Equations
Date: _____
Solve systems of equations using substitution or elimination. Check your solution.
2. $2x - 6y = -18$
 $x = 3y - 9$
4. $2x + 6y = -1$
 $y = -2x + 3$

Answer Key
Solving Systems of Equations
Date: _____
Solve systems of equations using substitution or elimination. Check your solution.
2. $2x - 6y = -18$
 $x = 3y - 9$
 $2(3y - 9) - 6y = -18$
 $6y - 18 - 6y = -18$
 $-18 = -18$
infinitely many solutions
 $y = 2 + 5$
 $y = 7$
 $(2, 7)$

Multiplying & Dividing Rational Expressions
Date: _____
Directions: Multiply or divide the rational expressions. Show your work.

Rational Expression Operations - Addition & Subtraction
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	$\frac{5}{x} + \frac{3}{x+1}$	$\frac{2x+1}{x+2}$	
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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