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WANT A FREE ALGEBRA ACTIVITY?

Join my email list by clicking on the image below and get a free, self-checking print & digital Algebra 1 & Algebra 2 activity!

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The image shows a collage of algebra worksheets and a digital self-checking activity on a tablet. The worksheets include:

- Answer Key** for **ADDING & SUBTRACTING RATIONAL EXPRESSIONS** and **SOLVING SYSTEMS OF EQUATIONS**.
- MULTIPLYING & DIVIDING RATIONAL EXPRESSIONS** worksheet.
- SOLVING SYSTEMS OF EQUATIONS** worksheet.

The digital activity on the tablet is titled **Rational Expression Operations - Addition & Subtraction**. It includes a table with 8 questions and 8 answers, with a matching path highlighted in blue and yellow.

#	Question	Answer
1	$\frac{5}{x} + \frac{3}{x+1}$	$\frac{2x+1}{x+2}$
2	$\frac{2}{x+4} - \frac{x^2}{x^2-16}$	$-\frac{1}{x^2-16}$
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	$\frac{x^2+2x}{x^2-1} - \frac{x+1}{x-1}$	$\frac{x-2}{4x}$

COMPLETING THE SQUARE 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: $x = 1, 5$ # _____ 1. Solve for x. Keep your answer in simplest radical form. $x^2 + 4x - 3 = 0$	Previous Answer: $x = 1, 2$ # _____ 2. Solve for x. Keep your answer in simplest radical form. $x^2 - 4x + 3 = 0$
Previous Answer: $x = 2 \pm \sqrt{3}$ # _____ 3. Solve for x. Keep your answer in simplest radical form. $5x^2 - 10x - 15 = 0$	Previous Answer: $x = -2 \pm \sqrt{10}$ # _____ 4. Solve for x. Keep your answer in simplest radical form. $3x^2 + 18x - 9 = 0$
Previous Answer: $x = -3 \pm 2\sqrt{3}$ # _____ 5. Solve for x. Keep your answer in simplest radical form. $x^2 - 10x + 15 = 0$	Previous Answer: $x = -2 \pm \sqrt{7}$ # _____ 6. Solve for x. Keep your answer in simplest radical form. $x^2 + 4x - 6 = 0$

COMPLETING THE SQUARE CIRCUIT

Previous Answer: $x = 1, 3$ #_____	Previous Answer: $x = -5, 1$ #_____
7. Solve for x. Keep your answer in simplest radical form. $4x^2 - 16x + 4 = 0$	8. Solve for x. Keep your answer in simplest radical form. $3x^2 - 9x + 6 = 0$
Previous Answer: $x = 5 \pm \sqrt{10}$ #_____	Previous Answer: $x = -1, 3$ #_____
9. Solve for x. Keep your answer in simplest radical form. $4x^2 + 16x - 20 = 0$	10. Solve for x. Keep your answer in simplest radical form. $3x^2 - 18x + 15 = 0$
Challenge: A rectangular garden has an area of 45 square meters. The length of the garden is 5 meters longer than the width. What are the dimensions of the garden? Round to the nearest hundredth, if necessary.	
How are you feeling about this topic? Circle one:    	

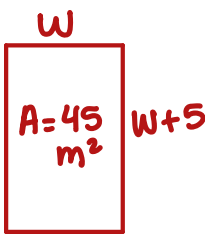
COMPLETING THE SQUARE CIRCUIT

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

Previous Answer: $x = 1, 5$ # 10 1. Solve for x. Keep your answer in simplest radical form. $x^2 + 4x - 3 = 0$ $\left(\frac{4}{2}\right)^2 = 4$ $x^2 + 4x + 4 = 3 + 4$ $x^2 + 4x + 4 = 7$ $\sqrt{(x+2)^2} = \sqrt{7}$ $x+2 = \pm\sqrt{7}$ $x = -2 \pm \sqrt{7}$	Previous Answer: $x = 1, 2$ # 8 2. Solve for x. Keep your answer in simplest radical form. $x^2 - 4x + 3 = 0$ $\left(\frac{-4}{2}\right)^2 = 4$ $x^2 - 4x + 4 = -3 + 4$ $x^2 - 4x + 4 = 1$ $\sqrt{(x-2)^2} = \sqrt{1}$ $x-2 = \pm 1$ $x = 1, 3$
Previous Answer: $x = 2 \pm \sqrt{3}$ # 7 3. Solve for x. Keep your answer in simplest radical form. $5x^2 - 10x - 15 = 0$ $\left(\frac{-2}{2}\right)^2 = 1$ $x^2 - 2x - 3 = 0$ $x^2 - 2x + 1 = 3 + 1$ $x^2 - 2x + 1 = 4$ $\sqrt{(x-1)^2} = \sqrt{4}$ $x-1 = \pm 2$ $x = -1, 3$	Previous Answer: $x = -2 \pm \sqrt{10}$ # 6 4. Solve for x. Keep your answer in simplest radical form. $3x^2 + 18x - 9 = 0$ $\left(\frac{6}{2}\right)^2 = 9$ $x^2 + 6x - 3 = 0$ $x^2 + 6x + 9 = 3 + 9$ $x^2 + 6x + 9 = 12$ $\sqrt{(x+3)^2} = \sqrt{12}$ $x+3 = \pm 2\sqrt{3}$ $x = -3 \pm 2\sqrt{3}$
Previous Answer: $x = -3 \pm 2\sqrt{3}$ # 4 5. Solve for x. Keep your answer in simplest radical form. $x^2 - 10x + 15 = 0$ $\left(\frac{-10}{2}\right)^2 = 25$ $x^2 - 10x + 25 = -15 + 25$ $x^2 - 10x + 25 = 10$ $\sqrt{(x-5)^2} = \sqrt{10}$ $x-5 = \pm\sqrt{10}$ $x = 5 \pm \sqrt{10}$	Previous Answer: $x = -2 \pm \sqrt{7}$ # 1 6. Solve for x. Keep your answer in simplest radical form. $x^2 + 4x - 6 = 0$ $\left(\frac{4}{2}\right)^2 = 4$ $x^2 + 4x + 4 = 6 + 4$ $x^2 + 4x + 4 = 10$ $\sqrt{(x+2)^2} = \sqrt{10}$ $x+2 = \pm\sqrt{10}$ $x = -2 \pm \sqrt{10}$

COMPLETING THE SQUARE CIRCUIT

Previous Answer: $x = 1, 3$ # <u>2</u> 7. Solve for x. Keep your answer in simplest radical form. $4x^2 - 16x + 4 = 0$ $\left(\frac{-4}{2}\right)^2 = 4$ $x^2 - 4x + 1 = 0$ $x^2 - 4x = -1$ $x^2 - 4x + 4 = -1 + 4$ $\sqrt{(x-2)^2} = \sqrt{3}$ $x-2 = \pm\sqrt{3}$ $x = 2 \pm \sqrt{3}$	Previous Answer: $x = -5, 1$ # <u>9</u> 8. Solve for x. Keep your answer in simplest radical form. $3x^2 - 9x + 6 = 0$ $\left(\frac{-3}{2}\right)^2 = \frac{9}{4}$ $x^2 - 3x + 2 = 0$ $x^2 - 3x = -2$ $x^2 - 3x + \frac{9}{4} = -2 + \frac{9}{4}$ $\sqrt{\left(x - \frac{3}{2}\right)^2} = \sqrt{\frac{1}{4}}$ $x - \frac{3}{2} = \pm \frac{1}{2}$ $x = \frac{3}{2} \pm \frac{1}{2}$ $x = 1, 2$
Previous Answer: $x = 5 \pm \sqrt{10}$ # <u>5</u> 9. Solve for x. Keep your answer in simplest radical form. $4x^2 + 16x - 20 = 0$ $\left(\frac{4}{2}\right)^2 = 4$ $x^2 + 4x - 5 = 0$ $x^2 + 4x = 5$ $x^2 + 4x + 4 = 5 + 4$ $\sqrt{(x+2)^2} = \sqrt{9}$ $x+2 = \pm 3$ $x = -5, 1$	Previous Answer: $x = -1, 3$ # <u>3</u> 10. Solve for x. Keep your answer in simplest radical form. $3x^2 - 18x + 15 = 0$ $\left(\frac{-6}{2}\right)^2 = 9$ $x^2 - 6x + 5 = 0$ $x^2 - 6x = -5$ $x^2 - 6x + 9 = -5 + 9$ $\sqrt{(x-3)^2} = \sqrt{4}$ $x-3 = \pm 2$ $x = 1, 5$
Challenge: A rectangular garden has an area of 45 square meters. The length of the garden is 5 meters longer than the width. What are the dimensions of the garden? Round to the nearest hundredth, if necessary.	
 $A = l \cdot w$ $45 = (w+5)w$ $45 = w^2 + 5w$ $\frac{25}{4} + 45 = w^2 + 5w + \frac{25}{4}$ $\sqrt{\frac{205}{4}} = \sqrt{\left(w + \frac{5}{2}\right)^2}$ $\pm \frac{\sqrt{205}}{2} = w + \frac{5}{2}$ $w = -\frac{5}{2} \pm \frac{\sqrt{205}}{2}$ $w = 1.08$ $l = 1.08 + 5 = 6.08 \text{ m}$ can't have negative dimensions	
How are you feeling about this topic? Circle one:    	

COMPLETING THE SQUARE 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: $x = -6$ # _____ 1. Solve for x. $x^2 + 6x = 16$	Previous Answer: $x = -12, 2$ # _____ 2. Solve for x. $x^2 - 8x = 20$
Previous Answer: $x = 1, 3$ # _____ 3. Solve for x. $x^2 + 4x = 12$	Previous Answer: $x = 1, 2$ # _____ 4. Solve for x. $x^2 - 6x + 5 = 0$
Previous Answer: $x = -5, -1$ # _____ 5. Solve for x. $x^2 + 4x - 5 = 0$	Previous Answer: $x = -7, 1$ # _____ 6. Solve for x. $x^2 - 3x = -2$

COMPLETING THE SQUARE CIRCUIT

Previous Answer: $x = -2, 10$ #_____	Previous Answer: $x = -2, 8$ #_____
7. Solve for x. $x^2 - 4x + 3 = 0$	8. Solve for x. $x^2 + 10x = 24$
Previous Answer: $x = -5, 1$ #_____	Previous Answer: $x = -6, 2$ #_____
9. Solve for x. $x^2 - 6x = 16$	10. Solve for x. $x^2 + 12x + 36 = 0$
Helpful Hints: Use these hints to help you solve the problems.	
Helpful steps: 1) Move the constant term to the other side of the equation. 2) Make sure $a = 1$. 3) Complete the square. 4) Rewrite the quadratic side as a square binomial. 5) Solve the equation using the square root method. 6) Solve for x. $ax^2 + bx + c = 0$ $ax^2 + bx = -c$ $x^2 + \frac{b}{a}x = -\frac{c}{a}$ $\left(\frac{b}{2a}\right)^2$ $x^2 + \frac{b}{a}x + \left(\frac{b}{2a}\right)^2 = \left(\frac{b}{2a}\right)^2 - \frac{c}{a}$ $\left(x + \frac{b}{2a}\right)^2 = \text{right-hand side}$ $x = -\frac{b}{2a} \pm \sqrt{\text{right-hand side}}$	
How are you feeling about this topic? Circle one:    	

COMPLETING THE SQUARE 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 → 5 → 9 → 8 → 2 → 7 → 3 → 10 → 1

Previous Answer: $x = -6$ # <u>10</u>	Previous Answer: $x = -12, 2$ # <u>8</u>
1. Solve for x. $\left(\frac{6}{2}\right)^2 = 9$ $x^2 + 6x = 16$ $x^2 + 6x + 9 = 16 + 9$ $\sqrt{(x+3)^2} = \sqrt{25}$ $x+3 = \pm 5$ $-3 \quad -3$ $x = -8, 2$	2. Solve for x. $\left(-\frac{8}{2}\right)^2 = 16$ $x^2 - 8x = 20$ $x^2 - 8x + 16 = 20 + 16$ $\sqrt{(x-4)^2} = \sqrt{36}$ $x-4 = \pm 6$ $+4 \quad +4$ $x = -2, 10$
Previous Answer: $x = 1, 3$ # <u>7</u>	Previous Answer: $x = 1, 2$ # <u>6</u>
3. Solve for x. $\left(\frac{4}{2}\right)^2 = 4$ $x^2 + 4x = 12$ $x^2 + 4x + 4 = 12 + 4$ $\sqrt{(x+2)^2} = \sqrt{16}$ $x+2 = \pm 4$ $-2 \quad -2$ $x = -6, 2$	4. Solve for x. $\left(\frac{6}{2}\right)^2 = 9$ $x^2 - 6x + 5 = 0$ $-5 \quad -5$ $x^2 - 6x = -5$ $x^2 - 6x + 9 = -5 + 9$ $\sqrt{(x-3)^2} = \sqrt{4}$ $x-3 = \pm 2$ $+3 \quad +3$ $x = 1, 5$
Previous Answer: $x = 1, 5$ # <u>4</u>	Previous Answer: $x = -8, 2$ # <u>1</u>
-15. Solve for x. $\left(\frac{4}{2}\right)^2 = 4$ $x^2 + 4x - 5 = 0$ $+5 \quad +5$ $x^2 + 4x = 5$ $x^2 + 4x + 4 = 5 + 4$ $\sqrt{(x+2)^2} = \sqrt{9}$ $x+2 = \pm 3$ $-2 \quad -2$ $x = -5, 1$	6. Solve for x. $\left(-\frac{3}{2}\right)^2 = \frac{9}{4}$ $x^2 - 3x = -2$ $x^2 - 3x + \frac{9}{4} = -2 + \frac{9}{4}$ $\sqrt{\left(x - \frac{3}{2}\right)^2} = \sqrt{\frac{1}{4}}$ $x - \frac{3}{2} = \pm \frac{1}{2}$ $+\frac{3}{2} \quad +\frac{3}{2}$ $x = 1, 2$

COMPLETING THE SQUARE CIRCUIT

Previous Answer: $x = -2, 10$ # <u>2</u>	Previous Answer: $x = -2, 8$ # <u>9</u>
7. Solve for x. $\left(\frac{-4}{2}\right)^2 = 4$ $x^2 - 4x + 3 = 0$ $x^2 - 4x = -3$ $x^2 - 4x + 4 = -3 + 4$ $\sqrt{(x-2)^2} = \sqrt{1}$ $x-2 = \pm 1$ $+2 \quad +2$ $x = 1, 3$	8. Solve for x. $\left(\frac{10}{2}\right)^2 = 25$ $x^2 + 10x = 24$ $x^2 + 10x + 25 = 24 + 25$ $\sqrt{(x+5)^2} = \sqrt{49}$ $x+5 = \pm 7$ $-5 \quad -5$ $x = -12, 2$
Previous Answer: $x = -5, 1$ # <u>5</u>	Previous Answer: $x = -6, 2$ # <u>3</u>
9. Solve for x. $\left(\frac{-6}{2}\right)^2 = 9$ $x^2 - 6x = 16$ $x^2 - 6x + 9 = 16 + 9$ $\sqrt{(x-3)^2} = \sqrt{25}$ $x-3 = \pm 5$ $+3 \quad +3$ $x = -2, 8$	10. Solve for x. $\left(\frac{12}{2}\right)^2 = 36$ $x^2 + 12x + 36 = 0$ $x^2 + 12x = -36$ $x^2 + 12x + 36 = -36 + 36$ $(x+6)^2 = 0$ $x+6 = 0$ $-6 \quad -6$ $x = -6$
Helpful Hints: Use these hints to help you solve the problems.	
Helpful steps: 1) Move the constant term to the other side of the equation. 2) Make sure $a = 1$. 3) Complete the square. 4) Rewrite the quadratic side as a square binomial. 5) Solve the equation using the square root method. 6) Solve for x. $ax^2 + bx + c = 0$ $ax^2 + bx = -c$ $x^2 + \frac{b}{a}x = -\frac{c}{a}$ $\left(\frac{b}{2a}\right)^2$ $x^2 + \frac{b}{a}x + \left(\frac{b}{2a}\right)^2 = \left(\frac{b}{2a}\right)^2 - \frac{c}{a}$ $\left(x + \frac{b}{2a}\right)^2 = \text{right-hand side}$ $x = -\frac{b}{2a} \pm \sqrt{\text{right-hand side}}$	
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