

Name: _____

Date: _____

Quadratic Formula Continue

MODEL

1. The solution of the equation $(x + 3)^2 = 7$ is:

(1) $3 \pm \sqrt{7}$

(3) $7 \pm \sqrt{3}$

(2) $-3 \pm \sqrt{7}$

(4) $-7 \pm \sqrt{3}$

2. Keith determines the zeroes of the function $f(x)$ to be 6 and -5 . Which of the following could be Keith's function?

(1) $f(x) = (x + 5)(x + 6)$

(3) $f(x) = (x - 5)(x + 6)$

(2) $f(x) = (x + 5)(x - 6)$

(4) $f(x) = (x - 5)(x - 6)$

3. When solving the equation $x^2 - 8x - 7 = 0$ by completing the square, which equation is a step in the process?

(1) $(x - 4)^2 = 9$

(3) $(x - 4)^2 = 23$

(2) $(x - 8)^2 = 9$

(4) $(x - 8)^2 = 23$

4. Rhiannon was asked to solve this word problem: "The product of two consecutive even integers is 224. What are the integers?" What type of equation should she create to solve this problem?

(1) linear

(3) quadratic

(2) exponential

(4) absolute value

CFU Think-Pair-Share

What are the solutions to the equation

$$3x^2 + 10x = 8?$$

- 1) $\frac{2}{3}$ and -4
- 2) $-\frac{2}{3}$ and 4
- 3) $\frac{4}{3}$ and -2
- 4) $-\frac{4}{3}$ and 2

If the quadratic formula is used to find the roots of the equation $x^2 - 6x - 19 = 0$, the correct roots are

- 1) $3 \pm 2\sqrt{7}$
- 2) $-3 \pm 2\sqrt{7}$
- 3) $3 \pm 4\sqrt{14}$
- 4) $-3 \pm 4\sqrt{14}$

Independent Practice Regent Questions

<u>Questions</u>	<u>Show all of your work</u>
What are the roots of the equation $x^2 + 4x - 16 = 0$? 1) $2 \pm 2\sqrt{5}$ 2) $-2 \pm 2\sqrt{5}$ 3) $2 \pm 4\sqrt{5}$ 4) $-2 \pm 4\sqrt{5}$	
What are the solutions to the equation $x^2 - 8x = 10$? 1) $4 \pm \sqrt{10}$ 2) $4 \pm \sqrt{26}$ 3) $-4 \pm \sqrt{10}$ 4) $-4 \pm \sqrt{26}$	
What are the solutions to the equation $x^2 - 8x = 24$? 1) $x = 4 \pm 2\sqrt{10}$ 2) $x = -4 \pm 2\sqrt{10}$ 3) $x = 4 \pm 2\sqrt{2}$ 4) $x = -4 \pm 2\sqrt{2}$	
Determine all the zeros of $m(x) = x^2 - 4x + 3$, algebraically.	

Keith determines the zeros of the function $f(x)$ to be -6 and 5 . What could be Keith's function?

- 1) $f(x) = (x + 5)(x + 6)$
 - 2) $f(x) = (x + 5)(x - 6)$
 - 3) $f(x) = (x - 5)(x + 6)$
 - 4) $f(x) = (x - 5)(x - 6)$
-

What is the solution set of the equation $(x - 2)(x - a) = 0$?

- 1) -2 and a
 - 2) -2 and $-a$
 - 3) 2 and a
 - 4) 2 and $-a$
-

The zeros of the function $f(x) = 2x^2 - 4x - 6$ are

- 1) 3 and -1
 - 2) 3 and 1
 - 3) -3 and 1
 - 4) -3 and -1
-

Janice is asked to solve $0 = 64x^2 + 16x - 3$. She begins the problem by writing the following steps:

Line 1 $0 = 64x^2 + 16x - 3$

Line 2 $0 = B^2 + 2B - 3$

Line 3 $0 = (B + 3)(B - 1)$

Use Janice's procedure to solve the equation for x . Explain the method Janice used to solve the quadratic equation.

Which equation has the same solutions as $2x^2 + x - 3 = 0$

- | | |
|--------------------------|--------------------------|
| a. $(2x - 1)(x + 3) = 0$ | c. $(2x - 3)(x + 1) = 0$ |
| b. $(2x + 1)(x - 3) = 0$ | d. $(2x + 3)(x - 1) = 0$ |
-

The Quadratic Formula: For quadratic equations: $ax^2 + bx + c = 0$,

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Solve each equation using the Quadratic Formula.

1. $4x^2 + 11x - 20 = 0$

2. $x^2 - 5x - 24 = 0$

3. $x^2 = 3x + 3$

4. $x^2 + 5 = -5x$

5. $x^2 = -x + 1$

6. $4x^2 - 1 = -8x$

7. $4x^2 + 7x - 15 = 0$

8. $x^2 + 3x - 10 = 0$

1. A rocket carrying fireworks is launched from a hill 80 feet above a lake. The rocket will fall into the lake after exploding at its maximum height. The rocket's height above the surface of the lake is given by $h(t) = -16t^2 + 64t + 80$, where t is the time in seconds and h is the height in feet.

a) What does t represent?

b) What does $h(t)$ represent?

c) What is the input of the function?

d) What is the output of the function?

e) How long will it take for the rocket to reach 128 feet?

f) Find the height at 0 seconds. What is the graphic name of this point?

g) Find the height at 2 seconds.

2. The area of a rectangular playground enclosure at Happy Times Nursery School is 600 sq. meters. The length is 25 meters longer than the width. Find the dimensions of the playground.
3. Collin is building a deck on the back of his house. He has enough lumber for the deck to be 144 square feet. The length should be 10 feet more than its width. What should the dimensions of the deck be?
4. Consider the quadratic equation $3x^2 + 5 = 10x$.
- a) State two possible methods to solve for the roots.
- b) Using one of the ways stated above, solve the quadratic equation $3x^2 + 5 = 10x$ in simplest radical form.

5. Simplify:

a) $2\sqrt{80}$

b) $3x^2\sqrt{125x^6}$

Factor:

6. a) $4x^2 - 81$

b) $14x^3y^2 - 10x^2y^5$

7. The Demon Drop at Cedar Point in Ohio takes riders to the top of a tower and drops them 60 feet. A function that approximates this ride is $h = -16t^2 + 64t + 60$, where h is the height of the riders in feet and t is the time in seconds. To the nearest tenth, how many seconds does it take for riders to hit the ground?

8. Consider the quadratic equation $w(x) = (2-x)(2x-1) + 3x^2 - 48$.

a) Simplify $w(x)$ and write it as a trinomial.

b) Solve for x when $w(x) = 0$.

9. Emma made a mistake when solving $x^2 + 2x - 8 = 0$ by completing the square. Explain and correct the mistake.

$$x^2 + 2x = 8$$

$$(x^2 + 2x + 1) = 8 + 1$$

$$(x + 1)^2 = 9$$

$$x + 1 = 3$$

$$x = 2$$

10. Solve the equation for y : $(y - 3)^2 = 4y - 12$

11. The roots of a function are $x = -2$ and $x = 9$. Write a possible quadratic function for these roots.