

SOLVING QUADRATICS

ALL METHODS

Graphic Organizer

ALGEBRA 1

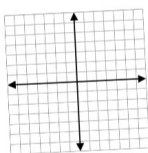
SOLVING QUADRATICS

Graphic Organizer

GRAPHING

- Solutions are the same as:
 - > _____
 - > _____
 - > _____
- Find the solutions by graphing the quadratic by hand & seeing where the graph crosses the x-axis or on the calculator with 2nd->trace->zero.

$$x^2 - 8x + 12 = 0$$



FACTORIZING

Zero Product Property!

- Set the equation equal to _____
- Factor.
- Set each factor equal to _____

$$x^2 = 10x$$

$$x^2 + 5x + 6 = 0$$

SQUARE ROOTS

- _____ the squared part.
- Take the _____ of both sides.
- Be sure to solve for _____ cases of the square root.

$$x^2 = 100$$

$$(x + 5)^2$$

COMPLETING THE SQUARE

- Rewrite as _____
- Divide the equation by _____
- Create a perfect square trinomial by adding _____ to both sides of the equation.
- _____ the perfect square trinomial.
- _____ using the square roots method.

$$2x^2 + 4x + 2 = 8$$

THE QUADRATIC FORMULA

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

_____ equation into _____
b and c into the formula.
_____ expression and find the two

$$3x^2 - 7x - 6 = 0$$

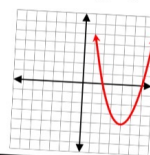
SOLVING QUADRATICS KEY

Graphic Organizer

GRAPHING

- Solutions are the same as:
 - > x-intercepts
 - > roots
 - > zeros
- Find the solutions by graphing the quadratic by hand & seeing where the graph crosses the x-axis or on the calculator with 2nd->trace->zero.

$$x^2 - 8x + 12 = 0$$



(2, 6)

FACTORIZING

Zero Product Property!

- Set the equation equal to 0
- Factor.
- Set each factor equal to 0

$$x^2 = 10x$$

$$x^2 + 5x + 6 = 0$$

{0, 10}

{-3, -2}

SQUARE ROOTS

- Isolate the squared part.
- Take the square root $\sqrt{\quad}$ of both sides.
- Be sure to solve for both cases of the square root.

$$x^2 = 100$$

$$(x + 5)^2 = 81$$

{-10, 10}

{-13, 4}

COMPLETING THE SQUARE

- Rewrite as $ax^2 + bx = c$
- Divide the equation by a
- Create a perfect square trinomial by adding $c = (b/2)^2$ to both sides of the equation.
- Factor the perfect square trinomial.
- Solve using the square roots method.

$$2x^2 + 4x + 2 = 8$$

{-3, 1}

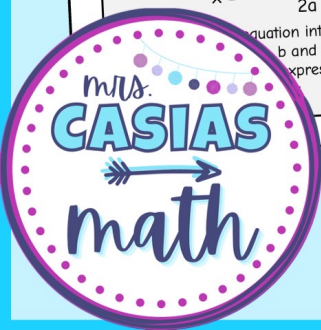
THE QUADRATIC FORMULA

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

- Rearrange the equation into $ax^2 + bx + c = 0$
- Substitute a, b and c into the formula.
- Simplify the expression and find the two cases ($\pm$) to solve for x.

$$3x^2 - 7x - 6 = 0$$

{ $-\frac{2}{3}$, 3}



SOLVING QUADRATICS

ALL METHODS

Guided Notes

• PAGE 3 •

Fill in the blank notes

• PAGE 4 •

Answer Key – Answers Only

• PAGE 5 •

Completed Answers Key – Worked out problems

These notes align well with TEKS A.8A

FIND THE VIDEO FOR THESE NOTES [HERE](#)



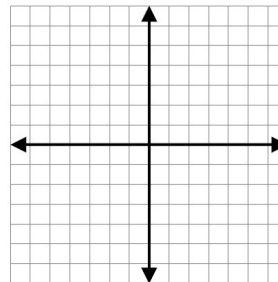
SOLVING QUADRATICS

Graphic Organizer

GRAPHING

- Solutions are the same as:
 - _____
 - _____
 - _____
- Find the solutions by graphing the quadratic by hand & seeing where the graph crosses the x-axis or on the calculator with 2nd->trace->zero.

$$x^2 - 8x + 12 = 0$$



FACTORING

Zero Product Property!

- Set the equation equal to _____.
- Factor.
- Set each factor equal to _____.

$$x^2 = 10x$$

$$x^2 + 5x + 6 = 0$$

SQUARE ROOTS

- _____ the squared part.
- Take the _____ of both sides.
- Be sure to solve for _____ cases of the square root.

$$x^2 = 100$$

$$(x + 5)^2 = 81$$

COMPLETING THE SQUARE

- Rewrite as _____.
- Divide the equation by _____.
- Create a perfect square trinomial by adding _____ to both sides of the equation.
- _____ the perfect square trinomial.
- _____ using the square roots method.

$$2x^2 + 4x + 2 = 8$$

THE QUADRATIC FORMULA

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

- Rearrange the equation into _____.
- _____ a, b and c into the formula.
- _____ the expression and find the two cases ($\pm$) to solve for x.

$$3x^2 - 7x - 6 = 0$$

SOLVING QUADRATICS KEY

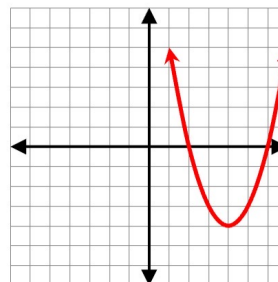
Graphic Organizer

GRAPHING

- Solutions are the same as:
 - > x-intercepts
 - > roots
 - > zeros
- Find the solutions by graphing the quadratic by hand & seeing where the graph crosses the x-axis or on the calculator with 2nd->trace->zero.

$$x^2 - 8x + 12 = 0$$

{2, 6}



FACTORING

Zero Product Property!

- Set the equation equal to 0.
- Factor.
- Set each factor equal to 0.

$$x^2 = 10x$$

{0, 10}

$$x^2 + 5x + 6 = 0$$

{-3, -2}

SQUARE ROOTS

- Isolate the squared part.
- Take the square root $\sqrt{\quad}$ of both sides.
- Be sure to solve for both cases of the square root.

$$x^2 = 100$$

{-10, 10}

$$(x + 5)^2 = 81$$

{-13, 4}

COMPLETING THE SQUARE

- Rewrite as $ax^2 + bx = c$.
- Divide the equation by a.
- Create a perfect square trinomial by adding $c = (b/2)^2$ to both sides of the equation.
- Factor the perfect square trinomial.
- Solve using the square roots method.

$$2x^2 + 4x + 2 = 8$$

{-3, 1}

THE QUADRATIC FORMULA

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

- Rearrange the equation into $ax^2 + bx + c = 0$.
- Substitute a, b and c into the formula.
- Simplify the expression and find the two cases ($\pm$) to solve for x.

$$3x^2 - 7x - 6 = 0$$

$\{-\frac{2}{3}, 3\}$

SOLVING QUADRATICS

Graphic Organizer

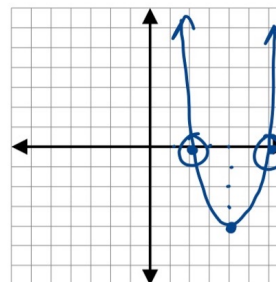
GRAPHING

Solutions are the same as:

- zeros
- x-intercepts
- roots

Find the solutions by graphing the quadratic by hand & seeing where the graph crosses the x-axis or on the calculator with 2nd->trace->zero.

$$x^2 - 8x + 12 = 0$$



$\{2, 6\}$

FACTORING → ✓ for GCF 1st!

Zero Product Property!

1. Set the equation equal to 0.
2. Factor.
3. Set each factor equal to 0.

$$x^2 = 10x$$

$$\frac{-10x}{-10x} \quad \frac{-10x}{-10x}$$

$$x^2 - 10x = 0$$

$$x(x - 10) = 0$$

$$x = 0$$

$$x - 10 = 0$$

$$\frac{+10}{+10} \quad \frac{+10}{+10}$$

$$x = 10$$

$$x = \{0, 10\}$$

$$x^2 + 5x + 6 = 0$$

$$(x+2)(x+3) = 0$$

$$x+2=0$$

$$\frac{-2}{-2} \quad \frac{-2}{-2}$$

$$x = -2$$

$$x+3=0$$

$$\frac{-3}{-3} \quad \frac{-3}{-3}$$

$$x = -3$$

$$x = \{-3, -2\}$$

SQUARE ROOTS → get squared part isolated

1. Isolate the squared part.
2. Take the square root of both sides.
3. Be sure to solve for both cases of the square root.

$$\sqrt{x^2} = \sqrt{100}$$

$$x = \pm 10$$

$$\sqrt{(x+5)^2} = \sqrt{81}$$

$$x+5 = \pm 9$$

$$\frac{-5}{-5} \quad \frac{-5}{-5}$$

$$x = -5 \pm 9$$

$$\begin{aligned} -5+9 &= 4 \\ -5-9 &= -14 \end{aligned}$$

$$x = \{-14, 4\}$$

any!

COMPLETING THE SQUARE *best used when "b" is even

1. Rewrite as $ax^2 + bx = c$.
2. Divide the equation by a.
3. Create a perfect square trinomial by adding $c = (\frac{b}{2})^2$ to both sides of the equation.
4. Factor the perfect square trinomial.
5. Solve using the square roots method.

$$2x^2 + 4x + 2 = 8$$

$$\frac{-2}{-2} \quad \frac{-2}{-2}$$

$$\frac{2x^2}{2} + \frac{4x}{2} = \frac{6}{2}$$

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

$$\frac{+1}{+1} \quad \frac{+1}{+1}$$

$$x^2 + 2x + 1 = 4$$

$$(x+1)(x+1) = 4$$

$$\sqrt{(x+1)^2} = \sqrt{4}$$

$$x+1 = \pm 2$$

$$\frac{-1}{-1} \quad \frac{-1}{-1}$$

$$x = -1 \pm 2$$

$$\begin{aligned} -1+2 &= 1 \\ -1-2 &= -3 \end{aligned}$$

$$x = \{-3, 1\}$$

any!

THE QUADRATIC FORMULA

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

1. Rearrange the equation into $ax^2 + bx + c = 0$.
2. Substitute a, b and c into the formula.
3. Simplify the expression and find the two cases ($\pm$) to solve for x.

$$3x^2 - 7x - 6 = 0$$

$$(a) \quad (b) \quad (c)$$

$$x = \frac{7 \pm \sqrt{(-7)^2 - 4(3)(-6)}}{2(3)}$$

$$x = \frac{7 \pm \sqrt{49 + 72}}{6}$$

$$x = \frac{7 \pm \sqrt{121}}{6}$$

$$\frac{7+11}{6} = 3$$

$$\frac{7-11}{6} = -\frac{2}{3}$$

$$x = \{-\frac{2}{3}, 3\}$$

FREE BONUS BUNDLE!

7TH & 8TH MATH + ALGEBRA 1

SIX GUIDED NOTES LESSONS & VIDEOS!

7TH

8TH

ALG

FREE!!

Mrs. CASIAS math

Get these six lessons instantly for free!

- 7th Math – Area & Circumference of Circles
- 7th Math – Two-Step Equations & Inequalities
- 8th Math – Pythagorean Theorem
- 8th Math – Graphing Transformations
- Algebra 1 – All 3 Forms of Linear Equations
- Algebra 1 – Vertex Form Basics

GET THEM NOW!

THANK YOU FOR PURCHASING MY PRODUCT!

Credits and Terms of Use

[TpT – Mrs. Casias Math](#)

This product and all its contents is property of Lauren Casias, Mrs. Casias Math©. It is for use by the individual buyer and is not available to share with others or post on websites for fair or free use.

If you have any questions, feel free to email me at

mrscasiasmath@gmail.com

Follow me on [Instagram](#) and [Twitter](#)
@mrscasiasmath



Clipart, Fonts, and/or Templates from the following authors may be used in this resource:

