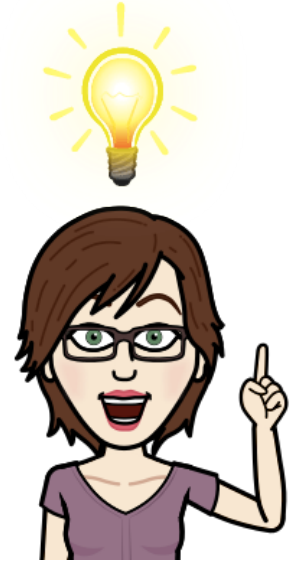


# Memory Aid Tips

## Solving a Quadratic Equation



# Quadratic Equation

There is one variable

Recognize

Equal sign

$$- 0.02(x + 5)^2 = - 2$$

$$2(x + 5)(x - 3) = 0$$

$$x^2 - 29x = -100$$

$$5x^2 - 3x - 2 = 0$$

Answer will be 0, 1 or 2 numbers

Quadratic – the exponent of x is 2

Focus on what solution will look like

# Quadratic Equation

Box out the expression that is squared

If there are numbers only outside the box

Perfect square method

If there are variables outside the box

- Factoring Method
- Quadratic Formula

#'s only outside of box, use the **perfect square method**

$$- 0.02(x + 5)^2 = - 2$$

Variables outside of box, once it is simplified use the **factored method**

$$x^2 - 29x = -100$$

What Method Do I use?

Simplify in order to determine method

$$2(x + 5)(x - 3) = 0$$



$$2x^2 + 4x - 30 = 0$$

Variables outside of box, once it is simplified but it was written in factored form so use the factored method

Variables outside of box, if it cannot be factored use the **factored method** or **quadratic formula**

$$5x^2 - 3x - 2 = 0$$

# Quadratic Equation

## Perfect Square Method

Find the value of x

$$- 0.02(x + 5)^2 = - 2$$

$$(x + 5)^2 = 100$$

$$\sqrt{(x + 5)^2} = \sqrt{100}$$

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$$x + 5 = 10$$

$$x = 5$$

$$x + 5 = -10$$

$$x = -15$$

1. Isolate the expression that is squared

2. Divide both sides by -0.02

3. Find the square root of both sides of the equation. Remember you have 2 answers; + and -

4. Solve the 2 mini equations

The solutions are 5 & -15

# Quadratic Equation

Simplified algebraic  
expression (no  
brackets)  
in decreasing order  
of exponents

GENERAL FORM

$$ax^2 + bx + c = 0$$

One side = 0

$$a \neq 0$$

# Quadratic Equation Factoring Method

1. Write the equation in the general form

$$ax^2 + bx + c = 0 \quad (\text{You can skip this step if it is already factored and } = 0)$$

2. Factor the non-zero side

3. Apply the zero product principle

4. Solve each linear (1st degree) equation

5. Write the solution set.

# Quadratic Equation Factoring Method

Find the value of x

$$x^2 - 29x = -100$$

$$x^2 - 29x + 100 = 0$$

$$(x - 25)(x - 4) = 0$$

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$$x - 25 = 0$$

$$x = 25$$

$$x - 4 = 0$$

$$x = 4$$

1. Write in general form

2. Factor

3. Solve the 2 mini equations

The solutions are 4 & 25



# Quadratic Equation

## Factoring Method

Find the value of x

$$2(x+5)(x-3) = 0$$

$(x+5)(x-3) = 0$	
$x+5=0$	$x-3=0$
$x=-5$	$x=3$

1. Here, the equation is written in factored form. Make sure RHS = 0
2. Divide both sides by 2
3. Solve the 2 mini equations

The solutions are -5 & 3

# Quadratic Equation

## Quadratic Formula

Find the value of x

$$5x^2 - 3x - 2 = 0$$

$$a = 5 \quad b = -3 \quad c = -2$$

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

$$x = \frac{-(-3) \pm \sqrt{(-3)^2 - 4(5)(-2)}}{2(5)}$$

1. Make sure equation is written in General form.
2. Identify a, b and c
3. Place the quadratic formula
4. Carefully plug in values for a, b and c

Con't

# Quadratic Equation

## Quadratic Formula

Find the value of x

$$5x^2 - 3x - 2 = 0$$

$$x = \frac{3 \pm \sqrt{9 + 40}}{10}$$

$$x = \frac{3 \pm \sqrt{49}}{10}$$

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$$x = \frac{3+7}{10}$$

$$x = \frac{3-7}{10}$$

$$x = \frac{10}{10}$$

$$x = \frac{-4}{10}$$

$$x = 1$$

$$x = -0.4$$

5. Carefully use arithmetic rules to simplify

The solutions are 1 & -0.4