TOPIC: CHOOSING A METHOD TO SOLVE QUADRATIC EQUATIONS

- You won't always be told what method to use, so you'll have to **choose** the ***best*** one to solve any given quadratic.

Note: Multiple methods may work for any given quadratic equation.

SOLVING QUADRATIC EQUATIONS				
$ax^2 + bx + c = 0$ *(Standard form)*				
	FACTORING	**SQ. ROOT PROPERTY**	**COMPLETE THE SQUARE**	**QUADRATIC FORMULA**
USE IF	• Has obvious factors **OR** • $c = 0$	• $(x + \#)^2 = [\textbf{constant}]$ **OR** • $b = 0$	• Leading coeff. is 1 **AND** • b is even	• Can't easily factor • Unsure what method to use

EXAMPLE: Identify the best method to solve each quadratic equation. Do not solve.

$(\boldsymbol{A})$	$(\boldsymbol{B})$	$(\boldsymbol{C})$	$(\boldsymbol{D})$
$x^2 + 3x = 0$	$x^2 + 6x + 1 = 0$	$(x + 2)^2 = 9$	$2x^2 + 7x + 3 = 0$

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(Standard form)

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STEPS	**1)** Write eqn in standard form **2)** Factor completely **3)** Set factors = 0, solve for x **4)** Check solutions	**1)** Isolate squared expression **2)** Take + & − square root **3)** Solve for x **4)** Check solutions	**1)** Simplify leading coeff. to 1 **2)** $+\left(\frac{b}{2}\right)^2$ to both sides, factor **3)** Solve for x w/ sqrt prop.	**1)** Write eqn in standard form **2)** Plug a, b, c in quad. form. $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ **3)** Compute & simplify sol'ns
EXAMPLE	$x^2 - 9x + 20 = 0$ $(x - 4)(x - 5)$ $\boldsymbol{x = 4, x = 5}$	$x^2 - 9 = 0$ $x^2 = 9$ $\boldsymbol{x = \pm 3}$	$x^2 + 2x + (2/2)^2 = 3 + (2/2)^2$ $(x + 1)^2 = 4$ $\boldsymbol{x = 1, x = -3}$	$3x^2 + 2x - 5 = 0$ $\frac{-2 \pm \sqrt{2^2 - 4(3)(-5)}}{2(3)}$ $\boldsymbol{x = 1, x = -5/3}$

PRACTICE: Choose and apply the best method to solve the given quadratic equation.

$$x^2 - 6x = 5$$

PRACTICE: Choose and apply the best method to solve the given quadratic equation.

$$4x^2 + 16x + 12 = 0$$