

Showing all work on separate paper, solve the following QUADRATIC EQUATIONS by:

**I. FACTORING:**

<u>EXAMPLE:</u>	<u>DESCRIPTION:</u>	<u>PROBLEMS:</u>	<u>ANSWERS:</u>
$2x^2 - 70 = 4x$		1. $2x^2 + 7x - 30 = 0$	_____
$2x^2 - 4x - 70 = 0$	Subtract 4x from each side to get zero on one side. Then put trinomial in descending order.	2. $x^2 + 6x = 16$	_____
$2(x^2 - 2x - 35) = 0$	Factor left side.	3. $(x - 6)^2 = 49$	_____
$x^2 - 2x - 35 = 0$	Divide each side by 2.	4. $x^2 = 13x$	_____
$(x - 7)(x + 5) = 0$	Factor left side (quadratic trinomial)	5. $x^2 + 2x - 1 = 0$	_____
$(x - 7) = 0$ or $(x + 5) = 0$	Set each binomial factor equal to zero.	6. $7x^2 - 14x = 56$	_____
$x = 7$ or $x = -5$	Solve each 'mini' equation.	7. $6x^2 + 7x - 5 = 0$	_____

**II. COMPLETING THE SQUARE:**

<u>EXAMPLE:</u>			
$x^2 + 10x - 1 = 0$		1. $x^2 - 2x = 30$	_____
$x^2 + 12x = 1$	Add 1 to each side.	2. $x^2 = -12 - 10x$	_____
$x^2 + 10x + 25 = 1 + 25$	Since $\left(\frac{10}{2}\right)^2 = 25$ , add 25 to each side.	3. $x^2 - \frac{7}{2}x + \frac{3}{2} = 0$	_____
$(x + 5)^2 = 26$	Factor $x^2 + 10x + 25$ .	4. $3x^2 - 30 = 18x$	_____
$\sqrt{(x + 5)^2} = \pm\sqrt{26}$ $x + 5 = \pm 26$	Take the square root of each side.	5. $x^2 + 2x - 3 = 0$	_____
$x + 5 + (-5) = -5 \pm \sqrt{26}$	Add -5 to (or subtract 5 from ) each side.	6. $x^2 + 15x = 5$	_____
$x = -5 + \sqrt{26}$ or $x = -5 - \sqrt{26}$	Simplify each equation.	7. $4x^2 + 16x + 24 = 0$	_____

**III. QUADRATIC FORMULA**

$$\left( x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \right):$$

<u>EXAMPLE:</u>			
$4x^2 - 4 = 8x$		1. $4x^2 + 8x - 3 = 0$	_____
$4x^2 - 8x - 4 = 0$	Subtract 8x from each side to get zero on side. Then put trinomial in descending order.	2. $x^2 + 8x = 14$	_____
$x = \frac{-(-8) \pm \sqrt{(-8)^2 - 4(4)(-4)}}{2(4)}$	Since a = 4, b = -8, and c = -4, substitute.	3. $x^2 + 3x + 1 = 0$	_____
$x = \frac{8 \pm \sqrt{128}}{8} = \frac{8 \pm 8\sqrt{2}}{8} = 1 \pm \sqrt{2}$		4. $2x^2 + 5x - 3 = 0$	_____