

$$c. \frac{3(x+5)^2}{3} = \frac{64}{3}$$

$$(x+5)^2 = \frac{64}{3}$$

$$x+5 = \pm \sqrt{\frac{64}{3}}$$

$$x = -5 \pm \sqrt{\frac{64}{3}}$$

$$d. x^2 + 12x + 30 = -5$$

$$x^2 + 12x + 35 = 0$$

$$(x+5)(x+7) = 0$$

$$x+5 = 0 \quad x+7 = 0$$

$$x = -5 \quad x = -7$$

$$e. 6x^2 + 8x + 1 = 0$$

$$a = 6 \quad b = 8 \quad c = 1$$

$$b^2 - 4ac$$

$$64 - 4(6)(1)$$

$$64 - 24 = 0$$

$$\text{Dis: } 40$$

$$\frac{-8 \pm \sqrt{40}}{12}$$

$$\frac{-4 + \sqrt{10}}{6}, \quad \frac{-4 - \sqrt{10}}{6}$$

$$f. 3x^2 + 13x + 12 = 0$$

3x	x	<table style="border-collapse: collapse; width: 100px; height: 100px;"> <tr> <td style="border-right: 1px solid black; padding: 5px;">$3x^2$</td> <td style="padding: 5px;">$4x$</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;">$9x$</td> <td style="padding: 5px;">12</td> </tr> </table>	$3x^2$	$4x$	$9x$	12
$3x^2$	$4x$					
$9x$	12					

$$(x+3)(3x+4) = 0$$

$$x+3 = 0 \quad 3x+4 = 0$$

$$x = -3 \quad x = -\frac{4}{3}$$

$$g. \frac{5(x-2)^2}{5} = \frac{125}{5}$$

$$\sqrt{(x-2)^2} = \sqrt{25}$$

$$x-2 = \pm 5$$

$$x-2 = 5 =$$

$$x = 7$$

$$h. x^2 - 16 = 0$$

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

$$x-4 = 0 \quad x+4 = 0$$

$$x = 4 \quad x = -4$$

$$i. 5x^2 - 3x - 1 = 7$$

$$5x^2 - 3x - 8$$

-40	5x	<table style="border-collapse: collapse; width: 100px; height: 100px;"> <tr> <td style="border-right: 1px solid black; padding: 5px;">$5x^2$</td> <td style="padding: 5px;">$5x$</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;">-8</td> <td style="padding: 5px;">$-8x$</td> </tr> </table>	$5x^2$	$5x$	-8	$-8x$
$5x^2$	$5x$					
-8	$-8x$					

$$(x+1)(5x-8) = 0$$

$$x+1 = 0 \quad 5x-8 = 0$$

$$x = -1 \quad x = \frac{8}{5}$$

$$j. x^2 - 15x + 56 = 0$$

$$(x-7)(x-8) = 0$$

$$(x-7) = 0 \quad x-8 = 0$$

$$x = 7 \quad x = 8$$

7. Solve equations by using Quadratic Formula

Use Q.F. when the equation is in standard form and number diamonds does not work.

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

a. $x^2 + 10x + 15 = 0$
 $a=1$ $b=10$ $c=15$
 $b^2 - 4ac$ $Disc: 40$
 $10^2 - 4(1)(15)$ $Solutions 2$
 $100 - 60$
 40
 $\frac{-10 \pm \sqrt{40}}{2}$
 $\frac{-10 \pm 2\sqrt{10}}{2} =$
 $\frac{-5 \pm \sqrt{10}}{1}$

b. $2x^2 + 10x = 1$
 $2x^2 + 10x - 1$
 $a=2$ $b=10$ $c=-1$
 $b^2 - 4ac$ $Disc: 108$
 $(10)^2 - 4(2)(-1)$ $Sol. 2-$
 $100 + 8 = 108$
 $\frac{-10 \pm \sqrt{108}}{2}$
 $-5 + 3\sqrt{3}, -5 - 3\sqrt{3}$

c. $3x^2 + 6x + 3 = 0$
 $a=3$ $b=6$ $c=3$
 $b^2 - 4ac$ $Disc: 0$
 $36 - 4(3)(3)$ $Sol. 1$
 $36 - 36 = 0$
 $\frac{-6 \pm \sqrt{0}}{2(3)} = \frac{-6}{6} = -1$

d. $8x^2 - 4x + 7 = 2$
 $8x^2 - 4x + 5$
 $a=8$, $b=-4$, $c=5$
 $b^2 - 4ac$
 $(-4)^2 - 4(8)(5) = -144$
 $Disc: -144$
 No Real Solutions.

8. Use the discriminant to determine the number of solutions

Discriminant:
 $b^2 - 4ac$
 If the discriminant is:
 Positive: two real
 Zero: one real
 Negative: zero real

a. Calculate the discriminant and tell number of solutions:
 $6x^2 + 2x + 1 = 0$
 $a=6$ $b=2$ $c=1$
 $2^2 - 4(6)(1)$
 $4 - 24$
 $Disc: -20$ $No Real Solution.$

b. Calculate the discriminant and tell how many times it will cross the x-axis.
 $6x^2 - 7x - 3 = 0$
 $a=6$ $b=-7$ $c=-3$
 $(-7)^2 - 4(6)(-3)$
 $49 + 72 = 121$
 $Disc. Pos: 121$ $2 solutions$

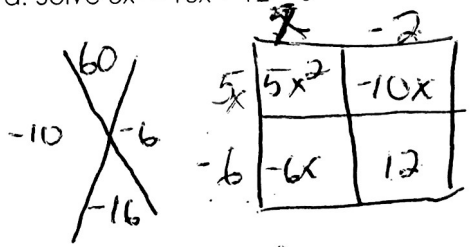
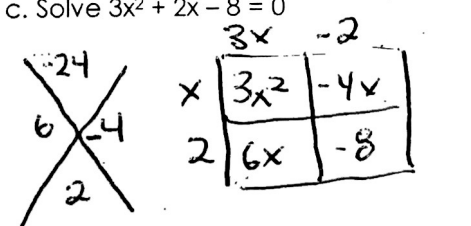
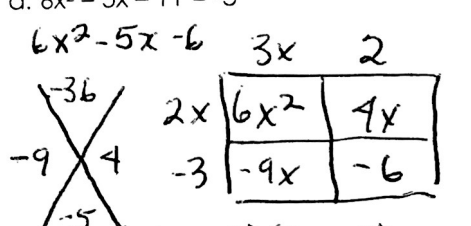
9. Determine the best method for solving quadratic equations.

Use graphic organizer to determine the best method for solving each equation.

a. $x^2 - 9 = 5$
 $x^2 = 14$
 $x = \pm \sqrt{14}$

b. $5x^2 - 7x = 0$
 $x(5x - 7) = 0$
 $x = 0$ $5x - 7 = 0$
 $x = 7/5$

4. Solve equations by factoring GCF	Use factoring by GCF when you have two terms (a & b) and both contain an x. One of the solutions will always be 0.	a. $x^2 - 4x = 0$ $x(x-4) = 0$ $x = 0$ $x-4 = 0$ $x = 4$	b. $12x^2 = -36x$ $12x^2 + 36x = 0$ $12x(x+3) = 0$ $12x = 0$ $x+3 = 0$ $x = 0$ $x = -3$
5. Solve equations by finding square roots.	Use solving by square roots when your equations have parenthesis or two terms (a & c). PEMDAS (backwards)	a. $x^2 = 49$ $x = \pm 7$	b. $8x^2 = 392$ $\frac{8x^2}{8} = \frac{392}{8}$ $x^2 = 49$ $x = \pm 7$
		c. $7x^2 - 3 = 445$ $7x^2 = 448$ $x^2 = 64$ $x = \pm 8$	d. $(x-4)^2 = 9$ $x-4 = 3$ $x-4 = -3$ $x = 7$ $x = 1$
		e. $2(x+2)^2 = 72$ $\sqrt{(x+2)^2} = \sqrt{36}$ $x+2 = \pm 6$ $x+2 = 6$ $x+2 = -6$ $x = 4$ $x = -8$	f. $3(x-3)^2 + 2 = 26$ $\frac{3(x-3)^2}{3} = \frac{24}{3}$ $x-3 = 2\sqrt{2}$ $(x-3)^2 = 8$ $x = 3 + 2\sqrt{2}$ $x-3 = \pm\sqrt{8}$ $x-3 = -2\sqrt{2}$ $x = 3 - 2\sqrt{2}$
6. Solve equations by completing the square	Move the c term to the right side Use $\left(\frac{b}{2}\right)^2$ to complete the square and then apply square root method	a. Solve $x^2 + 4x + 11 = 10$ $x^2 + 4x = -1$ $(x+2)^2 = -1 + 4$ $\sqrt{(x+2)^2} = \sqrt{3}$ $x+2 = \pm\sqrt{3}$ $x = -2 \pm \sqrt{3}$	b. Solve $x^2 - 16x + 52 = 0$ $x^2 - 16x = -52$ $(x-8)^2 = 64 - 52$ $\sqrt{(x-8)^2} = \sqrt{12}$ $x-8 = \pm 2\sqrt{3}$ $x = 8 \pm 2\sqrt{3}$

What you need to know & be able to do	Things to remember	Examples	
1. Solve equations in factored form.	Zero Product Property	a. Solve $(x-7)(x+3) = 0$ $x-7=0$ $x+3=0$ $x=7$ $x=-3$	b. Solve: $(x-4)(5x-7) = 0$ $x-4=0$ $5x-7=0$ $x=4$ $x=\frac{7}{5}$
2. Solve equations by factoring when $a=1$.	X Zero Prop.	a. Solve $x^2 - 9x + 20 = 0$ $(x-4)(x-5) = 0$ $x-4=0$ $x-5=0$ $x=4$ $x=5$	b. Solve $x^2 - 6x - 16 = 0$ $(x-8)(x+2) = 0$ $x-8=0$ $x+2=0$ $x=8$ $x=-2$
3. Solve equations by factoring when a is not 1	X <input type="checkbox"/> Zero Prop.	c. $x^2 - 13x + 47 = 7$ $x^2 - 13x + 40 = 0$ $(x-8)(x-5) = 0$ $x-8=0$ $x-5=0$ $x=8$ $x=5$	d. $x^2 - 100 = 0$ $(x-10)(x+10) = 0$ $x-10=0$ $x+10=0$ $x=10$ $x=-10$
		a. Solve $5x^2 - 16x + 12 = 0$  $(x-2)(5x-6) = 0$ $x-2=0$ $5x-6=0$ $x=2$ $x=\frac{6}{5}$	b. Solve $3x^2 - 18x + 15 = 0$ $3(x^2 - 6x + 5) = 0$ $(x-5)(x-1) = 0$ $x-5=0$ $x-1=0$ $x=5$ $x=1$
		c. Solve $3x^2 + 2x - 8 = 0$  $3(x+2)(3x-2) = 0$ $x+2=0$ $3x-2=0$ $x=-2$ $x=\frac{2}{3}$	d. $6x^2 - 5x - 11 = -5$ $6x^2 - 5x - 6 = 0$  $(2x-3)(3x+2) = 0$ $\frac{3}{2}, -\frac{2}{3}$