Due Date: Monday, May 18 by 9:00am
Late work will not be accepted

Notes: Included in this packet are some note taking templates.
  - Solving Quadratics by Completing the Square

Those with internet access can complete the notes as you watch the YouTube videos linked below.
https://youtu.be/57tftwCWnhg   https://youtu.be/zkYGJ17BFvg
https://youtu.be/GocX4K7zwtc   https://youtu.be/lwAeqLq0ZK8
https://youtu.be/CctBoiy34Dc

Students with limited internet access can use the teacher's notes at the end of this packet.

Reading: Textbook p.506-510 (hint: use the Dynamic e-book on Clever to see video tutorials)

Exercises: Textbook p.511 #5, 6, 8, 14, 17-20, 26-28, 30
Please submit your answers through Clever and the Big Ideas Math site.
Those with limited internet access can email me a scan/photograph of their work.
Those without internet access may submit paper copies to the main office on Monday from 12-3pm.

Videos: Here are some extra videos that may help you with the textbook exercises.
https://bit.ly/35EfZuY   https://bit.ly/2SHWT24
https://bit.ly/2WzACVb   https://bit.ly/3ftnutl
https://bit.ly/3fpXYoO   https://bit.ly/3ftjA3I
https://bit.ly/2xHCy5u   https://bit.ly/35FXt5o
                              https://bit.ly/2YGvXTU

Khan Videos: https://youtu.be/bNQY0z76M5A   https://youtu.be/KouDAzYl_bc

Tools: Here is a PowerPoint intro and an Excel tool.
https://ca01001129.schoolwires.net/Page/15726

Contact: leongc@luhsd.net
925.634.0037 ext. 6305
Remind @fnctn
Zoom office hours (TBA)

Accessing Big Ideas Through Clever

The preferred method of completing assignments is electronically through Clever.
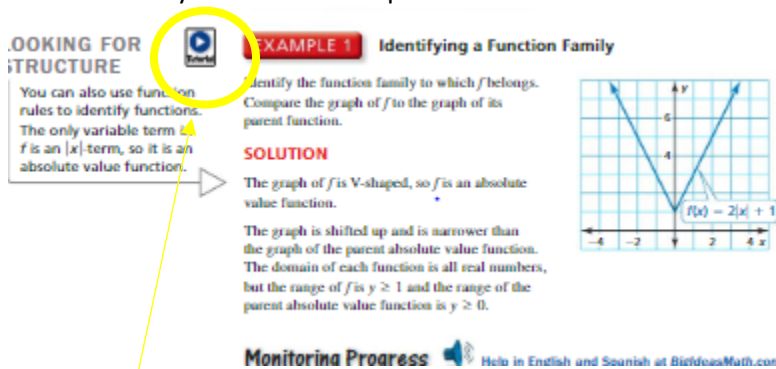
To access your assignments:

- Go to "clever.com/in/luhsd"
- Log in using your username and password as your student ID number
- Scroll down to "Math" where you will see the Big Ideas Math logo, click on "Big Ideas Math"
- If you are taking multiple math classes, you may need to select the book for the course you are working
- In the middle there is a tab that says "Assignments," click on "Assignments"
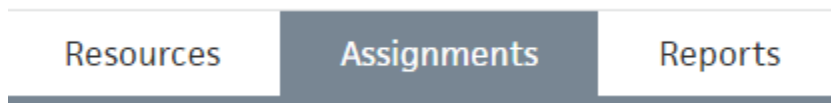
- Choose an assignment to work on from the list. Click the pencil/enter to start the assignment.
- *WARNING!!!!* Clever does NOT automatically save and submit progress. Once you finish the last problem in an assignment, be sure to click your name in the top-right corner and click "Submit" to turn your assignment in.

To access online tutorial videos:

- Go to "clever.com/in/luhsd"
- Log in using your username and password as your student ID number
- Scroll down to "Math" where you will see the Big Ideas Math logo, click on "Big Ideas Math"
- If you are taking multiple math classes, you may need to select the book for the course you are working
- Click on "Student Dynamic ebook"
- You can use the "Contents" tab on the left to get to the section you wish to view
- In the section you will see examples that look similar to the below pic:

The blue circle with triangle indicates there is a tutorial video for that example. Click the icon to view.

Solving Quadratic Equations by Completing the Square

Name: _____

Date: _____

Some quadratic equations can not be solved by factoring. Another method used to solve is Completing the Square.

Steps to Solving A Quadratic Equation $ax^2 + bx + c = 0$ **, by Completing the Square:**

Ex 1: Solve $2x^2 + 20x - 8 = 0$ by completing the square.

	Step 1: Isolate the constant.
	Step 2: Divide to make the coefficient of $x^2 = 1$.
	Step 3: Complete the square by adding $\left(\dfrac{b}{2}\right)^2$ to both sides of the equation.
	Step 4: Factor the perfect square trinomial, and simplify.
	Step 5: Square root both sides of the equation.
	Step 6: Simplify the radical if possible. Isolate *x.* Identify both solutions.

Examples: Solve each equation by completing the square.

1. $x^2 + -2x = 3$ 2. $x^2 + 12x = -8$

You Try!

1. $x^2 - 16x = -15$ 2. $x^2 - 18x = -17$

Examples: Solve each equation by completing the square.

1. $3x^2 - 24x + 27 = 0$ 2. $2x^2 + 12x - 10 = 0$

You Try!

1. $3x^2 = -24x - 15$ 2. $3g^2 - 24g - 27 = 0$

Solving Quadratic Equations by Completing the Square

Name: _____
TEACHER NOTES
Date: _____

Some quadratic equations can not be solved by factoring. Another method used to solve is Completing the Square.

Steps to Solving A Quadratic Equation $ax^2 + bx + c = 0$ **, by Completing the Square:**

Ex 1: Solve $\dfrac{2x^2 + 20x - 8 = 0}{2 \qquad 2}$ by completing the square.

$x^2 + 10x - 4 = 0$ $\qquad +4 \qquad +4$	**Step 1:** Isolate the constant.
$x^2 + 10x = 4$	**Step 2:** Divide to make the coefficient of $x^2 = 1$.
$\begin{array}{c c c} & x & 5 \\ x & x^2 & 5\cdot x \\ 5 & 5x & 25 \end{array} = \boxed{\quad 4 \quad \big/ 25}$	**Step 3:** Complete the square by adding $\left(\dfrac{b}{2}\right)^2$ to both sides of the equation.
$(x+5)(x+5) = 29$ $\sqrt{(x+5)^2} = \sqrt{29}$	**Step 4:** Factor the perfect square trinomial, and simplify.
$x + 5 = \pm\sqrt{29}$ $x + 5 = \sqrt{29} \qquad\qquad x + 5 = -\sqrt{29}$	**Step 5:** Square root both sides of the equation.
$\underline{\quad -5 \qquad -5 \quad} \qquad \underline{\quad -5 \qquad -5 \quad}$ $\boxed{x = -5 + \sqrt{29}} \qquad \boxed{x = -5 - \sqrt{29}}$ $\boxed{x \approx 0.385} \qquad \boxed{x \approx -10.385}$	**Step 6:** Simplify the radical if possible. Isolate x. Identify both solutions.

Examples: Solve each equation by completing the square.

1. $x^2 + -2x = 3$

$$\begin{array}{c|c} & x \quad -1 \\ \hline x & x^2 \quad -1x \\ -1 & -1x \quad 1 \end{array} = \boxed{3} \boxed{1}$$

$(x-1)(x-1) = 4$

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

$x - 1 = \pm 2$

$x - 1 = 2 \qquad x - 1 = -2$
$\underline{+1 \quad +1} \qquad \underline{+1 \quad +1}$
$x = 3 \quad \text{or} \quad x = -1$

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

$$\begin{array}{c|c} & x \quad 6 \\ \hline x & x^2 \quad 6x \\ 6 & 6x \quad 36 \end{array} = \boxed{-8} \boxed{36}$$

$(x+6)(x+6) = 28$

$\sqrt{(x+6)^2} = \sqrt{28}$

$x + 6 = \pm 2\sqrt{7}$

$x + 6 = 2\sqrt{7} \qquad x+6 = -2\sqrt{7}$
$\underline{-6 \quad -6} \qquad \underline{-6 \quad -6}$
$x = -6 + 2\sqrt{7} \qquad x = -6 - 2\sqrt{7}$

$x \approx -0.708 \text{ or } x \approx -11.292$

You Try!

1. $x^2 - 16x = -15$

$$\begin{array}{c|c} & x \quad -8 \\ \hline x & x^2 \quad -8x \\ -8 & -8x \quad 64 \end{array} = \boxed{-15} \boxed{64}$$

$(x-8)(x-8) = 49$

$\sqrt{(x-8)^2} = \sqrt{49}$

$x - 8 = \pm 7$

$x - 8 = 7 \qquad x - 8 = -7$
$\underline{+8 \quad +8} \qquad \underline{+8 \quad +8}$
$x = 15 \quad \text{or} \quad x = 1$

2. $x^2 - 18x = -17$

$$\begin{array}{c|c} & x \quad -9 \\ \hline x & x^2 \quad -9x \\ -9 & -9x \quad 81 \end{array} = \boxed{-17} \boxed{81}$$

$(x-9)(x-9) = 64$

$\sqrt{(x-9)^2} = \sqrt{64}$

$x - 9 = \pm 8$

$x - 9 = 8 \qquad x - 9 = -8$
$\underline{+9 \quad +9} \qquad \underline{+9 \quad +9}$
$x = 17 \quad \text{or} \quad x = 1$

Examples: Solve each equation by completing the square.

1. $\dfrac{3x^2 - 24x + 27}{3} = \dfrac{0}{3}$

$x^2 - 8x + 9 = 0$
$\underline{\qquad -9 \quad -9}$
$x^2 - 8x = -9$

$$\begin{array}{c|c} & x \quad -4 \\ \hline x & x^2 \quad -4x \\ -4 & -4x \quad 16 \end{array} = \boxed{-9} \boxed{16}$$

$(x-4)(x-4) = 7$

$\sqrt{(x-4)^2} = \sqrt{7}$

$x - 4 = \pm\sqrt{7}$

$x - 4 = \sqrt{7} \qquad x - 4 = -\sqrt{7}$
$\underline{+4 \quad +4} \qquad \underline{+4 \quad +4}$
$x = 4 + \sqrt{7} \qquad x = 4 - \sqrt{7}$

$x \approx 6.646 \text{ or } x = 1.354$

2. $\dfrac{2x^2 + 12x - 10}{2} = \dfrac{0}{2}$

$x^2 + 6x - 5 = 0$
$\underline{\qquad +5 \quad +5}$
$x^2 + 6x = 5$

$$\begin{array}{c|c} & x \quad 3 \\ \hline x & x^2 \quad 3x \\ 3 & 3x \quad 9 \end{array} = \boxed{5} \boxed{9}$$

$(x+3)(x+3) = 14$

$\sqrt{(x+3)^2} = \sqrt{14}$

$x + 3 = \pm\sqrt{14}$

$x + 3 = \sqrt{14} \qquad x + 3 = -\sqrt{14}$
$\underline{-3 \quad -3} \qquad \underline{-3 \quad -3}$
$x = -3 + \sqrt{14} \qquad x = -3 - \sqrt{14}$

$x \approx 0.742 \text{ or } x \approx -6.742$

You Try!

1. $\dfrac{3x^2}{3} = \dfrac{-24x - 15}{3}$

$x^2 = -8x - 5$
$\underline{+8x \qquad +8x}$
$x^2 + 8x = -5$

$$\begin{array}{c|c} & x \quad 4 \\ \hline x & x^2 \quad 4x \\ 4 & 4x \quad 16 \end{array} = \boxed{-5} \boxed{16}$$

$(x+4)(x+4) = 11$

$\sqrt{(x+4)^2} = \sqrt{11}$

$x + 4 = \pm\sqrt{11}$

$x + 4 = \sqrt{11} \qquad x + 4 = -\sqrt{11}$
$\underline{-4 \quad -4} \qquad \underline{-4 \quad -4}$
$x = -4 + \sqrt{11} \qquad x = -4 - \sqrt{11}$

$x \approx -0.683 \text{ or } x \approx -7.317$

2. $\dfrac{3g^2 - 24g - 27}{3} = \dfrac{0}{3}$

$g^2 - 8g - 9 = 0$
$\underline{\qquad +9 \quad +9}$
$g^2 - 8g = 9$

$$\begin{array}{c|c} & g \quad -4 \\ \hline g & g^2 \quad -4g \\ -4 & -4g \quad 16 \end{array} = \boxed{9} \boxed{16}$$

$(g-4)(g-4) = 25$

$\sqrt{(g-4)^2} = \sqrt{25}$

$g - 4 = \pm 5$

$g - 4 = 5 \qquad g - 4 = -5$
$\underline{+4 \quad +4} \qquad \underline{+4 \quad +4}$
$g = 9 \quad \text{or} \quad g = -1$