

Heritage High School – Distance Learning
Mr. Leong’s Algebra 1 Assignment Packet
May 11 – May 15

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/GocX4K7zwtc>
<https://youtu.be/CctBoiy34Dc>

<https://youtu.be/zkYGj17BFvg>
<https://youtu.be/lwAeqLq0ZK8>

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/2WzACVb>
<https://bit.ly/3fpXYoO>
<https://bit.ly/2xHCy5u>

<https://bit.ly/2SHWT24>
<https://bit.ly/3ftnutl>
<https://bit.ly/3ftjA3I>
<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>

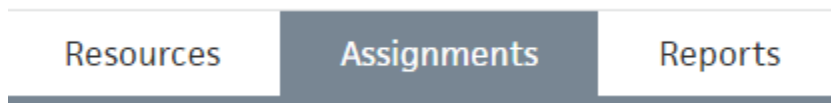
Contact: leongc@luhsd.net
925.634.0037 ext. 6305
Remind @fnctn
Zoom office hours (TBA)

Accessing Big Ideas Through Clever

The preferred method of completing assignments is electronically through Clever.

To access your assignments:

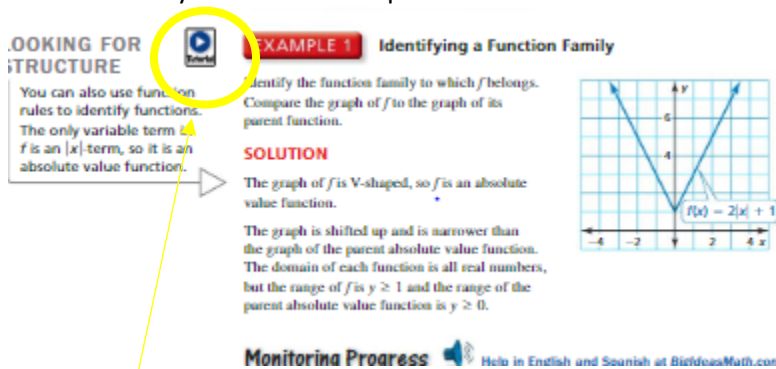
- Go to “clever.com/in/luhsd”
- Log in using your username and password as your student ID number
- Scroll down to “Math” where you will see the Big Ideas Math logo, click on “Big Ideas Math”
- If you are taking multiple math classes, you may need to select the book for the course you are working
- In 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:



LOOKING FOR STRUCTURE

You can also use function rules to identify functions. The only variable term in f is an $|x|$ -term, so it is an absolute value function.

EXAMPLE 1 Identifying a Function Family

Identify the function family to which f belongs. Compare the graph of f to the graph of its parent function.

SOLUTION

The graph of f is V-shaped, so f is an absolute value function.

The graph is shifted up and is narrower than the graph of the parent absolute value function. The domain of each function is all real numbers, but the range of f is $y \geq 1$ and the range of the parent absolute value function is $y \geq 0$.

$f(x) = 2|x + 1|$

Monitorina Progres Help in English and Spanish at BigIdeasMath.com

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 $\left(\frac{b}{2}\right)^2$ 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 $\frac{2x^2 + 20x - 8}{2} = 0$ by completing the square.

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

Examples: Solve each equation by completing the square.

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

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

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

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

$$x-1 = \pm 2$$

$$\begin{array}{c} x-1 = 2 \\ \quad +1 \quad +1 \\ \hline x = 3 \end{array} \quad \text{or} \quad \begin{array}{c} x-1 = -2 \\ \quad +1 \quad +1 \\ \hline x = -1 \end{array}$$

$$x = 3 \text{ or } x = -1$$

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

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

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

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

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

$$\begin{array}{c} x+6 = 2\sqrt{7} \\ \quad -6 \quad -6 \\ \hline x = -6 + 2\sqrt{7} \end{array} \quad \text{or} \quad \begin{array}{c} x+6 = -2\sqrt{7} \\ \quad -6 \quad -6 \\ \hline x = -6 - 2\sqrt{7} \end{array}$$

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

You Try!

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

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

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

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

$$x-8 = \pm 7$$

$$\begin{array}{c} x-8 = 7 \\ \quad +8 \quad +8 \\ \hline x = 15 \end{array} \quad \text{or} \quad \begin{array}{c} x-8 = -7 \\ \quad +8 \quad +8 \\ \hline x = 1 \end{array}$$

$$x = 15 \text{ or } x = 1$$

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

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

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

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

$$x-9 = \pm 8$$

$$\begin{array}{c} x-9 = 8 \\ \quad +9 \quad +9 \\ \hline x = 17 \end{array} \quad \text{or} \quad \begin{array}{c} x-9 = -8 \\ \quad +9 \quad +9 \\ \hline x = 1 \end{array}$$

$$x = 17 \text{ or } x = 1$$

Examples: Solve each equation by completing the square.

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

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

$$x^2 - 8x = -9$$

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

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

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

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

$$\begin{array}{c} x-4 = \sqrt{7} \\ \quad +4 \quad +4 \\ \hline x = 4 + \sqrt{7} \end{array} \quad \text{or} \quad \begin{array}{c} x-4 = -\sqrt{7} \\ \quad +4 \quad +4 \\ \hline x = 4 - \sqrt{7} \end{array}$$

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

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

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

$$x^2 + 6x = 5$$

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

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

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

$$\begin{array}{c} x+3 = \sqrt{14} \\ \quad -3 \quad -3 \\ \hline x = -3 + \sqrt{14} \end{array} \quad \text{or} \quad \begin{array}{c} x+3 = -\sqrt{14} \\ \quad -3 \quad -3 \\ \hline x = -3 - \sqrt{14} \end{array}$$

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

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

You Try!

1. $\frac{3x^2 - 24x - 15}{3} = 0$

$$\frac{x^2 - 8x - 5}{+8x \quad +8x} = 0$$

$$x^2 - 8x = 5$$

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

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

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

$$\begin{array}{c} x+4 = \sqrt{11} \\ \quad -4 \quad -4 \\ \hline x = -4 + \sqrt{11} \end{array} \quad \text{or} \quad \begin{array}{c} x+4 = -\sqrt{11} \\ \quad -4 \quad -4 \\ \hline x = -4 - \sqrt{11} \end{array}$$

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

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

$$\frac{g^2 - 8g - 9}{+1 \quad +1} = 0$$

$$g^2 - 8g = 9$$

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

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

$$g-4 = \pm 5$$

$$\begin{array}{c} g-4 = 5 \\ \quad +4 \quad +4 \\ \hline g = 9 \end{array} \quad \text{or} \quad \begin{array}{c} g-4 = -5 \\ \quad +4 \quad +4 \\ \hline g = -1 \end{array}$$

$$g = 9 \text{ or } g = -1$$

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