

Heritage High School – Distance Learning
Mr. Leong’s Algebra 1 Assignment Packet
April 6 – April 10

Due Date: Monday, April 13 by 9:00am
Late work will not be accepted

Notes: Included in this packet are some note taking templates. Those with internet access can complete the notes as you watch the YouTube videos linked below.

- Factoring GCF
- Factoring Trinomials
- Factoring Difference of Two Squares

Videos: Videos for the notes:
https://youtu.be/0KWcSCUK_nI
<https://youtu.be/NC1XS1kjU5U>
https://youtu.be/p1hTlSyA_4Y

Additional videos on factoring the GCF:
<https://youtu.be/409bn-RdJ7Y>
<https://youtu.be/2aojd6mRV4Q>

Additional videos on factoring trinomials:
<https://youtu.be/Aa-v1EK7DR4>
<https://youtu.be/SWtQGRNKHOU>

Additional videos on factoring the difference of two squares:
<https://youtu.be/H21qt027H48>

Reading: Textbook p.386-387, 392-393, 398-399

Exercises: Textbook p.411 #21-34
*Please submit your answers through Clever and the Big Ideas Math site.
Those without internet access may submit paper copies to the main office.*

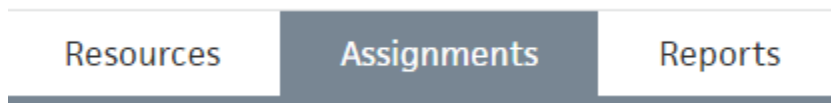
Contact: leongc@luhsd.net
925.634.0037 ext. 6305
Remind @fnctn
Zoom office hours (TBA)

Accessing Big Ideas Through Clever

The preferred method of completing assignments is electronically through Clever.

To access your assignments:

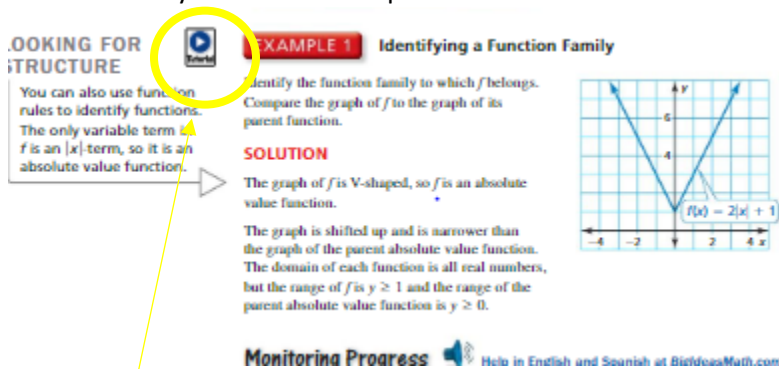
- Go to “clever.com/in/luhsd”
- Log in using your username and password as your student ID number
- Scroll down to “Math” where you will see the Big Ideas Math logo, click on “Big Ideas Math”
- If you are taking multiple math classes, you may need to select the book for the course you are working
- In 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 $y \geq 0$.

Monitoring Progress 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.

Factoring Polynomials

GCF

Factoring out the greatest common factor.

Look for the largest number and greatest variable factor that all terms have in common. Divide that greatest common factor out of the polynomial.

Example 1:

a) $2x^2 + 8x - 12$

b) $3x^4 - 6x^2 - 9x$

c) $42x^6 - 21x^4 + 7x^3$

You Try!

1) $5x^2 + 15x + 10$

2) $36x^3 - 18x^2 + 45x$

3) $24x^5 - 36x^4 - 144x^3$

Example 2:

d) $15x^3y^2 - 20x^2y + 5xy$

You Try!

4) $24a^2b + 12ab - 36a$

Factoring Polynomials Trinomials (7.4-7.5)

1)

2)

3)

4)

5)

Example 1: Factor.

a) $x^2 + 9x + 20$

b) $2x^2 + 13x + 15$

You Try!

1) $x^2 + 10x + 16$

2) $3x^2 + 10x + 8$

Example 2: Factor.

a) $x^2 - 10x + 24$

b) $2x^2 - x - 10$

You Try!

3) $3x^2 + 11x - 20$

Example 3: Factor.

a) $3x^2 + 15x - 42$

You Try!

4) $2x^2 + 12x + 16$

Starter

Find the product of each.

1. $(x - 3)(x + 3)$

2. $(2x + 5y)(2x - 5y)$

Factoring Using Difference of Squares

- *Difference of Squares* is a shortcut that can be used to factor an expression of the form $x^2 - y^2$.
- In this general case, the factored expression is $(x + y)(x - y)$.
- Note: the GCF may be used before using difference of squares.
- Another note: THIS TECHNIQUE DOES NOT WORK WITH A "SUM OF SQUARES"

Examples:

Factor $x^2 - 25$

$$(x + 5)(x - 5)$$

Factor $x^2 - 9$

$$(x + 3)(x - 3)$$

Factor $3x^2 - 75$

$$3(x^2 - 25)$$

$$3(x + 5)(x - 5)$$

Example 1: Factor the following difference of squares:

SOME MAY TAKE MORE THAN ONE STEP!

a) $x^2 - 64$

b) $16h^2 - 9a^2$

c) $121 - 4b^2$

d) $27g^3 - 3g$

e) $b^4 - 16$

f) $x^4 - 81$

You Try!

1) $x^2 - 25$

2) $4x^2 - 81$

3) $n^4 - 25$

4) $5y^2 - 45$

Factoring Polynomials

GCF

Factoring out the greatest common factor.

Look for the largest number and greatest variable factor that all terms have in common. Divide that greatest common factor out of the polynomial.

Example 1:

$$2 \text{) } \underline{2x^2 + 8x - 12}$$
$$x^2 + 4x - 6$$

$$2(x^2 + 4x - 6)$$

$$3 \text{) } \underline{3x^4 - 6x^2 - 9x}$$
$$x \text{) } \underline{x^3 - 2x^2 - 3x}$$
$$x^3 - 2x - 3$$

$$3x(x^3 - 2x - 3)$$

$$7 \text{) } \underline{42x^6 - 21x^4 + 7x^3}$$
$$x^3 \text{) } \underline{6x^3 - 3x^2 + 1}$$
$$6x^3 - 3x + 1$$

$$7x^3(6x^3 - 3x + 1)$$

You Try!

$$5 \text{) } \underline{5x^2 + 15x + 10}$$
$$x^2 + 3x + 2$$

$$5(x^2 + 3x + 2)$$

$$3 \text{) } \underline{36x^3 - 18x^2 + 45x}$$
$$3 \text{) } \underline{12x^3 - 6x^2 + 15x}$$

$$x \text{) } \underline{4x^3 - 2x^2 + 5x}$$
$$4x^2 - 2x + 5$$

$$\cancel{3x} \cdot (4x^2 - 2x + 5)$$
$$9x$$

$$12 \text{) } \underline{24x^5 - 36x^4 - 144x^3}$$
$$x^3 \text{) } \underline{2x^2 - 3x - 12}$$

$$12x^3(2x^2 - 3x - 12)$$

Example 2:

$$5 \text{) } \underline{15x^3y^2 - 20x^2y + 5xy}$$

$$x \text{) } \underline{3x^2y^2 - 4x^2y + 1xy}$$

$$y \text{) } \underline{3x^2y^2 - 4xy + 1y}$$
$$3x^2y - 4x + 1$$

$$\boxed{5xy(3x^2y - 4x + 1)}$$

You Try!

$$12 \text{) } \underline{24a^2b + 12ab - 36a}$$

$$a \text{) } \underline{2a^2b + 1ab - 3a}$$

$$2ab + 1b - 3$$

$$\boxed{12a(2ab + b - 3)}$$

Factoring Polynomials Trinomials (7.4-7.5)

★ 1) factor out a GCF, if it exists

2) area model / box method.

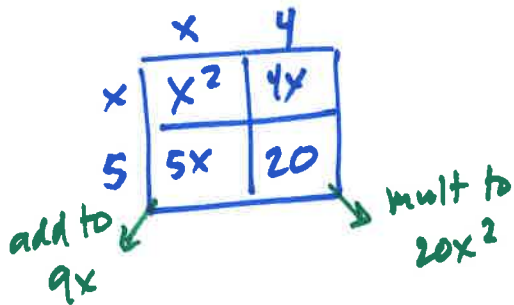
~~3)~~

~~4)~~

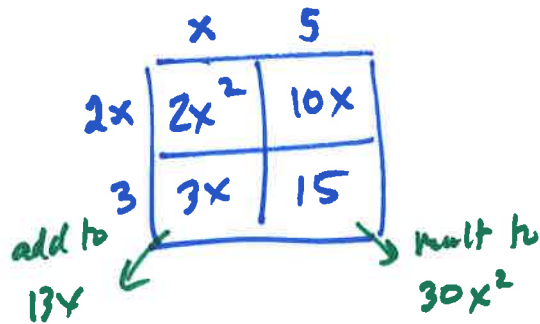
~~5)~~

Example 1: Factor.

a) $x^2 + 9x + 20 = (x+5)(x+4)$

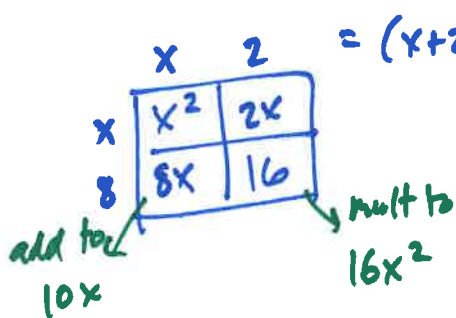


b) $2x^2 + 13x + 15 = (2x+3)(x+5)$

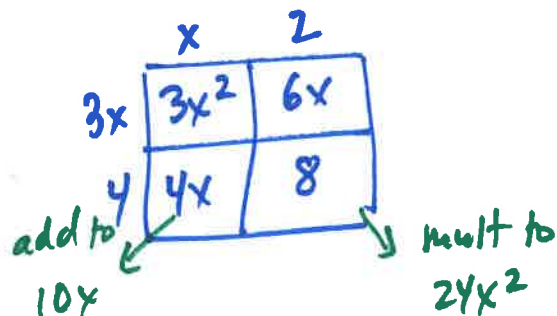


You Try!

1) $x^2 + 10x + 16 = (x+8)(x+2)$

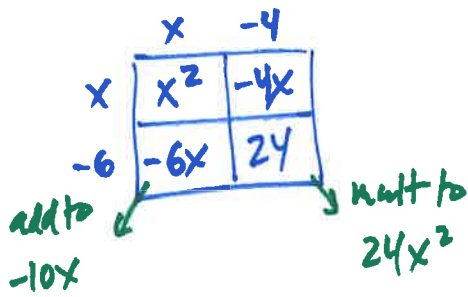


2) $3x^2 + 10x + 8 = (3x+4)(x+2)$

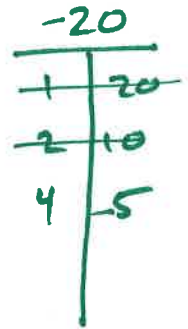
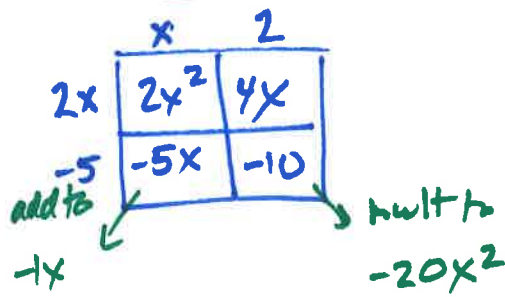


Example 2: Factor.

a) $x^2 - 10x + 24 = (x-6)(x-4)$

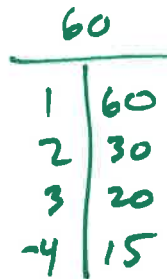
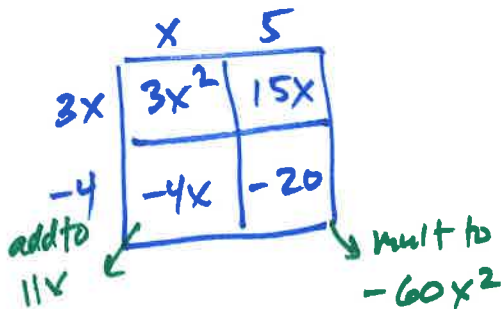


b) $2x^2 - 10x - 10 = (2x-5)(x+2)$



You Try!

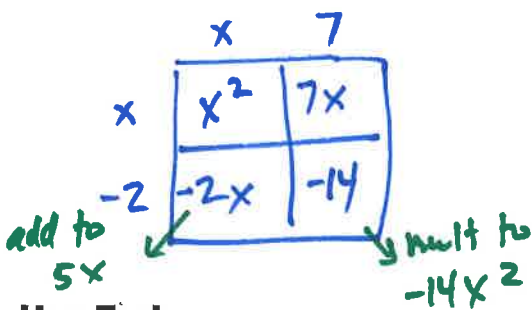
3) $3x^2 + 11x - 20 = (3x-4)(x+5)$



Example 3: Factor.

3) $3x^2 + 15x - 42 = 3(x-2)(x+7)$

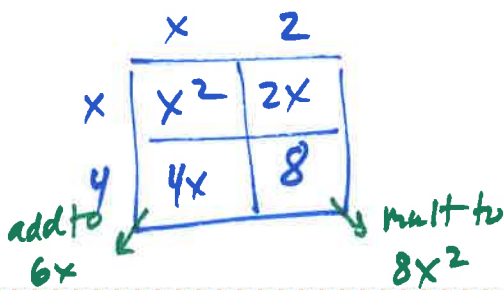
$x^2 + 5x - 14$



You Try!

2) $2x^2 + 12x + 16 = 2(x+4)(x+2)$

$x^2 + 6x + 8$



Starter

Find the product of each.

1. $(x - 3)(x + 3) = 1x^2 - 9$

mult.

	x	3
x	x ²	3x
-3	-3x	-9

2. $(2x + 5y)(2x - 5y) = 4x^2 - 25y^2$

	2x	-5y
2x	4x ²	-10xy
5y	10xy	-25y ²

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Examples:

Factor $x^2 - 25$
 $(x + 5)(x - 5)$

Factor $x^2 - 9$
 $(x + 3)(x - 3)$

Factor $3x^2 - 75$
 $3(x^2 - 25)$
 $3(x + 5)(x - 5)$

Example 1: Factor the following difference of squares:

SOME MAY TAKE MORE THAN ONE STEP!

a) $x^2 - 64 = (x + 8)(x - 8)$

b) $16h^2 - 9a^2 = (4h - 3a)(4h + 3a)$

c) $121 - 4b^2 = (11 + 2b)(11 - 2b)$

	x	-8
x	x ²	-8x
add to 8 0x	8x	-64

mult to -64x²

	4h	3a
4h	16h ²	12ha
add to 3a 0	-12ha	-9a ²

mult to -144h²a²

d) $27g^3 - 3g$
 $3g(9g^2 - 1)$
 $3g(3g + 1)(3g - 1)$

e) $b^4 - 16$
 $(b^2 + 4)(b^2 - 4)$
 $(b^2 + 4)(b + 2)(b - 2)$

f) $x^4 - 81$
 $(x^2 + 9)(x^2 - 9)$
 $(x^2 + 9)(x + 3)(x - 3)$

$3g(3g + 1)(3g - 1)$

$(b^2 + 4)(b^2 - 4)$

$(x^2 + 9)(x^2 - 9)$

$(b^2 + 4)(b + 2)(b - 2)$

$(x^2 + 9)(x + 3)(x - 3)$

You Try!

1) $x^2 - 25$

$\begin{array}{cc} \wedge & \wedge \\ x & 5 \end{array}$

$(x+5)(x-5)$

2) $4x^2 - 81$

$\begin{array}{cc} \wedge & \wedge \\ 2x & 9 \end{array}$

$(2x+9)(2x-9)$

3) $n^4 - 25$

$\begin{array}{cc} \wedge & \wedge \\ n^2 & 5 \end{array}$

$(n^2+5)(n^2-5)$

$5(5y^2 - 45)$

$\begin{array}{cc} \wedge & \wedge \\ y^2 & 9 \\ \wedge & \wedge \\ y & 3 \end{array}$

$5(y+3)(y-3)$