

Welcome back, Everyone!

I hope you have all had an enjoyable break and are ready to find some routine. As we move into Quarter 4, we will be shifting the way we work through our content so that we can maintain all of our health and safety. Below is a description of changes you will see.

Moving forward, we will be working through content week by week, so our routine will look something like this:

Monday:

- All assignments, notes, and resources will be posted to my website at <https://ca01001129.schoolwires.net/Domain/1730> by **9:00am**.
- **Assignments from the prior week will be due by 9:00am.**
- Mondays are devoted to meetings and preparation on my end, so I will only be available for scheduled one-on-one meetings and email questions. This will be between the hours of **12pm-3pm**.

Tuesday:

- If you *would like* to work through notes with me LIVE, you can connect to a Zoom meeting with me.
- The morning meeting will cover Algebra 1 topics and the afternoon meeting will cover the Geometry topics.
- These **meetings will be recorded and posted** on my website. Instructions for how to connect to me on Zoom are [my website](#). All Zoom meetings are strictly voluntary.
- You may schedule one-on-one meetings, or reach out through Remind or email for help outside these meetings between the hours of **8am-3pm**.

Wednesday-Friday:

- From **10am-2pm**, I will be available on Zoom for “drop-in” help (think study group sort of setting).
- Instructions for how to connect to me on Zoom are on [my website](#). All Zoom meetings are strictly voluntary, but will be recorded for record keeping purposes.
- You may schedule one-on-one meetings, or reach out through Remind or email for help outside these times between the hours of **8am-3pm**.

As a result in the change in routine, some changes will be made to my **late work, makeup, and retake policies**. Beginning immediately, **NO late work will be accepted**. As for makeup tests and retakes, I will address that in a future update as we get closer to a time when we would

normally take a test. If you have any questions regarding work, retakes, or accommodations from Quarter 3, please reach out to me through email no **later than April 10, 2020**.

Lastly, in an effort to be more accessible, I have set up a Remind. The course codes and add links are below.

Algebra 1: @dk7a22f

<https://www.remind.com/join/dk7a22f>

Geometry: @gbhaaa

<https://www.remind.com/join/gbhaaa>

We got this, guys!

Mosby

Heritage High School
Ms. Mosby's Algebra 1
Week 1: 4/6-4/10

Included in this packet:

- Directions to Access Assignments Through Clever
- Factoring GCF Notes Template
- Factoring GCF Notes Key
- Factoring Trinomials Notes Template
- Factoring Trinomials Notes Key
- Factoring Difference of Two Squares Notes Template
- Factoring Difference of Two Squares Notes Key

Assignments to be submitted by 9:00 am on Monday, April 13:

Please see next page on how to access your assignment electronically through Clever. The prefer method to complete your homework is electronically through Clever.

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

Problems: [Chapter 7 Review - p. 411-412 #21-34](#)

Contact: mosbyv@luhsd.net

925.634.0037 ext 6404

Remind @dk7a22f

Zoom office hours

Accessing Big Ideas Through Clever

The preferred method of completing assignments is electronically through Clever.

To access your assignments:

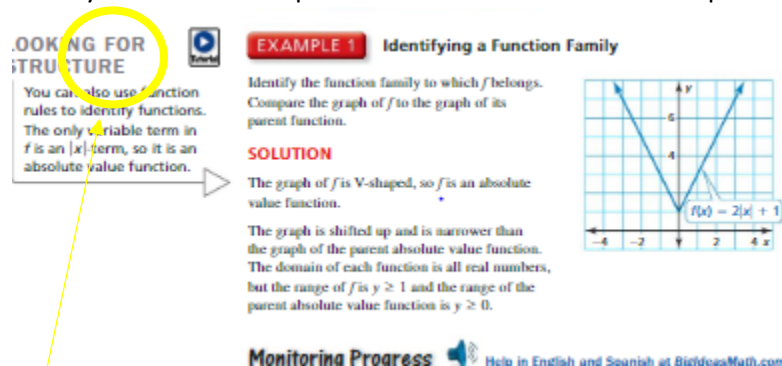
1. Go to clever.com/in/luhsd
2. Log in using your username and password as your student ID number for both items.
3. Scroll down to “Math” where you will see the Big Ideas Math logo, click on “Big Ideas Math”
4. If you are taking multiple math classes, you may need to select the book for the course you are working
5. In the middle there is a tab that says “Assignments,” click on “Assignments”



- a. Choose an assignment to work on from the list. Click the pencil/enter to start the assignment.
6. Choose an assignment to work on from the list. Click the pencil/enter to start the assignment.
 - a. **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 readings & tutorial videos:

1. Go to clever.com/in/luhsd
2. Log in using your username and password as your student ID number
3. Scroll down to “Math” where you will see the Big Ideas Math logo, click on “Big Ideas Math”
4. If you are taking multiple math classes, you may need to select the book for the course you are working
5. Click on “Student Dynamic ebook”
6. You can use the “Contents” tab on the left to get to the section you wish to view. You can just read from here.
7. 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 $y \geq 0$.

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

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

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:

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

2
GCF: 2
 $2 \cdot x^2 + 2 \cdot 4x + 2(-6)$
 $2(x^2 + 4x - 6)$

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

CF: 3, x, 3x

GCF: 3x

$3x \cdot x^3 + 3x(-2x) + 3x(-3)$

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

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

CF: 7, x, x^2 , x^3

$7x, 7x^2, 7x^3$

GCF: $7x^3$

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

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

You Try!

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

GCF: 5
 $5 \cdot x^2 + 5(3x) + 5(2)$
 $5(x^2 + 3x + 2)$

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

GCF: 9x

$9x \cdot 4x^2 + 9x(-2x) + 9x \cdot 5$

$9x(4x^2 - 2x + 5)$

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

GCF: $12x^3$

$12x^3 \cdot 2x^2 + 12x^3(-3x) + 12x^3(-12)$

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

Example 2:

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

CF: 5, x, y, 5x, 5y, 5xy

GCF: 5xy

$5xy \cdot 3x^2y + 5xy(-4x) + 5xy \cdot 1$

$5xy(3x^2y - 4x + 1)$

You Try!

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

GCF: 12a

$12a \cdot 2ab + 12a \cdot b + 12a(-3)$

$12a(2ab + b - 3)$

Starter

Find the product of each.

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

F: $x \cdot x = x^2 +$
 O: $x \cdot 3 = 3x +$
 I: $-3 \cdot x = -3x +$
 L: $-3 \cdot 3 = -9$

$x^2 + 3x - 3x - 9$
 $x^2 + 0 - 9$
 $x^2 - 9$

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

$2x \quad -5y$

$4x^2$	$-10xy$
$+10xy$	$-25y^2$

$+5y$

$4x^2 + 10xy - 10xy - 25y^2$
 $4x^2 + 0 - 25y^2$
 $4x^2 - 25y^2$

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" \downarrow
 ex $64x^2 + 36y^2$

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) $x^2 - 64$

square root \uparrow \uparrow square root

$(x + 8)(x - 8)$

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

square root \uparrow \uparrow square root

$(4h + 3a)(4h - 3a)$

c) $121 - 4b^2$

$(11 + 2b)(11 - 2b)$

d) $27g^3 - 3g$

not square!
 Factor out GCF.
 GCF: $3g$
 $3g \cdot 9g^2 + 3g \cdot (-1)$
 $3g(9g^2 - 1)$
 square root \uparrow \uparrow square root

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

e) $b^4 - 16$

factor again! \swarrow

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

f) $x^4 - 81$

factor again! \swarrow

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

You Try!

1) $x^2 - 25$

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

2) $4x^2 - 81$

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

3) $n^4 - 25$

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

4) $5y^2 - 45$

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

Factoring Polynomials Trinomials (7.4-7.5)

Trinomials follow form:
 $ax^2 + bx + c$
 sometimes $a=1$
 $x^2 + bx + c$

* Recall Factoring by Grouping!

- 1) Check for a Common Factor! Factor out GCF.
- 2) Multiply $a \cdot c$
- 3) Find 2 numbers which add (+) to b , and multiply (*) to ac (# from 2)
- 4) Split middle term into two / Set up area model
- 5) Factor by Grouping / Factor GCF out of each row & column

Example 1: Factor.

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

$1 \cdot 20 = 20$
 $1 + 20 = 21$
 $2 + 10 = 12$
 $4 + 5 = 9$

$$x^2 + 4x + 5x + 20$$

gcf: x gcf: 5

$$x(x+4) + 5(x+4)$$

gcf: $(x+4)$

$$(x+4)(x+5)$$

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

$2 \cdot 15 = 30$
 $1 + 30 = 31$
 $2 + 15 = 17$
 $3 + 10 = 13$
 $6 + 5 = 11$

$$2x^2 + 3x + 10x + 15$$

gcf: x gcf: 5

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

gcf: $(2x+3)$

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

You Try!

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

16
 $2 + 8 = 10$

$$x^2 + 2x + 8x + 16$$

gcf: x gcf: 8

$$x(x+2) + 8(x+2)$$

gcf: $(x+2)$

$$(x+2)(x+8)$$

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

$3 \cdot 8 = 24$
 $4 + 6 = 10$

$$3x^2 + 4x + 6x + 8$$

gcf: x gcf: 2

$$x(3x+4) + 2(3x+4)$$

gcf: $(3x+4)$

$$(3x+4)(x+2)$$

This can be hard to think through.
 Another way to organize your thinking
 is the "Area Model"

Example 2: Factor.

1.24 a) $x^2 - 10x + 24$
 $= 24$
 $1 + 24 = 25$
 $2 + 12 = 14$
 $3 + 8 = 11$
 $4 + 6 = 10$

$x^2 - 4x - 6x + 24$
 GCF: $(x - 6)$

x	x^2	$-6x$
-4	$-4x$	$+24$

$(x-6)(x-4)$

b) $2x^2 - 11x - 10$
 $2 \cdot 10 = 20$
 -20
 $1 + -20 = -19$
 $-1 + 20 = 19$
 $2 + -10 = -8$
 $-2 + 10 = 8$
 $4 + -5 = -1$
 $-4 + 5 = 1$

$2x^2 + 4x - 5x - 10$
 GCF $2x - 5$

x	$2x^2$	$-5x$
$+2$	$+4x$	-10

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

You Try!

3) $3x^2 + 11x - 20$
 $3 \cdot -20 = -60$
 $-1 + 60 = 59$
 $1 + -60 = -59$
 $-2 + 30 = 28$
 $2 + -30 = -28$
 $-3 + 20 = -17$
 $3 + -20 = -17$
 $-4 + 15 = 11$
 $4 + -15 = -11$

$3x^2 - 4x + 15x - 20$
 GCF: $x + 5$

$3x$	$3x^2$	$+15x$
-4	$-4x$	-20

$(x+5)(3x-4)$

Example 3: Factor.

(another format)
 $1 \cdot -14 = -14$
 $7 \cdot -2 = -14$
 5

a) $3x^2 + 15x - 42$
 common factor!
 GCF: 3
 $3(x^2 + 5x - 14)$
 Factor this part
 $3(x^2 + 7x - 2x - 14)$
 GCF: $x - 2$

x	x^2	$-2x$
$+7$	$+7x$	-14

$3(x-2)(x+7)$

You Try!

Use your preferred method!

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

$2(x+2)(x+4)$

Reflect:

Is there ever a time when you only need to go through step 3? When?