Snow Packet Days 11 – 16

Algebra I & Algebra I Support Blocks 1 & 2
(Notes and Assignment included)
Mrs. Penni Powell

Please contact me with any questions using
-LiveGrades messaging
-Email at penni.powell@k12.wv.us
-Remind App messaging using class codes listed below
Class codes 1st block: @ehspowell1
2nd block: @ehspowell2
-Google Voice Text Messaging (304) 460 - 5044

Please visit <u>YouTube</u> for video lesson that correlates with your notes!

Search by my name "Penni Powell"

TASKS FOR DAYS 11 - 16

Day 11 Multiplying Binomials and Trinomials

Objective: The learner will be able to multiply binomials and trinomials using the distributive property

Task: Read over provided notes & complete **EITHER** the Kaleidoscope handout "Binomials & Trinomials" **or** the matching handout "Polynomials Multiplying a Binomial by a Trinomial 2"

For additional examples and explanations, refer to pg. 366 - 368 examples 1 - 4 in your textbook.

Day 12 Factoring Polynomials in form x^2+ bx + c (Part I)

Objective: The learner will be able factor a polynomial from the form x^2+ bx + c

Task 1: Read over provided notes & complete the handout/activity "Factoring Trinomials Match Up"

For additional examples and assistance, refer to pgs. 386 387 examples 1 -3 in your textbook.

View this YouTube video for additional explanation: https://youtu.be/YdZUahudDOo

Day 13 Factoring Polynomials in form x^2+ bx + c (Part II)

Objective: The learner will be able factor a polynomial from the form x^2+ bx + c

Task 1: Read over yesterday's provided notes & complete the handout/activity "Gridwords Factoring Trinomials #4"

For additional examples and assistance, refer to pgs. 386 387 examples 1 -3 in your textbook.

View this YouTube video for additional explanation: https://youtu.be/YdZUahudDOo

Day 14 Factoring Polynomials in form ax^2+ bx + c (Part I)

Objective: The learner will be able to factor a polynomial from the form $ax^"$+ bx + c

Task 1: Read over provided notes & complete the self-checking maze, "Factoring Trinomials Maze ~ Advanced"

For additional examples and assistance, refer to pgs. 392 - 393, examples 1 - 4 in your textbook.

Day 15 Factoring Polynomials in form ax^2+ bx + c (Part II)

Objective: The learner will be able to factor a polynomial from the form $ax^"$+ bx + c

Task 1: Continue using the notes provided with Day 14 to complete textbook assignment pg. 395 (17 24)

For additional examples and assistance, refer to pgs. 392 - 393, examples 1 - 4 in your textbook.

Day 16 & 17 Brain Break Scavenger Hunt

Task 1: Complete the scavenger hunt. Have fun!

•Remember you must show all work for each assignment to earn credit!

If additional practice is needed, I encourage you to find lessons on IXL to practice. Logon through your Clever account. In the IXL search bar, search for lessons using the title of the day, such as "adding & subtracting polynomials" and pick an Algebra 1 lesson. Finally, work through questions until you get a Smart Score of 80!

Lastly, for all textbook references & assignments, you should have an issued textbook at home or you can utilize your online textbook (Big Ideas Math).

Multiplying binomials by trinomials

notes

In this section we will continue multiplying polynomials, but now you will multiply using trinomials and the first term of your polynomials will have a coefficient. The same step we used in our previous section applies, however now we have an additional term to utilize. Let's try it!

<u>Steps to using the Distributive Property to Multiply Binomials</u>
$$(3x + 11)(6x^2 - 2x + 8)$$

Step 1: Distribute the <u>first</u> term of the first polynomial to each term in the second polynomial.
$$(3x + 11)(6x^2 - 2x + 8)$$

$$18x^3 - 6x^2 + 24x$$

Step 2: Distribute the <u>second</u> term of the first polynomial to each term in the second polynomial.
$$(3x + 11)(6x^2 - 2x + 8)$$

$$18x^3 - 6x^2 + 24x + \underline{66x^2 - 22x + 88}$$

Step 3: Combine like terms.
$$18x^3 - 6x^2 + 24x + 66x^2 - 22x + 88$$
$$18x^3 + 60x^2 + 2x + 88$$

Step 4: Put polynomial in standard form.
$$18x^3 + 60x^2 + 2x + 88$$
(Already done!)

Name_____

_____

Block_____

Date_____

Binomials

&

Trinomials

$8x^3-2x^2-33x+27$	$4x^3-8x^2-26x+12$	$x^3-11x^2+29x-15$	x^2-3x+2	$4x^3-8x^2-26x+12$	$3x^3-11x^2-32x+16$
x^3+6x^2+x-28	$x^3-7x^2+14x-6$	$9x^3-7x+2$	$9x^2-7x+2$	$21x^3+34x^2-19x-36$	$6x^3+x^2-3x-12$
$x^3-11x^2+29x-15$	$2x^3-3x^2+5x-2$	$2x^3-3x^2+5x-2$	$20x^3+6x^2-10x-4$	$6x^3+23x^2+22x-5$	x^2-3x+2
$3x^3-11x^2-32x+16$	$2x^3-3x^2+5x-2$	$2x^3-3x^2+5x-2$	$6x^3+23x^2+22x-5$	$20x^3+6x^2-10x-4$	$8x^3-2x^2-33x+27$
x^3+6x^2+x-28	$21x^3+34x^2-19x-36$	$2x^3+7x^2-9$	$2x^3+7x^2-9$	$x^3-7x^2+14x-6$	$6x^3+x^2-3x-12$
x^2-3x+2	$3x^3+5x^2-10x-8$	$3x^3-11x^2-32x+16$	$8x^3-2x^2-33x+27$	$3x^3+5x^2-10x-8$	$x^3-11x^2+29x-15$

Multiply the binomials with the trinomials and shade in the blocks with the correct answers.

$(x+2)(x^2-2x+1)$

$(2x+4)(2x^2-8x+3)$

$(3x+4)(7x^2+2x-9)$

$(2x-1)(x^2-x+2)$

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

$(4x+9)(2x^2-5x+3)$

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

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

$(3x-2)(3x^2+2x-1)$

$(3x-4)(x^2+5x-4)$

$(2x+1)(10x^2-2x-4)$

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

$(x+4)(x^2+2x-7)$

$(x-3)(x^2-8x+5)$

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

Polynomials – Multiplying a Binomial by a Trinomial 2

What happened when the cosmetic student was sick on the day of the final exam?
Multiply these polynomials below. Cross off the solution in the boxed below.

1. $(4x+5y)(6x^2+3xy-4y^2) \cdot$ **K** $\cdot 24x^3+18x^2y-31xy^2-20y^3$

2. $(4x+5y)(6x^2-3xy-4y^2) \cdot$ **S**   **H** $\cdot 24x^3-42x^2y+31xy^2-20y^3$

3. $(4x-5y)(6x^2-3xy+4y^2) \cdot$ $\cdot 24x^3-18x^2y+xy^2-20y^3$

4. $(4x-5y)(6x^2+3xy+4y^2) \cdot$ **X** $\cdot 24x^3+42x^2y-xy^2-20y^3$

5. $(3x-5y)(8x^2-5xy+4y^2) \cdot$ **E** $\cdot 24x^3-25x^2y-37xy^2+20y^3$

6. $(3x-5y)(8x^2+5xy-4y^2) \cdot$ **U** $\cdot 24x^3+25x^2y-13xy^2+20y^3$

7. $(3x+5y)(8x^2+5xy-4y^2) \cdot$ **M** $\cdot 24x^3-55x^2y+37xy^2-20y^3$

8. $(3x+5y)(8x^2-5xy+4y^2) \cdot$ **A** $\cdot 24x^3+55x^2y+13xy^2-20y^3$

9. $(3x-5y)(8x^2-5xy-4y^2) \cdot$ **P** $\cdot 24x^3-55x^2y+13xy^2+20y^3$

10. $(x-y)(x^2-xy-y^2) \cdot$ **T** $\cdot x^3-2x^2y+y^3$

11. $(x+y)(x^2-xy-y^2) \cdot$ **W** $\cdot x^3+2x^2y-y^3$

12. $(x+y)(x^2+xy+y^2) \cdot$ **L** $\cdot x^3+2x^2y+2xy^2+y^3$

13. $(x+y)(x^2+xy-y^2) \cdot$ **I** $\cdot x^3+2xy^2-y^3$
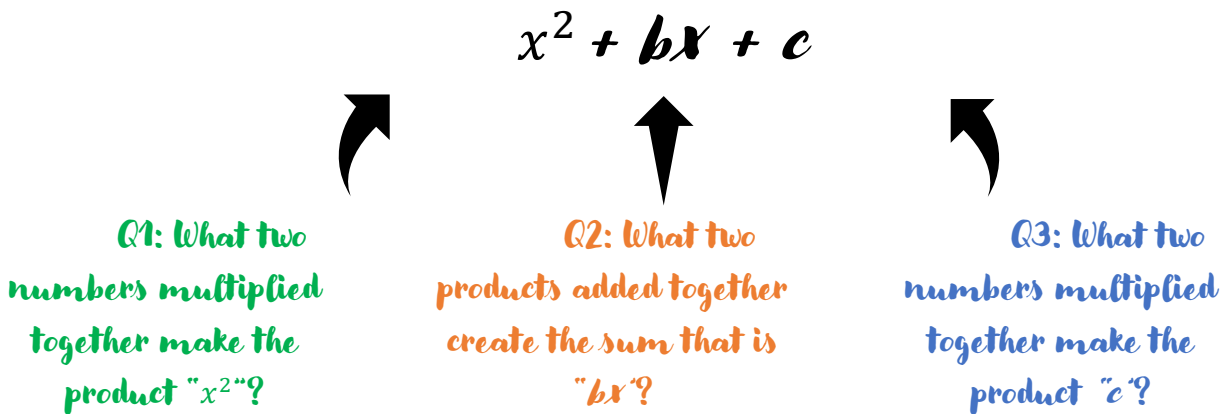
1   3   6   11   13   12   12   10   7   2   6

7   8   7   2   6   5   9   6   4   7   8

FACTORING POLYNOMIALS $x^2 + bx + c$ NOTES

Factoring a polynomial is determining what two binomials multiplied together created the product that is the polynomial. So, think inverse of FOIL-ing or the distributive property.

How do we THINK critically about factoring? Let's break it down with some helpful questions.

$$x^2 + bx + c$$

Q1: What two numbers multiplied together make the product "x^2"?

Q2: What two products added together create the sum that is "bx"?

Q3: What two numbers multiplied together make the product "c"?

You will factor the polynomial using the table below

:

Factors of c	Sum of the factors

The goal using this table, is to find a set of factors for c when added together equal the value of b from your polynomial! Then, this will lead us to the correct factorization of the polynomial!

Let's give it a try! Factor $x^2 + 9x + 20$

Factors of c $c = 20$	Sum of the factors	Does the sum equal b? b = 9
1, 20	21	no
2, 10	12	No
4, 5	9	Yes!

You found the factors that create both b and c! So, let's get down to how to write out the two binomials that are the factors of the given polynomial.

Factors are 4 & 5, so we use 4 in one binomial and 5 in the other binomial. Such as this: (x + 4)(x + 5)

How did I know to use x? Well, in the given polynomial we had x^2. And we know that x • x = x^2

Therefore, our answer is (x + 4)(x + 5), great work!

Here's your wrench… now consider the signs of b and c when determining the factors. Keep in mind, that c is always a product and b is always a sum of the products. Use this chart to help understand better:

When c is positive, such as $+c$	When c is negative, such as $- c$
To have a <u>positive</u> product, the factors would either be ++ or --	To have a <u>negative</u> product, the factors would either be +- or -+
Now consider what this means for b	Now consider what this means for b
When two positives (++) are added together, b would remain positive. Therefore, in the polynomial, you would see +b	Depending on the factor values, b could be positive or negative!
When two negatives (--) are added together, b would remain negative. Therefore, in the polynomial, you would see -b	😎

Let's give this new concept a try! Factor x^2 –12x + 27

Check your signs for b & c! <u>b is negative and c is positive</u>

So, look at c first! For c to be positive we must have a ++ or --. Now, check out b. b is negative. The only way for us to get a negative sum from our two options is that the factors were --. <u>Alright, now keep going!</u>

Factors of c c = 27 Must be - -	Sum of the factors	Does the sum equal b? b = -12
-1, -27	-28	no
-3, -9	-12	Yes!

Factors are -3 & -9, so we use -3 in one binomial and -9 in the other binomial. Such as this:
(x - 3)(x - 9)

There you go!

Factoring Trinomials Match Up

Instructions
Cut out the binomials below.
Factor each trinomial.
Glue the 2 binomials that are the factors into the boxes below the trinomial.

Materials Needed
Scissors & Glue

$(X+3)$	$(X+2)$	$(X-2)$	$(X-2)$
$(X+3)$	$(X+2)$	$(X-2)$	$(X-2)$
$(X+3)$	$(X+2)$	$(X+4)$	$(X-4)$
$(X+3)$	$(X+2)$	$(X+4)$	$(X-4)$
$(X-3)$	$(X-3)$	$(X+4)$	$(X-4)$
$(X-3)$	$(X-3)$	$(X+4)$	$(X-4)$
$(X+2)$	$(X-2)$	$(X+4)$	$(X-4)$
$(X+2)$	$(X+5)$	$(X+5)$	$(X+5)$
$(X-2)$	$(X-5)$	$(X-5)$	$(X-5)$

Factoring Trinomials Match Up

NAME_____

Factor each trinomial. Glue the 2 binomials that are the factors into the boxes below the trinomial.

X^2+5X+6

$X^2+7X+10$

$X^2-7X+10$

X^2-6X+8

$X^2-3X-10$

X^2-X-12

$X^2-7X+12$

X^2-X-6

X^2+2X-8

X^2+6X+8

X^2-5X+6

$X^2+3X-10$

$X^2+7X+12$

X^2-2X-8

X^2+X-6

$X^2+9X+20$

X^2+X-12

$X^2-9X+20$

GridWords: Factoring
#4 Trinomials with a = 1

Name: _____ Class: _____

Date: _____

Factor each expression. Write the factors on the lines, then highlight the boxes in the grid containing each factor. When you are finished, write the letters that are formed by the highlighted boxes in order to create a word.

1	$b^2 + 8b + 12$	_____ _____
2	$y^2 - 8y - 20$	_____ _____
3	$x^2 + x - 6$	_____ _____
4	$a^2 - 6a + 8$	_____ _____
5	$x^4 - 2x^2 - 3$	_____ _____
6	$y^2 - 5y - 6$	_____ _____
7	$b^2 - 4b - 21$	_____ _____
8	$x^2 + x - 2$	_____ _____
9	$b^2 + 6b - 16$	_____ _____
10	$a^2 + 9a + 20$	_____ _____
11	$b^2 + 7b + 12$	_____ _____
12	$a^4 - 9a^2 + 18$	_____ _____
13	$b^2 + 2b - 24$	_____ _____
14	$a^2 + 6a - 16$	_____ _____

15	$a^2 + 7a - 30$	_____ _____
16	$x^2 - x - 30$	_____ _____
17	$b^2 + 10b + 9$	_____ _____
18	$a^2 - 9a + 14$	_____ _____
19	$b^2 - 2b + 15$	_____ _____
20	$a^2 - 8a + 16$	_____ _____
21	$y^2 + 2y - 35$	_____ _____
22	$x^2 - 4x - 5$	_____ _____
23	$y^2 + 12y + 36$	_____ _____
24	$a^2 - 14a + 24$	_____ _____
25	$x^2 - x - 12$	_____ _____
26	$b^2 + b - 2$	_____ _____
27	$y^2 - 13y + 42$	_____ _____

Grid:

$a+8$	$b-6$	$2y$	$a-5$	$b-2x$	10	$x-9$
$y-5$	$b+4$	$y+6$	$x+3a$	$a-4$	$y-6$	$5a$
x^2-3	x^2	$a-2$	6	$a-12$	$a+2y$	$x+7$
$y-10$	$x-4$	$b+6$	$a+3$	$x+5$	$b+5$	14
x	x	x	x	x	x	x
2	$a+5$	$ab-3$	$a-b$	$6b$	$a-b$	$b-6$
$x+3$	$2x+2$	$y-7$	$x+7$	$b+2$	a^2-3	$x-1$
$y+6$	$b+1$	$a-4$	$b+5$	$b+3$	$x-8$	$a-7$
$x+2$	$y-5x$	$y+7$	$2y+12$	$a+10$	$y-b^2$	$x+1$
x	x	x	x	x	x	x
$y+1$	$x-2$	$x-ab$	$b-1$	$2x+1$	$x+7$	$3x$
$x-6$	$x-8$	$3b$	$b-4$	$y-6$	$b-2$	$a-5$
$b-7$	$a-2$	$5a-2$	x^2+1	$ab+1$	$y+2$	$5b+x$
x	x	x	x	x	x	x
$y+x$	$a-2$	$b+2$	5	a^2+2	$b+9$	$a+4$
$a-5$	$b+8$	$2a+2$	$3y-6$	$a-3$	4	$2x+1$
$6y$	$b+6$	$x-5$	$a+3$	$8xa$	$a-2$	$x+16$
$x-9$	a^2-6	$b-6$	x^2+3	$b+5$	$x-9$	$a-4$
3	$b+3$	$b+3$	$4x$	$b+3$	$b-5$	8

Write the GridWord here:

[_____]

Factoring Polynomials in form

$ax^2 + bx + c$ Notes

In this section we are continuing with the notes from the previous section, but we are considering how to factor the polynomial when our first term also has a coefficient.

Please understand, as we do this section, we do go through some trial and error as we attempt to find the correct factors. So, be patient with yourselves!

Let's jump right into this!

Factor $2x^2 + 7x + 6$

What we see is that in the given form $ax^2 + bx + c$, a = 2, b = 7, and c = 6

a	b	c
a is always a product, therefore consider the factors that will make a	b is always a sum	c is always a product, therefore consider the factors that will make c

Let's set up a table to help understand this information. Using this table we will consider the factors of a & c, then write a possible factorization for the polynomial. Once the possible factorization is setup, test the factoring to determine if the binomials multiplied would create the sum of b.

Factors of a a = 2	Factors of c c = 6	Possible factorization	What would b be in this factorization?	Correct b? b = 7
1, 2 1x, 2x Remember, these come FIRST in the binomials!	1, 6 Remember, these come SECOND in the binomials!	(1x + 1)(2x + 6)	Let's see. We need to take the possible factorization and multiply as we did many sections ago. $2x^2$ +6x +2x + 6	Add the two middle terms together. 6x + 2x 8x NOPE! Keep going...
1, 2 1x, 2x	6, 1 *Use the same factors but switch the order of the c factors only	(1x + 6)(2x + 1)	$2x^2$+2x +12x +6	2x + 12x = 14x Nope! Keep going!
1, 2 1x, 2x	2, 3	(1x + 2)(2x + 3)	$2x^2$+3x +4x +6	3x +4x = 7x Yes! You found your factorization

Therefore, when asked to factor $2x^2$ +7x + 6, the answer is
(1x + 2)(2x + 3)
or more correctly, as the 1 in the term 1x is not necessary:
(x + 2)(2x + 3)

I have also listed two online examples to assist you, if you would feel you need additional help:

https://teachers.henrico.k12.va.us/math/HCPSAlgebra1/Documents/8-4/acMethodofFactoring.pdf

https://mcckc.edu/tutoring/docs/br/math/factoring/Factoring_Traditional_AC_Method_using_Grouping.pdf
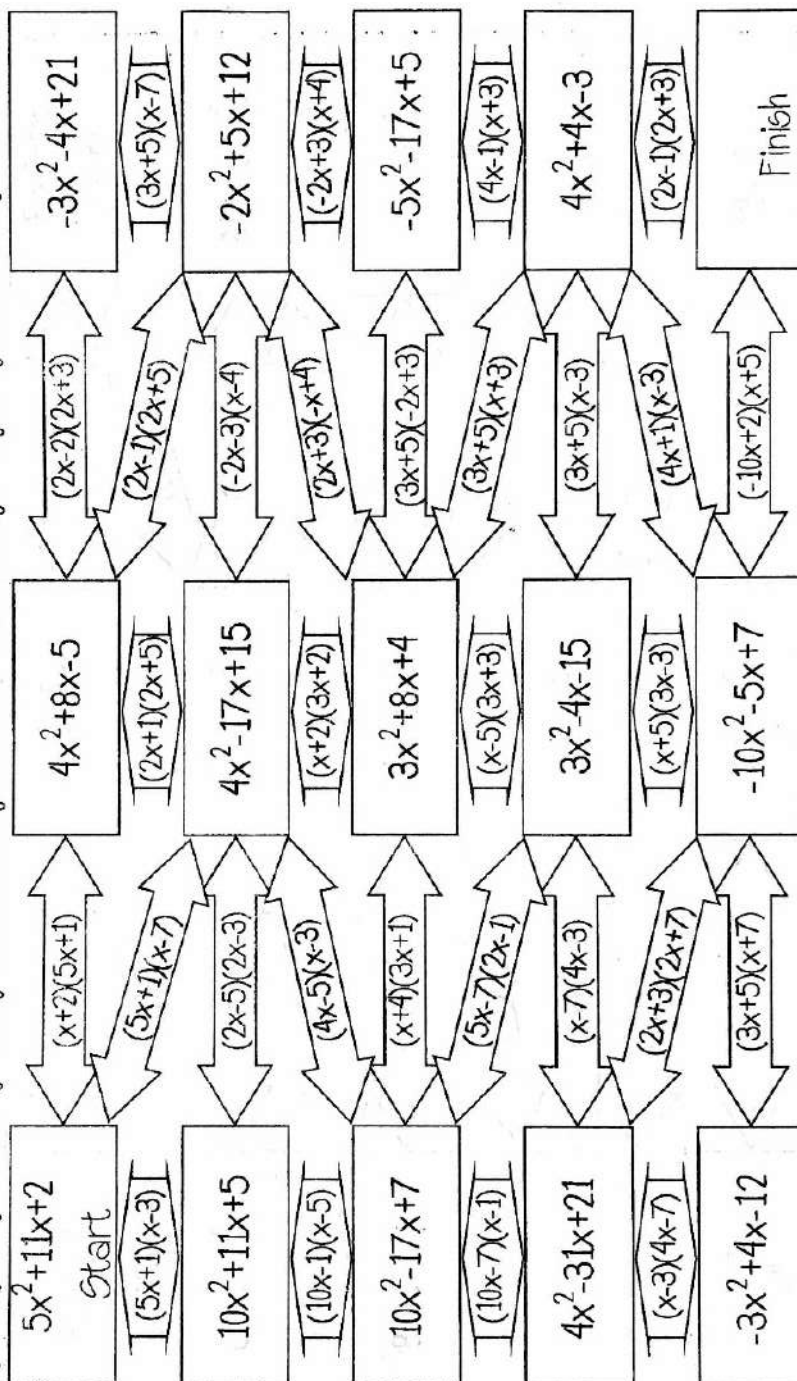
Factoring Trinomials Maze
~Advanced~

Name _____

Some boxes might not be used

Work your way through the maze by factoring each trinomial. Begin at the "Start" box and work your way through the maze until you reach the "Finish" box.

$-3x^2-4x+21$	$-2x^2+5x+12$	$-5x^2-17x+5$	$4x^2+4x-3$	Finish
$(3x+5)(x-7)$	$(-2x+3)(x+4)$	$(4x-1)(x+3)$	$(2x-1)(2x+3)$	

Vertical connectors (top region): $(2x-2)(2x+3)$, $(2x-1)(2x+5)$, $(-2x-3)(x-4)$, $(2x+3)(-x+4)$, $(3x+5)(-2x+3)$, $(3x+5)(x+3)$, $(3x+5)(x-3)$, $(4x+1)(x-3)$, $(-10x+2)(x+5)$

$4x^2+8x-5$	$4x^2-17x+15$	$3x^2+8x+4$	$3x^2-4x-15$	$-10x^2-5x+7$
$(2x+1)(2x+5)$	$(x+2)(3x+2)$	$(x-5)(3x+3)$	$(x+5)(3x-3)$	

Vertical connectors (bottom region): $(x+2)(5x+1)$, $(5x+1)(x-7)$, $(2x-5)(2x-3)$, $(4x-5)(x-3)$, $(x+4)(3x+1)$, $(5x-7)(2x-1)$, $(x-7)(4x-3)$, $(2x+3)(2x+7)$, $(3x+5)(x+7)$

|				
$5x^2+11x+2$ Start	$10x^2+11x+5$	$10x^2-17x+7$	$4x^2-31x+21$	$-3x^2+4x-12$
$(5x+1)(x-3)$	$(10x-1)(x-5)$	$(10x-7)(x-1)$	$(x-3)(4x-7)$	

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Factoring Polynomials in form
$ax^2 + bx + c$ CONTINUED

Task 1: Continue using the notes provided with Day 14 to complete textbook assignment pg. 395 (17 – 24)

Quarantine Scavenger Hunt

This assignment should be complete over a period of two days. The next school day is when your partner & you should focus on working on your Prezi presentation.
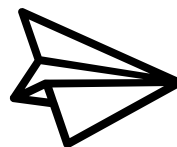
Quarantined Scavenger Hunt

You and a partner will complete a VIRTUAL scavenger hunt within your neighborhoods! Do _not_ complete this hunt in person. This means you will FaceTime, Video through Messenger, Skype, Zoom, whatever app you so choose! If you cannot do this, because you don't have the electronic capability or prefer to work alone, that's fine. ☺ So, let's get to it!

Task #1: Your partner & you will search your neighborhoods while maintaining social distancing rules to find the items listed below. It is okay if you these are in your house/yard also, _but_ mix it up a bit! As you find the object, snap a picture on your cell phone & jot down where the item was found.
Task #2: Your partner & you will make a Prezi (www.prezi.com) with your scavenger hunt treasures! (See Prezi expectations below)
Task #3: Once you have completed this amazingly awesome Prezi, email it to me! (penni.powell@k12.wv.us)

Side Note: If you do not have computer/Internet Access, not to worry! I would like you to journal this assignment. So, keep a journal of what item you found, describe the item in detail, and where you found the item. Be creative in your journal!

Prezi Expectations
Title page – Should include a Title, your name(s), Block number
No more than two treasures per page
The treasure should have a picture, name, description of where it was found, & who found the treasure

Scavenger Hunt Treasures to Find

A house with a black railing
A blue car
A plant in the window
A trash bin
Someone out for a walk
A camper in a driveway
A dog
An electricity box
A license plate that appears to spell out a word
A house with a "9" in the number
A bird
A fire hydrant

A house with no cars in the driveway
A bicycle
A porch with two chairs
A license plate with the letter "A"
An outside light turned on
An open garage/shed door
A basketball net
A "for sale" or "sold" sign
A black vehicle
A wreath on a door
Christmas lights
A "Welcome" sign
A house with more than three cars

Have fun!!