Snow Packet Days 17 – 26

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 code 1st block: @ehspowell1
Class code 2nd block: @ehspowell2
-Google Voice Text Messaging (304) 460 - 5044

Please visit YouTube for video lesson that correlates with your notes!

Search by my name "Penni Powell"

TASKS FOR DAYS 17 - 26

Day 17 (April 20th) Brain Break Scavenger Hunt

Task 1: Complete the scavenger hunt you began on Day 16. Have fun! Don't forget to email me the prezi! (penni.powell@k12.wv.us)

Days 18 - 19 (April 21st & 22nd) Factoring Special Products of Polynomials: Perfect Squares & Differences of Squares

Objective: The learner will be able to factor the difference of two squares & the learner will be able to factor perfect square trinomials.
Task #1: Read over provided notes & watch the instructional YouTube video titled "Days 18 & 19"
Task #2: Complete the handout *"Perfect Square Trinomials & Difference of Squares"* as a continuation of notes and practice work. Then check your answers against the provided answer key. (Do **NOT** turn in this work- this is simply practice for the assignment).
Task #3: Complete the matching cut & paste *Tarsia Jigsaw*
For additional examples and explanations, refer to pg. 372 examples 1 & pgs. 398 – 399 examples 1 - 3 in your textbook.

Days 20-21 (April 23rd & 24th) Factoring Polynomials Using a GCF (Greatest Common Factor)

Objective: The learner will be able to factor polynomials using the GCF (Greatest common factor).
Task #1: Read over provided notes & watch the instructional YouTube video titled "Days 20 & 21"
Task #2: Complete the self-checking handout *"Why Didn't the Piano Work?"*
For additional examples and explanations, refer to pg. 379 example 4 and pg. 392 example 1 in your textbook.
For additional practice complete the self-checking scavenger hunt handout or the IXL lesson "AA.1 GCF of monomials"

Days 22-23 (April 27th & 28th) Factoring Polynomials by Grouping

Objective: The learner will be able to factor a polynomial by grouping.
Task #1: Read over provided notes & watch the instructional YouTube video titled "Days 22 & 23"
Task #2: Complete the handout *"Gridwords: Factoring by Grouping #3"*
For additional examples and assistance, refer to pg. 404 example 1 in your textbook.

Days 24 & 25 (April 29th & 30th) Factoring Polynomials Completely

Objective: The learner will be able to factor a polynomial completely, using any previous factoring method.

Task #1: Read over provided review template & watch the instructional YouTube video titled "Days 24 & 25"

Task #2: complete the *"Zombies! Factoring Polynomials: Survive the Zombie Apocalypse" Flip Book*

For additional examples and assistance, refer to pg. 405, examples 2 & 3 and all previous factoring sections in your textbook.

Day 26 (May 1st) Chapter 7 Vocabulary Choice Board

Task 1: Complete one activity of your choice to review the vocabulary in Chapter 7

***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 I 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).

Days 18 & 19: Factoring Special Products of Polynomials

Factoring Perfect Squares & Difference of Squares notes

In this section, we will learn about special products of polynomials. There are three types of specials products.

Perfect Square of a Binomial (Sum)			
Form for a Perfect Square of a Binomial (sum) $(a + b)^2$ $= a^2 + 2ab + b^2$	Notice that in the end result, you will have a perfect square for both the first and last terms of the polynomials and your middle term is **twice the product of the first and last term.** Therefore, producing $+2ab$	What you can conclude is when given a polynomial that fits the pattern $a^2 + 2ab + b^2$, Where a & b are both perfect squares, and you can produce the middle term by multiplying a & b (the square roots of those perfect squares) by 2, the factorization will be $(a + b)^2$	Example: $144m^2 + 264x + 121$ $a^2 = 144$, $b^2 = 121$ Notice, both numbers are ***perfect squares***. This should be a red flag! Take the square root of each number, $\sqrt{144} = 12$ & $\sqrt{121} = 11$ This means $a = 12$, $b = 11$ Now, test if $2ab$ = your middle term. $2ab = 2(12)(11) = 264$ Perfect! Now setup the factorization from this form $(a + b)^2$ Where, $a = 12$ & $b = 11$ $(11m + 12)^2$

Perfect Square of a Binomial (Difference)

Form for Perfect Square of a Binomial (Difference)	Notice that in the end result, you will have a perfect square for both the first and last terms of the polynomials and your middle term is **twice the product of the first and last term.** Therefore, producing **-2ab**	What you can conclude is when given a polynomial that fits the pattern **$a^2 - 2ab + b^2$,** Where a & b are both perfect squares, and you can produce the middle term by multiplying a & b (the square roots of those perfect squares) by 2, the factorization will be **$(a - b)^2$**	Example: $w^2 - 18w + 81$ $a^2 = 1$, $b^2 = 81$ Notice, both numbers are ***perfect squares***. This should be a red flag! Take the square root of each number, $\sqrt{1} = 1$ & $\sqrt{81} = 9$ This means a = 1, b = 9 Now, test if 2ab = your middle term. 2ab = 2(1)(9) = 18 Perfect! Now setup the factorization from this form **$(a - b)^2$** Where, a = 1 & b = 9 *Remember subtract in this factorization!* **$(w - 9)^2$**

= $a^2 - 2ab + b^2$

Difference of Squares Binomial

Form for a Difference of Squares Binomial	Notice that in the end result, you will have a perfect square for both the first and last terms of the polynomials and there is **no middle term.**	What you can conclude is when given a polynomial that fits the pattern $\boldsymbol{a^2 - b^2}$, Where a & b are both perfect squares, and there is no middle term, the factorization will be (a + b) (a – b)	Example: $16x^2 - 25$ The first red flag here should be that you have no middle term! Now, check if the two terms you have are perfect squares. $a^2 = 16$, $b^2 = 25$ Both numbers are ***perfect squares***. This is your second red flag that you have a difference of squares Take the square root of each number, $\sqrt{16} = 4$ & $\sqrt{25} = 5$ This means a = 4, b = 5 Now setup the factorization from this form (a + b) (a – b) Where, a = 4 & b = 5 (4x + 5) (4x – 5)
(a + b) (a – b) $\boldsymbol{= a^2 - b^2}$			

So, what can you take from this chart?

We need to remember these patterns in our polynomials! When given perfect squares as the first and last term of a polynomial, we must check if that middle term follows one of the three given guidelines for a special solution. This will allow you to quickly determine the factorization of the polynomial!

If you're still feeling confused, follow these helpful steps:

Step 1: You notice that the first and last terms might be perfect squares. Take the square root of each number. If you have a perfect square, move onto step 2. The two answers you have are your values of a & b for the following steps.

If you do not have two perfect squares, factor as usual.

Step 2: Determine if the term in place of "b" can be found by multiplying a, b, and 2. If you found b using this method, great! Move on to step 3. If not, factor as usual.

SIDE NOTE- if you do not have a middle term, skip to step 3.

Step 3: Setup your factorization using the values of a & b from step 1.

If there are three terms, you have either a sum or difference of a PERFECT SQUARE.

$$(a + b)^2 \text{ or } (a - b)^2$$

*To determine, whether you have a sum (+) or difference (-), look at the original polynomial you were given. If b is positive, you have a sum. If b is negative, you have a difference.

If there are only two terms (you're missing the middle term), you have a DIFFERENCE OF SQUARES.

$$(a + b)(a - b)$$

There ya go! Now give it a shot!

Perfect Square Trinomials, Difference of Squares

Warm-Up:
Multiply the binomials and look for patterns

1. $(x-1)(x-1)$
2. $(x-3)(x-3)$
3. $(2x-y)(2x-y)$
4. $(2ax-b)(2ax-b)$
5. $(x-1)(x+1)$
6. $(x-3)(x+3)$
7. $(x-1)(x-6)$
8. $(2x-3y)(2x-3y)$

Ex. 1
Multiply these expressions. Describe any patterns you observe.

1. $(x-1)(x-1)$
2. $(x+3)(x+3)$
3. $(2x+y)(2x+y)$
4. $(2ax+b)(2ax+b)$

Perfect Square Trinomial

$(a+b)(a+b) = (a+b)^2 = a^2 + 2ab + b^2$

$(a-b)(a-b) = (a-b)^2 = a^2 - 2ab + b^2$

Both expressions have three terms: the square of a, twice a times b, and the square of b.

Ex. 3

Multiply these expressions and describe any patterns you observe

1. $(x-1)(x-1)$
2. $(x-3)(x-3)$
3. $(x+6)(x+6)$
4. $(2x+y)(2x+y)$

Difference of Squares

$(a+b)(a-b) = a^2 - b^2$

The expression $a^2 - b^2$ has two terms: the square of a and the square of b.

Ex. 5

Identify each expression as a perfect square trinomial, difference of squares, or neither. Factor (unless its neither).

1. $x^2 + 2x + 1$
2. $y^2 + 4y + 4$
3. $x^2 - 5x + 25$
4. $4x^2 - 25$
5. $x^2 + 4x + 1$
6. $9x^2 + 25$
7. $y^2 + 2yz + z^2$

Perfect Square Trinomial

$(a+b)(a+b) = (a+b)^2 = a^2 + 2ab + b^2$

$(a-b)(a-b) = (a-b)^2 = a^2 - 2ab + b^2$

Both expressions have three terms: the square of a, twice a times b, and the square of b.

Ex. 3

Multiply these expressions and describe any patterns you observe (answers will vary)

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

3. $(x+6)(x+6)$
$x^2 + 12x + 36$

2. $(x-3)(x-3)$
$x^2 - 6x + 9$

4. $(2x+y)(2x+y)$
$4x^2 + 4xy + y^2$

*The middle term is twice the product of a and b

Difference of Squares

$(a+b)(a-b) = a^2 - b^2$ ← Must be subtraction

The expression $a^2 - b^2$ has two terms: the square of a and the square of b.

Ex. 5

Identify each expression as a perfect square trinomial, difference of squares, or neither. Factor (unless its neither).

1. $x^2 + 2x + 1$ Perfect Square Trinomial
$(x+1)^2$

2. $y^2 + 4y + 4$ Perfect Square Trinomial
$(x+2)^2$

3. $x^2 - 5x + 25$ Neither
—

4. $4x^2 - 25$ Difference of Squares
$(2x-5)(2x+5)$

5. $x^2 + 4x + 1$ Neither
—

6. $9x^2 + 25$ Neither
—

7. $y^2 + 2yz + z^2$ Perfect Square Trinomial
$(y+z)^2$

ANSWER KEY

Perfect Square Trinomials, Difference of Squares

Warm-Up:
Multiply the binomials and look for patterns

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

2. $(x-3)(x-3)$
$= x^2 - 6x + 9$

3. $(2x-y)(2x-y)$
$= 4x^2 - 4xy + y^2$

4. $(2ax-b)(2ax-b)$
$= 4a^2x^2 - 4abx + b^2$

5. $(x-1)(x+1)$
$= x^2 - 1$

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

7. $(x-1)(x-6)$
$= x^2 - 7x + 6$

8. $(2x-3y)(2x-3y)$
$= 4x^2 + 12xy + 9y^2$

Ex. 1

Multiply these expressions. Describe any patterns you observe. (answers will vary)

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

2. $(x+3)(x+3)$
$= x^2 + 6x + 9$

3. $(2x+y)(2x+y)$
$= 4x^2 + 4xy + y^2$

4. $(2ax+b)(2ax+b)$
$= 4a^2x^2 + 4abx + b^2$

*The middle terms are twice the product of a and b

DAYS 18 & 19: Factoring Special Products continued

Using your notes from yesterday, you are going to complete a Tarsia Jigsaw. This Jigsaw puzzle is a mixture of the factoring you have done in previous sections, as well as factoring perfect square and difference of squares polynomials.

Tarsia Jigsaw Directions:

#1 Cut out each of the triangles. As you cut out the triangles, notice that each triangle has a mixture of polynomials and binomials. Polynomials are the questions and the binomials being multiplied are the answers in steps to come.

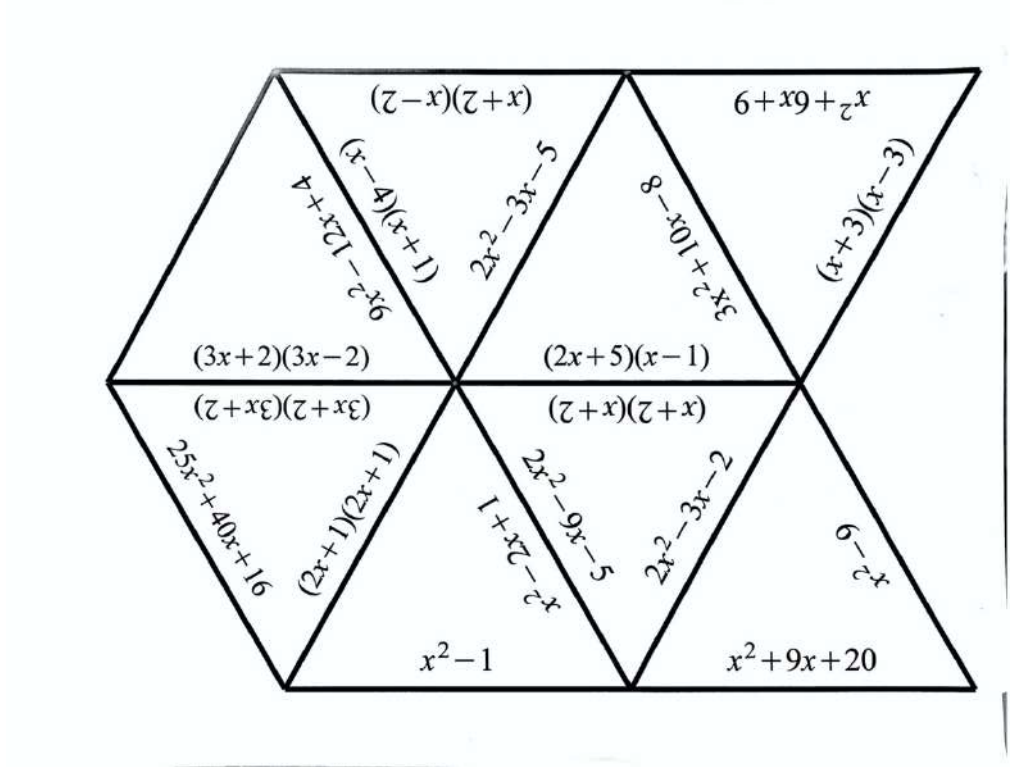
#2 Factor each polynomial within the given triangles. Show your work, whether on the back of the triangle or on a separate sheet of paper. Then transfer the answer only above/below the polynomial on the front of the triangle.

#3 Match the answers to your polynomials to the answers on OTHER triangles. As you match these, the question polynomial & the answer binomial should be touching.

#4 Once you have found each match and placed the triangles side by side, you should notice you have a shape. Once this is complete, glue/tape your triangles to a piece of paper.

#5 Feel free to color and decorate as you go!

HINT – YOUR END RESULT SHOULD BE A HEXAGON



$2x^2+3x-2$

$2x^2+9x-5$

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

$25x^2-40x+16$

$3x^2+4x-4$

$2x^2+3x-5$

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

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

x^2+3x-4

$(2x+1)(x-5)$

x^2+4x+4

$(5x-4)(5x-4)$

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

x^2-16

$(x-1)(x+4)$

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

$(x+1)(x-1)$

$4x^2-4x+1$

$(x-1)(x-1)$

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

---

x^2-4x+4

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

x^2-4

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

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

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

$(x-2)(x-2)$

$25x^2-16$

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

$(2x-1)(x+5)$

x^2-3x-4

$(2x-5)(x+1)$

$9x^2-4$

$9x^2+12x+4$

$(2x-1)(2x-1)$

$2x^2+11x+15$

$x^2+8x+16$

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

$4x^2+4x+1$

$(x+4)(x-4)$

DAYS 20 & 21: Factoring Polynomials using a GCF (Greatest Common Factor)

Factoring Polynomials using a GCF Notes

In this section, you will learn how to factor (divide) a polynomial by the GCF (Greatest common Factor). Let's get started!

To begin, we must understand what a GCF of a polynomial is. The GCF of a polynomial is the largest monomial (number and variable, if applicable) that can factor (divide) into each term of the polynomial evenly.

Steps for factoring a polynomial using the GCF

$16y^3z^2 + 24y^2$

Step 1: Factor out a the GCF of the coefficients for the terms

For the given polynomial the coefficients are 16 & 24. So, consider the factors of each number and identify the GCF.

Factors of 16: 1, 2, 4, 8, 16

Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24

The GCF of both is 8. Remember 8!

Step 2: Factor out the common variables for the terms.

Now, we must factor out the GCF of the variables. For this consider how same variable and their exponents. You can only factor until one term runs out of that variable!

Our first variable is y. The first term has 3 and the second term has 2. So, we can only factor out y^2. Remember, y^2!

Our second variable is z. The first term has 2. However, the second term has 0. So, we cannot factor out any of the variable z, as it isn't common to both terms.

Step 3: Factor the GCF from the polynomial & Rewrite your polynomial

Given: $16y^3z^2 + 24y^2$

GCF: $8y^2$

Factored polynomial using GCF: $8y^2(2yz^2 + 3)$

Notice, that both coefficients were divided by 8, their GCF. The variable y subtracted the exponents per our quotient of powers rule.

Great job!

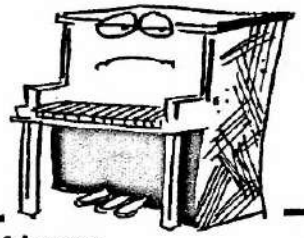
Let's try one more!

Factor $121a^2b^5c - 33ab^3c$

GCF of the coefficients is 11 & GCF of the variables is ab^3c

Factored we get: $11\ ab^3c\ (11\ ab^2 - 3)$.

Why Didn't the Piano Work?



Factor the expression. Find a factor in each of the two answer columns. One factor will have a letter and the other a number. Write the letter in the matching numbered box at the bottom of the page.

Set 1	Set 1 Answers	
a. $x^2 - 6x$	11. x^3	T. $(3x^2 + 10)$
b. $2x^2 + 8x$	6. $2x^2$	O. $(x - 6)$
	24. $2x$	V. $(8x^2 + 15x)$
c. $45x^2 - 20x$	2. $3x$	S. $(9x - 4)$
d. $9x^3 + 30x$	16. x	F. $(3x^2 - 4)$
	14. x^2	N. $(8x^2 - 15)$
e. $8x^5 - 15x^3$	8. $5x$	A. $(x + 4)$

Set 3	Set 3 Answers	
a. $m^3n + 9m^2n$	10. $5m^2n^2$	L. $(4 - 11m^2n^2)$
b. $10m^3n^2 - 25m^2n^3$	7. $24n$	P. $(7m^4 + 4n)$
	18. $7mn^4$	S. $(2m - 5mn^2)$
c. $49m^5n^3 + 28mn^4$	1. m^2n	W. $(3m^7 + 1)$
d. $72m^7n + 24n$	12. $2m^3n^4$	I. $(m + 9)$
	22. $7mn^3$	L. $(4 - 11mn^3)$
e. $8m^3n^4 - 22m^5n^6$	5. $8mn$	O. $(2m - 5n)$

Set 2	Set 2 Answers	
a. $8a^3 + 4a^2 + 12a$	7. $2a^2$	Y. $(a^2 - 5a - 2)$
b. $7a^4 - 35a^3 - 14a^2$	6. a^4	P. $(2a^5 - 5a^4 - 3)$
	15. $15a$	T. $(3 - 2a + 5a^2)$
c. $6a^8 + 10a^6 - 3a^4$	13. $7a^2$	K. $(2a^2 + a + 3)$
d. $36a^3 - 24a^4 + 60a^5$	9. $3a^2$	H. $(2a^5 - 5a^4 - 1)$
	4. $4a$	O. $(6a^4 + 10a^2 - 3)$
e. $30a^6 - 75a^5 - 15a$	19. $12a^3$	N. $(3 - 2a - 5a^3)$

Set 4	Set 4 Answers	
a. $40x^2 - 100xy - 80y^2$	17. $5xy$	R. $(4x^2 + 3x - 6y)$
b. $12x^5y^2 + 9x^4y^2 - 6x^3y^2$	21. $3x^2y$	N. $(16x^6y^2 + 3x^2y + 1)$
	5. $9x^2$	O. $(2x^2 - 5xy - 4y^2)$
c. $15x^3y - 35x^2y^2 + 40xy^3$	3. $5x^2$	Y. $(4x^2 + 3x - 2)$
d. $144x^8y^2 + 27x^4y + 9x^2$	25. $3x^3y^2$	L. $(2x^2 - y^2)$
	23. π	S. $(3x^2 - 7xy - 4y^2)$
e. $2\pi x^2 - \pi y^2$	20. 20	W. $(3x^2 - 7xy + 8y^2)$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25

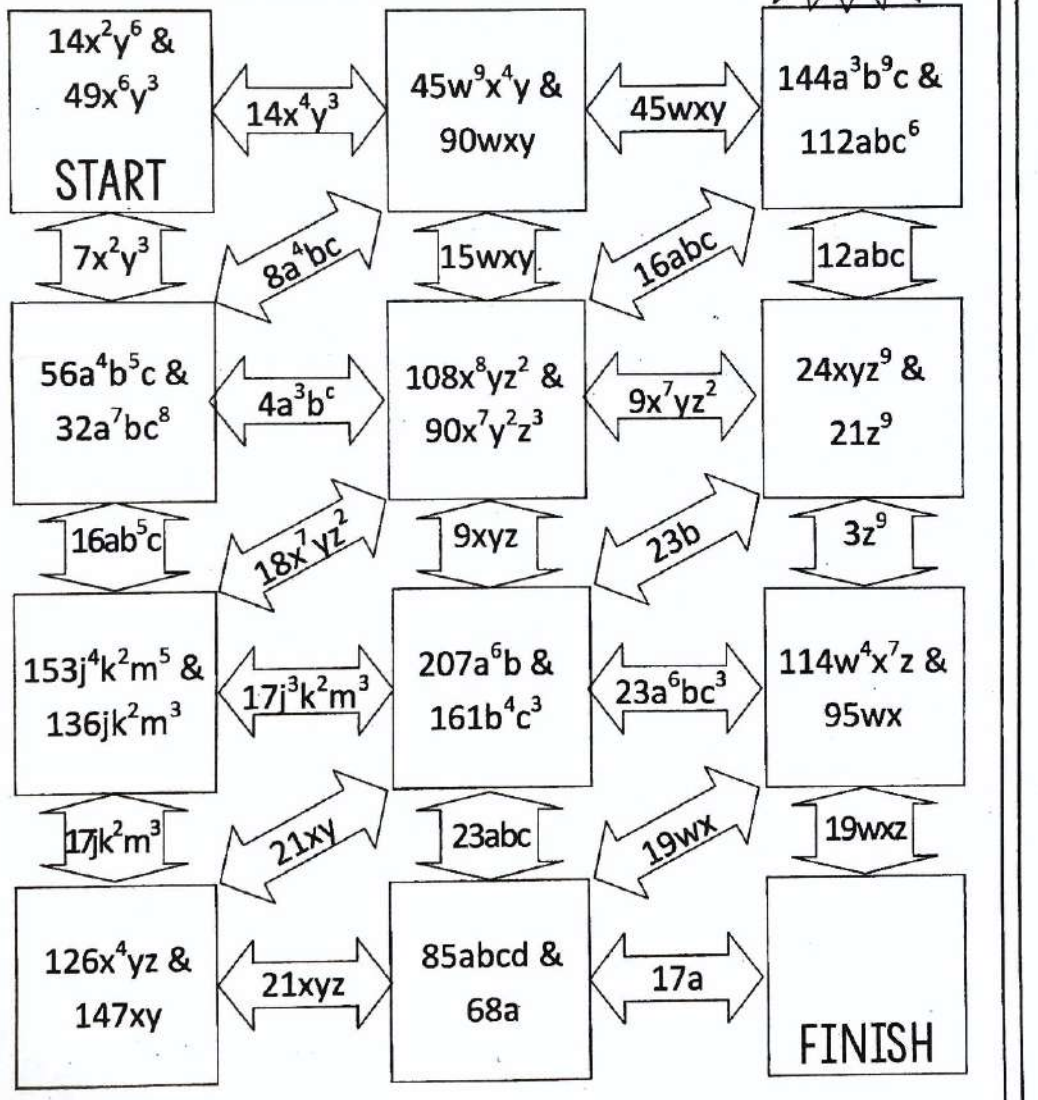
*EXTRA WORK – IF You need more Practice

GREATEST COMMON FACTOR

Some boxes might not be used

NAME _____

FIND THE GCF OF EACH PAIR OF ALGEBRAIC EXPRESSIONS



DAYS 22 & 23: Factoring Polynomials by Grouping

Factoring Polynomials by Grouping Notes

In this section we will be learning how to factor polynomials with four terms. Before today, you have only been factoring trinomials, so let's look at how to factor a polynomial if you have four terms!

Before we begin, recall our section when we factored out the GCF of a polynomial, that skill will be used again with this section. So, let's give it shot.

Given the polynomial, $x^3 + 4x^2 + 2x + 8$, we are going to factor using a **grouping** method. How do we do this? I want you to see if you can take this polynomial of four terms and make two groups of two terms by a common factor.

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

I grouped the first two terms and the second two terms, because I noticed each have a factor in common.

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

I see that between $(x^3 + 4x^2)$ there is a common factor of x^2.

I see that between $(2x + 8)$ there is a common factor of 2.

Now, that I have these terms **grouped** by a common factor, I am going to factor out the identify common factor.

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

Do you notice, how after I factored out the identified GCF, both binomials remaining are $(x+4)$? That's a good sign that this was completed correctly!

Next step is to factor out that common binomial $(x + 4)$

$$x^2\cancel{(x + 4)} + 2\cancel{(x + 4)}$$

Notice, as I factor those out all that remains is a sum of the factored GCFs.

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

And, there you go! $(x+4)(x^2 + 2)$ is the answer!

Let's try this again, with identified steps!

$$18y^2 + 21y + 30yz + 35z$$

Step 1: Group terms by a common factor (the GCF)

$$(18y^2 + 21y) + (30yz + 35z)$$

Step 2: Factor out the GCF

$$(18y^2 + 21y) + (30yz + 35z)$$

$$3y(6y + 7) + 5z(6y + 7)$$

Step 3: Factor out the common binomial

$$(18y^2 + 21y) + (30yz + 35z)$$

$$3y(6y + 7) + 5z(6y + 7)$$

$$(6y + 7)(3y + 5z)$$

There ya go! The answer is:

$$(6y + 7)(3y + 5z)$$

GridWords: Factoring
#3 Factoring by Grouping

Name: _____

Date: _____ Class: _____

Factor each expression. Be careful to factor completely – Some expressions have a greatest common factor. 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 $10a^3 + 5a^2 + 6a + 3$ _____

2 $4x^2y - 2xz + 2xy^2 - yz$ _____

3 $18a^2b^2 + 6a^2b + 3b^2x + xb$ _____

4 $7a^2x^3 - 14ax^2 + 5a^2x - 10a$ _____

5 $a^4x + a^3y + 3ax + 3y$ _____

6 $12b^5 + 3b^3 + 28b^2 + 7$ _____

7 $x^8ab + 5ab - 3x^8 - 15$ _____

8 $20x^2y + 4xa + 10xy^2 + 2ay$ _____

9 $3a^6 + 3a^4 + 8a^2 + 8$ _____

10 $6a^2b + 8ab - 3a - 4$ _____

11 $x^7 - x^6 + 5x - 5$ _____

12 $2a^2b^2 + 4ab^2 + a + 2$ _____

13 $14x^4 - 8x^3 + 21x - 12$ _____

14 $9a^3b + 12a^2b^2 - 6a - 8b$ _____

15 $x^5y^4 + x^3y^2 + x^2y^3 + y$ _____

16 $5b^3 + 10b^2 + 3b + 6$ _____

17 $4ab + a - 24b - 6$ _____

18 $2x^2 + 2xy - 3x - 3y$ _____

19 $12a^2 + 6ab - 36a - 18b$ _____

20 $27xy + 9y + 6x + 2$ _____

21 $y^4 + y^3 + 2y^2 + 2y$ _____

22 $5ab - 10a + 2b - 4$ _____

23 $7x^2 + 14x + xy + 2y$ _____

24 $3a^2 + 3ab + a + b$ _____

Write the GridWord here:

$x+y$	$3b^3+7$	$2a+1$	x	x	$3ab-9$	$4x$	x^8-4	x	$a+b$	$ax-2$	x	x^8+5	b	x	$3by-3$	$5b^3-b$	a^4+6	x	$ay+15$	$10x$	$xb-3$	x	$3a^4+8$	$a-6$
a^2+1	$5ax-b$	$2x-3$	9	x	$abx-4$	b^5	$10xy$	x	$3x+1$	x^4-3	x	$5b^2+3$	8	x	$4a$	$y^{10}-2$	$b+3ab$	x	b^5-11	ax^3	$2x+9$	x	$9y+2$	$3a$
$b-2$	$6a^2+x$	$8x$	3	x	$5xy+a$	6	y^2+2	x	$7x+y$	$3a+4b$	x	$2x+y$	y	x	$4b+1$	$x+2$	$5a^2+3$	x	$ab-3$	$b+2$	y	x	a^3+3	$a+2$
$3a+4$	$7y-x^2$	$7b+8$	2	x	$3a+1$	$5a$	x^3y+1	x	$4b^2+1$	$6ab+1$	x	$3x-z$	12	x	$2x+y$	b^7-5	x^2y^2+1	x	$2a+b$	$12ay$	$y+1$	x	$3a^2b-2$	xy
$a-3$	b^2-1	$x+13$	a	x	$2x^3+3$	y^3	$3b+1$	x	$ax+y$	$7x-4$	x	xya^3	x	x	$2ab-1$	$7x^2+5$	$2ab^2+1$	x	x^6+5	$1+c$	$2xy-z$	x	$5a+2$	$x-1$

DAYS 24 & 25: Factoring Polynomials Completely

Factoring Completely review

In today's & tomorrow's assignment, you will be combining all of the factoring methods to survive a ZOMBIE APOCALYPSE!! You will solve a series of factoring polynomials problems as you tread your ways toward or away from the zombies! Remember, any method can be used. Be careful, one wrong turn and the zombies will get you! Good news though, if you try the problem again, you can save yourself. Good luck!

Directions to create Flip Book

Cut out each book page (You' ll notice the page numbers)

Put flip book in order by page number

Staple the left side

Viola!

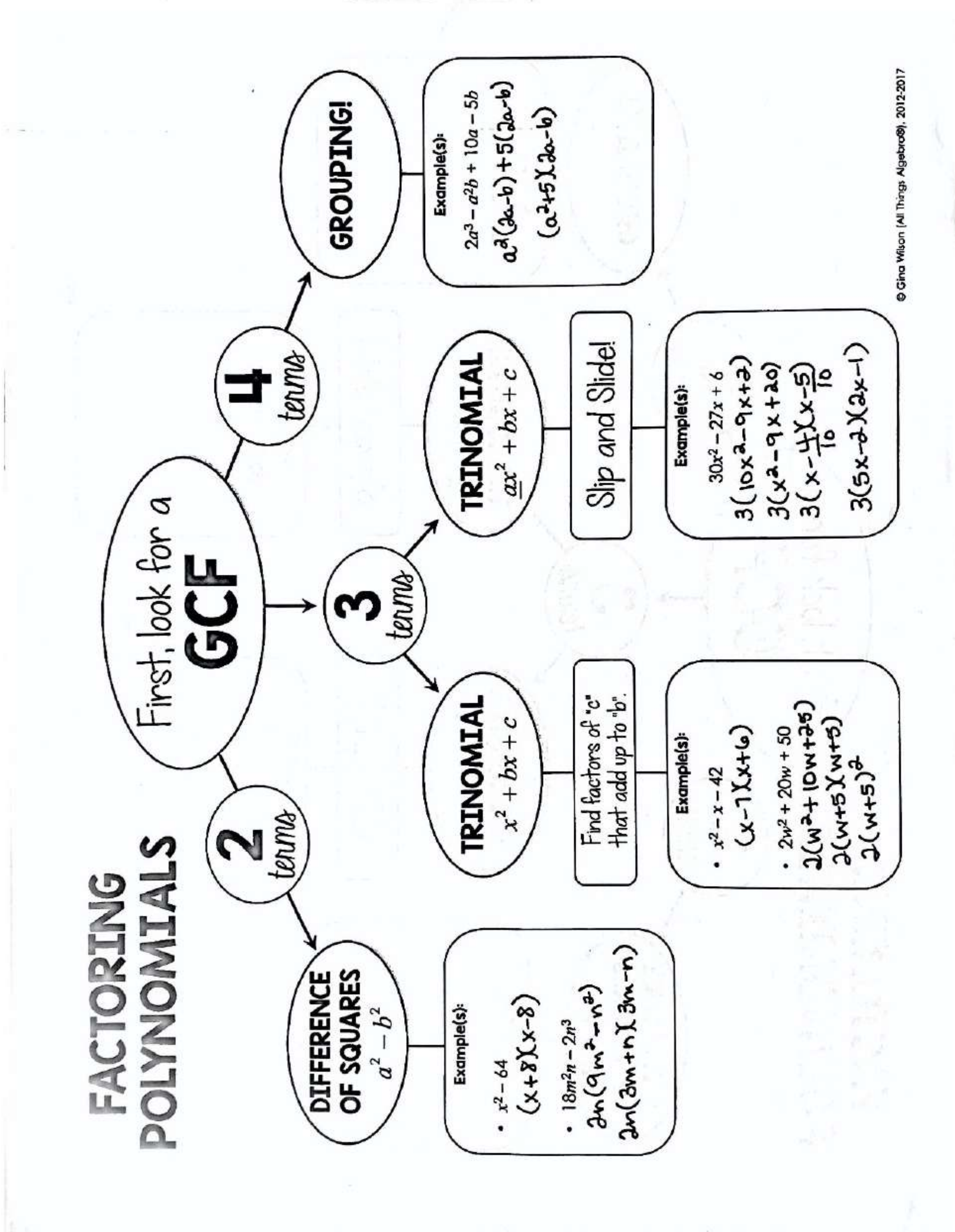
Directions to complete flip book

Start on page 1! If you do not, you' ll overwork yourself.

As you work, show your work on the back of the page or on a separate sheet of paper. When you get an answer, you have answer choices on that page. If you do not see it, try again. If you do see your answer, skip to the page number indicated.

This is similar to reading a Goosebumps book. You' ll skip around!

Please use the template that I have attached to complete the assignment.
Also, use any previous notes and the textbook. Have fun!



START

It was a normal boring day in the Math class when all of a sudden a zombie starts banging on the door...

p^4-81p^2

Pg #9) $p^2(p-9)(p+9)$

Pg #10) Not Factorable

Pg #11) $(p^2-9p)(p^2+9p)$

Pg #19) $p^2(p^2-81)$

2

AMAZING Mathematics
MIDDLE SCHOOL, ALGEBRA & GEOMETRY

You sprint down the hall and head towards the cafeteria. The lunch lady had always been a little off...but now it seems that the only thing on the menu is brains!

$9y^4-16y^2$

Pg #11) $(3y^2-4y)(3y^2+4y)$

Pg #19) $y^2(9y^2-4)$

Pg #28) $y^2(3y-4)(3y+4)$

Pg #26) $y^2(3y-8)(3y+8)$

4

In all the hurry you realize you forgot Hammy the Hamster on the ground by the rocket. You look back right as he knocks the rocket over with his hamster ball. The fuse goes out, the zombies close in, and the end is near... If only you had remembered to factor out 20 instead of 10.

Go back and try again

6

You make a run for it but a zombie catches you. You realize at the last minute that you should have factored the trinomial...if only.

Go back and try again!

10

Looks like Hammy the hamster was already bitten. He pokes his head out of his hamster ball and latches on to your hand. You were so close to escaping...but you forgot to factor out the GCF

Go back and try again!

8

"As the zombie stumbles towards you your last thought is "If only I had remembered to factor out the GCF..."

Better luck next time.

Go back and try again!

14

With the cure in your hand you dash down the halls...only to run into another zombie. You stare at her as she charges towards you and think to yourself "Oh yea...that answer wouldn't FOIL to equal -80".

Go back and try again!

12

You reach into a cabinet to look for the cure and a zombie student is all you find. You were so close but you forgot to factor out the negative. Now all is lost...

Go back and try again!

15

You're almost out of the parking lot when you see the class hamster, Hammy, rolling towards you in his little hamster ball. You stop to pick him up so the zombies don't get him...

$36c^3+162c^2+36c+162$

Pg #30) $18(c^2+1)(2c+9)$
Pg #8) $(2c+9)(18c^2+18)$
Pg #32) $18(2c^3+9c^2+2c+9)$
Pg #20) $18(c+1)(c-1)(2c+9)$
Pg #40) Not Factorable

17

Oh no! You forgot to factor the difference of squares...

The zombie charges towards you and the rest is history!

Go back and try again!

19

While you run away as fast you can the rocket launches into the sky. Fireworks erupt and a silvery dust falls like rain. All around you the zombies drop to the ground. Looks like you and Hammy made it! You ride away on your bike and think to yourself...

"At least I got out of school early today."

The End

21

You yell "Hey Mrs. Teacher" and she turns around... Then she lunges towards you at full speed yelling "Brains!!!" At the same moment she bites you. you realize that you should have checked your positive and negative signs a little better.

Go back and try again!

23

You always knew that a compass had to have more uses than just drawing circles. Turns outs it's a pretty good zombie weapon. You fight your way past the zombie and run into the hall...

$45x^3-24x^2-189x$

Pg #33) $x(15x+27)(3x-7)$
Pg #4) $3x(5x+9)(3x-7)$
Pg #14) $(15x^2+27x)(3x-7)$
Pg #18) $x(5x+9)(3x-7)$
Pg #40) $3x(5x+8)(3x-2)$

25

There was no hope...you forgot to factor by grouping. A zombie charged towards you and everything went to black...

Go back and try again

27

With a little luck and a lot of zombie dodging skill you make it outside to launch the cure into the sky. You set up the rocket, light the fuse, and run!

$20d^3+80d^2-20d-80$

Pg #6) $10(2d^2-2)(d+4)$
Pg #13) $20(d+4)(2d^2-2)$
Pg #38) $20(d^2-1)(d+4)$
Pg #21) $20(d+1)(d-1)(d+4)$
Pg #39) Not Factorable

29

Factoring Polynomials

Zombie Flip Book

Do everything right and you just might survive...

Start on page 2. Work through the given problem. Go to the page that matches your answer. If your answer is correct you will be taken to the next problem in the story. If your answer is incorrect you will be eaten alive by zombies and have to try again. Continue to work your way through the book until you reach the end of the story.

Good Luck!

1

Outside is no better! Looks like the zombie apocalypse wasn't just at the school. You look around for an escape route...

$-2x^3-24x^2-64x$

Pg #33) $-2(x^3+12x^2+32x)$

Pg #35) $-2x(x+4)(x+8)$

Pg #40) $-2x(x-4)(x-8)$

Pg #10) $-2x(x^2+12x+32)$

3

Your teacher has a plan... She will divert the zombies while you sneak back into the school. Rumor has it that your science teacher was a super genius and had developed a zombie cure. There might still be hope...

$32x^2-18$

Pg #31) $18(x^2-1)$

Pg #40) $18(x+1)(x-1)$

Pg #19) $2(16x^2-9)$

Pg #37) $2(4x-3)(4x+3)$

Pg #26) $2(8x-9)(8x+9)$

5

Eureka! You find the cure. It's contained in a model rocket. The only instructions are "To kill zombies...launch and run." You head outside to launch the cure...

$24x^2-80x+19$

Pg #24) $(3x-1)(8x-19)$

Pg #36) $(8x-1)(3x-19)$

Pg #12) $(8x-19)(3x-1)$

Pg #29) Not Factorable

7

Luckily all those zombie apocalypse drills your school has been doing paid off. You barricade the door and look around the room for a zombie fighting tool. All you find is...

$18m^3-54m^2-42m+126$

Pg #27) $6(3m^3-9m^2-7m+21)$

Pg #14) $(18m^2-42)(m-3)$

Pg #40) Not factorable

Pg #25) $6(3m^2-7)(m-3)$

9

At the same time your realize he's a zombie you remember that you can only do difference of squares when you are subtracting. He may be a zombie janitor but he runs faster than you...

Go back and try again!

11

Guessing really isn't a good option when picking answers or fighting zombies. You "Guessed" that the rocket fuse would light easily but it didn't. While you try to light the fuse the zombies endose you in a circle...So close but yet so far.

Go back and try again!

(without guessing)

13

You were in such a hurry to run away that you forgot something when you were showing your work. Your answer in incomplete... Zombies have no patience for forgetfulness and your fate is sealed.

Go back and try again!

18

You yell "Hey Mrs. Teacher" and she turns around... Then she lunges towards you at full speed yelling "Brains!!!" At the same moment she bites you. you realize that you should have checked your positive and negative signs a little better.

Go back and try again!

16

You look in your science teacher's desk for the cure. While your head is down a herd of zombies come in the room and the end is near. If only you had been more careful when arranging your numbers in the correct order...

Go back and try again!

22

At the same time your realize he's a zombie you remember that you can only do difference of squares when you are subtracting. He may be a zombie janitor but he runs faster than you...

Go back and try again!

20

Looks like your brains are on the zombie menu today. If only you had remembered to take the square root of the coefficient instead of halving it when doing difference of squares...

Go back and try again!

26

With the cure in your hand you dash down the halls...only to run into another zombie. You stare at him as he charges towards you and think to yourself "Oh yea...that answer wouldn't FOIL to equal -80".

Go back and try again!

24

You and little Hammy the hamster bicycle towards safety. You see your teacher behind the dumpster. Surely your teacher will know what to do...

$4x^2-64x+252$

Pg #16) $4(x-9)(x+7)$

Pg #5) $4(x-9)(x-7)$

Pg #23) $4(x+9)(x-7)$

30

You make it past the lunch lady and sprint towards the library. You see the janitor and are overjoyed to see another human being...

$25s^2+36$

Pg #20) $(5s+6)(5s-6)$

Pg #34) Not factorable

Pg #11) $(5s+6)(5s+6)$

28

As you sneak back into the school towards the science lab you think to yourself... "18 doesn't go into 32". While you are lost in thought your zombie science teacher jumps out from behind a corner.

Go back and try again!

31

In all this chaos you only factored out <u>part</u> of the GCF. Luckily the zombies are only going to eat <u>part</u> of you...

Go back and try again!

33

You spot a lone bicycle chained up to the side of the school. You use your awesome strength to break the chain and start bicycling through the herd of zombies towards safety...

$125x^2-5$

Pg #14) Not factorable

Pg #17) $5(5x+1)(5x-1)$

Pg #18) $5(5x-1)$

Page #19) $5(25x^2-1)$

35

You and Hammy the hamster make it into the science room. Now if you can just figure out where your teacher hid the zombie cure...

$-5x^2-12x-7$

Pg #15) $(-5x-7)(-x-1)$

Pg #22) $-(5x+1)(x+7)$

Pg #7) $-(5x+7)(x+1)$

Pg #40) $(5x+7)(x+1)$

37

You thought you couldn't be stopped...but you were tackled by a zombie before you could light the fuse. You also thought that polynomial couldn't be factored...you were wrong about that too.

Go back and try again!

39

As you begin walking your trip over a random brain.
EEEwWWW!
When you fell you dropped Hammy. You begin to look for her. Right then a heard of zombies rounds the corner. They eat Hammy as an appetizer. Looks like you're the main course.

Try again!

41

That plan didn't work very well. You are going to have to be much more careful if you are going to survive this Zombie Apocalypse.
Try Again!

43

"Guess that answers that question", you think to yourself as she begins devouring your brains.

Try Again!

45

Oh no! The janitor was a zombie but luckily you still had your compass from the math classroom. You fight him off and head outside...

$27x^2-3$

Pg #14) Not Factorable

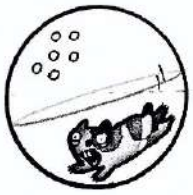
Pg #19) $3(9x^2-1)$

Pg #3) $3(3x+1)(3x-1)$

Pg #18) $(3x+1)(3x-1)$

34

Looks like Hammy the hamster was already bitten. He pokes his head out of his hamster ball and latches on to your hand. You were so close to escaping...but you forgot to factor by grouping!



Go back and try again!

32

You did everything right...almost! You forgot to bring matches to light the fuse and you failed to notice the difference of squares in your answer. Unfortunately, almost doesn't get you very far in zombie world.

You almost lived...

Go back and try again!

38

With the cure in your hand you dash down the halls...only to run into another zombie. You stare at him as he charges towards you and think to yourself "Oh yea...that answer wouldn't FOIL to equal -80".

Go back and try again!

36

The only weapon you can find is a ruler. You whack a nearby zombie on the head with it. That only makes it angrier and hungrier. Maybe the ruler wasn't the best weapon...

Try again!

42

You thought you could just take a guess and this would all work out. Guessing isn't a very good strategy for surviving the zombie apocalypse (or Algebra class). You "guess" your next move and run straight into a herd of zombies...

Go back and try again!

40

You realize too late why everyone looks so glazed over...

On the bright side Math class is ending early today. On the bad side...well you're dead.

Try again!

46

The area is overrun with Zombies! You don't stand a chance. You should have thought this out better...

Looks like this is the end for you and Hammy.

Poor Hammy.

Try Again!

44

DAYS 26: Chapter 7 Vocabulary Assignment

Chapter 7 Vocabulary Choice board

Choose ONE activity for Day #26

(Vocabulary words are on the next page)

Quiz - Create a mini-quiz, with an answer key, for a classmate that uses at least 10 vocabulary words.	***Sort It*** - Sort your vocabulary into three categories that make sense to you. Explain why you chose those categories.	***Super Sentences*** – Write a sentence for 10 of the vocabulary words. Show that you know the meaning of the word in the sentence by using context clues.
Illustrations – Draw a picture to show the meaning of at least 10 vocabulary words.	***Crossword*** – Make a crossword puzzle on puzzlemakers.com for someone to solve using all of your words. HINT: It is called Criss Cross.	***Picture It*** – Find a picture in a magazine or newspaper to represent each word, then glue them down to make a collage.
Flashcards – Create Flashcards for your vocabulary words and then use them to study.	***Poem*** – Choose 5 vocabulary words and write an acrostic poem for each one that explains what the word means.	***Real World*** - Choose 10 vocabulary words and give a real-world situation when you would use that word.

Chapter 7 Vocabulary

These are 17 words that we have gone over in this chapter. You will find these terms throughout your textbook under *core vocabulary* and *previous vocabulary*

Monomial
Degree of a Monomial
Polynomial
Binomial
Trinomial
Degree of a Polynomial
Standard Form
Leading Coefficient
Closed
FOIL Method
Factored Form
Zero-Product Property
Roots
Repeated Roots
Greatest Common Factor (GCF)
Factoring by Grouping
Factored completely