Book and homework on your desk.

Read in your novels.

Announcements

I really want to give back your Exponents Test 2, but I still have two students who have not taken it yet…

Polynomials tests have been released. You have until next Monday to complete corrections

HF Chapters 9-12 are due on today. Chapters 13-16 are due next Monday. Make sure you are hitting submit on Google Classroom!

Hidden Figures Due Dates

- 9-12 due TODAY
- 13-16 due March 11
- 17-20 due March 18
- 21-23 due March 25 → Book completed!

When we have finished the novel, we will watch the movie!

Unit Map - Factoring

~~Friday - Factoring by Grouping~~
Monday - Factoring Trinomials x^2+bx+c
Tuesday - Factoring Trinomials ax^2+bx+c
Wednesday - Factoring Special Cases
Thursday - *Hidden Figures Day - Ms. Barger at Math 1 PD*
Friday - Factoring Review
Monday - Factoring Test

Homework Check - Page 519 #16-21, 23, 25, 43

16. $(w^2 + 1)(11w - 9)$

17. $(2m+3)(4m^2-1)$

18. $(3k^2 - 10)(4k - 9)$

19. $(4v^2 - 5)(5v + 6)$

20. $(2h+5)(9h^2-4)$

21. $(4y^2 - 3)(3y + 1)$

23. $w(w^2 + 6)(3w - 2)$

25. $3q\,(2q+1)\,(q^2-4)$

43. $(6g^3 - 7h^2)(5g^2 + 4h)$

Warm-Up → Copy the example problem for "Factoring Completely" and then attempt the "Got It" question. This will go in your notes

Before factoring by grouping, you may need to factor out the GCF of all the terms.

Problem 2 **Factoring a Polynomial Completely**

What is the factored form of $4q^4 - 8q^3 + 12q^2 - 24q$? Factor completely.

$$4q^4 - 8q^3 + 12q^2 - 24q = 4q(q^3 - 2q^2 + 3q - 6) \quad \text{Factor out the GCF.}$$
$$= 4q[q^2(q - 2) + 3(q - 2)] \quad \text{Factor by grouping.}$$
$$= 4q(q^2 + 3)(q - 2) \quad \text{Factor again.}$$

Got It? **2.** What is the factored form of $6h^4 + 9h^3 + 12h^2 + 18h$? Factor completely.

Try these

1. Name two numbers the multiply to be -16 and add to be 6
2. Name two numbers that multiply to be -32 and add to be -14
3. Name two numbers that multiply to be 81 and add to be -30

Factoring Trinomials in the form x^2+bx+c

3/4/2019

Factoring Trinomials in the form x^2+bx+c

Essential Understanding You can write some trinomials of the form $x^2 + bx + c$ as the product of two binomials.

$(x + 3)(x + 7)$

$$(x + 3)(x + 7) = x^2 + (7 + 3)x + 3*7 = x^2 + 10x + 21$$

- The coefficient of the x^2 term is 1
- The coefficient of the x term is the sum of the numbers for b and c
- The constant term c, is the product of the b and c

To factor a trinomial of the form $ax^2 + bx + c$, you must find two numbers that have the sum of b and a product of c.

What does it really mean to **factor a trinomial? It means to write it as the product of two binomials. We can do this by using the product of the binomials.

How to Factor a Trinomial in the Form $ax^2 + bx + c$

Step 1: Multiply your first term (a) and your last term (c)
Step 2: Set up your ***T chart*** (what multiplies to "ac" that adds to "b
Step 3: Replace the original (b) term with the two numbers you just came up with
Step 4: Factor by grouping
Step 5 Factor out another GCF if one exists
Step 6: FOIL to check work! (Don't forget your GCF in front)!

Factors	Sums

What is the factored form of $x^2 + 8x + 15$?

List the pairs of factors of 15. Identify the pair that has a sum of 8.

Factors of 15	Sum of Factors
1 and 15	16
3 and 5	8 ✔

$x^2 + 8x + 15 = (x + 3)(x + 5)$

Check $(x + 3)(x + 5) = x^2 + 5x + 3x + 15$

$= x^2 + 8x + 15$ ✔

Practice: $r^2 + 11r + 24$

What is the factored form of $x^2 - 11x + 24$?

List the pairs of negative factors of 24. Identify the pair that has a sum of -11.

Factors of 24	Sum of Factors
-1 and -24	-25
-2 and -12	-14
-3 and -8	-11 ✔
-4 and -6	-10

$x^2 - 11x + 24 = (x - 3)(x - 8)$

Check $(x - 3)(x - 8) = x^2 - 8x - 3x + 24$

$= x^2 - 11x + 24$ ✔

Practice: $y^2 - 6y + 8$

b. $n^2 - 15n + 56$

c. $r^2 - 11r + 24$

What is the factored form of $x^2 + 2x - 15$?

Identify the pair of factors of -15 that has a sum of 2.

Factors of -15	Sum of Factors
1 and -15	-14
-1 and 15	14
3 and -5	-2
-3 and 5	2 ✔

$x^2 + 2x - 15 = (x - 3)(x + 5)$

Practice:

a. $n^2 + 9n - 36$

b. $c^2 - 4c - 21$

c. $r^2 + 6r - 27$

Example 4: The area of a rectangle is given by the trinomial $x^2 - 2x - 35$. What are the possible dimensions of the rectangle? Use factoring.

To factor $x^2 - 2x - 35$, identify the pair of factors of -35 that has a sum of -2.

Factors of -35	Sum of Factors
1 and -35	-34
-1 and 35	34
5 and -7	-2 ✔
-5 and 7	2

$x^2 - 2x - 35 = (x + 5)(x - 7)$

So the possible dimensions of the rectangle are $x + 5$ and $x - 7$.

Your turn:

A rectangle's area is $x^2 - x - 72$. What are possible dimensions of the rectangle? Use factoring.

You can also factor some trinomials that have more than one variable. Consider the product $(p + 9q)(p + 7q)$.

$$\begin{aligned}(p + 9q)(p + 7q) &= p^2 + 7pq + 9pq + 9q(7q) \\ &= p^2 + 16pq + 63q^2\end{aligned}$$

Trinomials in the form $x^2 + xy + y^2$: $(x + y)(x + y)$

Set up your T chart or X-factor the same way, but attach the second variable to the numbers inside the factors.

Example 5: $X^2 + 6x - 55y^2$

What is the factored form of $x^2 + 6xy - 55y^2$?

List the pairs of factors of -55. Identify the pair that has a sum of 6.

Factors of -55	Sum of Factors
1 and -55	-54
-1 and 55	54
5 and -11	-6
-5 and 11	6 ✔

$$x^2 + 6xy - 55y^2 = (x - 5y)(x + 11y)$$

Practice:

1. $x^2 - 8xy + 12y^2$
2. $x^2 + 11xy + 18y^2$
3. $x^2 + 2xy - 6y^2$
4. $x^2 + 20xy + 100y^2$
5. $x^2 + 2xy - 15y^2$
6. $x^2 - 6xy + 5y^2$

So remember...

1. If asked to factor, your first step is ALWAYS to look for a GCF. If there is one, pull it out. Then see if you can continue factoring.
2. If there are four terms, you will factor by grouping.
3. If there is a trinomial in the form x^2+bx+c, you look for two numbers that multiply to give you c, add to give you b.

If time allows… Kahoot

Factor Trinomials in the form x^2+ax+b - https://create.kahoot.it/details/trinomial-factor-fun/39b270a2-fa1c-417d-80b9-91203bbed6c4

Homework 8.5 worksheet (online)

#13 - 21 odd, 31-41 odd, 42, 43, 50