Week 19 Algebra 1 Assignment:

Day 1: pp. 365-366 #2-18 even, 21-24
Day 2: p. 368 #2-18 even, 21-25
Day 3: p. 373 #2-24 even
Day 4: p. 377 #1-25 odd
Day 5: p. 377 #2-26 even, 29-33

Notes on Assignment:

Pages 365-366:

General notes for this section: When looking for the Greatest Common Factor, you need to look at the constants (numbers) and also the variables. For the constant factor, ask "What is the largest number that will go into each of the numbers?" (The numbers may be coefficients or they may be stand-alone constants.) For the variables, look at each variable and write down the largest number of that variable that are present in each term.

*After you pull out the GCF, you polynomial must have the same number of terms that it started with.

Example: Factor $12x^4y^7z + 16x^3y^5z^8$

1. Set up your empty parentheses: ____ (____ + ____)
   The GCF is what goes in the blank outside the (+).
2. Find the GCF:
   - The greatest number that goes into 12 and 16 is 4, so put 4 in the blank.
   - Each term has at least 3 x's being multiplied, so put x^3 in the blank.
   - Each term has at least 5 y's being multiplied, so put y^5 in the blank.
   - Each term has at least 1 z being multiplied, so put z in the blank.

   Your problem now looks like this: $4x^3y^5z$ (____ + ____)

3. Now just work your way backwards by asking, "What times $4x^3y^5z$ will give me $12x^4y^7z$?
   - To get the 12 we need a 3.
   - To get the x^4 we need one more x.
   - To get y^7 we need 2 more y's, which means y^2.
   - We already have the z accounted for so we don't need any more z's.

   The first term inside the (+) should then be $3xy^2$

4. For the 2nd term, ask, "What times $4x^3y^5z$ will give me $16x^3y^5z^8$?
   - To get the 16 we need a 4.
   - We already have the x^3 accounted for so we don't need any more x's.
   - We already have the y^5 accounted for so we don't need any more y's.
   - To get z^8 we need 7 more z's, which means z^7.

   The second term inside the (+) should then be $4z^7$

5. Check your answer by multiplying back using Distributive.

$$4x^3y^5z(3xy^2+4z^7)=12x^4y^7z+16x^3y^5z^8$$

Work to show:

All Problems: Answers only is ok.

#2-10: For all of these, there is only a single variable or number to pull out.

#2: Make sure that you still have 2 terms inside the ( ) since you started with 2 terms.

Page 368:

General notes for this section: Now that you know how to pull out the GCF, you must always look for that first. Then, after you have pulled out the GCF, see if you can factor what is left.

If you have 2 terms, and both terms are perfect squares, factor them as the *difference of squares*. The first term of each binomial will be the square root of the 1st term of the polynomial. The 2nd term of each binomial will be the square root or the last term of the polynomial. Make the signs opposite for your final answer.

Example: $16x^2-81y^2=(4x-9y)(4x+9y)$

Work to show:

#2-18: Answers only is ok.
#21-25: Show work as needed.
#24: Graph

#24: Graph this in the x-y coordinate system.

#25: Pull out the GCF.

Page 373:

General notes for this section: If you have a trinomial, and you notice that the 1st and last terms are perfect squares, then it is possible that you have a perfect square trinomial. Either do backwards FOIL, or check to see if the middle term is twice the product of the square roots of the 1st and last terms. (The sign on the 2nd term of the trinomial will be the sign in the factored form.)

Example: Look at $x^2y^4 - 10xy^2z + 25z^2$.

- If you notice that the first and last terms are perfect squares, then try $(xy^2 - 5z)(xy^2 - 5z)$ to see if it works. Or,
- If you notice that the first and last terms are perfect squares, and the middle term is twice the product of the square roots of x^2y^4 and $25z^2$, then you know for sure that it factors to $(xy^2 - 5z)(xy^2 - 5z)$.

  In either case, you can write the answer as $(xy^2 - 5z)^2$.

Work to show:

#2-10: yes or no

#12-24: Show any work needed.

#12-24: These are all perfect square trinomials. Factor accordingly.

Page 377:

General notes for this section: When there is no coefficient on the 1st term of the trinomial, these are the easy backwards FOIL problems. Write down your ( )( ) and put your variable in the first spot of each ( ). Then ask the question: "What 2 numbers do I multiply to get the last term and add to get the middle coefficient?" These are the numbers that go in the last spot of each ( ).

Example: Factor: $x^2 - 3x - 10$.

1. Write your parentheses like this: (x)(x).
2. Ask, "What 2 numbers multiply to give me -10 and add to give me -3?" The answer is -5 and +2. So put these in the 2nd spots and you are done. The final answer is $(x-5)(x+2)$. You can also write $(x+2)(x-5)$.
3. Check your answer by running through FOIL.

$$(x+2)(x-5) = x^2 - 3x - 10$$

Work to show:

All Problems: If the problem has a GCF, show the problem with the GCF pulled out, and then the final factoring step. If there is no GCF, the you can just write the final answer.

#17-26: Make sure you look for (and pull out) any GCF before doing backwards FOIL.