Math 1

Greatest Common Factor

Factor	
GCF	
Prime	

Factoring is like _____, or using the distributive property backwards.

To find the GCF or ( ), we have to:

1. See what they ALL have in common (including numbers and variables)
2. Remove what is in common
3. Show what is left
4. Check by redistributing what you removed!

Directions: Find the GCF in each of the following.

1. $2x^2 - 10x$
2. $8x^2y^5 + 4x^5y^3 + 12x^3y^3$
3. $24x^5y^2 + 16x^7y^3 + 40x^3y^2$
4. $4x^8y^4 + 2x^3y^3 + 12x^5y^6$
5. $27x^6y^7 + 81x^2y^3 + 18x^3y^4$
6. $3x^3 + 12x^2 + 9x$
7. $8x - 56x^3$
8. $4a^4b - 16a^2b^2 + 4ab^4$
9. $6a^3b^2 - 12a^2b^3 + 18ab$

Math 1

7.6 Factor By Grouping

Unit 7

Factor by Grouping: A way of factoring a polynomial with _____ terms!

Essential Understanding: polynomials of a degree greater than 2 can be factored

GCF Method

Step 1: Put parenthesis around first two terms and second two terms.
Step 2: Factor out a GCF if one exists from each group
Step 3: Write your new factors as binomials
Step 4: Check your factors by multiplying them together and getting the original problem.

The Backwards Box Method

Step 1: Factor out a GCF if one exists
Step 2: Put each term into the "box"
Step 3: Factor out the greatest common factor and put it on top (or on the side) of each box
Step 4: Check your factors by multiplying them together and getting a solution within each box
Step 5: Write your new factors as binomials!

Example 1: Factor $3n^3 - 12n^2 + 2n - 8$

Example 2: Factor $8t^3 + 14t^2 + 20t + 35$

Example 3: Factor $12x^3 + 3x^2 + 20x + 5$

Factor a Polynomial completely: Remember to remove the GCF first.

Example 3: Factor $45w^4 - 36w^3 + 15w^2 - 12w$

Example 4: Factor $6g^3 + 18g^2 + 60g + 180$

Got it? Factor each of the following by grouping.

1. $21x^3 - 28x^2 - 6x + 8$
2. $8t^3 + 36t^2 + 2t + 9$
3. $6x^3 + 9x^2 + 2x + 3$
4. $21x^3 + 6x^2 - 28x - 8$
5. $32m^3 + 72m^2 - 80m - 180$
6. $30b^4 - 45b^3 - 10b^2 + 15b$
7. $60a^5 - 72a^4 - 210a^3 + 252a^2$
8. $12e^4 + 18e^3 + 36e^2 + 54e$

Word Problem: The toy shown below is made of several bars that can fold together to form a rectangular prism or unfold to form a ladder. What expressions can represent the dimensions of the toy when it is folded up? Use factoring

Step 1:

Step 2:

Step 3: