

FACTORING WITH WHOLE NUMBERS

Objective: This lesson is designed to use the concept of factoring with whole numbers to explore **Decomposition, Multiplication, and the relationship between Factoring and the Distributive Property.**

(* Note: This lesson should be taught after a lesson on Greatest Common Factor)

Part I: Common Factors with Whole Numbers

Directions:

Part II: Rolling Common Factors

Directions: Given the following terms, students will determine if the factor is a common factor. (A factor is a common factor if it can be multiplied with another whole number factor to produce each term as a product or each term is divisible by the factor.) Using 2

Is 5 a common factor?	5
Is 6 a common factor?	6
Is 7 a common factor?	7
Is 8 a common factor?	8
Is 9 a common factor?	9
Is 10 a common factor?	10
Is 11 a common factor?	11
Is 12 a common factor?	12
You Try # 4: $63 + 72 + 81$	
Is 2 a common factor?	2
Is 3 a common factor?	3
Is 4 a common factor?	4
Is 5 a common factor?	5
Is 6 a common factor?	6
Is 7 a common factor?	7
Is 8 a common factor?	8
Is 9 a common factor?	9
Is 10 a common factor?	10
Is 11 a common factor?	11
Is 12 a common factor?	12

Part III: GCF with Variables

Directions: Find the Greatest Common Factor of the two terms and factor out the GCF.

Example #4: $6 + 2$ GCF= 2 $\therefore + x$	You Try #4: $y + 5$ GCF= 5 $\therefore y + 5$
Example #5: $55 + 33p$ GCF= 11 $\therefore 55 + 33 = 11(5 + 3p)$	You Try #5: $100 + 40$ GCF= 20 $\therefore 100 + 40 = 20(5 + 2z)$
Example #6: $x^2 + 3x$ GCF= x $\therefore x^2 + 3x = x(x + 3)$	You Try #6: $6c^2 + 15c$ GCF= $3c$ $\therefore 6c^2 + 15c = 3c(2c + 5)$

Other Extensions:

- Have students discuss and determine how they could check their expressions.
- Use fractional factors.
- Use the Generic Area Model.
- Include polynomials with more terms (trinomials).

Common Core State Standard 6NS.4: Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor. [Example, $36 + 8 = 4(9 + 2)$]

