Lesson 15: Factoring – Polynomials – Quadratic Eq

Factoring Terminology Review

Factors, Product Factors, when multiplied together, form a product
Ex: a and b are factors of ab 3 and 5 are factors of 15

Factoring The act of breaking a product into factors

Factor tree A useful device for finding the prime factors of a number

Composite number Any natural number having factors other than 1 and the number itself

Prime number Any natural number greater than 1 that is divisible only by itself and 1
2, 3, 5, 7, 11, 13, 17, 19, 23, …

Prime factor form When a composite number (non prime) is stated as a product of only prime numbers (also called **completely** factored form).

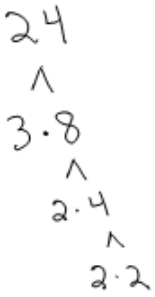
For negative numbers, factor out the –1 first.
Ex: -15 in factored form is $(-1)\cdot 3\cdot 5$
When a prime number appears as a factor more than once, write it in exponential form.

Prime Polynomial A polynomial that cannot be factored

Factoring 24

Two factors of 24 are 6 and 4. Two factors of 6 are 3 and 2. Two factors of 4 are 2 and 2.

It doesn't matter which factors one uses to start the factor tree. The results will be the same.



$24 = 3 \cdot 2 \cdot 2 \cdot 2 = 3 \cdot 2^3$

Greatest Common Factor A monomial that includes every number or variable that is a factor of all of the terms being considered is called the **GCF**

Consider the Distributive property: $4(x+7) = 4 \bullet x + 4 \bullet 7 = 4x + 28$

Look at $4x + 28$, what is the GCF (the common factor in both terms)? 4

$\xrightarrow{Multiplication}$

$4(x+7) = 4x + 28$ Factoring is just the reverse of multiplication!

$\xleftarrow{Factoring}$

The GCF is 4. $4x + 28$ factored is $4(x+7)$