Unit 3: Polynomials

Day 3: Common Factoring

Today we will...

1.   Learn how to recognize common factors in polynomials.

2.   Learn how to write a polynomials as a product of a common factor and a polynomial.

What do you call a number that doesn't stay in one place?

What is Factoring?

How can we write 18 as the product of smaller numbers?

18

Therefore 18 = 3 x 3 x 2

Called prime FACTORS

Factor: Write a polynomial as the product of 2 or more "smaller" polynomials

i.e. "Break it down into smaller pieces"

The greatest common factor (GCF) of a set of terms is:

the largest number and/or variable that divides evenly into all terms.

Example 1: Identify the GCF of the following terms.

a) 4, 8, 12

GCF = 4

b) $28z, 14z^2, 21z^3$

GCF =

c) p^7q^8, p^3q^6, p^5q^2

GCF =

d) $9x^3y^4, 18x^6y^7, 6x^7y^2$

GCF =

To common factor ...

✓ Look for the GCF of all the terms in the polynomial

✓ "Remove" the common factor by dividing all terms by it

✓ Place common factor outside a set of brackets with divided polynomial inside

Example 2: Common factor each polynomial.

a) $6x + 30$

b) $x^2 - x$

c) $2a^2 - 10a$

d) $10p^4 - 15p^3 - 5p^2$

e) $m^3n^2 - mn^4 - m^5n$

f) $49xy^2z + 14x^2yz^2 - 35xyz$

Sometimes the common factor isn't a monomial. We can factor out other polynomials as well as common factor portions of the polynomial!

Example 3: Common factor each polynomial.

a) $5x(x - 2) - 3(x - 2)$

c) $3a(4a + 5b) - 2b(4a + 5b)$

d) $x(2 - 3x - x^2) + 5(x^2 + 3x - 2)$

b) $10x^2 + 5x - 6xy - 3y$

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Homework:

Common Factoring Handout

Quiz next class:

Expanding and Simplifying