

Factoring Quadratics

MGSE9-12.A.REI.4 Solve quadratic equations in one variable.

MGSE9-12.A.REI.4b Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, factoring, completing the square, and the quadratic formula, as appropriate to the initial form of the equation (limit to real number solutions). Build a function that models a relationship between two quantities.

Vocabulary

Factoring - Separating an expression into its simplest terms or expressions that have been multiplied together

Greatest Common Factor - the largest number or term that divides evenly into each term of an expression.

Relatively Prime - an expression or set of terms where the greatest common factor is 1.

What am I learning today?

How to factor the GCF from a polynomial

How will I show that I learned it?

Find the GCF and factor it out of a trinomial expression

Factoring Polynomials

- You are "undoing" multiplication
- LOTS of different patterns and methods
- You can ALWAYS check your work by multiplying.

GCF - the Greatest Common Factor is the largest number with the largest variable that divides evenly into ALL terms.

Ex. A) $21x, 28$

Ex. B) $10x^4, 25x^2$

Ex. C) $12x^3, 35$

Ex. D) $8x^5, 24x^4, 4x^3$

How did we **distribute**?

1. $7(3x + 4)$

2. $10x(4x - 1)$

3. $-2(16x^2 + 9)$

Factoring is the **OPPOSITE!** We are **UNDOING** what was multiplied.

Factoring GCF - divide out the largest number with the largest variable that divides evenly into ALL terms.

Ex. A $21x + 28$

Ex. B $40x^2 - 10x$

If the leading coefficient is **NEGATIVE**, the GCF is also **NEGATIVE**.

Ex. C $-32x^2 - 18$

Ex. D $-12x^2 + 18x$

Ex. E $28x + 42x^2 + 14$

Ex. F $9x^2 + 20$

Relatively
Prime

$$\text{Ex. G } \frac{4x^2y}{2xy} + \frac{10xy}{2xy} = 2xy(2x + 5)$$

$$\text{Ex. H } 12x + 9 - 3x^2$$

S.F.

$$\frac{-3x^2}{-3} + \frac{12x}{-3} + \frac{9}{-3} = \boxed{-3(x^2 - 4x - 3)}$$

$$1. \frac{16p^4}{4p^3} + \frac{4p^3}{4p^3}$$

p/p/p

p/p/p

$$\boxed{4p^3(4p + 1)}$$