CHAPTER 9: POLYNOMIALS & FACTORING

Factoring GCFs and by Grouping

OBJECTIVES

- I can factor a monomial from a polynomial
- I can factor polynomials with four terms

PART 1: FACTORING GCFS

- Factoring reverses multiplication

Multiplying	Factoring
$3(5x+1) = 3\cdot 5x + 3\cdot 1$ $= 15x + 3$	$15x + 3 = 3\cdot 5x + 3\cdot 1$ $= 3(5x+1)$
$2x^2(3x^3+4) = 2x^2\cdot 3x^3 + 2x^2\cdot 4$ $= 6x^5 + 8x^2$	$6x^5 + 8x^2 = 2x^2\cdot 3x^3 + 2x^2\cdot 4$ $= 2x^2(3x^3+4)$

PART 1: FACTORING GCFS

- Greatest Common Factors
  - Factoring a number or term is breaking a number down to its products

PART 1: FACTORING GCFS

2 Find the GCF of the terms of each polynomial.

a. $5v^5 + 10v^3$ **b.** $3t^2 - 18$ **c.** $4b^3 - 2b^2 - 6b$

PART 1: FACTORING GCFS

3 Use the GCF to factor each polynomial.

a. $8x^2 - 12x$ **b.** $5d^3 + 10d$ **c.** $6m^3 - 12m^2 - 24m$

PART 2: FACTORING BY GROUPING

You can use the Distributive Property to **factor by grouping** if two groups of terms have the same factor.

$$\underbrace{y^3 + 3y^2}_{y^2(y+3)} + \underbrace{4y + 12}_{4(y+3)}$$

$$(y^2 + 4)(y + 3)$$

These factors are the same, so factor again.

To factor by grouping, look for a common binomial factor of two pairs of terms.

PART 2: FACTOR BY GROUPING

1 Factor each expression. Check your answer.

a. $5t^4 + 20t^3 + 6t + 24$ **b.** $2w^3 + w^2 - 14w - 7$

PART 2: FACTOR BY GROUPING

2 Factor $45m^4 - 9m^3 + 30m^2 - 6m$.

CAN YOU?? PROVE IT!!

- I can factor a monomial from a polynomial
- I can factor polynomials with four terms

Factor completely.

11. $12v^3 - 32v^2 + 6v - 16$

12. $7q^4 - 4q^3 + 28q^2 - 16q$