

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.**  $4b^3 - 2b^2 - 6b$ 

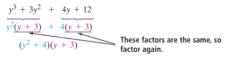
# PART 1: FACTORING GCFS

**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.



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