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Factoring By Grouping

Unit 8 Lesson 8

Factoring by Grouping

Students will be able to:

Factor polynomials by grouping.

Key Vocabulary:

- Factoring
- Grouping



Factoring by Grouping

Factoring by Grouping:

Steps in Factoring by Grouping:

Step 1: rewrite four terms so that the first two terms have a common factor and the last two terms have common factor.

Step 2: Group the first two terms and the last two terms.

Step 3: Both the first two terms and last two terms have a common factor. Use the distributive property to factor each group of two terms.

Step 4: Finally, you can factor the common binomial factor.

Factoring by Grouping

Sample problem 1: Factor the following polynomials by grouping.

$$1. 3y + 6 + by + 2b$$

$$2. x^2 + 5x + 2x + 10$$

$$3. ax + ay - bx - by$$

$$4. xy + 2x + y + 2$$

Factoring by Grouping

Sample problem 1: Factor the following polynomials by grouping.

$$1.3y + 6 + by + 2b$$

Solution:

$$= 3y + by + 6 + 2b$$

$$= (3y + by) + (6 + 2b)$$

$$= y(3 + b) + 2(3 + b)$$

$$= (y + 2)(3 + b)$$

Factoring by Grouping

Sample problem 1: Factor the following polynomials by grouping.

$$2x^2 + 5x + 2x + 10$$

Solution:

$$= x^2 + 2x + 5x + 10$$

$$= (x^2 + 2x) + (5x + 10)$$

$$= x(x + 2) + 5(x + 2)$$

$$= (x + 5)(x + 2)$$

Factoring by Grouping

Sample problem 1: Factor the following polynomials by grouping.

$$3. ax + ay - bx - by$$

Solution:

$$= (ax + ay) + (-bx - by)$$

$$= a(x + y) - b(x + y)$$

$$= (a - b)(x + y)$$

Factoring by Grouping

Sample problem 1: Factor the following polynomials by grouping.

$$4. xy + 2x + y + 2$$

Solution:

$$= (xy + 2x) + (y + 2)$$

$$= x(y + 2) + (y + 2)$$

$$= (x + 1)(y + 2)$$