

## Lesson 5.7: General Factoring Strategies

**Objectives:** Factor polynomials completely.

We have learned several ways to factor in this unit, today our goal is to learn how to recognize and apply the correct factoring patterns.

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### STEPS FOR FACTORING (no matter what kind of polynomial it is.)

**Step 1:** Factor out the GCF, if there is one.

**Step 2:** Count the number of terms.

**Step 3:** A) 2 terms

- Is it a *difference of squares*?

$$A^2 - B^2 = (A + B)(A - B)$$

- Is it a *difference of two cubes*?

$$A^3 - B^3 = (A - B)(A^2 + AB + B^2)$$

- Is it a *sum of two cubes*?

$$A^3 + B^3 = (A + B)(A^2 - AB + B^2)$$

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## Lesson 5.7: General Factoring Strategies

### Step 3: cont.

#### B) 3 terms

- Is it a perfect square trinomial?

$$A^2 + 2AB + B^2 = (A + B)^2$$

or

$$A^2 - 2AB + B^2 = (A - B)^2$$

- Is the coefficient of the  $x^2$  term 1?

$$x^2 + bx + c = (x + m)(x + n)$$

$$\text{where } m \cdot n = c, m + n = b$$

- Is the coefficient of the  $x^2$  term different than a 1?

➤ Then use factoring by grouping.

#### C) 4 terms

- Use factoring by grouping. (Remember: sometimes we can “group” into groups other than pairs, such as perfect square trinomials.)

### Step 4: Check your work!

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Example 1: Factor  $18x^2 + 3x - 3$

## Lesson 5.7: General Factoring Strategies

Example 2: Factor  $81z^2 - 49y^2$

## Lesson 5.7: General Factoring Strategies

Example 3: Factor  $100k^2 + 240k + 144$

## Lesson 5.7: General Factoring Strategies

Example 4: Factor  $125m^9 + 8n^6$

## Lesson 5.7: General Factoring Strategies

Example 5: Factor  $-2a^2b + 8ab + 42b$



## Lesson 5.7: General Factoring Strategies

Example 6: Factor  $6x^3 - 9x^2 - 6x + 9$

## Lesson 5.7: General Factoring Strategies

Example 7: Factor  $x^2 - 4xy + 4y^2 - 9$

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**Objectives:** Factor polynomials completely.

We have learned several ways to factor in this unit, today our goal is to learn how to recognize and apply the correct factoring patterns.

Can you?

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# Homework:

Pg. 421: #'s 3, 5, 7, 9, 11, 17, 19, 23, 25, 33, 35, 37, 39, 41, 47, 49, 51

AND

Pg. 442-443: #'s 72, 77, 83, 85, 92, 99, 102, 107

