

Name \_\_\_\_\_  
Date \_\_\_\_\_  
Professor Abel

Elementary Algebra  
Class #20

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### Factoring – Section 6.1

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Everything you have ever wanted to know about factoring, but were afraid to ask.

#### Section 1. Greatest Common Factor – Monomials.

1. Signs: \_\_\_\_\_
2. Coefficients: \_\_\_\_\_
3. Variables: \_\_\_\_\_
4. Practice: Find the Greatest Common Factors for the Following Monomial Expressions:

a.  $xy; x^2y^2; x^3y$  \_\_\_\_\_

b.  $18y^2; 15y^3; 27y^5$  \_\_\_\_\_

c.  $-20x^2; 12x; 40x^3$  \_\_\_\_\_

#### Section 2. Factoring a Monomial from a Polynomial.

Characteristics of a GCF for a Monomial and another Monomial:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_ unless \_\_\_\_\_
4. The GCF must be the GCF for all terms.

a.  $6x + 18$  \_\_\_\_\_

b.  $15x - 20$  \_\_\_\_\_

c.  $6y^2 + 9y^5$  \_\_\_\_\_

d.  $-12p^3 - 24p^2 + 8p$  \_\_\_\_\_

e.  $35x^2 - 25x + 5$  \_\_\_\_\_

**Section 3. Factoring a Common Polynomial (binomial) Expression:**

6. From this Point On: the common binomial factor is known as: \_\_\_\_\_

a.  $x(5x - 7) + 2(5x - 7)$  \_\_\_\_\_

b.  $4x(3x - 5) - 7(3x - 5)$  \_\_\_\_\_

c.  $2x(x + 3) - (x + 3)$  \_\_\_\_\_

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**Factoring - Section 6.2**

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**Section 1. Factoring a 4-Term Polynomial by Grouping.**

7. Factor and Take Notes of Each Step:  $ax + ay + bx + by$

_____	_____
_____	_____
_____	_____

Factor  $x^2 + 3x + 4x + 12$  by grouping:

_____	_____
_____	_____
_____	_____

Factor  $15x^2 + 12x + 10x + 8$  by grouping:

_____	_____
_____	_____
_____	_____

**Influence of the Sign of the Third Term!!!**



Factor  $6x^2 + 3x - 2x - 1$  by grouping:

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Factor  $5x^2 - 10x - 2x + 4$  by grouping:

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Factor  $5x^2 - 10x - 2x + 4$  by grouping:

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**Homework Section:**

Section	Page(s)	Problems
6.1	350	21 → 97 Odd
6.2	356	7 → 57 Odd
6.5	383	13 → 35 Odd

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***Factoring - Hour #2***

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Quality - Accuracy - Transfer - 100%

**Section 1. Perfect Squares:**

**1. Identify Perfect Squares that are Whole Numbers:**

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_

**2. Identify Perfect Squares that are Decimals:**

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_

**3. Identify Perfect Squares that are Fractions:**

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_

**4. Identify Perfect Squares that are Variables:**

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_

**Section 2. F.O.I.L.: Multiplication of the "Sum and Difference" of Two Numbers.**

**5. F.O.I.L. Is there a Pattern?**

a.  $(x + 7)(x - 7)$  \_\_\_\_\_

b.  $(a - 3)(a + 3)$  \_\_\_\_\_

c.  $(2x + 7)(2x - 7)$  \_\_\_\_\_

d.  $(5 + c)(5 - c)$  \_\_\_\_\_

e.  $(8x + 3)(8x - 3)$  \_\_\_\_\_

**6. Describe Each Outcome:** \_\_\_\_\_

\_\_\_\_\_

This result is known as: \_\_\_\_\_

**7. More: Use the Shortcut. Use and be able to recognize the Pattern.**

a.  $(c + d)(c - d)$  \_\_\_\_\_

b.  $(r^3 + s^3)(r^3 - s^3)$  \_\_\_\_\_

c.  $(7 - 20c)(7 + 20c)$  \_\_\_\_\_

d.  $(.5 + .9x)(.5 - .9x)$  \_\_\_\_\_

e.  $(\frac{3}{4}c + \frac{2}{3})(\frac{3}{4}c - \frac{2}{3})$  \_\_\_\_\_

**Section 3. Reverse F.O.I.L.: Factoring's First Steps.**

**8. Step 1: Recognizing and Factoring the Difference of Two Squares. FACTOR the following:**

1.  $5x^2 - 125$  \_\_\_\_\_

2.  $x^2 - 100$  \_\_\_\_\_

3.  $ax^2 - 49a$  \_\_\_\_\_

4.  $2n^2 - 162$  \_\_\_\_\_

5.  $n^4 - 16$  \_\_\_\_\_

6.  $25x^2 - 36$  \_\_\_\_\_

7.  $100x^2 - 9y^2$  \_\_\_\_\_

8.  $\frac{4}{9}y^2 - \frac{1}{16}$  \_\_\_\_\_

9.  $\frac{25}{81}c^2 - \frac{121}{144}d^2$  \_\_\_\_\_

10.  $.25a^2 - .36b^2$  \_\_\_\_\_