

Date:

Title:

---

**(A) Lesson Objectives:**

- a. Review what is meant by the term GCF.
- b. Determine the GCF of numbers and algebraic terms.
- c. Factor binomials/trinomials by identifying and factoring out the GCF.
- d. Illustrate the factoring process in the context of areas of rectangles.

**(B) Factoring Numbers & Algebraic Terms:**

- a. Factor the following numbers as products of prime factors:

(i) 100

(ii) 36

(iii) 30

- b. Factor the following algebraic terms (monomials) as products of prime factors:

(i)  $100x$

(ii)  $36x^2$

(iii)  $30x^3y$

**(C) Factoring pairs of numbers/monomials:** Determine the GREATEST COMMON FACTOR of the following pairs of numbers/monomials:

- a. 30 and 36: \_\_\_\_\_.
- b. 50 and 70: \_\_\_\_\_.
- c.  $8x^2y$  and  $24xy^2$ : \_\_\_\_\_.
- d.  $6x^2$  and  $15x$ : \_\_\_\_\_.
- e.  $25x$  and  $10x^2$ : \_\_\_\_\_.
- f.  $12x^3$  and  $30x^2$ : \_\_\_\_\_.
- g.  $6x^2y^3$  and  $21x^2y^5$ : \_\_\_\_\_.

**(D) Terminology:** Define/explain the terms EXPAND and FACTOR

- a. Expand: \_\_\_\_\_.
- b. Factor: \_\_\_\_\_.

Date:

Title:

---

(E) **INVESTIGATION: Setting a Context for factoring:**

a. What monomial would make the following algebraic statement true?

i.  $15x^2 + 10x = \boxed{\phantom{000}}(3x + 2)$ . Then explain HOW you determined your answer.

ii.  $12x^3 - 30x^2 + 24x = \boxed{\phantom{000}}(2x^2 - 5x + 4)$ . Then explain HOW you determined your answer.

iii.  $-9x^2y - 21xy^2 + 6xy = \boxed{\phantom{000}}(3x + 7y - 2)$ . Then explain HOW you determined your answer.

(F) **Applications:**

a. A rectangle has a width given by the expression  $\boxed{\phantom{000}}$  and a length given by the expression  $5x + 1$  and an area given by the expression  $10x^2 + 2x$ :



- i. Label the information on the diagram provided.
- ii. Determine an expression for the width of the rectangle.

iii. Determine the area and perimeter if  $x = 7$  cm.

b. A rectangle has a length given by the expression  $\boxed{\phantom{000}}$  and a width given by the expression  $2x - 3$  and an area given by the expression  $14x^3 - 21x^2$ :



- i. Label the information on the diagram provided.
- ii. Determine an expression for the length of the rectangle.

iii. Determine the area and perimeter if  $x = 5$  cm.

Date:

Title:

---

**(G) Algebraic Examples:**

*Exercise #6:* Write each of the following expressions as equivalent products of their GCF's and another factor.

(a)  $3x + 6 =$

(b)  $2x^2 + 8x =$

(c)  $4x^2 - 8x + 6 =$

(d)  $10x^2 - 25x =$

(e)  $6x + 27 =$

(f)  $5x^3 + 10x^2 + 5x =$

(g)  $2x^2 + 10x + 20 =$

(h)  $x^2 - x =$

(i)  $3x + 3 =$

(j)  $4x^2 - 10x =$

(k)  $8x^2 - 4x + 16 =$

(l)  $10x^3y^2 + 15x^2y^4 - 5x^2y^2 =$

19.  $14x^2 - 49x$

20.  $27x^2 - 9x + 3$

21.  $x^4 - x^2$

22.  $12y^2x + 15yx^2 - 6yx$

**(H) Homework/Resources**

- **HW: from Textbook** →

- Video help from OnlineMathLearning with inequalities:

o <http://www.onlinemathlearning.com/factoring-polynomials.html>

- Reading from PurpleMath

o <http://www.purplemath.com/modules/simpfact.htm>