Geometry Lomac 2015-2016	Date 12/7 due 12/8	More Factoring Trinomials 6.6L

Name _____ **Per**_____

LO: I can factor trinomials, including trinomials with a GCF.

emath 7.6

☐ **DO NOW** On the last page of this packet

☐ (1) **Trinomials with a GCF**

Factoring trinomials, which we first practiced in the last lesson, is a trying experience. All algebra students must learn how to do this procedure because of its immense number of **practical applications**. We will eventually see these applications, but for now, we need to get more practice factoring these trinomials. We begin by looking at a process known as **complete factoring**.

***Exercise* #1:** Consider the trinomial $4x^2+20x+24$.

(a) Write this trinomial as an equivalent expression involving the product of its term's gcf and another trinomial.

(b) Factor this additional trinomial to express the original in **completely factored form**.

☐ (2) **Factoring Trinomials with a GCF**

Whenever we factor, we should always look to see if a greatest common factor exists that can be "factored out" to begin the problem. This will always make any subsequent factoring easier.

***Exercise* #2:** Rewrite each of the following trinomials in completely factored form.

(a) $10x^2+15x-10$

(b) $3x^3-21x^2+36x$

(c) $7x^2+21x-70$

(d) $6x^2-2x-4$

☐ (3) **Factoring a difference of squares with a GCF**

Complete factoring can also involve factoring the **difference of perfect squares**. Try the next exercise to see how this works.

***Exercise* #3:** Write each of the following binomials in completely factored form.

(a) $2x^2 - 18$

(b) $5x^3 - 20x$

(c) $12x^2 - 3$

(d) $54x^2 - 24$

☐ (4) **Factoring a trinomial with or without a GCF**

If you understand factoring as breaking an expression into an equivalent product, then essentially you can always check to see if you have factored correctly. Complete factoring actually leads to a nice way to eliminate some guesses from trinomial guess and check methods.

***Exercise* #4:** Consider the trinomial $2x^2 + 11x + 12$.

(a) Do the three terms of this trinomial have a gcf other than 1?

(b) Why would the guesses $(2x+2)(x+6)$, $(2x+4)(x+3)$, and $(2x+12)(x+1)$ not make sense given your answer to (a)?

(c) Fill in the statement:

If a trinomial does not have a gcf, then _____ of its _____ factors will have a gcf.

(d) Factor this trinomial by limiting your guesses.

☐ (5) cont. **Factoring Trinomials Practice**

***Exercise* #5:** Use the Smart Guessing Tip from the last problem to factor $4x^2 - 21x - 18$.

☐ (6) cont. **Factoring Trinomials Practice**

3. Which of the following is the missing factor in the product $2(x-1)(\quad ? \quad)$ if it is equivalent to the trinomial $2x^2 + 10x - 12$?

   (1) $x+12$ (3) $x+3$

   (2) $x+6$ (4) $x-5$

4. Use the Smart Guessing Tip from Exercise #4 to help factor the following challenging trinomials. Note that they do **not** have a greatest common factor.

   (a) $4x^2 + 19x + 12$ (b) $6x^2 + 7x - 24$

☐ (7) **Factoring Trinomials Reasoning**

REASONING

5. Consider the **cubic trinomial** x^3+8x^2+7x.

   (a) Write this trinomial as an equivalent product in completely factored form.

   (b) How can the original trinomial and your answer to (b) help you determine the value of $(10)(17)(11)$ without a calculator? What is the value?

6. Use the complete factorization of $2x^3+8x^2+8x$ to determine the value of the product $(20)(12)^2$. Explain your reasoning.

☐ (8) **Exit Ticket**

ON THE LAST PAGE

☐ (9) cont. **Homework**

FLUENCY

1. Rewrite each of the following trinomials in completely factored form.

(a) $2x^2+20x+42$

(b) $6x^2+33x+15$

(c) $5x^2-10x-40$

(d) $30x^2+20x-10$

(e) x^3+7x^2+10x

(f) $4x^3+10x^2-24x$

(g) $5x^2-45$

(h) $2x^3-2x$

(i) $36-4x^2$

(j) $20x^2-125$

2. Which of the following is *not* a factor of $4x^3+12x^2-72x$? Show work that justifies your choice.

(1) $(x+9)$

(2) $4x$

(3) $(x-3)$

(4) $(x+6)$

Exit Ticket Name_____ Date _____ _____ Per_ _____ 6.6L

The LO (Learning Outcomes) are written below your name on the front of this packet. Demonstrate your achievement of these outcomes by doing the following:

(1) Factor completely: $15n^2 - 27n - 6$

DO NOW Name_____ Date _____ Per_____ 6.6L

(1) Translation to algebra progress. Write one or more algebraic statement(s) to represent this situation. Be sure to write at least one "Let" statement to define any variables.

A small pizza costs $8 and large pizza costs $10. The small pizza uses 4 ounces of dough and the large pizza uses 6 ounces. You have 60 ounces of dough, and you want to sell at least $110 worth of pizzas. What is the greatest number of large pizzas you can make and still make at least $110?