Name: _____ Date: _____

FACTORING POLYNOMIALS
COMMON CORE ALGEBRA I HOMEWORK

FLUENCY

1. Identify the greatest common factor for each of the following sets of monomials.

   (a) $6x^2$ and $24x^3$ (b) $15x$ and $10x^2$ (c) $2x^4$ and $10x^2$

   (d) $2x^3, 6x^2$, and $12x$ (e) $16t^2, 48t$, and 80 (f) $8t^5, 12t^3$, and $16t$

2. Which of the following is the greatest common factor of the terms $36x^2y^4$ and $24xy^7$?

   (1) $12xy^4$ (3) $6x^2y^3$

   (2) $24x^2y^7$ (4) $3xy$

3. Write each of the following as equivalent products of the polynomial's greatest common factor with another polynomial (of the same number of terms). The first is done as an example.

   (a) $8x-28$ (b) $50x+30$ (c) $24x^2+32x$

   $=4(2x-7)$

   (d) $18-12x$ (e) $6x^3+12x^2-3x$ (f) x^2-x

   (g) $10x^2+35x-20$ (h) $21x^3-14x$ (i) $36x-8x^2$

   (j) $30x^3-75x^2$ (k) $-16t^2+96t$ (l) $4t^3-32t^2+12t$

4. Which of the following is *not* a correct **factorization** of the binomial $10x^2+40x$?

   (1) $10x(x+4)$ (3) $5x(2x+4)$

   (2) $10(x^2+4x)$ (4) $5x(2x+8)$

5. Rewrite each of the following expressions as the product of two binomials by factoring out a common binomial factor. Watch out for the subtraction problems (b) and (d).

(a) $(x+5)(x+1)+(x+5)(x+8)$

(b) $(2x-1)(3x+5)-(2x-1)(x+4)$

(c) $(x-7)(x-9)+(x-7)(4x+5)$

(d) $(x+1)(5x-7)-(x+1)(x-3)$

APPLICATIONS

6. The area of a rectangle is represented by the polynomial $16x^2+56x$. The width of the rectangle is given by the binomial $2x+7$.

(a) Give a monomial expression in terms of x for the length of the rectangle. Show how you arrived at your answer.

(b) If the length of the rectangle is 80, what is the width of the rectangle? Explain your thinking.

REASONING

7. These crazy polynomials keep acting like integers. We can factor integers to determine their factors. We can also do the same for polynomials.

(a) List all of the positive factors of the integer 12 by writing all possible positive integer products (such as $12=3\cdot4$).

(b) List all of the factors of $2x^2-6x$ by also writing all possible products, such as $2(x^2-3x)$.

8. Which of the following is *not* a factor of $4x^2+12x$?

(1) $x+3$

(2) x

(3) $3x$

(4) 4