Algebra 1 CC
Assignment #64
Factoring Polynomials – Using Greatest Common Factor (GCF)
***Optional**

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) $12xy^4$ (2) $24x^2y^7$ (3) $6x^2y^3$ (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).

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

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

   *(g) $30x^3-75x^2$ (h) $-16t^2+96t$ (i) $4t^3-32t^2+12t$

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

   (a) $(x+5)(x+1)+(x+5)(x+8)$ (b) $(2x-1)(3x+5)-(2x-1)(x+4)$

5. 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.

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*R1. Which of the following would be the value of the expression $5x^3+2x^2+8x+4$ when $x=10$?

(1) 6,432 (2) 2,854 (3) 5,284 (4) 528

*R2. Which has the larger 15th term when comparing the arithmetic and geometric sequences below? Show evidence that supports your answer.

Arithmetic Sequence: 150, 650, 1150, 1650, … **Geometric Sequence:** 4, 12, 36, 108, …

R3. Eldora and Finn went to an office supply store together. Eldora bought 15 boxes of paper clips and 7 packages of index cards for a total cost of $55.40. Finn bought 12 boxes of paper clips and 10 packages of index cards for a total cost of $61.70. Find the cost of one box of paper clips and the cost of one package of index cards.

*R4. Simplify: $\dfrac{\left(2xy^2\right)^2}{4\left(x^2y^3\right)^2}$

*R5. Solve for *x*: $2-\dfrac{2}{5}x > x-12$

R6. What is the value of the *x*-intercept for the graph of 8x – 24y = 96?

1. (a) $6x^2$
   (b) $5x$
   (c) $2x^2$
   (d) $2x$
   (e) 16
   (f) $4t$

2. (1)

3. (a) $4(2x-7)$
   (b) $10(5x+3)$
   (c) $8x(3x+4)$
   (d) $6(3-2x)$
   (e) $3x(2x^2+4x-1)$
   (f) $x(x-1)$
   (g) $15x^2(2x-5)$
   (h) $16t(-t+6)$
   (i) $4t(t^2-8t+3)$

4. (a) $(x+5)(2x+9)$
   (b) $(2x-1)(2x+1)$

5. (a) $8x$
   (b) 27

R1. (3)

R2. Geometric sequence, 15th term = 19131876
Arithmetic sequence, 15th term = 7150

R3. \$1.85, Paper clips
\$3.95, Index Cards

R4. Simplify: $\frac{1}{x^2y^2}$

R5. $10 > x$ *or* $x < 10$

R6. $x = 12$