2/5 Algebra 1 - Downing

Warm-up - Find two numbers that multiply to x and add to y.

Ex) $x = 10$, $y = 7$

10	
1	10
2	5

→ 2 and 5

$x = 10$ $y = 11$ → 1 and 10

$x = 10$ $y = -7$ → -2 and -5

$x = -10$, $y = -3$ → 2 and -5

$x = -10$, $y = 9$ → 10 and -1

Ex) $x = 12$, $y = -7$

1	12
2	6
-3	-4

-3 and -4

Ex) $x = -32$, $y = -14$

1	32
2	-16
4	8

2 and -16

Ex) $x = -48$, $y = 2$

1	48
2	24
3	16
4	12
-6	8

-6 and 8

Unit 6 - Lesson 4 - GCF (Greatest Common Factor)

Largest monomial that can divide evenly into all terms.

Find the GCF

Ex) $18x^5y^2$ and $24xy^6$

18	
1	18
2	9
3	6

24	
1	24
2	12
3	8
4	6

$x^5y^2 = x \cdot x \cdot x \cdot x \cdot x \cdot y \cdot y$

$xy^6 = x \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y$

GCF = $6xy^2$

Ex) $32x^3y^6$ and $16x^2y^3z^2$

32	
1	32
2	16
4	8

16	
1	16
2	8
4	4

$x^3y^6 = x \cdot x \cdot x \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y$

$x^2y^3z^2 = x \cdot x \cdot y \cdot y \cdot y \cdot z \cdot z$

GCF = $16x^2y^3$

Ex) $24x^3y^5$ and $64x^7$

24	
1	24
2	12
3	8
4	6

64	
1	64
2	32
4	16
8	8

GCF = $8x^3$

Ex) $15x^6y^{10}z^{12}$ and $60xy^{12}z^9$ GCF = $15xy^{10}z^9$

Ex) $56x^8y^9$ and $28xy^{10}$ GCF = $28xy^9$

Factoring Out the GCF

steps	Example
1. Find the GCF	$12x^4y^3 + 8x^2y^6$ GCF $= 4x^2y^3$
2. Divide the GCF out of all terms	$\frac{12x^4y^3}{4x^2y^3} + \frac{8x^2y^6}{4x^2y^3} =$ $3x^2 + 2y^3$
3. Put GCF outside of parenthesis – everything else in.	$4x^2y^3(3x^2 + 2y^3)$

Ex) $\frac{14x^3y^2}{7xy} + \frac{7xy}{7xy} =$ GCF $\boxed{7xy(2x^2y + 1)}$

Ex) $\frac{14x^3y}{7x^2} + \frac{63x^2z}{7x^2} = \boxed{7x^2(2xy + 9z)}$

Ex) $\frac{28x^5y^7}{14x^3y^4} - \frac{42x^3y^4}{14x^3y^4} = \boxed{14x^3y^4(2x^2y^3 - 3)}$

HW – Worksheet # 1-12 #19, 20