Key

Algebra 1
Unit 1 lesson 5 Notes
Finding the GCF and LCM for a Set of Monomials

Essential Question: How do I find the greatest common factor and/or least common multiple for a set of monomials?

Vocabulary:

Factor:	Multiple
$4 \times 7 = 28$ (↑ ↑ Factors of 28) $(x+4)(x+1) = x^2+5x+4$ (↑ ↑ Factors of x^2+5x+4) One of 2 or more #'s that when x together produce a given product.	4: 4, 8, 12, 16, 20, 24, 28 . . . The result of x a number by an integer

Finding the Greatest Common Factor (GCF) Use each

Steps:
1. List all factors of each number.
2. Find the greatest factor they have in common

*For larger #'s, you may want to find the prime factorization instead. Use the smallest exponent on like terms and multiply ~~them together.~~ the factors together

Examples: Find the GCF

1. 28, 14
28: 1, 2, 4, 7, 14, 28
14: 1, 2, 7, 14
(14)

2. 20, 30
20: 1, 2, 4, 5, 10, 20
30: 1, 2, 3, 5, 6, 10, 15, 30
(10)

3. 180, 600 $= 2^2 \cdot 3 \cdot 5 =$ (60)

TI-84 → Math → Num → gcd
Put a , between the #'s

180: $2^2 \cdot 3^2 \cdot 5$
3 · 60
3 · 20
4 · 5
2 · 2

600: $2^3 \cdot 3 \cdot 5^2$
6 · 100
2 · 3 · 4 · 25
2 · 2 · 5 · 5

What about variables?

Use the smallest exponent on like ~~terms~~ Factors and multiply ~~them~~ the factors together!

Use variables they have in common and smallest exp.

Examples: Find the GCF

1. x^2, x^4 → x^2
2. $6x^2, 9x^4, -12x^5$ → $3x^2$
3. a^5b^4, a^2b^3c → a^2b^3

Finding the Least Common Multiple (LCM)

Steps:

1. List ~~all factors~~ several multiples of each number
2. Find the greatest one they have in common

*For larger #'s, you may want to find the prime factorization instead. Multiply the factors, using each common prime factor only once – if a ~~number~~ prime factor occurs more than once, use the one with the larger exponent)

TI-84 → MATH → NUM → LCM
* put a , between the #'s

Examples: Find the LCM

1) 20, 15 (60)
20: 20, 40, 60, 80 . . .
15: 15, 30, 45, 60, 75 . . .

2) 32, 4 (32)
4: 4, 8, 12, 16, 20, 24, 28, 32 . . .
32: 32

3) 18, 27 (54)
18: 18, 36, 54, 72
27: 27, 54, 81

What about variables?

Multiply the factors, using each common prime factor only once – if a ~~number~~ prime factor occurs more than once, use the one with the larger exponent)

Use all variables & biggest exponents

Examples: Find the LCM

1) $12x^2y^3$, $16xy^2$ $48x^2y^3$

2) $6xy^3z^4$, $8xz^2$ $24xy^3z^4$

3) $2x^2$, $3y$, $4xz^2$ $12x^2yz^2$