3.1 Factors and Multiples of Whole Numbers [GCF] (Day 1)

Composite Numbers:

A number that is not prime because it can be divided by other numbers than 1 and itself.

Ex.

4,6,8,9,10,_____,_____,_____,_____,_____,_____,_____,_____,_____,_____,_____,_____

Prime Numbers:

A number that is both greater than one and that is only divisible by 1 and itself. The following numbers are a list of prime number from 1 – 40

Ex.

2, 3, 5, 7, 11, _____, _____,_____,_____,_____,_____,____

Are 0 and 1 prime numbers?

Prime Factorization of a number is the number written as a product of its prime factors.

REVIEW DIVISIBILTY RULES (SEE CARD)

a) Is 3 a factor of 732? **b) Is 4 a factor of 712?** **c) Is 6 a factor of 558?** **d) Is 8 a factor of 1064?**

Example 1: Write the prime factorization of a number (Use a factor tree)

a) 12 b) 50 c) 3300

Greatest Common Factor: the greatest common factor (the biggest number you can divide all numbers by) that 2 or more numbers have in common.

Concept #1: Determine the greatest common factor of whole numbers using prime factorization **(NC)**

Example 2: Determine the greatest common factor of:

a) 24 and 36

b) 245, 280 and 385

Concept #4: Solve problems that involve prime factors, greatest common factors, least common multiples, square roots or cube roots **(NC)**

Example 3: Two ropes are 48 m and 32 m long. Each rope is to be cut into equal pieces and all pieces must have the same length that is a whole number of metres. What is the greatest possible length of each piece?

3.1 Day 1 Assignment: Pg 140 # 3ace, 4aef, 5ade, 6ace, 7, 8ace,9ad, 13 (Complete all questions with NO CALCULATOR, use divisibility rules and long division) (Note: Please label HW Assignments as follows:

Date 3.1 Factors and Multiples of Whole Numbers (GCF) Day 1 Assignment [First and last name]

[3.1 Day 1 Assignment ex. Pg 140 #3ace,4aef,5ade,6ace,7,8ace,9ad,13]

3.1 Factors and Multiples of Whole Numbers [LCM] (Day 2)

Concept #2: Determine the least common multiple of whole numbers using prime factorization **(NC)**

Least common multiple of two numbers is the smallest number (not zero) that is a multiple of both.

Example 1: Determine the least common multiple for:

a) 4 and 6

b) 28, 42, and 63

Method #1

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c) 12 and 15

c) 50 , 55 , 66

Method #2

Concept #4: : Solve problems that involve prime factors, greatest common factors, least common multiples, square roots or cube roots **(NC)**

Example 2: What is the side length of the smallest square that could be tiled with rectangles that measure 8" by 36"? Assume the rectangles cannot be cut. Sketch the square and rectangles.

Example 3: The Mayan used several different calendar systems; one system used 365 days, another system used 260 days. Suppose the first day of both calendars occurred on the same day. After how many days would they again occur on the same day? About how long is this in years? Assume 1 year has 365 days.

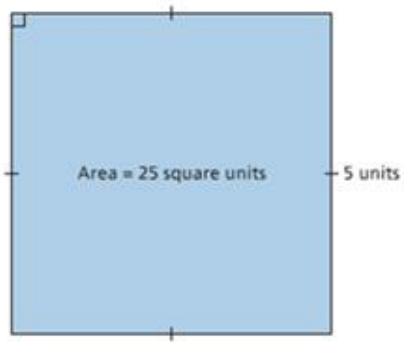
3.1 Day 2 Assignment Pg140 #8bd, 10bdf, 11ac, 12, 17, 19 (NO CALCULATOR)

Note: You will not use LCM to answer all questions. You need to be able to recognize when to answer the question using LCM or GCF.

3.2 – Perfect Squares, Perfect Cubes, and Their Roots

Concept #3 : Determine and explain if a whole number is a perfect square or perfect cube and determine its square root or Cube root **(NC)**

Any whole number that can be represented as the area of a square with a whole number side length is a perfect square.
The side length of the square is the square root of the area of the square.



We write: $\sqrt{25} = 5$

25 is a perfect square and
5 is its square root.

Perfect Square a number that can be expressed as a product of two equal integers **or** a number that is the area of a square such that the side length is a whole number.

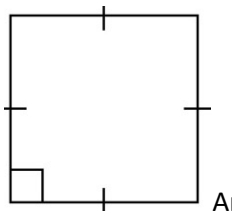
Examples:

Principle Square Root the positive integer of the square root taken. (A.k.a positive square root)

For example, the principal square root of 9 is 3, although *both* -3 and 3 are square roots of 9.

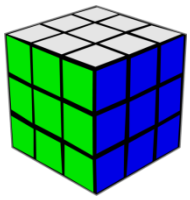
Example 1: Determine the square root of 576

Example 2: Determine the side length of the square using prime factorization.



Area = $225m^2$

Perfect Cube a number that can be expressed as a product of three equal integers or the volume of a cube such that the side length is a whole number



Example :

Example 3: Determine the cube root of 1728 using prime factorization

Example 4: A cube has volume $5832in^3$. What is the surface area of the cube?

Concept #4: Solve problems that involve prime factors, greatest common factors, least common multiples, square roots or cube roots **(NC)**

Example 5: Use prime factorization to determine if 784 is a perfect square number, a perfect cube number, neither or both.

Example 4: Determine the side length of a cube with volume $125x^3y^6$

3.2 Assignment Pg 146 # 4c,5a,6bcdf, 7a,8a,9, 10(NO CALCULATOR) Extra : 13, 17 (Challenge yourself)