L1 Factors and Multiples

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Lesson 1 Factors and Multiples of Whole Numbers

Definitions:

Factor: a number that divides evenly into another number
ie. factors of 18 are 1, 2, 3, 6, 9, and 18

Multiples: the result of multiplying a number by a whole number (or by skip counting)
ie. some multiples of 6 are 6, 12, 18, 24…

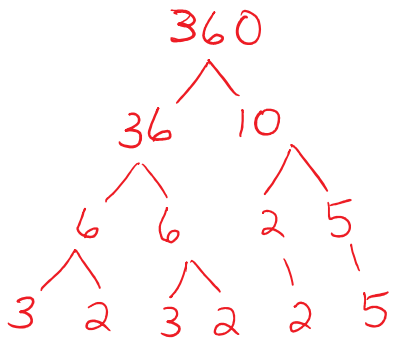
Greatest Common Factor (GCF): the largest factor two or more terms have in common
ie. the greatest common factor of 28 and 42 is 14

Prime Factorization: a natural number written as a product of its prime factors
ie. the prime factorization of 60 is $2^2 \cdot 3 \cdot 5$

Least Common Multiple (LCM): the smallest number that is divisible by two or more numbers
ie. the least common multiple of 5 and 6 is 30

Example 1: Prime Factorization

Determine the prime factorization of 360.



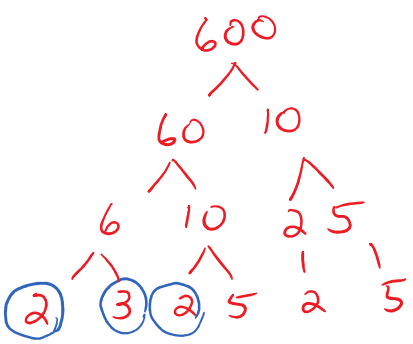
Prime factorization

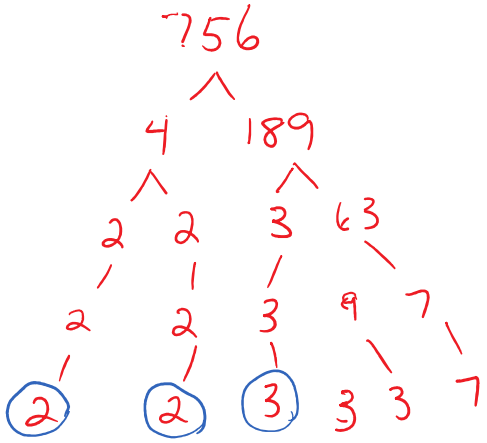
$2^3 \cdot 3^2 \cdot 5$

Try 192

Example 2: Greatest Common Factor (GCF)

Determine the GCF of 600 and 756





GCF $2 \cdot 2 \cdot 3$

12

Try 81 and 54

GCF $3 \cdot 3 \cdot 3$

27

Example 3: Determining the Least Common Multiple

Determine the least common multiple of 600 and 756.

600

$2 \cdot 2 \cdot 2 \cdot 3 \cdot 5 \cdot 5$

756

$2 \cdot 2 \cdot 3 \cdot 3 \cdot 3 \cdot 7$

LCM $2^3 \cdot 3^3 \cdot 5^2 \cdot 7$

37 800

65 and 104

G.F 13

Try 15 and 20

pg 70 9c,e,h 10d,j,n

Perfect Squares, Cubes, and their Roots

Perfect Square: a number that can be expressed as the product of two equal factors
ie. 1, 4, 9, 16, 25, 36, 49, 64…

Square Root: a number which multiplied by itself produces the original number

Perfect Cube: a number that can be expressed as the product of three equal factors
ie. 1, 8, 27, 64, 125, 216…

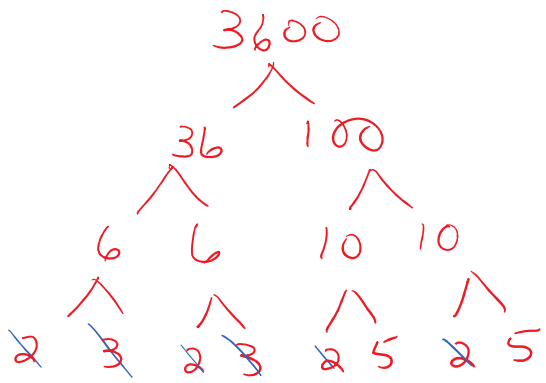
Cube Root: a number which multiplied by itself three times produces the original number

Example 1: Square Roots

Determine the square root of 3600.

$4 = 2 \cdot 2$

$25 = 5 \cdot 5$



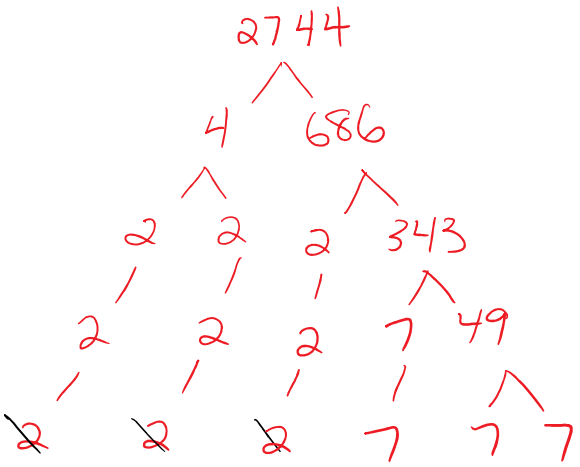
$(2 \cdot 3 \cdot 2 \cdot 5)(2 \cdot 3 \cdot 2 \cdot 5)$

$60 \cdot 60$

$\therefore \sqrt{3600} = 60$

Example 2: Determining the Cube Root of a Whole Number

Determine the cube root of 2744.



$(2 \cdot 7)(2 \cdot 7)(2 \cdot 7)$

$14 \cdot 14 \cdot 14$

$\therefore \sqrt[3]{2744} = 14$

pg 79
3g, 4f, j

Try
pg 70
7a, c