FMP10 Name: _____
Date: _____

Unit 2: Exponents & Roots
2.1 – Factor Trees, GCF, & LCM

Prime Numbers: Numbers with only two distinct factors of 1 and itself.

Ex. 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, ...

↑ only even prime!

Composite Numbers: Numbers with more than two factors.

Ex. 4, 6, 8, 9, 10, 12, 14, 15, 16, ...

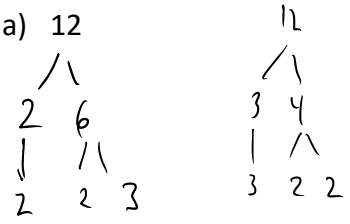
Prime Factorization: Expressing a composite number as a product of prime factors.

Ex. $10 = 2 \cdot 5$ $8 = 2 \cdot 2 \cdot 2$

A **factor tree** is useful to prime factor a number.

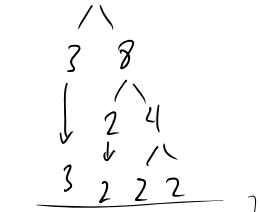
Ex. Use a factor tree to find the prime factorization of each given number:

a) 12



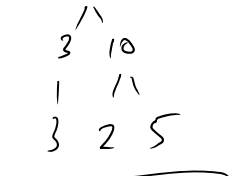
$12 = 2 \cdot 2 \cdot 3$

b) 24



$24 = 2 \cdot 2 \cdot 2 \cdot 3$

c) 30



$30 = 2 \cdot 3 \cdot 5$

Greatest Common Factor (GCF): The largest common factor among a group of two or more numbers.

Ex. Use prime factorization to identify the GCF in each group of numbers:

a) 12 and 24

$12 = 2 \cdot 2 \cdot 3$

$24 = 2 \cdot 2 \cdot 2 \cdot 3$

GCF = multiply the common factors together

$= 2 \cdot 2 \cdot 3$

GCF = 12

b) 24 and 30

$24 = 2 \cdot 2 \cdot 2 \cdot 3$

$30 = 2 \cdot 3 \cdot 5$

GCF = $2 \cdot 3$

GCF = 6

c) 12, 24, and 30

$12 = 2 \cdot 2 \cdot 3$

$24 = 2 \cdot 2 \cdot 2 \cdot 3$

$30 = 2 \cdot 3 \cdot 5$

GCF = $2 \cdot 3$

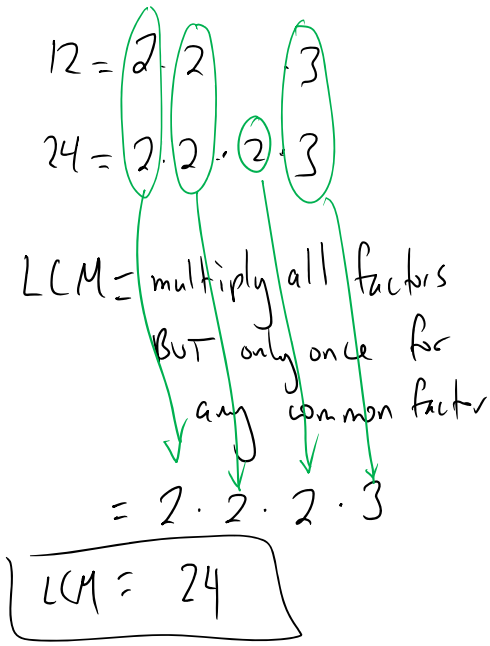
GCF = 6

Ex. Multiples of 5: 5, 10, 15, 20, 25...

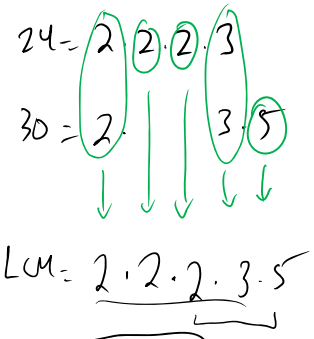
Least Common Multiple (LCM): The smallest common multiple among a group of two or more numbers.

Ex. Use prime factorization to identify the LCM in each group of numbers:

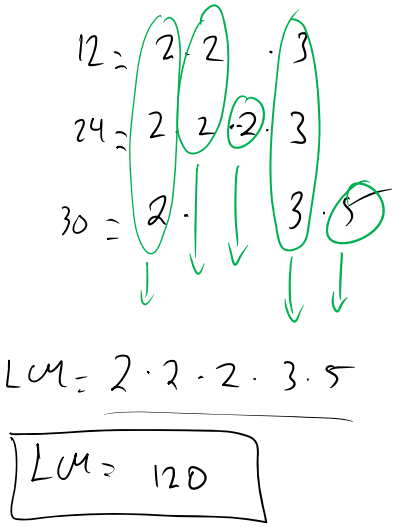
a) 12 and 24



b) 24 and 30



c) 12, 24, and 30



Practice: WS. 3.1 1 odds