

GREATEST COMMON FACTOR

Greatest Common Factor or GCF of two or more numbers is the largest number that is a factor of the given set or group of numbers. It is the largest whole number that will divide evenly into the set or group of numbers.

Example: Find the GCF of 16 and 36

Solution: First, find all of the factors of 16 and 36.

Factors of 16: (1, 2, 4, 8, 16)

Factors of 36: (1, 2, 3, 4, 6, 9, 12, 18, 36)

The common factors shared by 16 and 36 are: 1, 2, and 4

Since 4 has the largest value of the common factors it is the greatest common factor. So..... our sentence is:

The greatest common factor (GCF) of 16 and 36 is 4.

****Here is a fun way to find GCF of two numbers.****

GCF: Greatest Common Factor

The GCF of 12 and 20 is 4

12			
	1	2	3
	12	6	4

20			
	1	2	4
	20	10	5

Least - smallest, lowest

Common - same, shared

Multiple - a value $\times 1, \times 2, \times 3, \dots$

The Least Common Multiple or LCM of a set or group of numbers is the smallest number that is a multiple of all of the numbers of the given set or group.

Example: Find the LCM of 8 and 12

Solution: Listing is one method for finding LCM;

Multiples of 8: 8, 16, 24, 32, 40, 48, 56, 64, 72, ...

Multiples of 12: 12, 24, 36, 48, 60, 72, ...

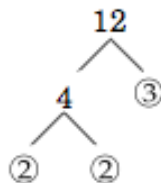
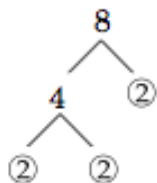
The first few multiples shared by 8 & 12 are 24, 48 and 72.

The least of these common multiples is 24. So... Our sentence is...

The least common multiple (LCM) of 8 and 12 is 24.

****Another method is by using factor trees and prime factorization.****

① Find the prime factors of 8 and 12:



② Now list the prime factors, one below the other, but if a factor is not "matched" with the same number above it, then place it in a separate shaded column <shading is for clarity, don't actually try to do shading yourself>.

For 8:	2	•	2	•	2	
For 12:	2	•	2	•		3

③ Now, draw "down arrows" through each shaded column. Write the number that is "represented" by that column:

For 8:	2	•	2	•	2		
For 12:	2	•	2	•		3	
	↓		↓		↓	↓	
	2	•	2	•	2	•	3

④ Multiply this together to get the LCM:

$$2 \times 2 \times 2 \times 3 = 24$$