

LCM and GCF

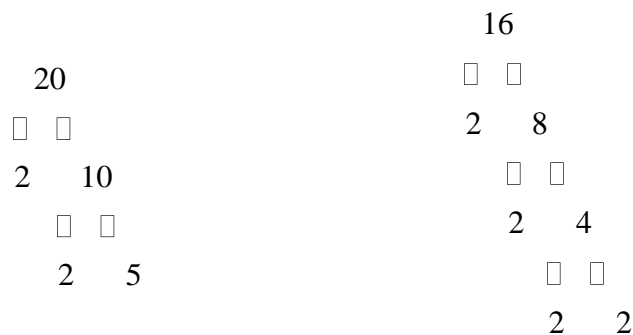
The greatest common factor or GCF of two numbers is the largest common factor of both numbers. You can use prime factors to find the GCF of two numbers.

What is the GCF of 20 and 16?

STEP 1: Use factor trees to find the prime factors of the numbers.

$$20 = 2 \times 2 \times 5$$

$$16 = 2 \times 2 \times 2 \times 2$$



STEP 2: Write the prime factors that are in both factor trees.

2 and 2

STEP 3: Multiply the common factors

$$2 \times 2 = 4$$

$$GCF(16, 20) = 2^2 = 4$$

The Least Common Factor of two numbers is the least multiple that is common for two numbers

To find the least common multiple, or LCM of two numbers, you can list the multiples of each number. The smallest number in both lists is the LCM.

Find the LCM for 6 and 12:

6 → 6, 12, 18, **24**, 30, ...

12 → 12, **24**, 36, ...

12 and 24 are common multiples but 12 is the least

$$LCM(6,12) = 12$$

Examples:

A- Find the GCF

1) 32, 36

$$\underline{32 = 2 \times 2 \times 2 \times 2 \times 2}$$

$$\underline{36 = 2 \times 2 \times 3 \times 3}$$

$$GCF(32,36) = 2^2 = 4$$

2) 60, 90

$$\underline{60 = 2 \times 2 \times 3 \times 5}$$

$$\underline{90 = 2 \times 3 \times 3 \times 5}$$

$$GCF(60,90) = 2 \times 3 \times 5 = 30$$

3) 42, 56

$$\underline{42 = 2 \times 3 \times 7}$$

$$\underline{56 = 2 \times 2 \times 2 \times 7}$$

$$GCF(42,56) = 2 \times 7 = 14$$

B- Find the LCM

4) 7, 3

7: 7, 14, 21, 28, 35, ...

3: 3, 6, 9, 12, 15, 18, 21, 24, ...

$$LCM(3,7) = 21$$

5) 4, 5

4: 4, 8, 12, 16, 20, 24, 28, 32, ...

5: 5, 10, 15, 20, 25, 30, ...

$$LCM(4,5) = 20$$