

GCF and LCM

GCF = greatest common factor; the largest number that divides evenly into two (or more) numbers

The factors of 12 are: 1, 2, 3, 4, 6, 12

The factors of 18 are: 1, 2, 3, 6, 9, 18

The common factors of 12 and 18 are: 1, 2, 3, 6

The GCF of 12 and 18 is 6.

LCM = least common multiple; the smallest number that is a multiple of two (or more) numbers

The multiples of 12 are: 12, 24, 36, 48, 60, 72.....

The multiples of 18 are: 18, 36, 54, 72, 90, 108.....

The common multiples of 12 and 18 are: 36, 72.....

The least common multiple of 12 and 18 is 36.

prime factor = a prime number that divides evenly into another number

prime factorization = the process of expressing a number as a multiple of its prime factors only

the prime factorization of 12 is: $2 \cdot 2 \cdot 3 = 2^2 \cdot 3$

the prime factorization of 18 is: $2 \cdot 3 \cdot 3 = 2 \cdot 3^2$

The **GCF** can be determined by listing the prime factors of two (or more) numbers, noting the **lowest** order occurrence of each **COMMON** factor, and multiplying those numbers.

12 & 18: 2, 2², 3, 3² → 2, 3 → 2 * 3 = 6

The **LCM** can be determined by listing the prime factors of two (or more) numbers, noting the **highest** order occurrence of **ALL** factors (including those that are a factor of only one of the numbers), and multiplying those numbers.

12 & 18: 2, 2², 3, 3² → 2² * 3² = 4 * 9 = 36

The LCM can also be found by multiplying the two numbers and dividing by the GCF:

$(12 \cdot 18) / 6 = 36$

and similarly, the GCF is the product of the two numbers divided by the LCM:

$(12 \cdot 18) / 36 = 6$

Which can be summarized as: **A * B = LCM * GCF** for any two numbers A and B

Rules of Divisibility

2: the number ends in an even number (includes 0)

3: the number's digits add up to a number divisible by 3

4: the last two digits of the number are divisible by 4

5: the number ends in 0 or 5

6: the number is divisible by both 2 and 3

7: remove the digit in the ones column from the number, double it and subtract from the truncated number, repeat if necessary to determine if the result is divisible by 7

8: the last three digits of the number are divisible by 8

9: the number's digits add up to a number divisible by 9

Practice Questions from khanacademy.org

Emily just bought 1 package of 12 notebooks. She also bought 1 package of 8 binders. She wants to use all of the notebooks and binders to create identical sets of office supplies for her friends.

What is the greatest number of identical sets Emily can make using all the supplies?

At Nadia's bakery, Nadia bakes one batch of 40 chocolate chip cookies and one batch of 45 oatmeal cookies each day. Nadia sells all her cookies the same day in gift baskets.

To keep the price the same, Nadia wants to make sure each gift basket is identical.

What is the greatest number of gift baskets Nadia can sell each day?

Ashley and Christopher are in different chemistry classes at Almond. Ashley's teacher always gives quizzes with 30 questions on them while Christopher's teacher gives more frequent quizzes with only 21 questions.

Christopher's teacher also assigns 9 projects per year.

Even though the two classes have to take a different number of quizzes, their teachers have told them that both classes will get the same total number of quiz questions each year.

Next week, Jessica is having a party and she's planning to play her 25 favorite songs. She also wants to get some hot dogs for the party. When she goes to the store, she finds that hot dogs come in packages of 20 and buns come in packages of 25.

If Jessica wants to have the same number of hot dogs and buns, what is the minimum number of hot dogs she will have to buy?