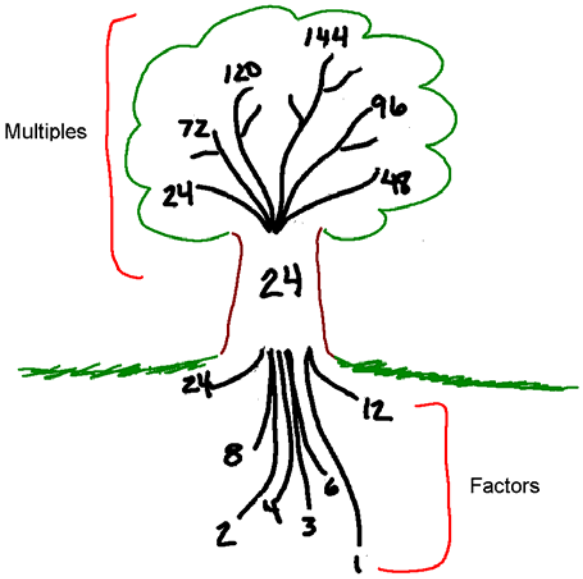
Lowest Common Multiple / Greatest Common Factor

Pick a number, any number: How about 24?

Multiples of 24 – these are numbers you get when you **multiply** by 24

1 * 24 = 24
2 * 24 = 48
3 * 24 = 72, and so on.

These can go on <u>forever</u>.

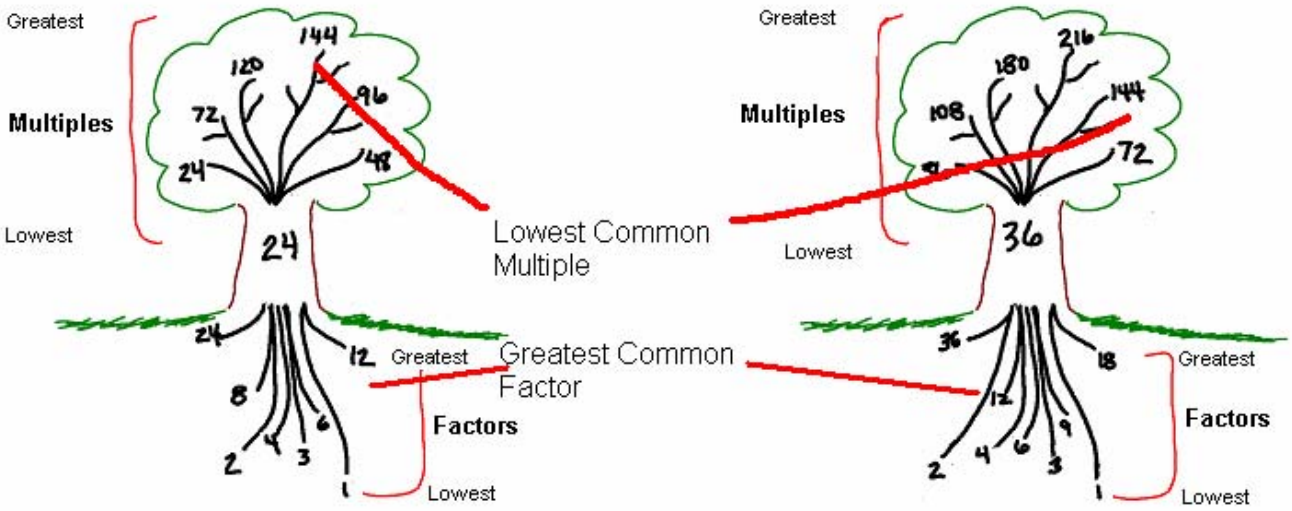


Factors of 24 – these are numbers that you can **divide (factor)** into 24.

24 / 1 = 24
24 / 2 = 12
24 / 3 = 8, and so on.

If you stay with whole numbers, these are limited.

Common – this means two numbers, like 24 and 36, have certain things **in common,** in <u>both</u> of them.
Lowest / Least – this means the smallest
Greatest – this means the largest or biggest



So the **Lowest Common Multiple** of **24** <u>**and**</u> **36** is **144**
(smallest) (in both) (multiplied by them)

& the **Greatest Common Factor** of **24** <u>**and**</u> **36** is **12**
(biggest) (in both) (divided into)

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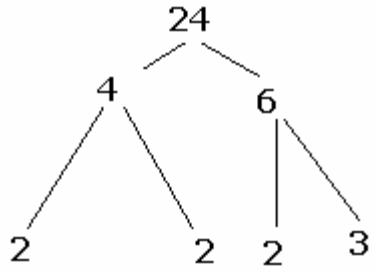
Another way to do this is by using **Prime Factoring**

Pick a number, any number: How about 24?

Prime – numbers that cannot be divided (factored) any further (only by 1)

Factoring – dividing



So the **Prime Factors** of **24** are $2 * 2 * 2 * 3$

We can also write them exponentially

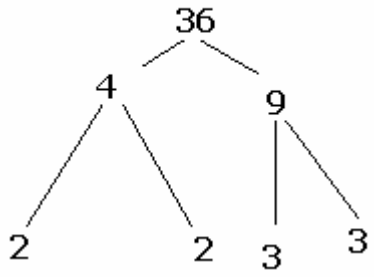
Exponentially – with exponents/powers $2^3 * 3$

Now we look at each base

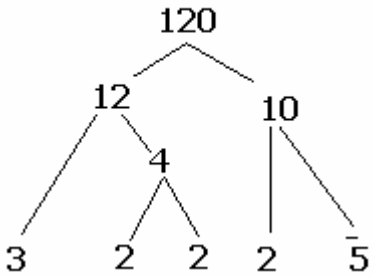
Base – the number (or variable) just in front of the exponent. It's the one being raised to a power.

So the bases in **24** are **2** and **3**; notice that **2** has the exponent **3**

Let's look at 36 and 120 this way



$2 * 2 * 3 * 3$



$2 * 2 * 2 * 3 * 5$

Or **exponentially:** $2^2 * 3^2$ $2^3 * 3^1 * 5^1$

For the Lowest Common Multiple: (take the "most" – ironic, isn't it?)

Take **every base** (**2**, **3**, and **5**) with its **largest exponent**: $2^3 * 3^2 * 5^1 = 360$

For the Greatest Common Factor: (take the "least")

Take **only shared bases** (**2** and **3**) with their **smallest exponents**: $2^2 * 3^1 = 12$

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Lowest Common Multiple and Greatest Common Factor
Practice Page

	Lowest Common Multiple	Greatest Common Factor
1.	**18 and 32**	**18 and 32**
2.	**16 and 24**	**16 and 24**
3.	**9 and 52**	**9 and 52**

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