

Calculate Highest Common Factors(HCFs) & Least Common Multiples(LCMs) – NA1

What are the **multiples** of 5?

Hey Look...
The multiples are in the five times table

$$\begin{aligned} 1 \times 5 &= 5 \\ 2 \times 5 &= 10 \\ 3 \times 5 &= 15 \\ 4 \times 5 &= 20 \end{aligned}$$

Don't forget...
the number itself is a multiple.

So, 5, 10, 15, 20, ... etc are multiples of 5

What are the **factors** of 90?

Each of these is a pair of factors.

$$\begin{aligned} 1 \times 90 &= 90 \\ 2 \times 45 &= 90 \\ 3 \times 30 &= 90 \\ 5 \times 18 &= 90 \\ 6 \times 15 &= 90 \\ 9 \times 10 &= 90 \end{aligned}$$

There are 6 pairs of factors, hence 12 factors.

Don't forget...
1 and the number itself are also factors.

So, 1, 2, 3, 5, 6, 9, 10, 15, 18, 30, 45, 90 are factors of 90

Lowest Common Multiples

Example

Calculate the Lowest Common Multiple of 45 and 60.

Solution

Multiples of 45: 45, 90, 135, 180, 225, ...

Multiples of 60: 60, 120, 180, 240, ...

Strategy

List the multiples of the two numbers & ask 'what is the smallest number common to both lists?'
This is the **LCM**.

It's 180

So 180 is the LCM of 45 and 60

Your Turn!!

a) Calculate the Lowest Common Multiple of 8 and 12.

Definition

The **Lowest Common Multiple** of 2 or more numbers is the lowest number that can **be divided by** all of these numbers.

Highest Common Factors

Example

Calculate the Highest Common Factor of 45 and 60.

Solution

Factors of 45: 1, 3, 5, 9, 15, 45.

Factors of 60: 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60.

Strategy

List the factors of the two numbers & ask 'what is the largest number common to both lists?'
This is the **HCF**.

It's 15

So 15 is the HCF of 45 and 60

Your Turn!!

b) Calculate the Highest Common Factor of 8 and 12.

Definition

The **Highest Common Factor** of 2 or more numbers is the highest number that can **divide into** all of these numbers.

Observation

180 is the **Lowest Common Multiple** of 45 and 60.

15 is the **Highest Common Factor** of 45 and 60.

The **Lowest Common Multiple** is a '**BIG**' number

The **Highest Common Factor** is a '**SMALL**' number

RAPID 'ACID' TEST – Blank out the page above before answering these!

- Calculate the **LCM** of 12 and 20.
- Calculate the **HCF** of 12 and 20.