

**Multiples and factors**

- Use prime factorisation of numbers to find LCM and HCF

Remember to watch the video!



# Recap!!!! Can you remember?

### What is a multiple?

A **multiple** of a number is the result of multiplying that number by an integer (whole number) - just like times tables!

<b>Some multiples of 2</b> 2, 10, 8 20, 4	<b>Some multiples of 3</b> 3, 15, 30 60, 9	<b>Some multiples of 5</b> 5, 25, 50 20, 55
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If one number is a multiple of another, it will divide exactly with no remainder.

$12 \div 2 = 6$  so 12 is a multiple of 2. (2, 4, 6, 8, 10, 12)

$15 \div 3 = 5$  so 15 is a multiple of 3. (3, 6, 9, 12, 15)

**Top Tip**  
Use division to find out if one number is a multiple of another.

You can also use divisibility tests or rules for large numbers.

### What is a factor?

A **factor** of a number is any amount that divides into that number exactly, leaving no remainder.

e.g. 2 is a factor of 12, because 2 goes into 12 six times ( $2 \times 6 = 12$ ). This means that 6 is also a factor of 12.

Here are all the factors of 12:

$1 \times 12 = 12$   
 $2 \times 6 = 12$   
 $3 \times 4 = 12$

It is usual to write the factors of a number in an ordered list, like this:

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

**Top Tip**  
Learn your times tables thoroughly to easily find factors.

# LEAST COMMON MULTIPLE LCM

## Definition:

• the smallest number that is the multiple of two or more other numbers

## Clue:

3 3, 6, 9, 12, 15, 18  
4 4, 8, 12, 16, 20, 24,  
6 6, 12, 18, 24, 30, 36,

## Highest Common Factor

**Definition:** The **Highest Common Factor (HCF)** of two or more given numbers is the **highest (or greatest) of their common factors**. It is also known as **Greatest Common Divisor (GCD)**.

**Example:** Find the Highest Common Factor(HCF) of 12 and 16.

**Factors of 12:** 1, 2, 3, 4, 6, 12

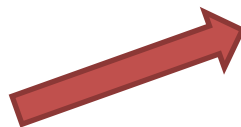
**Factors of 16:** 1, 2, 4, 8, 16

The common factors of 12 and 16 are 1, 2 and 4

**Highest Common Factor(HCF)** will be the highest of the given common factors – i.e. 4

Therefore HCF of 12 and 16 is 4.

Also known as



## GREATEST COMMON FACTOR GCF

### Definition:

• the biggest number that will divide two or more other numbers exactly.

### Clue:

24 1, 2, 3, 4, 6, 8, 12, 24  
36 1, 2, 3, 4, 6, 9, 12, 18, 36.  
1, 2, 3, 4, 6, 12  
∴ 1, 2, 3, 4, 6, 12  
GCF = 12

## EXAMPLES:

find the highest number that is a factor of 60 and 72 (hcf)

$$\begin{aligned} 60 &= 2 \times 2 \times 3 \times 5 \\ 72 &= 2 \times 2 \times 2 \times 3 \times 3 \end{aligned}$$

$$\text{hcf} = 2 \times 2 \times 3$$

$$\text{hcf} = 12$$

find the lowest number that is a multiple of 60 and 72 (lcm)

$$\begin{aligned} 60 &= 2 \times 2 \times 3 \times 5 \\ 72 &= 2 \times 2 \times 2 \times 3 \times 3 \end{aligned}$$

$$\text{lcm} = 2 \times 2 \times 2 \times 3 \times 3 \times 5$$

$$\text{lcm} = 360$$

Do Exercise 1.6 p10 no 1-11