

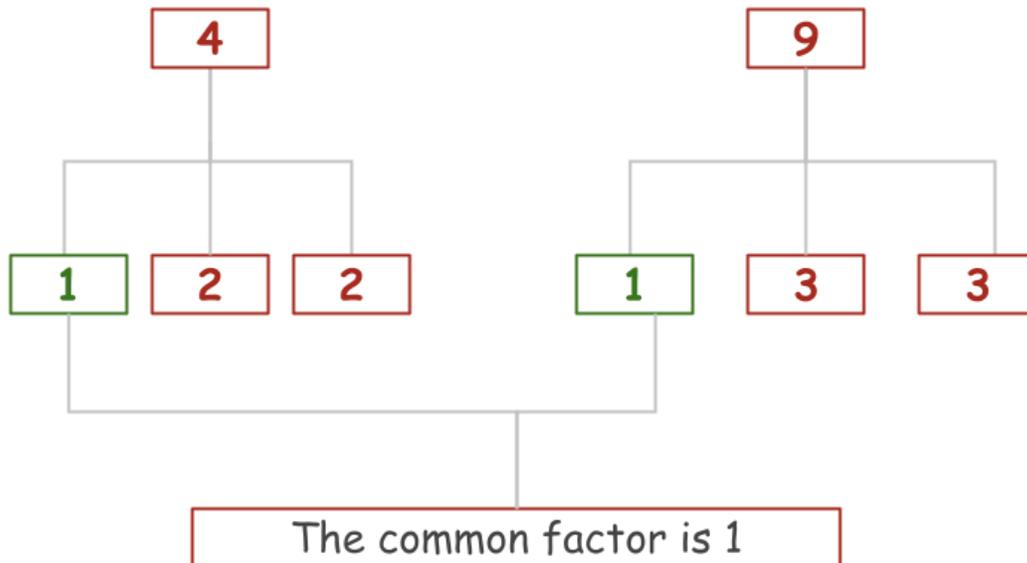
Coprime Numbers Definition

Coprime Numbers Definition- Pairs of numbers whose common factor is one are called co-prime or pairs of numbers whose HCF is only 1. Ex- There is only 1 common factor between 4 and 7.

Properties of co-prime numbers

- There is only 1 common factor between coprime numbers

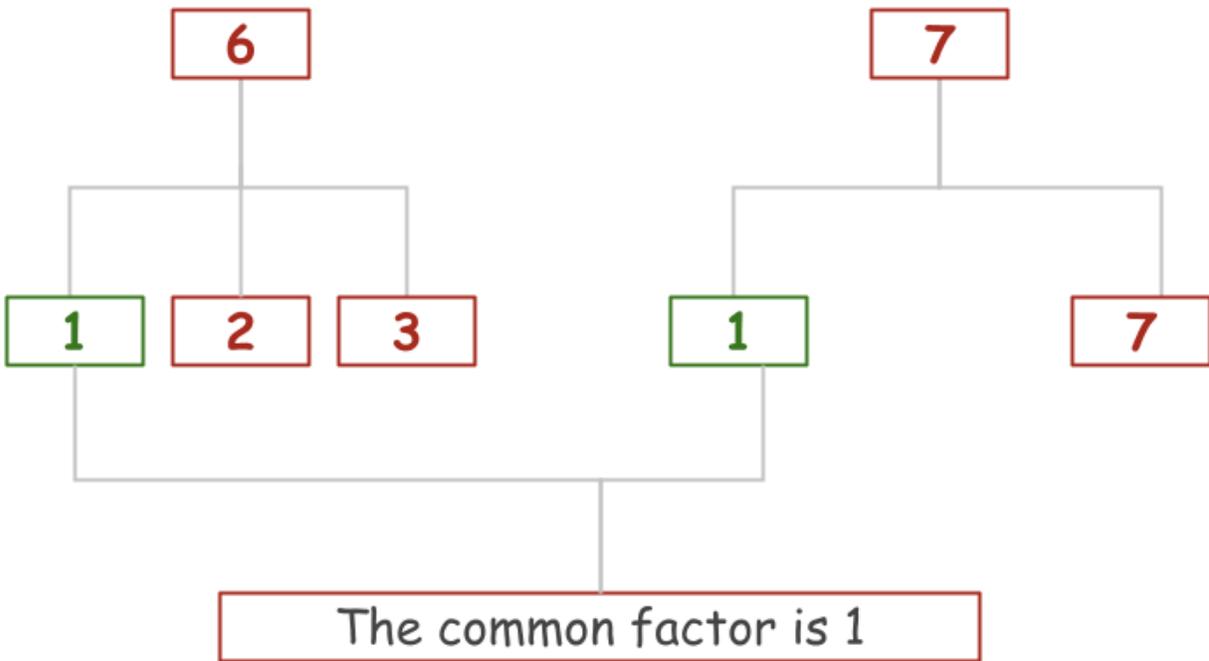
Ex – 4 and 9 are coprime numbers. Factor of 4 = $1 \times 2 \times 2$ and factor of 9 = $1 \times 3 \times 3$



4 and 9 are prime number

As shown in the picture. The common factor of 4 and 9 is found to be number 1.

Ex– 6 and 7 are coprime numbers. The factor of 6 = $1 \times 2 \times 3$ and the factor of 7 = 1×7



6 and 7 are coprime number
 The common factor of 6 and 7 is 1.

- HCF of two coprime numbers is always 1.

Ex- 13 and 8 are prime. 13, 8 factor of 13 = 1×13 , factor of 8 = $2 \times 2 \times 2$.

The factor of 8 = $1 \times 2 \times 2$
 The factor of 13 = 1×13

here is 1 HCF between 13, 8

Ex- Both 15 and 19 are coprime numbers. How?, The factor of 15 = $1 \times 3 \times 5$ and the factor of 19 = 1×19

$$\begin{aligned} \text{The factor of } 15 &= 1 \times 3 \times 5 \\ \text{The factor of } 19 &= 1 \times 19 \end{aligned}$$

15 and 19 are coprime

here is 1 HCF between 15, 19

- Pairs of even numbers can't be coprime because their common factor is 2.

Ex– Number 4 and 8 are even numbers let's check these are coprime numbers. The factor of 4 = $1 \times 2 \times 2$, the factor of 8 = $1 \times 2 \times 2 \times 2$. There are two common numbers between 4 to 8. The HCF of numbers 4 and 8 are 2 so these are not coprime numbers.

$$\begin{aligned} \text{The factor of } 4 &= 1 \times 2 \times 2 \\ \text{The factor of } 8 &= 1 \times 2 \times 2 \times 2 \end{aligned}$$

- Pairs of prime numbers are always coprime numbers.

$$\begin{aligned} \text{The factor of } 3 &= 1 \times 3 \\ \text{The factor of } 7 &= 1 \times 7 \end{aligned}$$

- All pairs of two consecutive numbers are co-prime numbers
- [Prime Number](#)
- [CoPrime Number 1 to 10](#)
- [Coprime Numbers 1 to 20](#)

How to find co-prime numbers?

Before finding the coprime number, keep two points in mind.

- If any one of the given numbers is prime number then those numbers will be coprime. Exceptions (2, even numbers) (3, numbers divisible by 3) (5, numbers divisible by 5) (numbers divisible by 7, 7) etc.
- If both the numbers in the given numbers are prime numbers then the numbers will be coprime numbers

Pairs of numbers that follow both the conditions will be coprime numbers. If both the condition is followed then division method can be checked by factorization method

How to find Coprime number by division method

The factor is found by the division of the number in the division method.

Are 80 and 72 both coprime numbers?

2	80
2	40
2	20
2	10
5	5
	1

The factor of 80 = $2 \times 2 \times 2 \times 2 \times 5$

2	72
2	36
2	18
3	9
3	3
	1

The factor of 72 = $2 \times 2 \times 2 \times 3 \times 3$

We get the factor of 80 = $2 \times 2 \times 2 \times 2 \times 5$ and the factor of 72 = $2 \times 2 \times 2 \times 3 \times 3$ by the division method. The common numbers in these are $2 \times 2 \times 2$ so these are not coprime numbers.

Is 18 and 23 coprime?



2	18
3	9
3	3
	1

The factor of 18 = $1 \times 2 \times 3 \times 3$

23	23
	1

The factor of 23 = 1×23

The common number 1 is obtained by doing the factorization of 8 and 23. So these numbers are coprime numbers.

Co-prime Numbers Examples

Is 18 and 35 a Coprime number?

Yes!

How?

factor of 18 = $2 \times 9 = 2 \times 3 \times 3$

factor of 35 = 5×7

There is 1 common (HCF) factor between 18 and 35 so 18 and 35 are coprime numbers.

Is 11 and 12 a Coprime number?

Yes!

How!

Factor of 11 = 11×1

factor of 12 = $2 \times 2 \times 3$

There is 1 common factor between 11 and 12 so these are coprime numbers

Are 2 and 4 Coprime numbers?

No!

How?

Factor of 2 = 2×1

Factor of 4 = 2×2

HCF of 2 and 4 is 2 so it is not a coprime number.

Is 17 and 68 a Coprime number?

No!

How?

Factor of 17 = 1×17

Factor of 68 = $1 \times 2 \times 2 \times 17$

The common factors of 17 and 68 are 1 and 17 so it is not a coprime number. To be coprime there must be 1 common

Is 12 and 15 Coprime numbers?

No!

How?

Factor of 12 = $2 \times 2 \times 3$

Factor of 15 = 3×5

The common factor of 12 and 15 is 3. so it is not coprime.