

# Coprime

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When two numbers have no common factors other than 1.

# **What is Composite Number?**

In math, composite numbers can be defined as the whole numbers that have more than two factors.

# What are Prime Numbers?

In math, prime numbers are whole numbers greater than 1, that have only two factors – 1 and the number itself.

Prime numbers are divisible only by the number 1 or itself.

For example, 2, 3, 5, 7 and 11 are the first few prime numbers.

Here's a list of all the prime numbers up to 100, marked in yellow.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

## Fun Facts

- 1 is neither a prime number nor a composite number.
- The only even prime number is 2.
- No prime number greater than 5 ends in a 5.

# ***Divisibility Rules***

*Note: Zero is divisible by **any number** (except by itself), so gets a "yes" to all these tests.*

**1** Any integer (not a fraction) is divisible by 1

**2** The last digit is even (0,2,4,6,8)

→ 128 **Yes**

→ 129 **No**

**3** The sum of the digits is divisible by 3

→ 381 ( $3+8+1=12$ , and  $12 \div 3 = 4$ ) **Yes**

→ 217 ( $2+1+7=10$ , and  $10 \div 3 = 3 \frac{1}{3}$ ) **No**

This rule can be repeated when needed:

→ 99996 ( $9+9+9+9+6 = 42$ , then  $4+2=6$ ) **Yes**

**4** The last 2 digits are divisible by 4

→ 1312 is ( $12 \div 4 = 3$ ) **Yes**

→ 7019 is not ( $19 \div 4 = 4 \frac{3}{4}$ ) **No**

A quick check (useful for small numbers) is to halve the number twice and the result is still a whole number.

→  $12/2 = 6$ ,  $6/2 = 3$ , 3 is a whole number. **Yes**

→  $30/2 = 15$ ,  $15/2 = 7.5$  which is not a whole number. **No**

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**5** The last digit is 0 or 5

→ 175 **Yes**

→ 809 **No**

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**6** Is even and is divisible by 3 (it passes both the 2 rule and 3 rule above)

→ 114 (it is even, and  $1+1+4=6$  and  $6 \div 3 = 2$ ) **Yes**

→ 308 (it is even, but  $3+0+8=11$  and  $11 \div 3 = 3 \frac{2}{3}$ ) **No**

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**8** The last three digits are divisible by 8

→ 109**816** ( $816 \div 8 = 102$ ) **Yes**

→ 216**302** ( $302 \div 8 = 37 \frac{3}{4}$ ) **No**

A quick check is to halve three times and the result is still a whole number:

→  $816/2 = 408$ ,  $408/2 = 204$ ,  
 $204/2 = 102$  **Yes**

→  $302/2 = 151$ ,  $151/2 = 75.5$   
**No**

**9** The sum of the digits is divisible by 9

(Note: This rule can be repeated when needed)

→ 1629 ( $1+6+2+9=18$ , and again,  $1+8=9$ ) **Yes**

→ 2013 ( $2+0+1+3=6$ ) **No**

**10** The number ends in 0

→ 22**0** **Yes**

→ 22**1** **No**

Divisibility rule for 11:

If in any number the sum of the numbers in the even positions = sum of the odd numbers in the odd positions, then the number is divisible by 11. Alternatively, the difference of the sum of the numbers in even positions and the sum of the numbers in the odd positions  $\equiv 11$ .

Example 1: 9317. Here  $9+1 = 10$  , same as  $3+7$ . Hence 9317 is divisible by 11.