

DIVISIBILITY

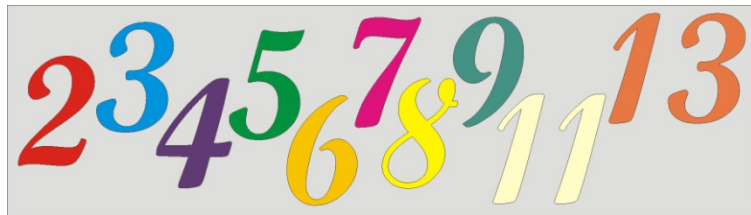
“Divisible By” means “If you divide one number by another, is the result a whole number?”

Example: 24 is divisible by 3, because $24 \div 3 = 8$ exactly

Example: 13 is not divisible by 3, because the result is not a whole number

DIVISIBILITY RULES

A divisibility rule is a method that can be used to determine whether a number is evenly divisible by other numbers. Divisibility rules are a shortcut for testing a number's factors without resorting to division calculations.



The rules transform a given number into a generally smaller number while preserving divisibility by the divisor of interest. Therefore, unless otherwise noted, the resulting number should be evaluated for divisibility by the same divisor.

Dividing by 2

All even numbers are divisible by 2. E.g., all numbers ending in 0,2,4,6 or 8.

Dividing by 3

Add up all the digits in the number.

Find out what the sum is. If the sum is divisible by 3, so is the number

For example: 12123 ($1+2+1+2+3=9$) 9 is divisible by 3, therefore 12123 is too!

Dividing by 4

Are the last two digits in your number divisible by 4?

If so, the number is too!

For example: 358912 ends in 12 which is divisible by 4, thus so is 358912.

Dividing by 5

Numbers ending in a 5 or a 0 are always divisible by 5.

Dividing by 6

If the Number is divisible by 2 and 3 it is divisible by 6 also.

Dividing by 7

1. Take the last digit in a number.
2. Double and subtract the last digit in your number from the rest of the digits.

3. Repeat the process for larger numbers.

Example: 357 (Double the 7 to get 14. Subtract 14 from 35 to get 21 which is divisible by 7 and we can now say that 357 is divisible by 7.

Dividing by 8

This one's not as easy, if the last 3 digits are divisible by 8, so is the entire number.

Example: 6008 - The last 3 digits are divisible by 8, therefore, so is 6008.

Dividing by 9

Almost the same rule and dividing by 3. Add up all the digits in the number.

Find out what the sum is. If the sum is divisible by 9, so is the number.

For example: 43785 ($4+3+7+8+5=27$) 27 is divisible by 9, therefore 43785 is too!

Dividing by 10

If the number ends in a 0, it is divisible by 10.

Dividing by 11

1. Sum of the odd numbered digits
2. Sum of the even numbered digits
3. The (sum of the odd numbered digits) - (sum of the even numbered digits) is divisible by 11.

Example: 23881913 $\rightarrow 2 + 8 + 1 + 1 = 12$; $3 + 8 + 9 + 3 = 23 \rightarrow 23 - 12 = 11 \rightarrow$

23881913 is divisible by 11