DIVISIBILITY TESTS

The following are some shortcuts for deciding whether a given integer is divisible by 2, 3, 4, 5, 6, 8, 9, or 10.

Divisibility by 2

An integer is divisible by 2 if its last digit is 0, 2, 4, 6, or 8.

Example

754 is divisible by 2, since its last digit is 4.

8267 is not divisible by 2, since its last digit is not one of 0, 2, 4, 6, or 8.

Divisibility by 3

An integer is divisible by 3 if the sum of its digits is divisible by 3.

Example

747 is divisible by 3, since, 7 + 4 + 7 = 18,

and 18 is divisible by 3.

2389 is not divisible by 3, since, 2 + 3 + 8 + 9 = 22, and 22 is not divisible by 3.

We can use this rule twice or more times in succession for large numbers. For example, to test 965787 for divisibility by 3, first add the digits:

9 + 6 + 5 + 7 + 8 + 7 = 42

If we are not sure about 42, add the digits again, 4 + 2 = 6. 6 is definitely divisible by 3. So, 965787 is also.

Divisibility by 4

An integer is divisible by 4 if the last two digits are divisible by 4.

Example

7508 is divisible by 4, since 8 is divisible by 4.

8437 is not divisible by 4, since 37 is not divisible by 4.

Divisibility by 5

An integer is divisible by 5 if the last digit is either 0 or 5.

Example

9375 is divisible by 5, since the last digit is 5.

8417 is not divisible by 5 , since the last digit is not a 0 or a 5.

Divisibility by 6

An integer is divisible by 6 if it is divisible by 2 and divisible by 3.

Example

966 is divisible by 6, since:

- It is divisible by 2 (the last digit is 6)
- It's divisible by 3 (9 + 6 + 6 = 21, which is divisible by 3).

268 is not divisible by 6, since:

- It is divisible by 2 (the last digit is 8)
- But it is not divisible by 3 (2 + 6 + 8 = 16, which is not divisible by 3).

Divisibility by 7

Take the last digit of the number. Double it and subtract it from the rest of the digits. 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.

Divisibility by 8

An integer is divisible by 8 if the last three digits are divisible by 8.

Example

56104 is divisible by 8, since 104 is divisible by 8.

29027 is not divisible by 4, since 27 is not divisible by 8.

Divisibility by 9

An integer is divisible by 9 if the sum of the digits is divisible by 9.

Example

76653 is divisible by 9, since, 7 + 6 + 6 + 5 + 3 = 27, and 27 is divisible by 9.

29027 is not divisible by 9, since, 2 + 9 + 0 + 2 + 7 = 20, and 20 is not divisible by 9.

Divisibility by 10

An integer is divisible by 10 if the last digit is 0

Example

46090 is divisible by 10 , since the last digit is 0.

29027 is not divisible by 10, since the last digit is not 0.