TEST OF DIVISIBILITY

Divisibility Rule of 2

If a number is even or a number whose last digit is an even number i.e. 2,4,6,8 including 0, it is always completely divisible by 2.

Example: 508 is an even number and is divisible by 2 but 509 is not an even number, hence it is not divisible by 2.

Divisibility Rules for 3

Divisibility rule for 3 states that a number is completely divisible by 3 if the sum of its digits is divisible by 3.

Consider a number, 308. To check whether 308 is divisible by 3 or not, take sum of the digits (i.e. 3+0+8= 11).

Similarly, 516 is divisible by 3 completely as the sum of its digits i.e. 5+1+6=12, is a multiple of 3.

Divisibility Rule of 4
If the last two digits of a number are divisible by 4, then that number is a multiple of 4 and is divisible by 4 completely.

Example: Take the number 2308. Consider the last two digits i.e. 08. As 08 is divisible by 4, the original number 2308 is also divisible by 4.

Divisibility Rule of 5

Numbers, which last with digits, 0 or 5 are always divisible by 5.

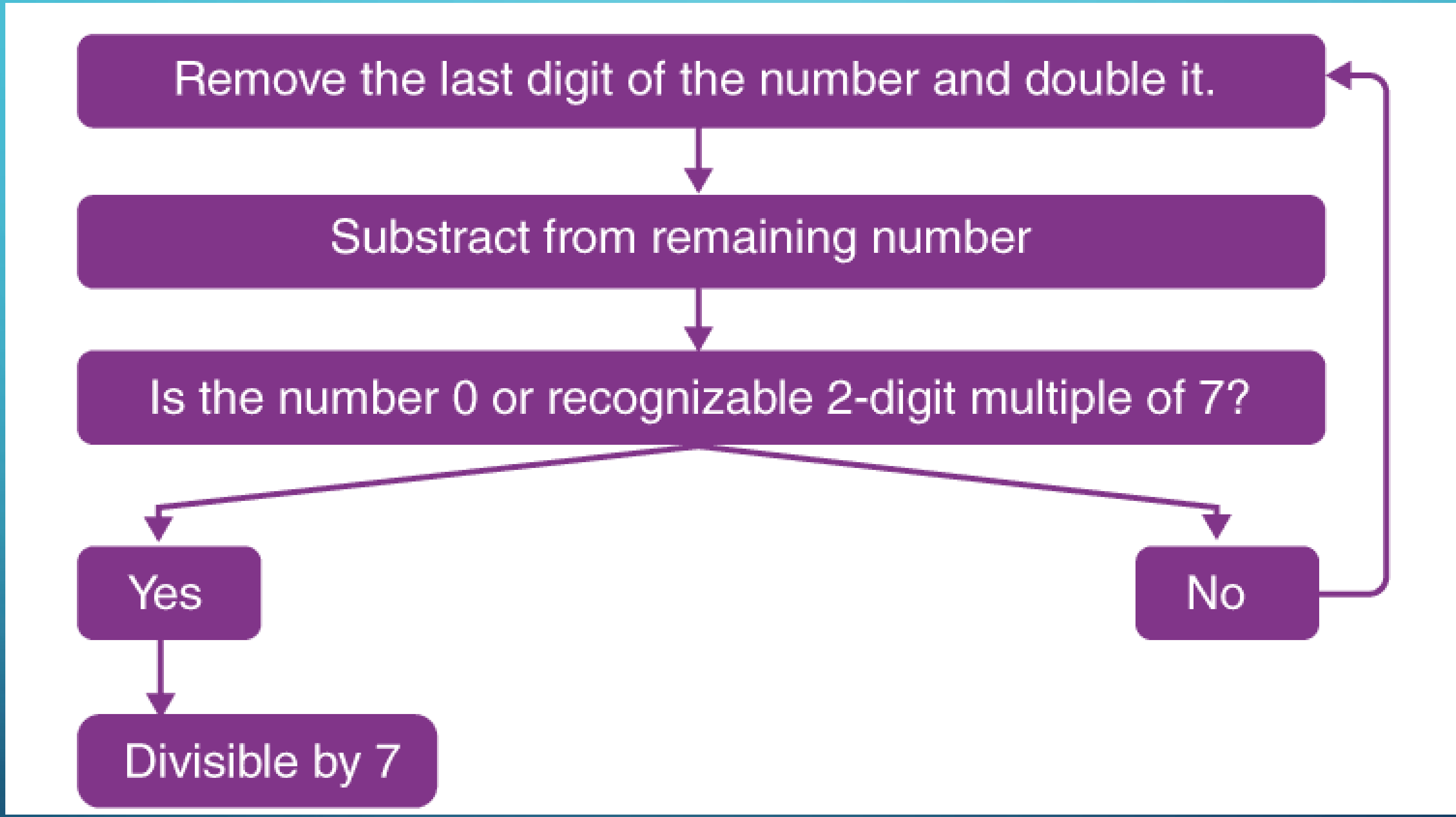
Example: 10, 10000, 10000005, 595, 396524850, etc.

Divisibility Rule of 6

Numbers which are divisible by both 2 and 3 are divisible by 6.

Example: 630, the number is divisible by 2 as the last digit is 0. The sum of digits is 6+3+0 = 9, which is also divisible by 3. Hence, 630 is divisible by 6.

Divisibility Rules for 7



Example: Is 1073 divisible by 7?

- From the rule stated remove 3 from the number and double it, which becomes 6.
- Remaining number becomes 107, so 107-6 = 101.
- Repeating the process one more time, we have 1 x 2 = 2.
- Remaining number 10 – 2 = 8.
- As 8 is not divisible by 7, hence the number 1073 is not divisible by 7.

Divisibility Rule of 8

If the last three digits of a number are divisible by 8, then the number is completely divisible by 8.

Example: Take number 24344. Consider the last two digits i.e. 344. As 344 is divisible by 8, the original number 24344 is also divisible by 8.

Divisibility Rule of 9

The rule for divisibility by 9 is similar to divisibility rule for 3. That is, if the sum of digits of the number is divisible by 9, then the number itself is divisible by 9.

Example: Consider 78532, as the sum of its digits (7+8+5+3+2) is 25, which is not divisible by 9, hence 78532 is not divisible by 9.

Divisibility Rule of 10

Divisibility rule for 10 states that any number whose last digit is 0, is divisible by 10.

Example: 10, 20, 30, 1000, 5000, 60000, etc.

Divisibility Rules for 11

If the difference of the sum of alternative digits of a number is divisible by 11, then that number is divisible by 11 completely.

i.e., Sum of digits in odd places – Sum of digits in even places = 0 or a multiple of 11

In order to check whether a number like 2143 is divisible by 11, below is the following procedure.

- Group the alternative digits i.e. digits which are in odd places together and digits in even places together. Here 24 and 13 are two groups.
- Take the sum of the digits of each group i.e. 2+4=6 and 1+3= 4
- Now find the difference of the sums; 6-4=2
- If the difference is divisible by 11, then the original number is also divisible by 11. Here 2 is the difference which is not divisible by 11.
- Therefore, 2143 is not divisible by 11.

Divisibility Rule of 12
If the number is divisible by both 3 and 4, then the number is divisible by 12 exactly.

Example: 5864
Sum of the digits = 5 + 8 + 6 + 4 = 23 (not a multiple of 3)
Last two digits = 64 (divisible by 4)
The given number 5864 is divisible by 4 but not by 3; hence, it is not divisible by 12.

Is 2848 divisible by 11?

Solution:
The given number is 2848.
To check whether the number 2848 is divisible by 11, follow the below steps:
Step 1: First, find the sum of alternative digits.
It means,
2 + 4 = 6
8 + 8 = 16
Step 2: Find the difference between 6 and 16.
The difference between 6 and 16 = 16 – 6 = 10.
Step 3: Check whether the difference value obtained in step 2 is divisible by 11 or not.
Here, the difference = 10, which is not divisible by 11.
Therefore, 2848 is not divisible by 11.

Is 99992 divisible by 8?

Solution:
Given number: 99992.
According to the divisibility rule of 8, a number is divisible by 8 if the last three digits of a number are divisible by 8.
In the number 99992, the last 3 digits are 992.
Now, we need to check whether 992 is divisible by 8.
When 992 is divisible by 8, we get the quotient as 124 and the remainder as 0.
So, 992 is divisible by 8.
Therefore, 99992 is divisible by 8.

What least value must be assigned to * so that the number 4567*234 is divisible by 9?

Sum of all digits = 4 + 5 + 6 + 7 + 2 + 3 + 4 = 31

Nearest Multiple of 9 = 36

Value assigned to * = 36 - 31 = 5

∴ Least value must be assigned to * is 5

Which digits should come in place of * and % if the number 62684*% is divisible by both 8 and 5 ?

The given number is divisible by 5, so 0 or 5 must come in place of %. But, a number ending with 5 is never divisible by 8. So, 0 will replace %. Now, the number formed by the last three digits is 4*0, which becomes divisible by 8, if * is replaced by 4. Hence, digits in place of * and % are 4 and 0 respectively.

What are the values of M and N respectively If M39048458N is divisible by both 8 and 11, where M and N are Single-digit integers?

M39048458N

This is both divisible by 11 and 8 so the last number should be 4 because last three digits must be divided by 8 and to find the first number use the divisibility rule of 11 and you get the number as 6. So M=6 and N=4