

2. TEST OF DIVISIBILITY

These test help us to know whether a given number however large it maybe is divisible by a certain division without going into the process of division.

1. Test of divisibility by "2": Any number whose last digit is 0, 2, 4, 6, or 8 is divisible by 2.

Ex: The numbers 72, 908, 1426 are divisible by 2.

2. Test of divisibility by "3": A number is divisible by '3' if the sum of it's digits divisible by 3.

Ex: 126, 147, 198....

3. Test of divisibility by "4": A number is divisible by 4 if the last two digits of a number divisible by 4.

Ex: 124, 184, 864, 1528.....

4. Test of divisibility by "5": If a number ends in '5' (or) '0' the number is divisible by 5.

Ex: 120, 180, 175, 225, 290, 350, 520, 1000, 1550, 1900....

5. Test of divisibility by "6": If a number is divisible by both 3 & 2 the number is also divisible by '6'.

Ex: 126, 198, 864, 1260....

6. Test of divisibility by "7": If a number is divisible by '7' if its unit digit is multiplied with 2 and sobtracted from the remaining number its result is divisible by '7' the number is divisible by '7'.

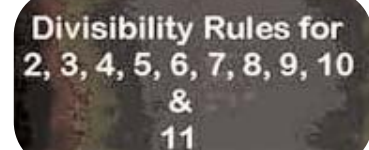
Ex: 1. Find 343 is divisible by '7' (or) not-

Ans: $343 = 34 - 2 \times 3 = 36 - 6 = \frac{28}{7} = 4$ So the number 343 is divisible by 7

2. Find 2961 is divisible by 7 (or) not-

Ans: $2961 = 296 - 2(1) = 294$

$294 = 29 - 2(4) = \frac{21}{7} = 3$ So, 2961 is divisible by 7



Divisibility Rules for
2, 3, 4, 5, 6, 7, 8, 9, 10
&
11

7. Test of divisibility of "8": If the last three digits of a number is divisible by '8' then the number is also divisible by '8'.

8. Test of divisibility by "9": If the sum of all the digits of a number is divisible by "9" the number is also divisible by '9'.

Ex: 387, 549, 657...

9. **Test of divisibility by "10"**: Any number which ends with zero it is divisible by '10'.

Ex: 30, 90, 150, 470, 890, 1000, 1500, 1860...

10. **Test of divisibility by "11"**: A number is divisible by 11, if the difference of the sum of its digits at odd places and the sum of its digits at even places is either "0" (or) a number divisible by '11'.

Ex: Show that 4832718 is divisible by 11 or not -

(sum of digits at odd places) - (sum of digits at even places)

$$\boxed{4} \text{ } \boxed{8} \text{ } \boxed{3} \text{ } \boxed{2} \text{ } \boxed{7} \text{ } \boxed{1} \text{ } \boxed{8}$$

$$= [8 + 7 + 3 + 4] - [8 + 2 + 1] = 22 - 11 = 11, \text{ which is divisible by 11.}$$

11. **Test of divisibility by "12"**: Any number which is divisible by both 3 & 4 it is also divisible by 12.

Ex: 240, 312, 612, 886.....

Problems on Test of divisibility:

1. What least value must be given to * so that the number 451*603 is exactly divisible by "9"?

- a) 8 b) 9 c) 2 d) 6

Ans: According rule

Sum of the digits must be divisible by "9". Sum of digits = [19 + *]

$$\frac{[19+0]}{9} \Rightarrow \text{least value of * is "8".}$$

2. What is the least value of "k" so that the number 6735k1 is divisible by "9".

Ans: $6 + 7 + 3 + 5 + k + 1 = (22 + k)$

The least number greater than "22" and divisible by "9" is 27.

$$\therefore 27 = 22 + k \Rightarrow k = 5$$

3. For what value of 'k' the number 7236k2 is divisible by "8".

- a) 3 b) 7 c) 3&7 d) 3(or)7

Ans: According rule.

The last three digits 6k2 is divisible by '8' if k is 3 or 7.

4. 5x2 is a three digit number with 'x' as a missing digit. If the number is divisible by '6' then the missing digit is-

- a) 3 b) 6 c) 7 d) 2

Ans: The given number must be divisible by 2 as well as 3.

$$\Rightarrow 5 + x + 2 = 7 + x = \text{must be divisible 3,}$$

$$\frac{7+2}{3} = x = 2$$