

Divisibility Tests

Divisibility tests are rules or methods used to determine whether one number is divisible by another without actually performing the division operation. These tests are particularly useful in mental math, checking arithmetic calculations, and identifying factors or multiples of numbers.

Divisibility Tests for Common Divisors:

1. Divisibility by 2:
 - A number is divisible by 2 if its last digit is even (0, 2, 4, 6, or 8).
2. Divisibility by 3:
 - A number is divisible by 3 if the sum of its digits is divisible by 3.
3. Divisibility by 4:
 - A number is divisible by 4 if the number formed by its last two digits is divisible by 4.
4. Divisibility by 5:
 - A number is divisible by 5 if its last digit is either 0 or 5.
5. Divisibility by 6:
 - A number is divisible by 6 if it is divisible by both 2 and 3.
6. Divisibility by 9:
 - A number is divisible by 9 if the sum of its digits is divisible by 9.
7. Divisibility by 10:
 - A number is divisible by 10 if its last digit is 0.

Example:

To determine if the number 2376 is divisible by each of these numbers:

1. Divisible by 2? No (Last digit is 6)
2. Divisible by 3? Yes ($2 + 3 + 7 + 6 = 18$, which is divisible by 3)
3. Divisible by 4? No (76 is not divisible by 4)
4. Divisible by 5? No (Last digit is not 0 or 5)
5. Divisible by 6? Yes (Divisible by 2 and 3)
6. Divisible by 9? Yes (Sum of digits is 18, which is divisible by 9)
7. Divisible by 10? No (Last digit is not 0)

Other Divisibility Tests:

- Divisibility by 7: There is a divisibility rule for 7, but it involves more complex calculations.
- Divisibility by 8: A number is divisible by 8 if the number formed by its last three digits is divisible by 8.

- Divisibility by 11: There is a simple rule for divisibility by 11: alternate sum of digits. Subtract the sum of the digits at odd places from the sum of the digits at even places. If the result is divisible by 11, then the original number is divisible by 11.

Conclusion:

Divisibility tests provide quick and efficient ways to determine whether one number is divisible by another. By applying these rules, you can save time and effort in performing division operations, especially in mental math and arithmetic calculations. These tests are valuable tools for identifying factors, multiples, and relationships between numbers.