Divisibility Rules

Divisibility rules are shortcuts that help you determine whether a number can be divided evenly by another number. In other words, these rules allow you to check if a number is divisible by 2, 3, 5, 9, 10, and other numbers without actually performing the division.

Divisibility Rules for Common Numbers

Divisibility by 2: A number is divisible by 2 if its last digit is even (i.e., 0, 2, 4, 6, or 8).

Example: 14 is divisible by 2 because its last digit is 4 (even).

Divisibility by 3: A number is divisible by 3 if the sum of its digits is divisible by 3.

Example: 21 → 2 + 1 = 3, which is divisible by 3, so 21 is divisible by 3.

Divisibility by 5: A number is divisible by 5 if its last digit is 0 or 5.

Example: 35 is divisible by 5 because its last digit is 5.

Divisibility by 9: A number is divisible by 9 if the sum of its digits is divisible by 9.

Example: 72 → 7 + 2 = 9, which is divisible by 9, so 72 is divisible by 9.

Divisibility by 10: A number is divisible by 10 if its last digit is 0.

Example: 40 is divisible by 10 because its last digit is 0.

Properties of Divisibility

Divisibility rules simplify division: Instead of performing long division, you can use these rules to quickly check if a number is divisible by another.

Divisibility rules apply to all numbers: You can use the rules for any whole number, not just small numbers.

Sum of digits rule for 3 and 9: For divisibility by 3 and 9, check the sum of the digits of the number.

Example 1

Question: Is 246 divisible by 3?

Solution:

Step 1: Find the sum of the digits of 246.

2 + 4 + 6 = 12.

Step 2: Check if 12 is divisible by 3.

Since 12 ÷ 3 = 4 (a whole number), 246 is divisible by 3.

Answer: 246 is divisible by 3.

Example 2

Question: Is 135 divisible by 5?

Solution:

Step 1: Check the last digit of 135.

The last digit is 5, so it is divisible by 5.

Answer: 135 is divisible by 5.

Summary Points

- Divisibility rules help you quickly determine if a number can be divided by another number without actually dividing.
- Check the last digit for divisibility by 2, 5, and 10.
- Use the sum of digits for divisibility by 3 and 9.
- Divisibility rules simplify calculations and are useful in many math problems.