# Divisibility Rules

## Divisibility by 2:

### All About the Ending

- A number is divisible by 2 if its last digit is even (0, 2, 4, 6, or 8).
- Example: 246 is divisible by 2 because its last digit is 6.

## Divisibility by 3:

### Strength in Adding Digits

- A number is divisible by 3 if the sum of its digits is a multiple of 3.
- Example: 234 → 2 + 3 + 4 = 9 (which is divisible by 3), so 234 is divisible by 3.

## Divisibility by 4:

### The Role of Powers of 2

- A number is divisible by 4 if the last two digits form a number that is divisible by 4.
- Example: 1,216 → The last two digits are 16, and 16 : 4 = 4, so 1,216 is divisible by 4.

## Divisibility by 5:

### All About the Ending

- A number is divisible by 5 if its last digit is 0 or 5.
- Example: 1,225 ends in 5, so it is divisible by 5.

## Divisibility by 6:

### The Combination of Simpler Rules

- A number is divisible by 6 if it is divisible by both 2 and 3.
- Example: 234 is even (divisible by 2) and 2 + 3 + 4 = 9 (divisible by 3), so 234 is divisible by 6.

# Divisibility Rules

## Divisibility by 8:

### The Role of Powers of 2

- A number is divisible by 8 if its last three digits form a number that is divisible by 8.
- Example: 4,096 → The last three digits are 096 (96), and 96 : 8 = 12, so 4,096 is divisible by 8.

## Divisibility by 9:

### Strength in Adding Digits

- A number is divisible by 9 if the sum of its digits is a multiple of 9.
- Example: 729 → 7 + 2 + 9 = 18 (which is divisible by 9), so 729 is divisible by 9.

## Divisibility by 10:

### All About the Ending

- A number is divisible by 10 if it ends in 0.
- Example: 1,230 ends in 0, so it is divisible by 10.

## Divisibility by 11:

### The Alternating Sum Rule

- A number is divisible by 11 if the difference between the sum of its alternating digits is a multiple of 11.
- Example: 1,221 → (1 + 2) - (2 + 1) = 3 - 3 = 0 (which is divisible by 11), so 1,221 is divisible by 11.

## Divisibility by 12:

### The Combination of Simpler Rules

- A number is divisible by 12 if it is divisible by both 3 and 4.
- Example: 1,152 → The sum of its digits is 1 + 1 + 5 + 2 = 9 (divisible by 3), and the last two digits, 52, are divisible by 4, so 1,152 is divisible by 12.