WHAT THE COMMON DIFFERENCE DECIDES

Each term of an arithmetic sequence is the previous one plus the same fixed value d. The sign of d governs the direction of the whole sequence.

ARITHMETIC SEQUENCE

$$a_n = a_1 + (n-1)d$$

split by **the sign of d**

CASE 1

$d > 0$

Increases

each term is larger than the one before

CASE 2

$d < 0$

Decreases

each term is smaller than the one before

E.G. $7, 3, -1, -5, \ldots$ with $d = -4$

CASE 3

$d = 0$

Constant

every term is identical

TAKEAWAY

The size of d sets the spacing; its sign sets the direction. The sequence $7, 3, -1, -5, \ldots$ has $d = -4$, each term falling four units below the previous.