

Section 9.2 Arithmetic Sequences

arithmetic sequence: a sequence where the difference between consecutive terms is constant. This difference is called the **common difference**.

d

arithmetic mean: average $\dots, a_7, a_8, a_9, \dots$

$$\frac{a_7 + a_9}{2} = a_8$$

Problem 1:

Is the sequence an arithmetic sequence?

a. 12, 22, 32, 42, 52, ... *yes* $d = 10$

b. 1, 1, 2, 3, 5, ... ⁸ ¹³ *no*

$$\begin{aligned} 52 - 42 &= 42 - 32 = 32 - 22 \\ &= 22 - 12 = 10 \end{aligned}$$

$$5 - 3 \neq 3 - 2 \neq 2 - 1 \neq 1 - 1$$

Problem 5:

Write an explicit and a recursive formula for the sequence.

a. -32, -20, -8, 4, 16, ...

b. 27, 18, 9, 0, -9, ...

Problem 6:

Find the missing terms of the arithmetic sequence $1, a_2, a_3, a_4, -35, \dots$

.