
ALGEBRA: SEQUENCES & NTH TERM**Best Guess Mastery Worksheet (Target Grade 4/5)****I Do**

Here are the first five terms of an arithmetic sequence:

7 11 15 19 23

(a) Find an expression, in terms of n , for the n -th term of this sequence.

(b) Show that 87 is a term in this sequence.

..... (2)

----- (2)

We Do

Arabella writes down the first five terms of an arithmetic sequence:

2 7 12 17 22

(a) Find an expression, in terms of n , for the n -th term of this sequence.

(b) Show that 112 is a term in Arabella's sequence.

..... (2)

(2)

ALGEBRA: SEQUENCES & NTH TERM**Best Guess Mastery Worksheet (Target Grade 4/5)****You Do 1**

Doug writes down the first five terms of an arithmetic sequence:

8 14 20 26 32

(a) Find an expression, in terms of n , for the n -th term of this sequence.

(b) Show that 152 is a term in Doug's sequence.

..... (2)

----- (2)

You Do 2

Emily writes down the first five terms of a decreasing arithmetic sequence:

10 7 4 1 -2

(a) Find an expression, in terms of n , for the n -th term of this sequence.

(b) Show that -44 is a term in Emily's sequence.

..... (2)

(2)

ALGEBRA: FRACTIONAL SEQUENCES**Best Guess Mastery Worksheet (Target Grade 6/7)****Challenge 1**

Steve writes down a sequence of fractions. The first four terms are:

$$\frac{5}{2}, \quad \frac{8}{7}, \quad \frac{11}{12}, \quad \frac{14}{17}$$

(a) Find an expression, in terms of n , for the n -th term of this sequence.

(b) Show that $\frac{50}{77}$ is a term in this sequence.

..... (2)

..... (2)

Challenge 2

Paige writes down a sequence of fractions. The first four terms are:

$$\frac{1}{4}, \quad \frac{3}{10}, \quad \frac{5}{16}, \quad \frac{7}{22}$$

(a) Find an expression, in terms of n , for the n -th term of this sequence.

(b) Paige says that $\frac{25}{74}$ is a term in her sequence.

..... (2)

Is Paige correct?

You must show all your working to justify your answer.

..... (3)

Answers & Worked Solutions

I Do:

(a) The sequence goes up by 4 each time. The zeroth term is $7 - 4 = 3$.

Expression: $4n + 3$

(b) Set $4n + 3 = 87 \rightarrow 4n = 84 \rightarrow n = 21$.

Since 21 is a whole number (integer), 87 is the 21st term in the sequence.

We Do:

(a) The sequence goes up by 5 each time. The zeroth term is $2 - 5 = -3$.

Expression: $5n - 3$

(b) Set $5n - 3 = 112 \rightarrow 5n = 115 \rightarrow n = 23$.

Since 23 is an integer, 112 is the 23rd term in the sequence.

You Do 1:

(a) The sequence goes up by 6 each time. The zeroth term is $8 - 6 = 2$.

Expression: $6n + 2$

(b) Set $6n + 2 = 152 \rightarrow 6n = 150 \rightarrow n = 25$.

Since 25 is an integer, 152 is the 25th term in the sequence.

You Do 2:

(a) The sequence goes down by 3 each time. The zeroth term is $10 + 3 = 13$.

Expression: $-3n + 13$ (or $13 - 3n$)

(b) Set $-3n + 13 = -44 \rightarrow -3n = -57 \rightarrow n = 19$.

Since 19 is an integer, -44 is the 19th term in the sequence.

Challenge 1:

(a) Numerator sequence (5, 8, 11, 14...) is $3n + 2$.

Denominator sequence (2, 7, 12, 17...) is $5n - 3$.

Expression: $(3n + 2) / (5n - 3)$

(b) Check numerator: $3n + 2 = 50 \rightarrow 3n = 48 \rightarrow n = 16$.

Substitute $n = 16$ into denominator: $5(16) - 3 = 80 - 3 = 77$.

Both parts match for $n = 16$, so it is the 16th term in the sequence.

Challenge 2:

(a) Numerator sequence (1, 3, 5, 7...) is $2n - 1$.

Denominator sequence (4, 10, 16, 22...) is $6n - 2$.

Expression: $(2n - 1) / (6n - 2)$

(b) Check numerator: $2n - 1 = 25 \rightarrow 2n = 26 \rightarrow n = 13$.

Substitute $n = 13$ into denominator: $6(13) - 2 = 78 - 2 = 76$.

The 13th term is actually $25/76$, not $25/74$. Therefore, Paige is **incorrect**.