

# GCSE Maths: Position-to-term rules (Higher): worksheet

GCSE Maths - Sequences and nth Term - Higher - Lesson 11.3

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Score: \_\_\_\_\_

14 questions. Write your answers in the spaces. Answers and step-by-step help are free at [websink.site/gcse/maths/ch11-sequences/higher/position-to-term-rules/](https://websink.site/gcse/maths/ch11-sequences/higher/position-to-term-rules/)

## Exercise 11C Position-to-term rules Non-calculator

**1** Write down the first four terms of the sequence with each nth term.

(a)  $3n + 1$

Answer: \_\_\_\_\_

(b)  $5n - 2$

Answer: \_\_\_\_\_

(c)  $4n + 3$

Answer: \_\_\_\_\_

(d)  $2n - 7$

Answer: \_\_\_\_\_

(e)  $10n + 5$

Answer: \_\_\_\_\_

(f)  $6n - 1$

Answer: \_\_\_\_\_

**2** Write down the first five terms of the sequence with each nth term.

(a)  $20 - 3n$

Answer: \_\_\_\_\_

(b)  $12 - 2n$

Answer: \_\_\_\_\_

(c)  $50 - 10n$

Answer: \_\_\_\_\_

(d)  $1 - n$

Answer: \_\_\_\_\_

**3** Write down the first four terms of the sequence with each nth term.

(a)  $n^2 + 1$

Answer: \_\_\_\_\_

(b)  $n^2 - 1$

Answer: \_\_\_\_\_

(c)  $2n^2$

Answer: \_\_\_\_\_

(d)  $3n^2 + 2$

Answer:

(e)  $n^3$

Answer:

(f)  $3^n$

Answer:

**4 Work out the term asked for.**

(a) The  $n$ th term is  $4n + 7$ . Find the 100th term.

Answer:

(b) The  $n$ th term is  $3n - 5$ . Find the 50th term.

Answer:

(c) The  $n$ th term is  $9n + 4$ . Find the 20th term.

Answer:

(d) The  $n$ th term is  $100 - n$ . Find the 60th term.

Answer:

(e) The  $n$ th term is  $n^2 + 3$ . Find the 12th term.

Answer:

(f) The  $n$ th term is  $2n^2 + 1$ . Find the 10th term.

Answer:

**5 The  $n$ th term of a sequence is  $3n - 2$ . Work out the terms in positions 1, 2, 5 and 10.**

Answer:

**6 A taxi charges a fixed £3 plus £2 for every mile. The cost, in pounds, of a journey of  $n$  miles is  $2n + 3$ .**

(a) Work out the cost of a 7-mile journey.

Answer:

(b) Work out the cost of a 15-mile journey.

Answer:

(c) Work out the cost of a 40-mile journey.

Answer:

**7 A gym charges £25 to join and then £15 a month. After  $n$  months the total cost in pounds is  $15n + 25$ . Work out the total cost after 12 months.**

Answer:

**8 Zoe says, "The 5th term of the sequence  $2n^2$  is 100, because  $2 \times 5 = 10$  and  $10^2 = 100$ ." What mistake has she made, and what is the correct answer?**

Answer:

**9 Which of these is the  $n$ th term of the sequence 5, 8, 11, 14, ...? **A**  $5n$  **B**  $n + 4$  **C**  $3n + 2$  **D**  $3n + 5$ . Show how you decide.**

Answer:

**10** The  $n$ th term of one sequence is  $n^2$  and the  $n$ th term of another is  $11n$ .

(a) Which is bigger, the 10th term of  $n^2$  or the 10th term of  $11n$ ?

Answer: .....

(b) Which is bigger, the 12th term of each?

Answer: .....

**11** A function machine does the following to the position number  $n$ : multiply by 4, then subtract 3, giving the term.



(a) Write the  $n$ th term.

Answer: .....

(b) Work out the 6th term.

Answer: .....

**12** The  $n$ th term of a sequence is  $7n - 4$ . Work out the **sum** of the 1st term and the 10th term.

Answer: .....

**13** Write down the first five terms of the sequence with each  $n$ th term.

(a)  $n^2 - 3n + 5$

Answer: .....

(b)  $2n^2 + n - 1$

Answer: .....

(c)  $-n^2 + 10n$

Answer: .....

(d)  $n^2 + n$

Answer: .....

**14** The  $n$ th term of a sequence is  $n^2 - 6n + 10$ . Show that the 2nd term and the 4th term are equal. Find another pair of equal terms.

Answer: .....