Year 9 Sequences and Functions – Developing

ANSWER KEY HappyKids.fit

Answers and worked solutions · 10 questions

A. Use sequences and functions

1. second difference 2; pattern 10 has 120 tiles

First differences 5, 7, 9; second difference 2 (constant, so quadratic)
Continue the first differences up to pattern 10: 120

2. second difference 2; pattern 6 has 42 tiles

First differences 4, 6, 8; second difference 2 (constant, so quadratic)
Continue the first differences up to pattern 6: 42

3. Yes, it is the 8th term.

Solve $n^3 = 512$
n = 8: yes, it is the 8th term

4. Yes, it is the 40th term.

Solve $7n - 6 = 274$
n = 40: yes, it is the 40th term

5. 4 and −14

Undo the square: the number before squaring is 9 or −9
Undo + 5: 9 − 5 = 4; −9 − 5 = −14

6. 4 and −8

Undo the square: the number before squaring is 6 or −6
Undo + 2: 6 − 2 = 4; −6 − 2 = −8

7. (1/2)n + 7/2

Difference 1/2, so the rule starts (1/2)n
n = 1 gives 1/2; first term 4
(1/2)n + 7/2

8. 69

$(4)^3 = 64$
64 + 5 = 69

9. No. One input has two different outputs, but a function gives exactly one output for each input.

A function gives exactly one output for each input
Look for an input that appears with two different outputs
No

10. Mistake: the difference gives the number of n's (the coefficient of n). Correct: 7n + 5

Error: the difference gives the number of n's (the coefficient of n)
7n gives 7, 14, 21, ...; add 5
7n + 5