Year 9 Sequences and Functions – Developing

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Year 9 · Maths · Sequences and Functions · Level 2 Developing · 10 questions

Name _____ **Date** _____

A. Use sequences and functions

1. A pattern is made of a square of tiles with n + 1 tiles on each side and one corner tile removed. Pattern 1 has 3 tiles, pattern 2 has 8, pattern 3 has 15 and pattern 4 has 24. Find the second difference, and the number of tiles in pattern 10.

Answer _____

2. A pattern is made of tiles: pattern n is a rectangle of n rows with n + 1 tiles in each row. Pattern 1 has 2 tiles, pattern 2 has 6, pattern 3 has 12 and pattern 4 has 20. Find the second difference, and the number of tiles in pattern 6.

Answer _____

3. Is 512 a term of the sequence with nth term n^3? If it is, which term is it?

Answer _____

4. Is 274 a term of the sequence with nth term 7n − 6? If it is, which term is it?

Answer _____

5. The function machine is input → + 5 → square → output. The output is 81. Find both possible inputs.

Answer _____

6. The function machine is input → + 2 → square → output. The output is 36. Find both possible inputs.

Answer _____

7. Find the nth term of the sequence 4, 4 1/2, 5, 5 1/2, ...

Answer _____

8. The function machine is input → cube → + 5 → output. Find the output when the input is 4.

Answer _____

9. In a mapping diagram, −3 maps to 1; 4 maps to 36; −2 maps to 0; −3 maps to 3. Does the diagram show a function? Explain.

Answer _____

10. Chen says the nth term of 12, 19, 26, 33, … is n + 7. Explain the mistake and give the correct answer.

Answer _____