Year 9 Sequences and Functions – Challenge

HappyKids.fit

Year 9 · Maths · Sequences and Functions · Level 3 Challenge · 8 questions

Name _____ **Date** _____

A. Think like a mathematician

1. Kofi looks at the sequence with nth term $n^2 + n$ and conjectures that every term is even. Test some terms. Do you agree? Explain.

Answer _____

2. Kofi looks at the sequence with nth term $n^2 - n + 11$ and conjectures that every term is prime. Test some terms. Do you agree? Explain.

Answer _____

3. In a mapping diagram, −2 maps to 1; 3 maps to 36; 6 maps to 81; 4 maps to 49. Does the diagram show a function? Explain.

Answer _____

4. Ivo says the nth term of 32, 30, 28, 26, … is 2n + 30. Explain the mistake and give the correct answer.

Answer _____

5. Eli says the nth term of 7, 13, 19, 25, … is n + 6. Explain the mistake and give the correct answer.

Answer _____

6. Gus says the sequence $2n^2$ goes up by the same amount each time. Is Gus right? Explain.

Answer _____

7. A pattern is made of matchsticks making an n by n grid of small squares. Pattern 1 has 4 matchsticks, pattern 2 has 12, pattern 3 has 24 and pattern 4 has 40. Find the second difference, and the number of matchsticks in pattern 8.

Answer _____

8. The function machine is input → square root → × 3 → – 6 → output. The output is 12. Find the input.

Answer _____