Year 9 Sequences and Functions – Mixed Practice

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Year 9 · Maths · Sequences and Functions · Mixed practice · 30 questions

Name _____ **Date** _____

A. Mixed practice (mixed order)

1. The nth term of a sequence is 10 − 3n. Write the first four terms.

Answer _____

2. Find the nth term of the sequence 6, 9, 14, 21, 30, ... Answer _____

3. The function machine is input → square → × 4 → − 6 → output. Find the output when the input is 3.

Answer _____

4. The nth term of a sequence is n/4. Write the first four terms.

Answer _____

5. The first term of a sequence is 0. The term-to-term rule is 'square, then add 1'. Write the first five terms.

Answer _____

6. Find the nth term of the sequence 2, 4 1/2, 7, 9 1/2, ...

Answer _____

7. Is 196 a term of the sequence with nth term 5n + 1? If it is, which term is it?

Answer _____

8. The function machine is input → + 7 → square → output. The output is 64. Find both possible inputs.

Answer _____

9. Lina looks at the sequence with nth term 2n + 5 and conjectures that every term is prime. Test some terms. Do you agree? Explain.

Answer _____

10. Find the nth term of the sequence 4, 7, 12, 19, 28, … Answer _____

11. A pattern is made of dots arranged in a triangle with 1 dot in the top row, 2 in the next row, and so on. Pattern 1 has 1 dots, pattern 2 has 3, pattern 3 has 6 and pattern 4 has 10. Find the second difference, and the number of dots in pattern 10.

Answer _____

12. The nth term of a sequence is $n^2 - 1$. Write the first four terms.

Answer _____

13. The first term of a sequence is 6. The term-to-term rule is 'multiply by 2, then add 3'. Write the first five terms.

Answer _____

14. The function machine is input → + 4 → square → output. The output is 9. Find both possible inputs.

Answer _____

15. The function machine is input → + 7 → square → output. Find the output when the input is 4.

Answer _____

16. Chen says 100 is a term of the sequence $n^2 + 1$. Is Chen right? Explain.

Answer _____

17. Is 447 a term of the sequence with nth term n^3? If it is, which term is it?

Answer _____

18. Find the nth term of the sequence 12, 5, −2, −9, …

Answer _____

19. A pattern is made of chairs: pattern n is a hall with n rows of 2n chairs. Pattern 1 has 2 chairs, pattern 2 has 8, pattern 3 has 18 and pattern 4 has 32. Find the second difference, and the number of chairs in pattern 6.

Answer _____

20. For the function $y = 3x^2 - 8$, find y when x = 3.

Answer _____

21. Find the nth term of the sequence 4 1/3, 4 2/3, 5, 5 1/3, …

Answer _____

22. A rule pairs these inputs and outputs: (0, 1), (1, 4), (4, 13), (1, 8). Is the rule a function? Explain.

Answer _____

23. Find the nth term of the sequence 1/4, 1/2, 3/4, 1, 1 1/4, ...

Answer _____

24. Hana looks at the sequence with nth term $n^3 - n$ and conjectures that every term is a multiple of 6. Test some terms. Do you agree? Explain.

Answer _____

25. The nth term of a sequence is $n^3 - 3$. Write the first four terms.

Answer _____

26. The first term of a sequence is 1. The term-to-term rule is 'square, then add 1'. Write the first five terms.

Answer _____

27. Bella says the nth term of 22, 18, 14, 10, … is 4n + 18. Explain the mistake and give the correct answer.

Answer _____

28. The function machine is input → + 3 → square → output. The output is 16. Find both possible inputs.

Answer _____

29. Jade says the cube numbers 1, 8, 27, 64, … have a constant second difference. Is Jade right? Explain.

Answer _____

30. Is 343 a term of the sequence with nth term n^3? If it is, which term is it?

Answer _____