

Foundation GCSE: Sequences — Term-to-Term Rules

Name: _____

Class: _____

Instructions: Answer all questions. Questions are ordered from easiest (1) to hardest (20). Working out should be shown where appropriate.

1. Write down the next two terms of the sequence:
4, 7, 10, 13, ...
2. Find the next term in the sequence:
20, 17, 14, 11, ...
3. State the term-to-term rule for the sequence:
5, 10, 20, 40, ...
4. Find the next two terms of the sequence:
2, 6, 18, 54, ...
5. The 1st term of a sequence is 3 and the term-to-term rule is “add 5”. Find the 4th term.
6. The 1st term of a sequence is 32 and the term-to-term rule is “subtract 4”. Find the 5th term.
7. Find the missing term in the sequence:
8, 13, ..., 23, 28
8. Find the missing term in the sequence:
96, 48, 24, ..., 6
9. A sequence starts at 2 and has the rule “multiply by 3 and add 1”. Find the 3rd term.
10. Find the next term in the decimal sequence:
0.5, 1.1, 1.7, 2.3, ...
11. State the term-to-term rule and find the next term: 81, 27, 9, 3, ...
12. The 2nd term of a sequence is 11 and the term-to-term rule is “add 4”. Find the 5th term.
13. Find the missing terms: 2, ..., ..., 14, 18 (linear sequence)
14. A sequence follows the rule: “halve the previous term and add 3”. If the 1st term is 10, find the 3rd term.
15. Find the next term in the Fibonacci sequence:
1, 1, 2, 3, 5, 8, ...
16. The 3rd term of a sequence is 22 and the term-to-term rule is “add 6”. Find the 1st term.
17. Find the next term in the fraction sequence:
 $\frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \frac{1}{16}, \dots$
18. A sequence starts at 1 and the rule is “square the previous term and subtract 1”. Find the 3rd term.
19. Find the missing terms in the geometric sequence: 3, ..., ..., 24
20. The 4th term of a sequence is 40 and the term-to-term rule is “subtract 7 then multiply by 2”. Find the 2nd term working backwards.

Answers & Worked Solutions

1. 16, 19 – Add 3 each time.
2. 8 – Subtract 3 each time.
3. Multiply by 2 ($(\times 2)$).
4. 162, 486 – Multiply by 3 each time.
5. 18 – Terms are 3, 8, 13, 18.
6. 16 – Terms are 32, 28, 24, 20, 16.
7. 18 – Common difference is +5.
8. 12 – Halve the previous term ($\div 2$).
9. 22 – Term 1: 2; Term 2: $(2 \times 3) + 1 = 7$; Term 3: $(7 \times 3) + 1 = 22$.
10. 2.9 – Add 0.6 each time.
11. $\div 3$, next term is 1.
12. 23 – Term 2 is 11, Term 3 is 15, Term 4 is 19, Term 5 is 23.
13. 6, 10 – Common difference is +4.
14. 7 – Term 1: 10; Term 2: $10/2 + 3 = 8$; Term 3: $8/2 + 3 = 7$.
15. 13 – Add the two previous terms ($5 + 8$).
16. 10 – Work backwards: $22 - 6 - 6 = 10$.
17. $\frac{1}{32}$ – Halve the denominator each time.
18. 0 – Term 1: 1; Term 2: $1^2 - 1 = 0$; Term 3: $0^2 - 1 = -1$.
19. 6, 12 – Multiply by 2 each step (3, 6, 12, 24).
20. 27 – Working backwards from Term 4 (40): reverse operations (divide by 2 then add 7).