

Finding the nth Term

Formula for finding the nth term of an arithmetic sequence:
 $a_n = a_1 + d(n - 1)$ or $a_n = a_1 + (n - 1)d$

Use the nth term formula to find the requested term of each arithmetic sequence.

1. 5, 10, 15, 20, ... 17th term +5
 $a_{17} = 5 + 5(17-1)$
 $5 + 5(16)$
 $5 + 80$
85

2. 121, 110, 99, 88, ... 10th term -11
 $= 121 - 11(10-1)$
 $121 - 11(9)$
 $121 - 99$
22

3. -2, -5, -8, -11, ... 41st term -3
 $= -2 - 3(41-1)$
 $-2 - 3(40)$
 $-2 - 120$
 -122
-122

4. -30, -22, -14, -6, ... 20th term +8
 $= -30 + 8(20-1)$
 $-30 + 8(19)$
 $-30 + 152$
122

5. 6, 13, 20, 27, ... 25th term +7
 $= 6 + 7(25-1)$
 $6 + 7(24)$
 $6 + 168$
174

6. 18, 13, 8, 3, ... 32nd term -5
 $= 18 - 5(32-1)$
 $18 - 5(31)$
 $18 - 155$
-137

Use the formula for finding the nth term of a sequence to write an equation for the arithmetic sequence.

7. 4, 8, 12, 16, ... +4
 $a_n = 4 + 4(n-1)$
 $4 + 4n - 4$
 $a_n = 4n$

8. 18, 12, 6, 0, ... -6
 $a_n = 18 - 6(n-1)$
 $18 - 6n + 6$
 $a_n = -6n + 24$

9. -3, 0, 3, 6, ... +3
 $a_n = -3 + 3(n-1)$
 $-3 + 3n - 3$
 $a_n = 3n - 6$

10. 2, 6, 10, 14, ... +4
 $a_n = 2 + 4(n-1)$
 $2 + 4n - 4$
 $a_n = 4n - 2$

11. 22, 16, 10, 4, ... -6
 $a_n = 22 - 6(n-1)$
 $22 - 6n + 6$
 $a_n = -6n + 28$

12. -12, -2, 8, 18, ... +10
 $a_n = -12 + 10(n-1)$
 $-12 + 10n - 10$
 $a_n = 10n - 22$

List the first four terms of the described sequence.

13. $a_n = -2 + 4(n-1)$
 $-2 + 4n - 4$
 $4n - 6$
-2, 2, 6, 10

14. $a_n = 8 - 3(n-1)$
 $8 - 3n + 3$
 $-3n + 11$
8, 5, 2, -1

15. $a_n = 5 + (n-1)6$
 $5 + 6n - 6$
 $6n - 1$
5, 11, 17, 23

16. $a_n = -15 + (n-1)(-2)$
 $-15 - 2n + 2$
 $-2n - 13$
-15, -17, -19, -21