

Arithmetic Sequence worksheet

Name Key

Write the first five terms of each arithmetic sequence described.

1. $a_1 = 4, d = 3$
2. $a_1 = 7, d = 5$
3. $a_1 = 16, d = -2$
4. $a_1 = 38, d = -4$
5. $a_1 = \frac{3}{4}, d = -\frac{1}{4}$

1. 4, 7, 10, 13, 16
2. 7, 12, 17, 22, 27
3. 16, 14, 12, 10, 8
4. 38, 34, 30, 26, 22
5. $\frac{3}{4}, \frac{1}{2}, \frac{1}{4}, 0, \frac{1}{4}$

Name the next four terms of each arithmetic sequence.

6. 5, 9, 13, ... $d = 4$
7. 2, -3, -8, ... $d = -5$
8. 21, 15, 9, ... $d = -6$
9. $\frac{1}{2}, \frac{3}{2}, \frac{5}{2}, \dots$ $d = \frac{2}{2} = 1$

6. 17, 21, 25, 29
7. -13, -18, -23, -28
8. 3, -3, -9, -15
9. $\frac{7}{2}, \frac{9}{2}, \frac{11}{2}, \frac{13}{2}$

Find the n^{th} term of each arithmetic sequence.

10. $a_1 = -1, d = -10, n = 25$
 $a_{25} = -1 - 10(25-1)$
 $= -1 - 10(24)$
 $= -241$
11. $a_1 = -3, d = -9, n = 11$
 $a_{11} = -3 - 9(11-1)$
 $= -3 - 9(10)$
 $= -93$
12. $a_1 = -7, d = 3, n = 17$
 $a_{17} = -7 + 3(17-1)$
 $= -7 + 3(16)$
 $= 41$
13. $a_1 = 2, d = \frac{1}{2}, n = 8$
 $a_8 = 2 + \frac{1}{2}(8-1)$
 $= 2 + \frac{1}{2}(7)$
 $= 5.5$

10. $a_{25} = -241$
11. $a_{11} = -93$
12. $a_{17} = 41$
13. $a_8 = \frac{11}{2} = 5.5$

Complete each statement.

- $d = 7$ 14. 124 is the _____th term of -2, 5, 12, ...
 $124 = -2 + 7(n-1)$
 $126 = 7(n-1)$
 $18 = n-1$
 $n = 19$
- $d = -5$ 15. -28 is the _____th term of 7, 2, -3, ...
 $-28 = 7 - 5(n-1)$
 $-35 = -5(n-1)$
 $7 = n-1$
 $n = 8$
- $d = -\frac{1}{4}$ 16. $-\frac{17}{4}$ is the _____th term of $2\frac{1}{4}, 2, 1\frac{3}{4}, \dots$
 $-\frac{17}{4} = 2\frac{1}{4} - \frac{1}{4}(n-1)$
 $-\frac{20}{4} = -\frac{1}{4}(n-1)$
 $20 = n-1$
 $n = 21$

14. $n = 19$
15. $n = 8$
16. $n = 21$

Find the indicated term in each arithmetic sequence.

17. $d=4$
 a_{12} for $-17, -13, -9, \dots$
 $a_{12} = -17 + 4(12-1)$
 $= -17 + 4(11)$
 $= -17 + 44$
 $= 27$

18. $d=-3$
 a_{21} for $10, 7, 4, \dots$
 $a_{21} = 10 - 3(21-1)$
 $= 10 - 3(20)$
 $= 10 - 60$
 $= -50$

19. $d=3$
 a_{32} for $4, 7, 10, 13, \dots$
 $a_{32} = 4 + 3(32-1)$
 $= 4 + 3(31)$
 $= 4 + 93$
 $= 97$

20. $d=-5$
 a_{10} for $8, 3, -2, \dots$
 $a_{10} = 8 - 5(10-1)$
 $= 8 - 5(9)$
 $= 8 - 45$
 $= -37$

Find the missing terms in each arithmetic sequence.

21. $55, \underline{70}, \underline{85}, \underline{100}, 115$ *KNOWS*

22. $-10, \underline{-7}, \underline{-4}, \underline{-1}, 2$

23. $\underline{-13}, -6, \underline{1}, \underline{8}, 15, \underline{22}$

24. $\underline{56}, 49, \underline{42}, \underline{35}, 28$

25. The last term of an arithmetic sequence is 207, the common difference is 3, and the number of terms is 14. What is the first term?

$207 = a_1 + 3(14-1)$
 $207 = a_1 + 39$
 $a_1 = 168$

26. The third term of an arithmetic sequence is 14 and the ninth term is -1. Find the first four terms of the sequence.

$\frac{19}{a_1} \quad \frac{16.5}{a_2} \quad \frac{14}{a_3} \quad \frac{11.5}{a_4} \quad \frac{9}{a_5} \quad \frac{6.5}{a_6} \quad \frac{4}{a_7} \quad \frac{1.5}{a_8} \quad \frac{-1}{a_9}$

27. During a free fall, a skydiver falls 16 feet in the first second, 48 feet in the 2nd second, and 80 feet in the third second. If she continues to fall at this rate, how many feet will she fall during the 8th second?

$\frac{16}{a_1} \quad \frac{48}{a_2} \quad \frac{80}{a_3} \quad \frac{112}{a_4} \quad \frac{144}{a_5} \quad \frac{176}{a_6} \quad \frac{208}{a_7} \quad \frac{240}{a_8}$

$d=32$

17. $a_{12} = 27$

18. $a_{21} = -50$

19. $a_{32} = 97$

20. $a_{10} = -37$

21. $d=15$

22. $d=3$

23. $d=7$

24. $d=-7$

25. $a_1 = 168$

26. $19, 16.5, 14, 11.5$

27. $a_8 = 240 \text{ ft}$

$a_8 = 16 + 32(8-1)$
 $= 16 + 32(7)$
 $= 16 + 224$
 $= 240$

similar # 21-24