

C-1 Arithmetic Sequences Worksheet

Name Kry

1-9 HOMEWORK #1

Is the given sequence arithmetic? If so, identify the common difference.

1. 1, 4, 9, 16, ...

$+3$ $+5$ not arithmetic

2. 1, 1, 2, 3, 5, 8, ...

$+0$ $+1$ $+1$ $+2$ not arithmetic

3. -21, -18, -15, -12, ...

$-18 - (-21) = 3$

$+3$ $+3$ $+3$ $d=3$
arithmetic

4. 3, 7, 11, 15, ...

$+4$ $+4$ $+4$

arithmetic $d=4$

Solve the following problem.

5. A student claims that the next term of the arithmetic sequence 0, 2, 4, ... is 8. What error did the student make?

$+2$ $+2$
The student doubled 4 (or multiplied by 2) instead of adding 2.

Find the 4th term of each sequence.

6. $a_1 = 18, d = 5$

18, 23, 28, 33

7. $a_1 = 18, d = -3$

18, 15, 12, 9

8. $a_1 = 18, d = \frac{1}{2}$

18, $18\frac{1}{2}$, 19, $19\frac{1}{2}$

9. $a_1 = 18, d = -4$

18, 14, 10, 6

10. $a_1 = 5, d = 12$

5, 17, 29, 41

11. $a_1 = 4, d = -2$

4, 2, 0, -2

Write a recursive and explicit formula for each sequence.

12-14

12. 0, 6, 12, 18, 24, ... $d=6$

Recursive: $a_1 = 0$
 $a_n = a_{n-1} + 6$

Explicit:
 $a_n = 0 + (n-1)6$
 $a_n = 0 + 6n - 6$
 $a_n = 6n - 6$

13. -4, -8, -12, -16, -20, ... $d=-4$

Recursive: $a_1 = -4$
 $a_n = a_{n-1} - 4$

Explicit:
 $a_n = -4 + (n-1)(-4)$
 $a_n = -4 + -4n + 4$
 $a_n = -4n$

14. 27, 15, 3, -9, -21, ... $d=-12$

Recursive: $a_1 = 27$
 $a_n = a_{n-1} - 12$

Explicit:
 $a_n = 27 + (n-1)(-12)$
 $a_n = 27 - 12n + 12$
 $a_n = -12n + 39$

15. -32, -20, -8, 4, 16, ...

~~Recursive:
 $a_1 = -32$
 $a_n = a_{n-1} + 12$~~

~~Explicit:
 $a_n = -32 + (n-1)12$
 $a_n = -32 + 12n - 12$
 $a_n = 12n - 44$~~

Solve the following problem.

16. In February you start a holiday savings account with a deposit of \$20. You increase each monthly deposit by five dollars until the end of the year.

a. Write the amount in the account after each deposit.

\$20, \$25, \$30, \$35, \$40, \$45, \$50, \$55, \$60, \$65, \$70
 Feb Mar Apr May Jun Jul Aug Sept Oct Nov Dec

b. Write a recursive formula for the sequence of balances.

$a_1 = \$20$
 $a_n = a_{n-1} + 5$

c. How much money will you have saved by the end of the year?

\$70

16-18

Given two terms of each arithmetic sequence, find a_1 and d .

17. $a_3 = 5$ and $a_5 = 11$

$a_4 = \frac{(5+11)}{2} = \frac{16}{2} = 8$

$a_3 = 5$, $a_4 = 8$, $a_5 = 11$

$a_1 = -1$ $d = 3$

18. $a_3 = 32$ and $a_7 = -8$

$a_5 = \frac{(32 + (-8))}{2} = 12$

$a_4 = \frac{(32 + 12)}{2} = 22$

$a_3 = 32$, $a_4 = 22$

$a_2 = 22$, $a_1 = 12$

$d = -10$
 $a_1 = 12$

19. $a_4 = -34.5$ and $a_5 = -12.5$