

KEY

Name _____ Date _____ Class _____

LESSON
4-6

Practice A
Arithmetic Sequences

Determine if the sequence is arithmetic. Write *yes* or *no*.

1. 5, 9, 14, 20, ...

$\begin{matrix} 4 & 5 & 6 \\ \swarrow & \searrow & \swarrow \\ & & \end{matrix}$
No

2. 10, 22, 34, 46, ...

$\begin{matrix} 12 & 12 & 12 \\ \swarrow & \searrow & \swarrow \\ & & \end{matrix}$
Yes

Find the common difference for each arithmetic sequence.

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

$\begin{matrix} 3 & 3 & 3 \\ \swarrow & \searrow & \swarrow \\ & & \end{matrix}$
 $d = 3$

4. 30, 24, 18, 12, ...

$\begin{matrix} -6 & -6 & -6 \\ \swarrow & \searrow & \swarrow \\ & & \end{matrix}$
 $d = -6$

Find the common difference for each arithmetic sequence. Then find the next three terms.

5. 20, 10, 0, -10, ... $d = -10$

$-20, -30, -40$

6. 100, 98, 96, 94, ... $d = -2$

$92, 90, 88$

Find the indicated term of each arithmetic sequence.

7. 42nd term: $a_1 = 10; d = 6$

$a_{42} = 10 + (42-1)6$

$a_{42} = 256$

8. 27th term: 59, 56, 53, 50, ...

$a_{27} = 59 + (27-1)(-3)$

$a_{27} = -19$

A swim pass costs \$30 for the first month. Each month after that, the cost is \$20 per month. Riley wants to swim for 12 months.

9. The sequence for this situation is arithmetic. What is the first term of this sequence?

\hookrightarrow start amount

30

10. What is the common difference? \hookrightarrow rate of change

20

11. The 12th term will be the amount Riley spends for a one year swim pass. Write the equation for finding the total cost of a one year swim pass.

$a_n = 30 + (n-1)20$

$a_n = 20n + 10$

12. What is the total amount of money Riley will spend for a one year swim pass?

$\$250$

$n = 12$

$\sum a_n = 20n + 10$

$\sum a_{12} = 20(12) + 10$

$\sum a_{12} = 250$

3-4 Skills Practice

Arithmetic Sequences

Determine whether each sequence is an arithmetic sequence. If it is, state the common difference.

1. 4, 7, 9, 12, ... **NO**
 $\begin{array}{cccc} 4 & 7 & 9 & 12 \\ \downarrow & \downarrow & \downarrow & \\ 3 & 2 & 3 & \end{array}$

2. 15, 13, 11, 9, ... **yes $d = -2$**
 $\begin{array}{cccc} 15 & 13 & 11 & 9 \\ \downarrow & \downarrow & \downarrow & \\ -2 & -2 & -2 & \end{array}$

3. 7, 10, 13, 16, ... **yes $d = 3$**
 $\begin{array}{cccc} 7 & 10 & 13 & 16 \\ \downarrow & \downarrow & \downarrow & \\ 3 & 3 & 3 & \end{array}$

4. -6, -5, -3, -1, ... **NO**
 $\begin{array}{cccc} -6 & -5 & -3 & -1 \\ \downarrow & \downarrow & \downarrow & \\ +1 & +2 & +2 & \end{array}$

5. -5, -3, -1, 1, ... **yes $d = 2$**
 $\begin{array}{cccc} -5 & -3 & -1 & 1 \\ \downarrow & \downarrow & \downarrow & \\ +2 & +2 & +2 & \end{array}$

6. -9, -12, -15, -18, ... **yes $d = -3$**
 $\begin{array}{cccc} -9 & -12 & -15 & -18 \\ \downarrow & \downarrow & \downarrow & \\ -3 & -3 & -3 & \end{array}$

Find the next three terms of each arithmetic sequence.

7. 3, 7, 11, 15, ... **19, 23, 27**
 $d = 4$

8. 22, 20, 18, 16, ... **14, 12, 10**
 $d = -2$

9. -13, -11, -9, -7, ... **-5, -3, -1**
 $d = 2$

10. -2, -5, -8, -11, ... **-14, -17, -20**
 $d = -3$

11. 19, 24, 29, 34, ... **39, 44, 49**
 $d = 5$

12. 16, 7, -2, -11, ... **-20, -29, -38**
 $d = -9$

Find the n th term of each arithmetic sequence described.

13. $a_1 = 6, d = 3, n = 12$ **$a_{12} = 39$**
 $a_{12} = 6 + (12-1)3$

14. $a_1 = -2, d = 5, n = 11$ **$a_{11} = 48$**
 $a_{11} = -2 + (11-1)5$

15. $a_1 = 10, d = -3, n = 15$ **$a_{15} = -32$**
 $a_{15} = 10 + (15-1)(-3)$

16. $a_1 = -3, d = -3, n = 22$ **$a_{22} = -66$**
 $a_{22} = -3 + (22-1)(-3)$

17. $a_1 = 24, d = 8, n = 25$ **$a_{25} = 216$**
 $a_{25} = 24 + (25-1)8$

18. $a_1 = 8, d = -6, n = 14$ **$a_{14} = -70$**
 $a_{14} = 8 + (14-1)(-6)$

19. 8, 13, 18, 23, ... for $n = 17$ **$a_{17} = 88$**
 $a_{17} = 8 + (17-1)5$

20. -10, -3, 4, 11, ... for $n = 12$ **$a_{12} = 67$**
 $a_{12} = -10 + (12-1)7$

21. 12, 10, 8, 6, ... for $n = 16$ **$a_{16} = -8$**
 $a_{16} = 12 + (16-1)(-2)$

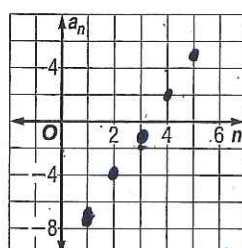
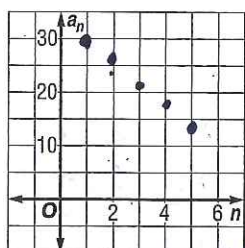
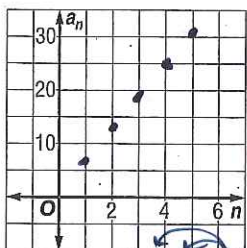
22. 12, 7, 2, -3, ... for $n = 25$ **$a_{25} = -108$**
 $a_{25} = 12 + (25-1)(-5)$

Write an equation for the n th term of each arithmetic sequence. Then graph the first five terms of the sequence.

23. $\begin{array}{c|c|c|c|c} n & 1 & 2 & 3 & 4 & 5 \\ \hline a_n & 7 & 13 & 19 & 25 & 31 \end{array}$
 $a_n = 7 + (n-1)6$
 $a_n = 6n + 1$

24. 30, 26, 22, 18, ... **14**

25. -7, -4, -1, 2, ... **5**



$a_n = 7 + (n-1)6$
 $a_n = 6n + 1$

$a_n = 30 + (n-1)(-4)$
 $a_n = -4n + 34$

$a_n = -7 + (n-1)3$
 $a_n = 3n - 10$