

## 12.1 warm up

Date \_\_\_\_\_ Period \_\_\_\_\_

**Determine if the sequence is arithmetic. If it is, find the common difference, the explicit formula, and the recursive formula.**

1) 3, 8, 13, 18, ...

2)  $\frac{3}{2}, 2, \frac{5}{2}, 3, \dots$

3) -0.5, -2.6, -4.7, -6.8, ...

4) -3, -9, -27, -81, ...

**Given the recursive formula for an arithmetic sequence find the first five terms and the explicit formula.**

5)  $a_n = a_{n-1} + 6$   
 $a_1 = 16$

6)  $a_n = a_{n-1} + 20$   
 $a_1 = 31$

**Given the explicit formula for an arithmetic sequence find the common difference and the first five terms.**

7)  $a_n = 40 + (n - 1) \cdot 3$

8)  $a_n = -15 + (n - 1) \cdot -20$

**Find the common difference, the 52nd term, the explicit formula, and the recursive formula.**

9) -24, -4, 16, 36, ...

10) 16, 25, 34, 43, ...

**Given a term in an arithmetic sequence and the common difference find the explicit formula and the recursive formula.**

11)  $a_{19} = -198, d = -9$

12)  $a_{27} = 195, d = 9$

**Given two terms in an arithmetic sequence find the common difference, the explicit formula, and the recursive formula. (Notes)**

13)  $a_{16} = 141$  and  $a_{37} = 351$

14)  $a_{20} = -536$  and  $a_{38} = -1076$

15)  $a_{12} = 43$  and  $a_{35} = 112$

16)  $a_{15} = -39$  and  $a_{32} = -73$

17)  $a_{11} = 276$  and  $a_{38} = 1086$

18)  $a_{19} = 129$  and  $a_{39} = 309$

## Answers to 12.1 warm up (ID: 1)

- 1) Common Difference:  $d = 5$   
 Explicit:  $a_n = 3 + (n - 1) \cdot 5$   
 Recursive:  $a_n = a_{n-1} + 5$   
 $a_1 = 3$
- 2) Common Difference:  $d = \frac{1}{2}$   
 Explicit:  $a_n = \frac{3}{2} + (n - 1) \cdot \frac{1}{2}$   
 Recursive:  $a_n = a_{n-1} + \frac{1}{2}$   
 $a_1 = \frac{3}{2}$
- 3) Common Difference:  $d = -2.1$   
 Explicit:  $a_n = -0.5 + (n - 1) \cdot -2.1$   
 Recursive:  $a_n = a_{n-1} - 2.1$   
 $a_1 = -0.5$
- 4) Not arithmetic
- 5) First Five Terms: 16, 22, 28, 34, 40  
 Explicit:  $a_n = 16 + (n - 1) \cdot 6$
- 6) First Five Terms: 31, 51, 71, 91, 111  
 Explicit:  $a_n = 31 + (n - 1) \cdot 20$
- 7) Common Difference:  $d = 3$   
 First Five Terms: 40, 43, 46, 49, 52
- 8) Common Difference:  $d = -20$   
 First Five Terms: -15, -35, -55, -75, -95
- 9) Common Difference:  $d = 20$   
 $a_{52} = 996$   
 Explicit:  $a_n = -44 + 20n$   
 Recursive:  $a_n = a_{n-1} + 20$   
 $a_1 = -24$
- 10) Common Difference:  $d = 9$   
 $a_{52} = 475$   
 Explicit:  $a_n = 7 + 9n$   
 Recursive:  $a_n = a_{n-1} + 9$   
 $a_1 = 16$
- 11) Explicit:  $a_n = -36 + (n - 1) \cdot -9$   
 Recursive:  $a_n = a_{n-1} - 9$   
 $a_1 = -36$
- 12) Explicit:  $a_n = -39 + (n - 1) \cdot 9$   
 Recursive:  $a_n = a_{n-1} + 9$   
 $a_1 = -39$
- 13) Common Difference:  $d = 10$   
 Explicit:  $a_n = -19 + 10n$   
 Recursive:  $a_n = a_{n-1} + 10$   
 $a_1 = -9$
- 14) Common Difference:  $d = -30$   
 Explicit:  $a_n = 64 - 30n$   
 Recursive:  $a_n = a_{n-1} - 30$   
 $a_1 = 34$
- 15) Common Difference:  $d = 3$   
 Explicit:  $a_n = 7 + 3n$   
 Recursive:  $a_n = a_{n-1} + 3$   
 $a_1 = 10$
- 16) Common Difference:  $d = -2$   
 Explicit:  $a_n = -9 - 2n$   
 Recursive:  $a_n = a_{n-1} - 2$   
 $a_1 = -11$
- 17) Common Difference:  $d = 30$   
 Explicit:  $a_n = -54 + 30n$   
 Recursive:  $a_n = a_{n-1} + 30$   
 $a_1 = -24$
- 18) Common Difference:  $d = 9$   
 Explicit:  $a_n = -42 + 9n$   
 Recursive:  $a_n = a_{n-1} + 9$   
 $a_1 = -33$