

### Arithmetic Sequences Assignment

1. Write the first five terms of each arithmetic sequence.

- a)  $a = 2, d = 3$                       b)  $a = 7, d = 4$                       c)  $a = -1, d = -3$
- d)  $a = 12, d = -4$                       e)  $a = -8, d = 5$                       f)  $a = 5, d = -8$

2. For the arithmetic sequence 3, 5, 7, 9, ..., determine each term.

- a)  $t_n$                                       b)  $t_8$                                       c)  $t_{25}$

3. For the arithmetic sequence 11, 8, 5, 2, ..., determine each term.

- a)  $t_n$                                       b)  $t_6$                                       c)  $t_{20}$

4. Write the general term for each arithmetic sequence.

- a) i) 5, 8, 11, 14, ...                      ii) 17, 14, 11, 8, ...  
    iii) 5, 7, 9, 11, ...                      iv) 10, 8, 6, 4, ...

b) Choose one sequence from part a. Write to explain how you determined the general term.

5. Each sequence is an arithmetic sequence. Write a formula for  $t_n$ , then use it to determine the indicated term.

- a) 1, 5, 9, 13, ...  $t_{17}$                       b) 3, 6, 9, 12, ...  $t_{21}$                       c) -4, 1, 6, 11, ...  $t_{13}$
- d) 41, 35, 29, 23, ...  $t_{18}$                       e) -2, -5, -8, -11, ...  $t_{10}$                       f) 9, 1, -7, -15, ...  $t_{46}$

6. A pile of bricks is arranged in rows. The number of bricks in each row forms the arithmetic sequence 65, 59, 53, ...

- a) One row contains 17 bricks. Which row is this?
- b) How many rows of bricks are there? Explain your assumptions and answer.

7. An arithmetic sequence is 8, 14, 20, 26, ... Which term is 92?

8. a) For each arithmetic sequence, a later term in the sequence is given. Which term is it?
- i) 5, 8, 11, ..., 41                      ii) 2, 7, 12, ..., 122                      iii) 14, 25, 36, ..., 234
- iv) 75, 68, 61, ..., 12                      v) - 12, - 6, 0, ..., 72                      vi) 28, 20, 12, ..., - 164

b) Choose one sequence from part a. Write to explain how you identified the term.

9. The Olympic Winter Games are held every four years. The first Winter Olympics were held in 1924.

a) Beginning with 1924, list what should have been the first six Winter Olympic years.

b) In two of those years, the Winter Olympics were cancelled. What years do you think they were? Explain your answer.

c) The Winter Olympics followed the pattern of being held every four years until 1992. Beginning in 1994, another pattern of holding the Winter Olympics every four years was begun. How many Winter Olympics followed the first pattern?

d) Why do you think the first pattern was broken in 1994?

**Answers:**

1a) 2, 5, 8, 11, 14                      b) 7, 11, 15, 19, 23                      c) - 1, - 4, - 7, - 10, - 13                      d) 12, 8, 4, 0, - 4  
 e) - 8, - 3, 2, 7, 12                      f) 5, - 3, - 11, - 19, - 27

2a)  $2n+1$                       b) 17                      c) 51

3a)  $14- 3n$                       b) - 4,                      c) - 46

4a) i)  $3n+2$                       ii)  $20- 3n$                       iii)  $2n+3$                       iv)  $12- 2n$

5a)  $t_n = 4n - 3 ; 65$                       b)  $t_n = 3n ; 63$                       c)  $t_n = 5n - 9 ; 56$                       d)  $t_n = 47 - 6n - 3 ; - 61$

e)  $t_n = 1 - 3n ; - 29$                       f)  $t_n = 17 - 8n ; - 351$

6a) 9<sup>th</sup>                      b) 11 rows

7) 15<sup>th</sup>

8a) i) 13<sup>th</sup>                      ii) 25<sup>th</sup>                      iii) 21<sup>st</sup>                      iv) 10<sup>th</sup>                      v) 15<sup>th</sup>                      vi) 25<sup>th</sup>

9a) 1924, 1928, 1932, 1936, 1940, 1944                      b) 1940, 1944; they coincided with World War II                      c) 16