

## Unit 10 Lessons 1-2 Homework Set

Write the first four terms of each sequence whose general term is given.

1.  $a_n = 3^n$

2.  $a_n = (-1)^n(n + 3)$

3.  $a_n = \frac{2n}{n+4}$

4.  $a_n = \frac{(-1)^{n+1}}{2^{n-1}}$

The sequences are defined using recursion formulas. Write the first four terms of each sequence.

5.  $a_0 = 7$  and  $a_n = a_{n-1} + 5$  for  $n \geq 1$

6.  $a_0 = 3$  and  $a_n = 4a_{n-1}$  for  $n \geq 1$

7.  $a_0 = 4$  and  $a_n = 2a_{n-1} + 3$  for  $n \geq 1$

The general term of a sequence is given and involves a factorial. Write the first four terms of each sequence.

8.  $a_n = \frac{n^2}{n!}$

9.  $a_n = 2(n + 1)!$

Write the first six terms of each arithmetic sequence.

10.  $a_1 = 300, d = -90$

11.  $a_1 = \frac{5}{2}, d = -\frac{1}{2}$

12.  $a_n = a_{n-1} - 0.4, a_1 = 1.6$

Find the indicated term of the arithmetic sequence with first term,  $a_1$ , and common difference,  $d$ .

13. Find  $a_{50}$  when  $a_1 = 7, d = 5$

14. Find  $a_{60}$  when  $a_1 = 35, d = -3$

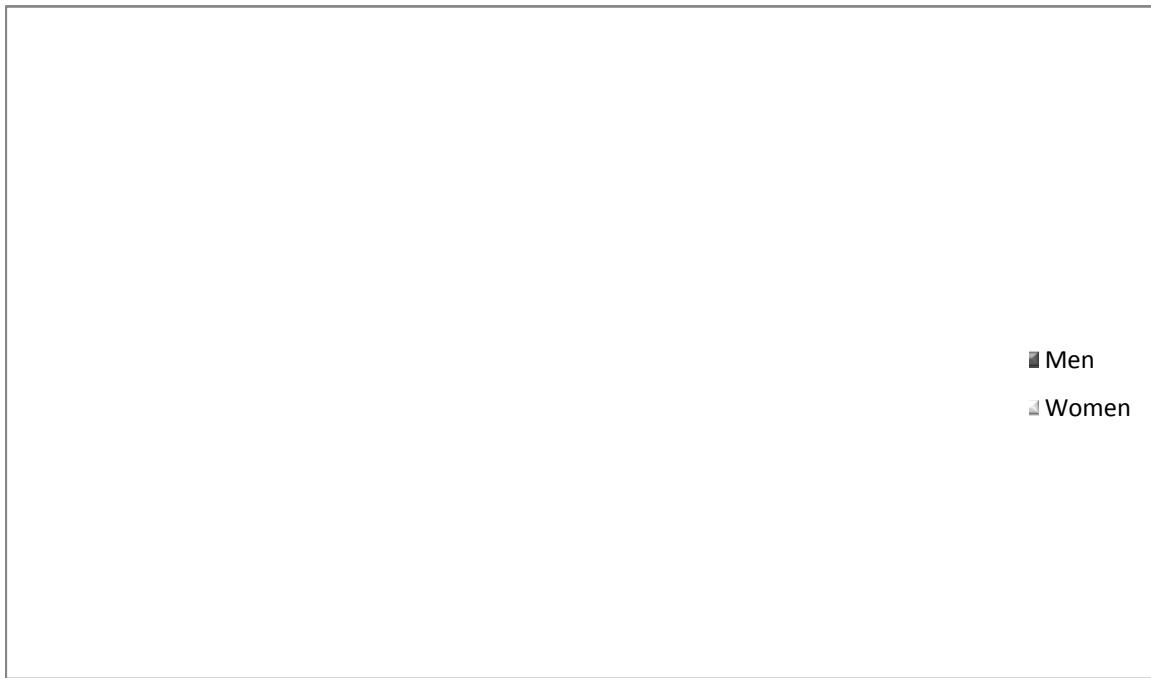
Write a formula for the general term (the  $n$ th term) of each arithmetic sequence. Do not use a recursion formula. Then use the formula for  $a_n$  to find  $a_{20}$ , the 20<sup>th</sup> term of the sequence.

15.

16.

17. Find the sum of the first 20 terms of the arithmetic sequence:

18. Find the sum of the first 50 terms of the arithmetic sequence:



19. In 1970, the median age of first marriage for U.S. men was 23.2 (see above chart). On average, this age has increased by approximately 0.12 per year.

- Write a formula for the  $n$ th term of the arithmetic sequence that describes the median age of first marriage for U.S. men  $n$  years after 1969.
- What will be the median age of first marriage for U.S. men in 2009?

20. You are considering two job offers. Company A will start you at \$19,000 a year and guarantee a raise of \$2600 per year. Company B will start you at a higher salary, \$27,000 a year, but will only guarantee a raise of \$1200 per year. Find the total salary that each company will pay over a ten-year period. Which company pays the greater total amount?