Name	_ period	date	score

Show algebraically that each sequence is arithmetic and find the common difference.

1. 
$$\{a_n\} = \{3n+5\}$$
  
2.  $\{a_n\} = \{6-2n\}$   
3.  $\{a_n\} = \{e^{\ln n}\}$ 

Find the *n*th term and  $51^{st}$  term of the arithmetic sequence with the given first term and common difference.

4. 
$$a_1 = -2, d = 4$$
  
5.  $a_1 = 5, d = -3$   
6.  $a_1 = 20, d = -\frac{1}{4}$ 

Find the indicated term in each arithmetic sequence.

7. $80^{\text{th}}$ term of $-7, -4, -1, \dots$	8. $72^{nd}$ term of 428	9. $35^{\text{th}}$ term of $4\sqrt{5}$ , $6\sqrt{5}$ , $8\sqrt{5}$
7.00 tom 01 7, 1, 1,	0.72 term of 1, 2, 0,	$\mathbf{y}_{3,3,3,5} = \mathbf{y}_{3,3,5} = \mathbf{y}_{3,5} = \mathbf{y}_{3,5}$

a) Find the first term and the common difference.
b) Give a recursive formula for the sequence.
c) Find a formula for the *n*th term.
10. 8<sup>th</sup> term is 8; 20<sup>th</sup> term is 44
11. 9<sup>th</sup> term is -5; 15<sup>th</sup> term is 25
12. 7<sup>th</sup> term is 4; 17<sup>th</sup> term is -96
13. 12<sup>th</sup> term is -4; 18<sup>th</sup> term is -28

Find each sum.

14. $1+3+5++(2n-1)$	15. 5+8+11++44	16. $6+2-2-670$
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17. 
$$\sum_{k=1}^{80} (3k-4)$$
 18.  $\sum_{k=1}^{35} (5-3k)$  19.  $\sum_{k=1}^{60} \left(\frac{k}{4} + \frac{1}{2}\right)$ 

## Solve each problem. Show your work.

20. The Drury Lane Theater has 25 seats in the first row and 30 rows in all. Each successive row contains one additional seat. How many seats are in the theater?

- 21. A brick staircase has a total of 30 steps. The bottom step requires 100 bricks. Each successive step requires two fewer bricks than the prior step.
  - a) How many bricks are required for the top step?
  - b) How many bricks are required to build the entire staircase?

22. How many rows are in the corner section of a stadium containing 2040 seats if the first row has 10 seats and each successive row has 4 additional seats?

23. An outdoor amphitheater has 35 seats in the first row, 37 in the second row, 39 in the third row, and so on. The back row has 87 seats. How many total people can the amphitheater seat?