11.2- Arithmetic Sequences and Series

NAME _____DATE _____

Find the indicated term of each arithmetic sequence.

1. Find the twentieth term of the arithmetic sequence with $a_1 = 15$ and $d = 4$.

2. Find the seventh term of the arithmetic sequence with $a_1 = -81$ and $d = 12$.

3. Find a_{31} of the arithmetic sequence 18, 15, 12, 9, ...

4. Find a_{100} of the arithmetic sequence -63, -58, -53, -48, ...

Write an equation for the *n*th term of each arithmetic sequence.

1) $a_1 = 15$ and $d = 38$

2) $a_1 = 72$ and $d = -13$

3) -56, -39, -22, -5, ...

4) -94, -52, -10, 32, ...

Find the sum of each arithmetic series.

1. $a_1 = 12$, $a_n = 100$, $n = 12$

2. $a_1 = 50$, $a_n = -50$, $n = 15$

3. $a_1 = 60$, $a_n = -136$, $n = 50$

4. $a_1 = 20$, $d = 4$, $a_n = 112$

5. $a_1 = 180$, $d = -8$, $a_n = 68$

6. $a_1 = -8$, $d = -7$, $a_n = -71$

7. $a_1 = 42$, $n = 8$, $d = 6$

8. $a_1 = 4, n = 20, d = 2\frac{1}{2}$

9. $a_1 = 32$, $n = 27$,
   $d = 3$

10. 8 + 6 + 4 + ... + -10

11. 16 + 22 + 28 + ... + 112

12. $\sum_{n=18}^{42} (4n - 9)$

13. $\sum_{n=20}^{50}(3n+4)$

14. $\sum_{j=5}^{44}(7j-3)$

Find the first three terms of each arithmetic series.

1. $a_1 = 4$, $a_n = 31$, $S_n = 175$

2. $a_1 = -3$, $a_n = 41$, $S_n = 228$

3. $n = 10$, $a_n = 41$, $S_n = 230$

4. $n = 19$, $a_n = 85$, $S_n = 760$

Find the arithmetic means in each sequence.

1) 17, __?__, __?__, __?__, 41

2) 235, __?__, __?__, __?__, __?__, __?__, __?__, 32

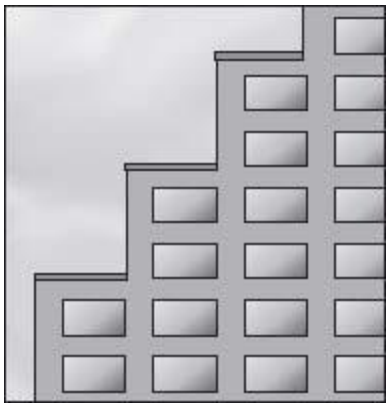
Find the sum of each arithmetic series.

1) 1 + 4 + 7 + 10 + ... + 43

2) -2 + (-5) + (-8) + ... + (-20)

Real world applications:

1. **WINDOWS** A side of an apartment building is shaped like a steep staircase. The windows are arranged in columns. The first column has 2 windows, the next has 4, then 6, and so on. How many windows are on the side of the apartment building if it has 15 columns?



2. **WEIGHTS** Nathan has a collection of barbells for his home gym. He has 2 barbells for every 5 pounds starting at 5 pounds and going up to 80 pounds. What is the total weight of all his barbells?

3. **TRAINING** More than 380,000 people run in U.S. marathons each year. Matthew is training to run a marathon. He runs 20 miles his first week of training. Each week, he increases the number of miles he runs by 4 miles. How many total miles did he run in 8 weeks of training?