# Day on Arithmetic Sequence Practice

1-4: For each arithmetic sequence, find the next 3 terms, the common difference, the nth term named in the problem, and finally, write an equation that models the sequence.

 $8, -2, -12, -22, \ldots$  Find  $a_{31}$ 

$$a = -2 - 8 = -10$$
  $a_5 = -32$   $a_6 = -42$ ,  $a_7 = -52$ 

 $a_n = 8 + (n-1)(-10)$ 

$$-10n + 10$$

$$31 = 9 + 30000$$

$$(a_{31} = -292)$$

3. -24, -44, -64, -84, ... Find a36

$$a_n = -20n - 4$$

$$a_{36} = -24 + 35(-20)$$

$$a_n = 10n - 30$$

$$(a_{38} = 350)$$

44, 48, 52 .... Find a23

$$a_n = 4n + 36$$

$$(a_{23} = 128)$$

5-6: Find the nth term named in the problem.

5. d = -7,  $a_1 = -37$ . Find  $a_{26}$ 

$$a_{26} = -37 + 25(-7)$$

$$a_{26} = -212$$

6. 
$$d = 5$$
,  $a_2 = -9$ . Find  $a_{36}$ 

$$a_{36} = -9 + 34(5)$$

$$a_{36} = 161$$

7-8: Find the indicated term in each arithmetic sequence.

9-10: Show your work to solve each word problem.

Julia loves a good sale! She only has \$75 to spend. She has her eye on a handbag that is \$355. The sale policy at TJ Max is to reduce the price of each item by 30% every week. How many weeks with she can purchase the Kate Spade bag? (1-3)355, 248.50, 173,95, ...

Jory loves to lift weights. This is AFTER he does his math homework every day! His goal is to lift 265 pounds unassisted. Currently, he can lift 125 pounds. If it takes him(7 weeks to reach his goal, and he increased the amount of weight each week by the same amount. How much weight did he add each week?

\$ 75=355 (.7)h .2113=(.7) log. 2113=n log. 7.2113=n

7n 2 H.36 (5 weeks

265 = 125 + (7-0)d 265 = 125 + 7d

## Day of Arithmetic Series Practice

## 1-6: Find the sum (S<sub>n</sub>) for each arithmetic series described.



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

$$S_{12} = \frac{12}{5}(12+100)$$
 $(6(112) = (672)$ 

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

3. 
$$a_1 = 42, n = 8, d = 6$$

$$S_8 = \frac{9}{2}(142 + a_n) \rightarrow a_8 = 42 + 7(6)$$

$$= 4(42 + 84) \rightarrow a_8 = 84$$

$$= 4(42 + 84) \rightarrow 504$$

$$\sum_{n=1}^{\infty} (2n+1)$$

$$S_{20} = 20 \left( \frac{3}{2} + \frac{41}{n+2} \right) = (440)$$

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

$$S_{15} = \frac{15}{50}(50 + 50)$$
  
 $7.5(0) = 0$ 

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

$$S_{20} = \frac{20}{2}(4+a_n) \quad a_{20} = 4+19(2.5)$$

$$S_{20} = \frac{20}{2}(4+a_n) \quad a_{20} = 51.5$$

$$= 10(4+51.5) \Rightarrow (555)$$

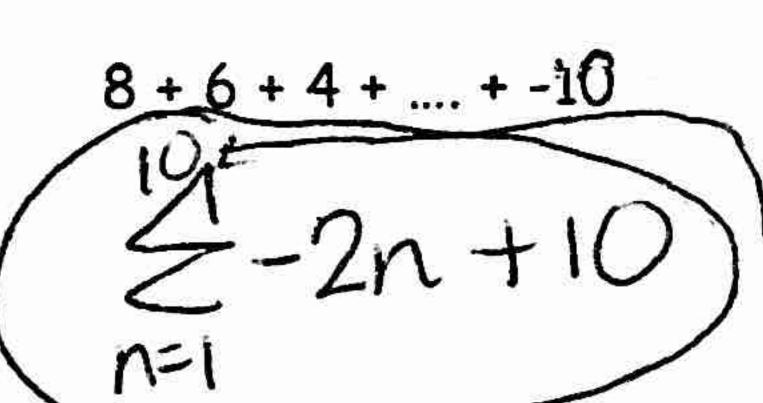
$$\sum_{n=5}^{25} n - 1$$

$$S_{21} = 21 - (4 + 24) + (294)$$

$$S_{21} = 21 - (4 + 24) + (294)$$

### 7-8: Use sigma notation to express each series and find the sum.





$$-10=8+(n+)(-2)$$

$$-10 = -2n + 2$$

$$-10 = -2n + 2$$

$$-20 = -2n$$

$$-10 = n$$

$$S_{10} = 10(9)$$

99=3+(n-1)3 96 = 3n - 3

9-10: Write each series in expanded form, and find its sum.

$$\sum_{n=0}^{6} -3n + 2n$$

$$\sum_{n=0}^{\infty} -3n + 2$$

$$\sum_{n=0}^{\infty} -3n + 2$$

$$S_{7} = 2 + -1 + -4 + -7 + -10 + -13 + -16$$

10. 
$$\sum_{n=3}^{8} \frac{1}{2} n - 6$$

### 11-12: Find the first three terms of each series.

$$a_1 = 7$$
,  $a_n = 83$ ,  $s_n = 900$   $900 = \frac{n}{2}(7+83)$   
 $900 = 45n$   
 $20 = n$ 

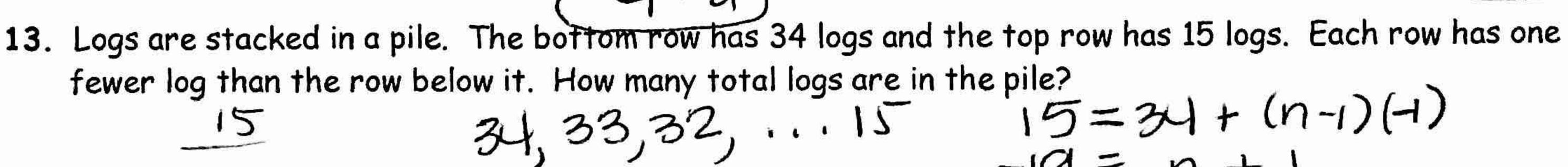
$$20 = 7$$
  
 $83 = 7 + 19(d)$ 



$$a_1 = 5$$
,  $a_n = 200$ ,  $S_n = 4100$ 

$$a_1 = 5$$
,  $a_n = 200$ ,  $s_n = 4100$   $4100 = \frac{n}{2}(5+20)$   
 $4100 = 102.5n$   
 $40 = n$ 

$$200=40=n$$
 $200=5+39(d)$ 
 $-195=39d$ 





$$5_{20} = \frac{20(34+15)}{2}$$