


Cornell Notes 	Topic/Objective: <u>6.5 Arithmetic Series</u>	Name:
		Class/Period: <u>4</u>
		Date: <u>4/19/17</u>
Essential Question: <u>What is the formula for an arithmetic series?</u>		
Questions:	Notes:	
	<p>The sum of the terms of an arithmetic sequence is called an <u>arithmetic series</u>.</p> $S_n = u_1 + u_2 + u_3 + \dots + u_n$ $S_n = u_1 + (u_1 + d) + (u_1 + 2d) + \dots + (u_1 + (n-1)d)$	
see page 172	<p>THE GENERAL FORMULA FOR FINDING THE nth TERM OF AN ARITHMETIC SERIES IS:</p> $S_n = \frac{n}{2}(u_1 + u_n)$ <p>OR</p> $S_n = \frac{n}{2}(2u_1 + (n-1)d)$	
	<p>Ex) Calculate the sum of the first 15 terms of the series $29 + 21 + 13 + \dots$</p> <p>$n=15$ $u_1=29$, $d=-8$</p> $S_{15} = \frac{15}{2}(2(29) + (14)(-8))$ $S_{15} = -405$	

Questions:

Notes:

Ex) Find the number of terms in the
a. series $14 + 15.5 + 17 + 18.5 + \dots + 50$
 $n = ?$

$$S_n = \frac{n}{2} (u_1 + u_n)$$

Before I can use \uparrow

I need to know the value of the
series at n . (ie find S_n)

$$u_1 = 14, u_n = 50, d = 1.5$$

used to
find a term
of the sequence

$$\rightarrow u_n = u_1 + (n-1)d$$

$$50 = 14 + (n-1)1.5$$

$$50 = 14 + 1.5n - 1.5$$

$$37.5 = 1.5n$$

$$\frac{37.5}{1.5} = \frac{1.5n}{1.5}$$

$$25 = n$$

b. Find the sum of the terms

$$S_{25} = \frac{25}{2} (14 + 50) = 800$$

Questions:

Notes:

Ex) a. Write an expression for S_n , the sum of the 1st n terms of the series $64 + 60 + 56 + \dots$

$$u_1 = 64, d = -4$$

$$\begin{aligned} S_n &= \frac{n}{2} (2u_1 + (n-1)d) \\ &= \frac{n}{2} (2(64) + (n-1)(-4)) \\ &= \frac{n}{2} (128 - 4n + 4) \\ &= \frac{n}{2} (132 - 4n) \end{aligned}$$

$$S_n = 66n - 2n^2$$

b. Find the value of n for which $S_n = 0$

$$66n - 2n^2 = 0$$

$$2n(33 - n) = 0$$

$$\frac{2n=0}{2} \quad \frac{33-n=0}{2}$$

~~$n=0$~~ or $n=33$

HW 6G p. 173 #3, 4

6H p. 174 #1, 2, 3, 6