What you should have learned from yesterday’s exercise:

In general, the sum of the terms of an arithmetic sequence is equal to:

Does the rule work when there are an odd number of terms? How can it if one term is not paired?

Example: Given the 9-term sequence: 5, 10, 15, 20, 25, 30, 35, 40, 45
Find the sum using the above stated rule.

First, pair up all the terms $a_1+a_9$, $a_2+a_8$, $a_3+a_7$, $a_4+a_6$. The left over term is $a_5$.

Question: How does $a_5$ compare to the sum of each pair (for example, $a_1+a_9$)?

So the generalized rule for finding the sum of an arithmetic sequence with first term $a_1$ and last term $a_n$ is:

Example: Let’s find the sum of the sequence: -12, 6, 24,..., 888, 906

A) What is the first term? $a_1 =$ ____

B) What is the last term? $a_n =$ ____

C) How many terms are in this sequence? $n =$ ____

D) Find the Sum.
Notations

$S_n$ denotes the sum of the first $n$ terms of a sequence. In other words it is the “$n^{th}$ partial sum.”

Example: What is $S_5$ of the sequence defined by $a_n = 1.5 + 2n$?

SUMMATION NOTATION (Sigma)

A series can also be denoted using Sigma Notation.

Example: $\sum_{n=1}^{4} (3n - 2) =$

Example: $\sum_{n=1}^{44} (26 - 2n) =$

HW: p. 605 #’s 46-53, 57, 59, 61, 63-68