NCLS Math 7 Homework, 4/22/2012 Name:_____

Arithmetic Sequence

1. Consider the arithmetic sequence 1, 4, 7, 10, 13, …
   (a) Find the 15^{th} term in the sequence
   (b) Find a formula for the n^{th} term in the sequence.
2. The 3^{rd} term of an arithmetic sequence is 5 and the 6^{th} is -1. Find the 12^{th} term of this sequence.
3. How many terms are in the arithmetic sequence 5, 11, 17, …, 89?
4. When the 171^{st} even positive integer is subtracted from the 219^{th} odd positive integer, the result is z. Find z.
5. In the infinite arithmetic sequence a_1, a_2, a_3, …, we have a_8=2001. If the common difference d is an integer, find the minimum value of d so that $a_{17} > 10000$.
6. Given an infinite arithmetic sequence a_1, a_2, a_3, …, first term is a_1, common difference is d.
   (a) If we remove the first m terms and make a new sequence with the remaining terms. Is the new sequence an arithmetic one? If so, what are the values for its first term and common difference?
   (b) If we remove all the odd-number terms and make a new sequence with the remaining terms. Is the new sequence an arithmetic one? If so, what are the values for its first term and common difference?
7. Given an arithmetic sequence $\{a_n\}$.
   (a) Is it true that $2a_5 = a_3 + a_7$? $2a_5 = a_1 + a_9$? Why?
   (b) $2a_n = a_{n-1} + a_{n+1}$ (n> 1)? $2a_n = a_{n-k} + a_{n+k}$ (n>k> 1)?

8. Given an arithmetic sequence $\{a_n\}$, fill in the blank below:

a_1	A_3	A_5	A_7	d
-7		8		
	2			-6.5

9. A stadium's seating is arranged as follows: the first row has 15 seats. Starting from the second row, every row has two more seats than the previous row. Can you represent n^{th} row? How many people can 10^{th} row sit?
10. Under normal condition, between the ground and 10km sky, whenever the height increases by 1km, the temperature will drop a fixed value. If the temperature at 1km is 8.5 C, and at 5km is -17.5 C. What are the temperatures at 2km, 4km, and 8km?