

COMPUTER SCIENCE 20, SPRING 2012  
DISCRETE MATHEMATICS FOR COMPUTER SCIENCE

Class #3 (Well Ordering Principle)

**Homework, due in hard copy Monday 1/30/2012 at 10:10am**

1. Write up problem 3 from today's class. Here is the problem reproduced:  
Use the Well Ordering Principle to prove that

$$\sum_{k=0}^n k^2 = \frac{n(n+1)(2n+1)}{6},$$

for all nonnegative integers,  $n$ .

2. Use the Well Ordering Principle to show that  $4^n + 6n - 1$  is divisible by 9  
for all nonnegative integers,  $n$ .

Hint: find an expression for  $4^c + 6c - 1$  in terms of  $4^{c-1} + 6(c-1) - 1$ .