CSE332 Week 1 Section Worksheet

1. Find values for c and n0 (according to the definition of O( )) for f(n) is O(g(n)), where
   a.
      $f(n)=7n$
      $g(n)=n^2/10$
   b.
      $f(n)=1000$
      $g(n)=3n^3$
   c.
      $f(n)=7n^2+3n$
      $g(n)=n^4$
   d.
      $f(n)=n+n\log n$
      $g(n)=2n\log n$

2. True or false?
   a. f(n) is Θ (g(n)) implies f(n) is O(g(n))

   b. f(n) is Θ (g(n)) implies g(n) is Θ (f(n))

   c. f(n) is O(g(n)) implies g(n) is O(f(n))

3. Find functions f(n) and g(n) such that f(n) is O(g(n)) and the constant c for the definition of O( ) must be >1. That is, find f & g such that c must be greater than 1, as there is no sufficient n0 when c=1.

4. What's the O( ) run-time of this code fragment in terms of n. Why?

```
sum = 0;
for (i = 1; i <= n; i++)
{
	for (k = 1; k <= i * i * i; k++)
	{
		if (k % 10 == 0)
		{
			for (x = 1; x <= n; x++)
			{
				sum++;
			}
		}
	}
}
```