Assignment 5

Due Friday, February 1

Name: _____

1. Factor the following without using a calculator: 3240. (You will find the following fact useful: A number is divisible by 3 precisely when the sum of its digits is divisible by 3.) You could, for example, do this using Wolfram Alpha (or something similar), but you're going to be asked a question similar to this on an upcoming test, and so knowing how to do it may be a good thing.

2. A manufacturing facility is constructing a new smokestack and must meet federal and state requirements for pollution control. There are seven types of filters available, and it is known that using any three filters of different type at the same time will do the job and meet regulations. (The three filters may be placed in any order, etc.) How many different configurations are possible?

3. There are roughly 340 models of cars available on the market currently. Awards are to be given for "most fuel efficient," "most fuel inefficient," "most environmentally friendly," and "most destructive to the planet." No car can receive two awards, and each award is only awarded to a single car. How many distinct ways can these awards be given out?