Some Word Problems

1. The density of a liquid is .821 g/mL. What is the volume (in mL) of 63.1g of this liquid? How many grams will fill the test tube shaped like a cylinder 10cm long and a hemisphere on the bottom that has a radius of 1cm? (1 cm^3=1 mL)

2. A salesperson find that her sales average 40 cases per store when she visits 20 stores a week. Each time she visits an additional store per week, the average sales per store decrease by 1 case. How many stores should she visit if she wants to maximize her sales?

3. You have \$5000 in a retirement fund and would like a return of 5% (to do slightly better than the historical trends of inflation). There are 5 year CDs (certificate of deposits) being offered with an annual rate of 3.05% and index funds (a collection of stocks from companies included in measures like the S&P 500) that returned 17.3% in the 1990's. How much money do you relegate to a CD and how much money do you put in an index fund?

4. A radiator contains 8 quarts of fluid, 40% of which is antifreeze. How much fluid should be drained and replaced with pure antifreeze so that the new mixture is 60% antifreeze?

5. An airplane flew with the wind for 2.5 hours and returned on the same route against the wind in 3.5 hours. If the cruising speed of the plane was a constant 360 mph in air, how fast was the wind blowing?

6. James T. Kirk is in this course and would like to know if it is still possible to earn a 2.5 now that he's taken two exams. He has looked at the gradebook on catalyst and has computed the averages listed below.

   Assuming James' work does not drastically change in the remaining 3 weeks and his averages remain about the same, find what grade he needs to get on the final to receive a 2.5 in the course. In case you don't remember, the weights specified in the syllabus and the graph of the function f that takes your class percentage x and returns your score on a 4. scale are also provided below.

	weight	James' ave
Mini-Quizzes	5%	95%
WeBWork	10%	10%
WrittenHW	15%	0%
Quizzes	15%	70%
2 Midterms	30%	100%
Final	25%