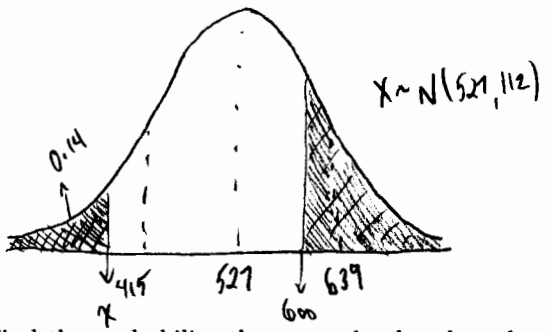
Key.

Quiz 2
Statistics for Business (22S:008, Bognar) **September 6, 2006**

1. (*15 pts*) Scores on the GMAT exam follow a normal distribution with mean $\mu = 527$ and standard deviation $\sigma = 112$. For simplicity, let's denote GMAT scores by X.

   (a) (*3 pts*) Make a properly scaled graph depicting the distribution of the GMAT scores. Be sure to properly mark the location of $\mu = 527$, $\mu + \sigma = 639$, and $\mu - \sigma = 415$ on your graph.



Normal curve w/ mean = 1 pt
Proper scaling w/ labeled pts of inflection = 2 pts.

   (b) (*6 pts*) Find the probability that a randomly selected person scores more than 600 on the GMAT exam. *Clearly show all of your work using the probability notation from class.*

$$P(X > 600) = P\left(\frac{X-527}{112} > \frac{600-527}{112}\right) = P(Z > 0.652) = 1 - 0.7422 = 0.2578$$

2pts 2pts 2pts

   (c) (*6 pts*) Suppose Hank's score on the GMAT exam was at the 14th percentile. What was Hank's GMAT score? *Clearly show all of your work using good notation.*

$$z = \frac{x-\mu}{\sigma} \rightarrow x = \mu + z\sigma = 527 + (-1.08)(112) = 527 - 120.96 = 406.04$$

2pts 2pts.

For the 14th %ile, $z = -1.08$] 2 pts

2. (*5 pts*) Suppose the weights X of bags of potato chips follow a normal distribution with mean μ ounces and standard deviation $\sigma = 0.07$ ounces. If 6.3% of the bags weigh less than 7.93 ounces, what is the mean μ? *Hint: Use the standardization formula. Clearly show all of your work using good notation.*

$$z = \frac{x-\mu}{\sigma} \rightarrow z\sigma = x - \mu \rightarrow \mu = x - z\sigma = 7.93 - (-1.53)(0.07) = 7.93 + 0.1071 = 8.0371$$

3 pts 1 pt

For the 6.3th %ile, $z = -1.53$] 1 pt