Stat 2470, Quiz #4, Spring 2014 Name KEY

Instructions: Show all work. You may use your calculator rather than compute formulas by hand, but if you do, 'show work' by saying which program you used to obtain the result and what information you entered. Round measures of center to one decimal place more than the data, and variance/standard deviation to two decimal places more than the original data. Round probabilities to three decimal places (or percent plus one decimal place).

1. Suppose that a house in a certain development sells for $Y = 145X - 150$ in thousands of dollars where X is the number of thousands of square feet in the house. Suppose that there are three sizes of homes: 2000 sq.ft., 2500 sq.ft. and 3000 sq.ft. The developer builds the houses randomly with probabilities: P(2000)=0.3, P(2500)=0.5, P(3000)=0.2.
   a. Find the expected size of a house in the development.

   $2000 * .3 + 2500 * .5 + 3000 * .2 = 2450$

   b. Find the expected price of a house in the development.

   $145(2450) - 150 = \$355,100$

   c. What is the variance of the size of the houses in the development?

   $2000^2 * .3 + 2500^2 * .5 + 3000^2 * .2 = 6,125,000$

   $2450^2 = 6,002,500$

   $6125000 - 6002500 = 122,500$

   d. What is the variance of the prices of the homes in the development?

$145^2 (122,500) =$

$2,575,562,500 \approx 2.576 \times 10^9$

2. What conditions would be needed to make choosing cards from a deck into a binomial experiment?

You would need to split the cards into just 2 categories like hearts & not hearts (B w/ replacement)

3. If the probability of a certain event in a given trial is 0.6, and 10 identical trials are to be conducted, what is the probability that more than 5 successes (occurrences of the event) will be recorded in the ten trials?

1 - binomialcdf(10, .6, 5) = .6331

or 63.31%