

This is an open book quiz. You are allowed to use your text and written notes. Other books, phones, laptops, PDA's and text messaging devices are prohibited. Calculators are permitted. Give complete explanations to receive full credit. There are [30] total points.

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Binomial Random Variables.

The Circleville Protractor Company receives 60% of its orders over the internet.

- a. [10] Among 20 random, independently placed orders, what is the probability that at least 12 are received over the internet?

- b. [10] Among 20 random, independently placed orders, what is the probability that the number of internet orders is two standard deviations or more below the expected number of internet orders?

- c. [10] Let X be the number of internet orders among 3 random, independently placed orders. Plot $F(x)$, the cumulative distribution function of X . Be sure to label the points of interest in your graph.

