Department of Mathematics and Statistics
Semester 122

STAT319 Quiz 2 Saturday March 2, 2013

Name: _____ ID #: _____

1) Samples of 25 parts from a metal punching process are selected every hour. Typically 1% of the parts require rework. Let X denote the number of parts in the sample that require rework. A process problem is suspected if X exceeds its mean by more than 3 standard deviations.
   a) What is the probability of a process problem?

   b) If the rework percentage increases to 4%, what is the probability that X exceeds 1?

2) The weight of a sophisticated running shoe is normally distributed with a mean of 0.35 kg and a standard deviation of 0.015 kg.
   a) What is the probability that a shoe weighs more than 0.37 kg?

   b) What weight exceeds 99.9% of all the shoes produced?

   c) What must the standard deviation of weight be in order for the company to state that 99.9% of its shoes are less than 0.37 kg?