

Math 153 - Quiz 10

November 19, 2015

Name key

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (6 points) The bottlers of YumTea know that the volumes of their bottles are normally distributed, but they have no reliable estimate for the population standard deviation. The volumes (in ml) of ten randomly selected bottles are given below.

502.9, 499.8, 503.2, 502.8, 500.9, 503.9, 498.2, 502.5, 503.8, 501.4

Construct a 95% confidence interval estimate for the mean volume of bottles of YumTea. Give an interpretation of your result in a complete sentence.

T Interval w/ Data gives (500.62, 503.26).

WE ARE 95% CONFIDENT THAT THE TRUE MEAN

VOLUME IS BETWEEN 500.62 ml AND 503.26 ml.

2. (4 points) Yearly Medicare spendings per beneficiary are normally distributed with population standard deviation \$612. Determine the sample size required to compute a confidence interval estimate with a margin of error of \$75 at the level $\alpha = 0.05$.

$$n = \left(\frac{\text{invNorm}(1-0.025) \cdot 612}{75} \right)^2 \approx 255.786$$

CHOOSE $n = 256$