



Name: _____

Class: 25 _____

Math Tutor: _____

Term 2 Week 9 Revision
Topic: Hypothesis Testing

1 TMJC Prelim 9758/2020/02/Q11 (modified)

A supplier claims that their bananas have a mean mass of more than 125 g. Their masses are normally distributed and the population standard deviation is 10 g. A supermarket decides to test the claim and measures the masses of a random sample of 20 bananas from the supplier.

Given that the supplier's claim is valid at the 5% level of significance, find the range of possible values of the sample mean. [3]

Let Y be the mass of a randomly chosen banana from the supplier, in g, and μ be the population mean mass of bananas from the supplier, in g.

$$H_0 : \mu = 125$$

$$H_1 : \mu > 125$$

Perform a 1-tail test at 5% level of significance.

$$\text{Under } H_0, \bar{Y} \sim N\left(125, \frac{10^2}{20}\right)$$

To reject H_0 , $p\text{-value} \leq 0.05$

$$P(\bar{Y} \geq \bar{y}) \leq 0.05$$

$$\text{From GC, } P(\bar{Y} \geq 128.678) = 0.05$$

$$\bar{y} \geq 128.6780 \Rightarrow \bar{y} \geq 129 \text{ (3sf)}$$