Stat 328 Lab #1 Key Summer 2000

(a) \( \bar{y} = 95.1124 \quad s = 0.000129 \)

(b) Attached is a normal plot, histogram and some intervals for \( \mu \) and \( \sigma \) made using JMP 4.0. The normal curve fitted on the histogram and the confidence intervals for \( \mu \) and \( \sigma \) were added under the \textbf{Fit Distribution} menu. (In JMP-IN 3.2.6 you can get the normal curve from the checkmark on the lower left corner of the report. I haven't figured out if JMP-IN 3.2.6 will give the confidence interval for \( \sigma \).)

(c) 95% Confidence interval for \( \mu \): (95.1123, 95.1124)

95% Confidence interval for \( \sigma \): \((9.013445 \times 10^{-5}, 2.263865 \times 10^{-4})\)

(d) 95% prediction interval for a single additional observation: (95.1121, 95.1127)

(e) The scale is inaccurate.

(f) The scale is precise.

(g) 99.99% and 93.55% respectively.

(h) \( P(Weight < 111.2) = 0.16028 \)

\( P(Weight > 111.2) = 0.12765 \)

(i) \( P(Weight) < 113.2) = 0.25536 \)

\( P(Weight > 113.2) = 0.070355 \)

\( P(Weight < 109.2) = 0.091947 \)

\( P(Weight > 109.2) = 0.21127 \)

(j) \( \alpha = .16028 \) (from (h)!!)

(k) Yes. If \( \sigma \) could be cut in half, 2.34% of complete consumer units will fail the final inspection and 1.14% of consumer units missing the plastic bag will pass the final inspection.

(l) \( P(Weight < 123.47) = 0.01976 \)

\( P(Weight < 129.82) = 0.00089156 \)

(m) \( 3.08 = \frac{(104.42 + 6.35x - 5.92) - 104.42}{5.96} \Rightarrow x = 3.82 \)
### Parameter Estimates

<table>
<thead>
<tr>
<th>Type</th>
<th>Parameter</th>
<th>Estimate</th>
<th>Lower 95%</th>
<th>Upper 95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Mu</td>
<td>95.11236</td>
<td>95.11228</td>
<td>95.11245</td>
</tr>
<tr>
<td>Dispersion</td>
<td>Sigma</td>
<td>0.00013</td>
<td>0.00009</td>
<td>0.00023</td>
</tr>
</tbody>
</table>

**Fitted Normal**

Normal Quantile Plot

The fitted normal distribution is normal(95.1124, 0.00013)