**ESTIMATION AND CONFIDENCE INTERVALS**

**What's given in the problem:**

* Sample data: 1.13, 1.55, 1.43, 0.92, 1.25, 1.36, 1.32, 0.85, 1.07, 1.48, 1.20, 1.33, 1.18, 1.22, 1.29
* Sample size: n = 15

**1.Calculate the sample mean:**

2. **Calculate the sample standard deviation**:

**3. Determine the t-score for a 99% confidence interval with 14 degrees of freedom:**

**4. Calculate the margin of error:**

ME =

**5. Construct the confidence interval:**

**Part B: Using Known Population Standard Deviation**

**1.Use the known population standard deviation:**

**2. Determine the Z-score for a 99% confidence interval:**

**3. Calculate the margin of error:**

ME =

**4.Construct the confidence interval:**

**Final Answers**

* The 99% confidence interval using the sample standard deviation is {(1.09, 1.39)} million characters.
* The 99% confidence interval using the known population standard deviation is {(1.11, 1.37)} million characters.