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Chapter: 9 - Hammermill

Problem Definition:

Hammermill would like to determine if the width of their paper exceeds 216mm. Paper not meeting these dimensions jams office equipment.

Sigma is known to be; σ = .023mm

Alpha α = .05

Hypothesis:

H_0: $\mu \leq 216$

H_1: $\mu > 216$

Decision Rule:

If Z test statistic is greater than 1.645 reject the null

P < α ; Reject the null

Test:

Test

Null hypothesis	H_0: μ = 216
Alternative hypothesis	H_1: μ > 216

Z-Value	P-Value
2.15	0.016

Descriptive Statistics

N	Mean	StDev	SE Mean	95% Lower Bound for μ
50	216.007	0.022	0.003	216.002

μ: population mean of MMPaper
Known standard deviation = 0.023

Conclusion:

The Z test statistic of 2.15 is greater than the critical value of 1.645. Reject the null hypothesis. There is a 5% chance that a type 1 error has been committed.

The hypothesized value of μ = 216 does not fall within confidence interval lower bound of 216.002 milliliters of fill.

Interpretation:

The process is not in control. The sheets are significantly larger than 216mm. The cutting machine may need to be serviced which will include a blade change.

Assumptions:

Randomly and independently selected sample. Sample size exceeds 30 so approximate normality may be assumed under central limit theorem.