

RECITATION 2-group Tests

First:

Collect homework due today.

Handout homework solutions.

Review one or more homework problems, as needed.

Then:

Explain difficult concepts from the lecture.

EXERCISE:

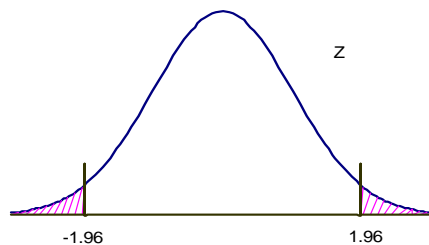
A machinist sets two machines so that they will cut bars of steel with equal average lengths. A quality controller takes two samples of 50, one from each of the two machines.

Machine	I	II
n	50	50
\bar{X}	27.80	27.70
σ	.10	.12

Does the machinery need to be adjusted? Test at $\alpha = .05$.

$$H_0 : \mu_1 = \mu_2$$

$$H_1 : \mu_1 \neq \mu_2$$



$$Z = \frac{27.80 - 27.70}{\sqrt{\frac{(.10)^2}{50} + \frac{(.12)^2}{50}}} = \frac{.10}{.022} = 4.54$$

REJECT H_0

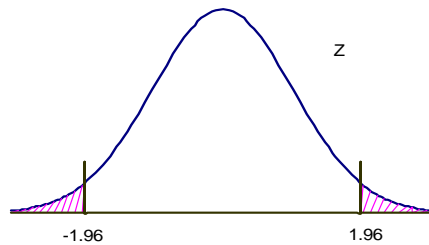
EXERCISE:

	Men's Salaries	Women's Salaries
n	100	64
\bar{X}	380	360
σ	10	16

Test at $\alpha = .05$.

$$H_0 : \mu_1 = \mu_2$$

$$H_1 : \mu_1 \neq \mu_2$$



$$Z = \frac{380 - 360}{\sqrt{\frac{(10)^2}{100} + \frac{(16)^2}{64}}} = \frac{20}{\sqrt{5}} = 8.94$$

REJECT H_0

EXERCISE:

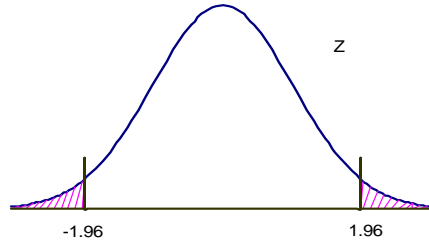
Packaging machinery in a coffee plant. $\Sigma = .2$ oz.

	March 1	March 8
n	20	25
\bar{X}	15.99	16.10

Does the machinery need to be adjusted? Test at $\alpha = .05$.

$$H_0 : \mu_1 = \mu_2$$

$$H_1 : \mu_1 \neq \mu_2$$



$$Z = \frac{15.99 - 16.10}{\sqrt{\frac{(.2)^2}{20} + \frac{(.2)^2}{25}}} = \frac{-.11}{.06} = -1.83$$

DO NOT REJECT H_0

EXERCISE:

Compare two rates of response. Two versions of the same mail survey. One includes an incentive for completing the survey (perhaps a pen or a keychain). The other does not.

Rates of response

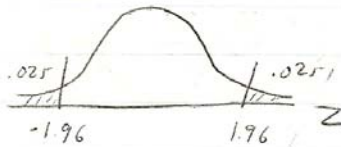
With incentive: $P_{s1} = 77 / 100$

Without incentive: $P_{s2} = 120 / 200$

Is there a difference? Test at $\alpha = .05$.

$$H_0: p_1 = p_2$$

$$H_1: p_1 \neq p_2$$



$$\bar{p} = \frac{77 + 120}{100 + 200} = \frac{197}{300} = .657$$

$$Z = \frac{.77 - .60}{\sqrt{(.657)(.343)\left(\frac{1}{100} + \frac{1}{200}\right)}} = \frac{.17}{.058} = 2.93$$

reject H_0