

SOLUTIONS

King Fahd University of Petroleum & Minerals
Department of Mathematics & Statistics

STAT-212-Term063-Quiz3

Name: _____

ID: _____

Serial: _____

A study was performed to determine whether men and women differ in their repeatability in discussing customers when coming to a big mall. Random samples of 25 men and 21 women were selected; the two sample standard deviations of discussing time were $S_{Men} = 0.98$ minutes and $S_{Women} = 1.60$ minutes. Is there evidence to support the claim that men and women differ in repeatability for this discussing task? Use $\alpha = 0.05$

1. The hypothesis are:

$$H_0: \sigma_{Men}^2 - \sigma_{Women}^2 = 0$$

$$H_A: \sigma_{Men}^2 - \sigma_{Women}^2 \neq 0 \text{ (2-Points)}$$

2. The test statistic value:

$$F_C = \frac{S_{Women}^2}{S_{Men}^2} = \frac{(1.60)^2}{(0.98)^2} = 2.6656 \text{ (2-Points)}$$

3. Decision Rule & decision :

$$\text{Reject } H_0 \text{ if } F_C > F_{\alpha/2, n_{Women} - 1, n_{Men} - 1}$$

$$F_{0.025, 20, 24} = 2.327 \quad \text{(3-Points)}$$

$$2.6656 > 2.327$$

Reject H_0

4. conclusion:

Based on the two samples information, we conclude that the women and men differ in repeatability in discussing customers when coming to a big mall. (1-Point)

5. State any necessary assumptions to perform the test.

I. The Two populations are normally distributed

II. The sample variances are independent

(2-Points)