

SOLUTION

Here is some data nobody cares about. Use Analysis of Variance (ANOVA) to test the null hypothesis that the treatment means are equal at the $\alpha = 0.05$ level of significance. Fill in the ANOVA table.

Levels	Some engineering experiment (whatever)				Totals	Averages
	Sample 1	Sample 2	Sample 3	Sample 4		
1	382	364	374	373	1493	373.25
2	380	351	333	367	1431	357.75
3	376	317	363	316	1372	343
					4296	358

$$\sum \sum y_{ij}^2 = 1544094 \quad (+1)$$

$$\sum y_{i.}^2 = 6159194$$

$$SS_T = \sum \sum y_{ij}^2 - \frac{y_{..}^2}{N} = 1544094 - \frac{4296^2}{12} = 6126 \quad (+1)$$

$$d.o.f. = an - 1 = 11 \quad (+1)$$

$$SS_{\text{Treatments}} = \sum \frac{y_{i.}^2}{n} - \frac{y_{..}^2}{N} = \frac{6159194}{4} - \frac{4296^2}{12}$$

$$= 1830.5 \quad (+1)$$

$$d.o.f. = a - 1 = 2 \quad (+1)$$

$$SS_E = SS_T - SS_{\text{Treatments}} = 4295.5 \quad (+1)$$

$$d.o.f. = a(n-1) = 9 \quad (+1)$$

$$MS_{\text{Treatments}} = \frac{1830.5}{2} = 915.25 \quad (+1)$$

$$MS_E = \frac{4295.5}{9} = 477.28 \quad (+1)$$

$$f_0 = \frac{915.25}{477.28} = 1.918 \quad (+1)$$

$$f_{\text{critical}} = f_{.05, 2, 9} = 4.26 \quad (+1)$$

$f_0 \neq f_{\text{critical}}$
fail to reject H_0
(+1)

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	f_0
Treatments	1830.5	2	915.25	1.918
Error	4295.5	9	477.28	.
Total	6126	11	.	.

No significance to levels