

(Continued)

2. How many groups were analyzed in this ANOVA?

A: 4; we know this because for both main effects, the dfs are 1. To get this number, we must take the number of levels for the factor and subtract 1. There are thus two levels of each factor. As we know from Figure 11.2 and from the example we just used, this is called a 2×2 factorial design, which has four groups.

3. How was $SS_{\text{InteractionAxB}}$ calculated?

A: $SS_{\text{total}} = SS_{\text{within-groups}} + \text{all } SS_{\text{between-groups}}$. So here we have $SS_{\text{total}} = 507$, $SS_{\text{within-groups}} = 440$, $SS_{\text{FactorA}} = 50$, and $SS_{\text{FactorB}} = 2$. By plugging in the numbers, we get:

$$507 = 440 + 50 + 2 + SS_{\text{InteractionAxB}}$$
$$15 = SS_{\text{InteractionAxB}}$$

4. How was $df_{\text{InteractionAxB}}$ calculated?

A: We take the dfs for each factor and multiply them together. That gives us $1 \times 1 = 1$.

5. How was $MS_{\text{InteractionAxB}}$ calculated?

A:

$$\frac{SS_{\text{Interaction AxB}}}{df_{\text{Interaction AxB}}} = \frac{15}{1} = 15$$

6. How was $F_{\text{InteractionAxB}}$ calculated?

A:

$$\frac{MS_{\text{Interaction AxB}}}{MS_{\text{within-groups}}} = \frac{15}{10} = 1.50$$

Problem #2

Fill in the missing pieces of information from this ANOVA summary table:

Source of Variability	SS	df	MS	F
Factor A	10	2	???	???
Factor B	50	2	???	???
Interaction _{AxB}	40	???	???	???
Within-groups	800	???	???	
Total	900	408		

A:

Source of Variability	SS	df	MS	F
Factor A	10	2	5	2.50
Factor B	50	2	25	12.50
Interaction _{AxB}	40	4	10	5.00
Within-groups	800	400	2	
Total	900	408		