HW8 KEY

1.

Source	DF	SS	MS	F	P-Value
C	1	8.161	8.161	3.64	0.074
D	1	13.082	13.082	5.84	0.028

a. Significant at the α=**0.10** level:
- **Main effect of Factor C.**
- **Main effect of Factor D.**

b. $R^2 = 100\% \times \left(1 - \frac{35.851}{75.264}\right) \approx 52.4\%$ **of total variation in the response is explained by the full model involving factors A, B, C and D.**

c. $R^2_{adj} = 100\% \times \left(1 - \frac{31}{16} \times \frac{35.851}{75264}\right) \approx 7.71\%$

d. ANOVA table for interactive model involving factors C and D:

Source	DF	SS	MS	F	P-Val
C	1	8.161	8.161	**4.84**	0.036
D	**1**	**13.082**	**13.082**	**7.75**	0.010
C*D	1	6.771	6.771	**4.01**	0.055
Error	**28**	**47.250**	**1.688**		
Total	31	75.264			

e. $R^2_{adj} = 100\% \times \left(1 - \frac{31}{28} \times \frac{47.250}{75.264}\right) \approx 30.49\%.$

f. $R^2_{adj} = 100\% \times \left(1 - \frac{31}{29} \times \frac{54.0215}{75.2638}\right) \approx 23.27\%.$

g. **Strictly based on R^2_{adj} values, the best model is the interactive model involving C and D, the model in part (e). Of the three, it has the highest R^2_{adj} which means that it is able to explain much of the variation in responses better than the other 2 models.**

2. A.

A	B	D	C=ABD	E=AD	treatment
-	-	-	-	+	e
+	-	-	+	-	ac
-	+	-	+	+	bc e
-	-	+	+	-	cd
+	+	-	-	-	ab
+	-	+	-	+	ade
-	+	+	-	-	bd
+	+	+	+	+	abcde

B. treatment e ac

C. The defining relation is I=ABCD=ADE=BCE. Thus A=BCD=DE=ABCE, and α2 is aliased with γ^{BCD}_{222}, γ^{DE}_{22}, and γ^{ABCE}_{222}.