1.

1. Class size is the response variable
2. Education Level and Location are the factors in this problem
3. Education Level: Elementary, Intermediate, High Scholl

Location: City A, City B, City C

1. The is not an interaction between Education Level and City.

The P-value is 0.99952 and does not satisfy the level of significance for interaction.

1. Yes, The P-Value for education is .00137 which shows that there is an effect.
2. Yes, The P-Value for city is .0000 which shows that there is an interaction.
3. Since the p-value for interaction does not meet the level of significance we can assume that there is no interaction, meaning on variable is not dependent on the other. From looking at the plots the board can conclude that city C has the smallest classes at elementary level education and city A has the biggest classes at high school level education

A screenshot of a cell phone

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2.

1. There is interaction between body fat and smoking at p-value 0.004247.
2. In this problem I would choose the anova table with interaction because it helps me interpret the main effects since there is interaction at a significance level.

Anova table with interaction:

A screenshot of a cell phone

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Anova table without interaction:

A picture containing table

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c)

There is no pattern is the residual plot. There seems to be a great horizontal line along the axis at 0, so we can assuming linearity.

We can assume normality since the points fall along the reference line.

In the scale-location graph we can observe that the is no clear horizontal line. There may be non-constant variances, a solution to reduce the heteroscedasticity we can use a log transformation. Furthermore, this may be a potential problem.

A close up of a map

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1. Since the model is additive, so both affect the number of minutes of vigorous exercise required to reach a predetermined level of stress. The difference in low and high body fat is 8.83 minutes until stress. In smoking, the difference until stress between light smokers and heavy smokers is 2.9 minutes, the difference between none and heavy is 7.5 minutes and the difference between none and light is 4.5 minutes until stress. If you have low body fat and don’t smoke and the other person has high body fat and smokes heavy the difference until stress is about 16 minutes. If both persons don’t smoke but one has low body fat and the other has high body fat the difference until stress is about 14 minutes.