SPSS

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	200.857	2	100.429	3.288	.061
Within Groups	549.714	18	30.540		
Total	750.571	20			

1. ANOVA

a. What characteristic of the data above indicates that we should use *one-way* analysis of variance?

b. If the objective is to test the claim that the three size categories have the same *mean* chest deceleration, why is the method referred to as analysis of *variance*?

2. Why Not Test Two at a Time? Refer to the sample data given in Exercise 1. If we want to test for equality of the three means, why don't we use three separate hypothesis tests for $\mu_1 = \mu_2$, $\mu_1 = \mu_3$, and $\mu_2 = \mu_3$?

3. Test Statistic What is the value of the test statistic? What distribution is used with the test statistic?

4. *P*-Value If we use a 0.05 significance level in analysis of variance with the sample data given in Exercise 1, what is the *P*-value? What should we conclude?

In Exercises 5–16, use analysis of variance for the indicated test.

5. Lead and Verbal IQ Scores Example 1 used measured *performance* IQ scores for three different blood lead levels. If we use the same three categories of blood lead levels with measured *verbal* IQ scores, we get the accompanying Minitab display. (The data are listed in Data Set 5 of Appendix B.) Using a 0.05 significance level, test the claim that the three categories of blood lead level have the same mean verbal IQ score. Does exposure to lead appear to have an effect on verbal IQ scores?

MINITAB

Source	DF	SS	MS	F	P
LEAD	2	142	71	0.39	0.677
Error	118	21441	182		
Total	120	21584			

6. Lead and Full IQ Scores Example 1 used measured *performance* IQ scores for three different blood lead levels. If we use the same three categories of blood lead levels with the *full* IQ scores, we get the accompanying Excel display. (The data are listed in Data Set 5 of Appendix B.) Using a 0.05 significance level, test the claim that the three categories of blood lead level have the same mean full IQ score. Does it appear that exposure to lead has an effect on full IQ scores?

EXCEL

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	938.3653	2	469.1827	2.303395	0.104395	3.07309
Within Groups	24035.63	118	203.6918			
Total	24974	120				

7. Highway Fuel Consumption Data Set 14 in Appendix B lists highway fuel consumption amounts (mi/gal) for cars categorized by size (small, midsize, large). If we use those highway fuel consumption amounts arranged into the three separate size categories, we get the TI-83/84 Plus calculator results shown below. Using a 0.05 significance level, test the claim