

Quick Questions 18 Analysis of Variance

I. Copy the formulas and expressions on the right into this ANOVA summary chart.

Variance Analysis Summary Table				
Variance Sources	df	Sum of the Squares	Mean Squares	ANOVA
Between Treatments				
Within Treatments (error)				
Total Variance				

SS_T	$F = \frac{MS_T}{MS_E}$
$N - t$	SS_{TOTAL}
$MS_T = \frac{SS_T}{t-1}$	$t - 1$
$MS_E = \frac{SS_E}{N-t}$	SS_E
$N - 1$	

II. Answer the following fill in the blank questions.

- A. Analysis of variance requires the populations be _____ distributed.
- B. When using the F distribution, the numerator is always the _____ of the 2 variances.
- C. When doing ANOVA, the numerator of the F distribution measures variance _____ the treatments.
- D. When doing ANOVA, the denominator of the F distribution measures variance _____ the treatments.

III. Complete the following ANOVA study concerning grade point averages randomly selected by a local college. Those using statistics software should skip to part D.

A. Begin by completing this chart.

Analysis of College Grades Based Upon High School Grades						Row Totals Required for Calculations
High H.S. Grades T_1		Medium H.S. Grades T_2		Low H.S. Grades T_3		
College Grades (X_1)	X_1^2	College Grades (X_2)	X_2^2	College Grades (X_3)	X_3^2	
3.4		3.2		2.1		
3.5		2.8		2.5		
3.1		3.0		2.7		
$\sum X_T$						$\sum x =$
$(\sum X_T)^2$						
n						$N = 9$
$\frac{(\sum X_T)^2}{n}$						$\sum \left[\frac{(\sum X_T)^2}{n} \right] =$
$\sum X_T^2$						$\sum x^2 =$