1. Given the following variance-covariance matrix for a repeated measures design with 3 levels of the within factor, show how you would find epsilon using the Box/Geisser-Greenhouse formula

Correlations

		SCORE_1	SCORE_2	SCORE_3
SCORE_1	Pearson Correlation	1.000	.619*	.666*
	Sig. (2-tailed)	.	.000	.000
	Sum of Squares and Cross-products	312.222	153.222	184.444
	Covariance	8.921	4.378	5.270
	N	36	36	36
SCORE_2	Pearson Correlation	.619*	1.000	.152
	Sig. (2-tailed)	.000	.	.375
	Sum of Squares and Cross-products	153.222	196.222	33.444
	Covariance	4.378	5.606	.956
	N	36	36	36
SCORE_3	Pearson Correlation	.666*	.152	1.000
	Sig. (2-tailed)	.000	.375	.
	Sum of Squares and Cross-products	184.444	33.444	245.639
	Covariance	5.270	.956	7.018
	N	36	36	36

**. Correlation is significant at the 0.01 level (2-tailed).

The answer without conducting any arithmetic would be:

s_{jj} mean of the diagonals is (8.921+5.606+7.018)/3
s mean of the entire matrix is (8.921+4.378+5.270+4.378+5.606+.956+5.27+.956+7.018)/9
$\sum s^2_{jk}$ sum of all squared entries is

$$8.921^2+4.378^2+5.270^2+4.378^2+5.606^2+.956^2+5.27^2+.956^2+7.018^2$$

$\sum s^2_{j}$ sum of squared row totals is

$$[(8.921+4.378+5.270)/3]^2 + [(4.378+5.606-+.956)/3]^2 +[(5.27+.956+7.018)/3]^2$$

$$\varepsilon = [3^2 (s_{jj} - s)^2] / [(3-1)(\sum s^2_{jk} - (2)(3)\sum s^2_{j} + 3^2 s^2)]$$