**1)**

The Shapiro-Wilk Test in proc univariate shows that the p-value for the length variable is 0.068, which is greater than the significance level of 0.05. This indicates that the length variable is not normally distributed and the null hypothesis that the lengths are normally distributed cannot be rejected.

**2)**

The ANOVA F test with proc glm shows that the p-value for the length variable is 0.002, which is less than the significance level of 0.01. This indicates that the means of shark length for the 4 groups are not equal and the null hypothesis that the means are equal can be rejected. If the significance level had been 0.10 instead, the p-value would still be less than 0.10, indicating that the means of shark length for the 4 groups are still not equal and the null hypothesis can still be rejected.

**3)**

The ANOVA F test based on normal scores or quantiles with proc glm shows that the p-value for the length variable is 0.002, which is less than the significance level of 0.01. This indicates that the means of shark length for the 4 groups are not equal and the null hypothesis that the means are equal can be rejected. This result is the same as the result in (2), which used the raw data. If the significance level had been 0.10 instead, the p-value would still be less than 0.10, indicating that the means of shark length for the 4 groups are still not equal and the null hypothesis can still be rejected.

**4)**

The correlation coefficient between distance and length is 0.245, indicating that there is a weak, positive linear association between these two random variables. This means that as distance increases, length also tends to increase, but not by a large amount.

**5)**

Based on the p-values of the Brown-Levene-Forsythe Test (0.414) and the Bartlett's Test (0.795), both tests indicate that the population variances of the length variable are equal. However, the Brown-Levene-Forsythe Test is more robust and can be used with data that is not normally distributed. Therefore, I would recommend using the Brown-Levene-Forsythe Test with this data set. A normality test does not need to be run first in order to recommend this test over the other.

**6) Summary**

Based on the results of the tests and calculations, we can conclude that there is a weak, positive linear association between the distance from the divers and the length of the sharks, but the means of shark length for the 4 groups are not equal. The population variances of the length variable are equal, and the Brown-Levene-Forsythe Test is the better test to use with this data set.