

## Answer Key: One-Way ANOVA

1.) Your answer

2.) Treatment effects (differences AMONG group averages) are calculated in the numerator. The denominator measures error (VARIABILITY within groups). If no treatment effect exists, then the computed F-value will be close to 1. As the treatment effect goes up, the F-value goes up. In other words, as the differences among group means increases—due to the independent variable—then the computed F-value goes up. This increases the likelihood of rejecting the null hypothesis.

3.) Your answer

4.) a. F-crit = 2.95      b. F-crit = 4.02      c. F-crit = 2.30      d. F-crit = 3.01

5.) Your answer

6.)

- a.  $F = 13.65$
- b. Yes, significant effect
- c. 16 rats
- d. A one-way ANOVA was conducted to determine whether doses of 0, 10, and 20 mg. of caffeine would significantly impact pellet-finding performance of rats. There was sufficient evidence to reject the null hypothesis;  $F(2,13) = 13.65, p < .01$ . Caffeine has a significant effect on performance. Further post-hoc testing is needed to determine which groups of rats were statistically, significantly different from one another, in terms of average number of pellets found.

7.) Your answer