EXST7015 : Daily Design Question 25

Carefully read the description of the experiment below. The experiment is patterned after an one in a MS thesis by Mark Grippo from Virginia Polytechnic Inst. and State Univ., Blacksburg, VA, in April 13, 2001 titled The Effect of Mercury on the Feeding Behavior of Fathead Minnows (*Pimephales promelas).*

Fathead minnows (*Pimephales promelas)* were exposed to mercury at 1.69, 6.79, and 13.57 µg/l HgCl2 for 10 days. There was also an unexposed control group. There were 6 fish in each group. The experiment consisted of placing each fish in a tank with a dozen partially-buried dead worms. Foraging success was measured as the number of worms found. The main experiment consisted of examining the learning ability of the differently treated fish by examining foraging success for each fish over a week. The data below provide a simpler comparison of worms found and consumed before training and after training. The variable of interest is foraging success (i.e. worms eaten).

Table 1. Average number of worms eaten per day (mean ±SE) during 10-day exposure to HgCl. Each value represents the treatment average of the average number of worms consumed/day by an individual fish. Before statistical comparison, post-trial data were log transformed for equal variance.

	Worms consumed (number/day)	
Exposure Conc (µg/L)	Pre-trial	Post-trial
Control	4.5 ± 0.69	6.8 ± 0.80
1.69	5.5 ± 0.56	7.8 ± 0.66
6.79	5.3 ± 0.56	6.0 ± 0.46
13.57	4.1 ± 0.45	5.7 ± 0.63

Questions:

What is the treatment arrangement for this experiment?

(a) single factor (b) factorial (c) nested

What is the experimental design for this experiment?

(a) CRD (b) RBD (c) LSD (e) Split-plot (d) Repeated Measures

Does it seem to you that the treatments are fixed or random?

(a) fixed (b) random

What is the experimental unit for this experiment?

(a) a chemical (b) a fish (c) foraging success (d) a day (e) a worm (f) a tank

What is the sampling unit for this experiment?

(a) a chemical (b) a fish (c) foraging success (d) a day (e) a worm (f) a tank

What is the dependent variable for this experiment?

(a) a chemical (b) a fish (c) foraging success (d) a day (e) a worm (f) a tank

If the design is RBD, what are the blocks?

(a) a chemical (b) a fish (c) foraging success (d) a day (e) a worm (f) a tank

How many degrees of freedom are available for testing the treatments?

Enter the correct value here: _____