

FrogPond Worksheet

Please answer these questions as you work your way through the *FrogPond* tutorial.

1. Which scenario are you investigating? (I suggest trying Scenario One first.)

___ One ___ Two ___ Three

2. • Calculate the frequency of deformity in Top Pond:

Number of normal frogs counted: _____

Number of deformed frogs counted: _____

Total counted: _____

Frequency of deformed frogs in Top Pond: (# deformed / total counted): _____

- Calculate the frequency of deformity in Bottom Pond:

Number of normal frogs counted: _____

Number of deformed frogs counted: _____

Total counted: _____

Frequency of deformed frogs in Bottom Pond: (# deformed / total counted): _____

3. Do you think the true frequency of deformity is substantially different between the two ponds?

___ Yes ___ No

Explain your reasoning:

If you think the true frequency of deformity is NOT substantially different between the two ponds, select a different scenario and start over.

If you think the true frequency of deformity IS substantially different between the two ponds, your next challenge is to figure out why. Note that the cause of deformity is the same in both ponds. If the frequency of deformity is higher in one pond than the other, it must be because the causative factor is more abundant or intense there.

4. Pick the hypothesis you prefer (I suggest starting with the Parasite Hypothesis):

___ Parasite Hypothesis: The deformities in both ponds are caused by infection with parasitic worms. There are more worms in one pond than in the other.

___ Mutation Hypothesis: The deformities in both ponds are caused by a genetic variant passed from parents to offspring. The frogs in one pond are more likely to carry the variant than are the frogs in the other. The parasites are harmless.

5. Describe and diagram a study that will test the hypothesis you have chosen.

- What will you do with the frogs?
- What data will you collect?
- Predict the results if your hypothesis is correct AND the results if your hypothesis is incorrect.

6. Run your study. Describe and diagram your results. Was your hypothesis correct? If not, design and run a study to test another hypothesis.

7. What can you conclude about the cause of deformity?

8. Match each scenario with the cause of variation in number of legs:

Scenario	Kind of Variation
One _____	A. Environmental variation
Two _____	B. Genetic variation
Three _____	C. Genotype-by-environment interaction
Four _____	D. Chance

9. Describe an experiment that will produce a different outcome under each of four possible hypotheses. Sketch the results you'll get for each and explain your reasoning.