



Intro to Chemistry Test - Lesson 7 – Causation – Answer Key Page 1

1. When thinking of possible reasons to explain how or why something happened, we think of various possibilities called “hypotheses.” What’s the next step?

- (A) Do an experiment to prove the hypothesis.
- (B) Gather together an experimental group and a control group.
- (C) Decide what each hypothesis predicts.**
- (D) Collect relevant data.

The correct answer is C. One you think of various hypotheses to explain something puzzling, decide what each hypothesis predicts, keeping in mind that the predictions have to be something you can find with an experiment.

2. Why doesn’t finding the prediction predicted by one hypothesis immediately prove that hypothesis, and establish that hypothesis as the reason for the puzzling event?

- (A) Because you haven’t thought of all possible hypotheses.
- (B) Because you haven’t looked for the predictions predicted by other hypotheses.
- (C) Even if you have looked for the predictions predicted by other hypotheses and didn’t find them, it doesn’t mean they weren’t there, only that you didn’t find them.
- (D) All three answers are correct.**

The correct answer is D. Proving causation is tricky because we want to believe something that makes sense.

3. True or false: When you have successfully ruled out every other possible cause, the one cause you haven’t ruled out must be the reason for the puzzling event.

- (A) True
- (B) False**

The correct answer is B. Doing what Sherlock Holmes did sometimes works, but how sure are you that you’ve successfully ruled out all other causes? Were your experiments done properly, and have you really thought of all possible reasons, or are there still hypotheses that you haven’t yet considered?

4. What is the difference between an experimental group and a control group?

- (A) The experimental group is the group you perform the experiment on. The control group is not experimented on.
- (B) The experimental group is allowed to act on its own. The control group's behavior is controlled.
- (C) The experimental group is identical to the control group except for one important thing.**
- (D) The experimental group is larger than the control group in order to establish reliability of the results.

The correct answer is C. The experimental and control groups should only differ by one factor, so when both groups are exposed to the same treatment, any difference in results must be due to the single difference in the experimental group.

5. When offering a hypothesis to explain some puzzling observation, the reason to do an experiment is to _____.

- (A) help the hypothesis explain why the observation occurred
- (B) find what the hypothesis predicts**
- (C) prove the hypothesis
- (D) clarify the hypothesis

The correct answer is B. Each hypothesis you offer to explain a puzzling observation predicts something that you can find with an experiment. Finding the prediction supports your hypothesis but does not prove it.