## **Analysis**

1. Chemiosmosis is a process that drives the creation of ATP. This process requires the use of specific enzymes which were unlikely to have existed on early Earth. a. What has this new study uncovered in relation to ATP on early Earth? b. How do scientists postulate that the phosphorus on early Earth was created? c. Explain why this study is important? 2. The scientists in this study attempted to simulate the conditions created from meteorites impacting Earth. In order to do so, they had to implement proper experimental design. a. Scientific experiments strive to be accurate. Accuracy refers to results that are correct. How can accuracy be achieved?

b. Scientific experiments also strive to be reliable. Reliability refers to an experiment that can be duplicated over and over again with the same results. Give an example of how reliability can be achieved.

c. Experiments usually have several controlled variables. These are variables that must be kept constant in all parts of an experiment. For example, if an experiment is testing the effect of sunlight on the growth rate of 5 seeds, the only variable that should change should be the amount of sunlight. All other variables should remain the same to ensure that sunlight is the only aspect affecting the results. The other variables, such as soil type, amount of water, type/amount of fertilizer, are the controlled variables. Looking back at the simulation experiment on the meteorite, describe two variables that should have been controlled.