

Scoring Guide

Score & Description

Complete

Student demonstrates ability to design a simple test of a given hypothesis. The response correctly identifies the following three elements of the experiment: a suitable environment in which to test the hypothesis, an effective light source (a contrast of shaded and light areas must at least be implied), and observation of the directional movement of the paramecia.

Credited environments that allow for free movement include:

- a. container
- b. bowl
- c. reservoir

Partial

Student response does not correctly identify a suitable environment to test the hypothesis. The other two elements are correctly identified.

Unsatisfactory/Incorrect

Student response does not correctly identify a suitable environment to test the hypothesis, and does not correctly identify at least one of the other two elements.

Complete - Student Response

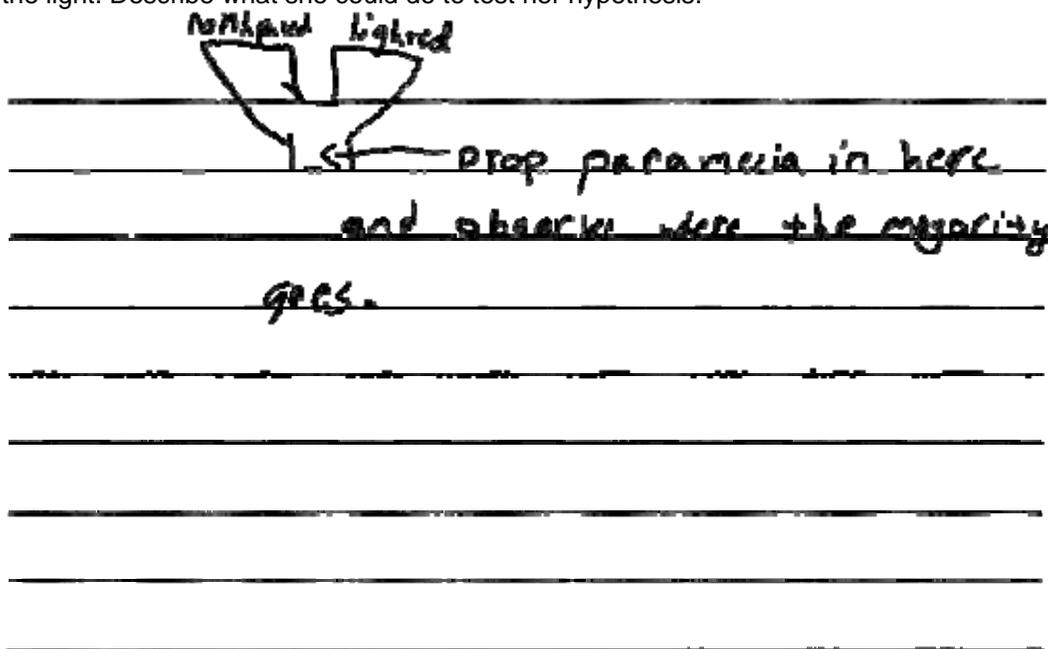
Using a microscope, Linh observes some paramecia in a drop of pond water on a slide. She notices that the paramecia move faster in the area where the light is brightest than they do in an area where the light is less bright. Linh hypothesizes that the paramecia are trying to get away from the light. Describe what she could do to test her hypothesis.

She can collect paramecia
+ put them in a tank that
is half lit + half dark + see
which side the paramecia
go to

Scorer Comments:

Student response correctly identifies a suitable environment in which to test the hypothesis (a tank), implies a suitable light source (half lit and half dark), and mentions the direction of movement of the paramecia.

Using a microscope, Linh observes some paramecia in a drop of pond water on a slide. She notices that the paramecia move faster in the area where the light is brightest than they do in an area where the light is less bright. Linh hypothesizes that the paramecia are trying to get away from the light. Describe what she could do to test her hypothesis.



Drop paramecia in here and observe where the majority goes.

Scorer Comments:

Student response, through the use of a labeled diagram, correctly identifies a suitable environment in which to test the hypothesis, implies a suitable light source (lighted and nonlighted), and mentions the direction of movement of the paramecia.

Partial - Student Response

Using a microscope, Linh observes some paramecia in a drop of pond water on a slide. She notices that the paramecia move faster in the area where the light is brightest than they do in an area where the light is less bright. Linh hypothesizes that the paramecia are trying to get away from the light. Describe what she could do to test her hypothesis.

she could move the light and see if the paramecia would move towards the darkness

Scorer Comments:

Student response identifies a suitable light source, and mentions observing whether the paramecia would move toward the darkness. Response does not identify an environment in which to test the hypothesis.

Using a microscope, Linh observes some paramecia in a drop of pond water on a slide. She notices that the paramecia move faster in the area where the light is brightest than they do in an area where the light is less bright. Linh hypothesizes that the paramecia are trying to get away from the light. Describe what she could do to test her hypothesis.

She could have light on all areas except for one. If it goes to that one spot that doesn't have light, then the paramecia obviously doesn't like the light.

Scorer Comments:

Student response identifies a suitable light source, and discusses the implication if the paramecia move toward the unlit area. Response does not identify an environment in which to test the hypothesis.

Unsatisfactory/Incorrect - Student Response

Using a microscope, Linh observes some paramecia in a drop of pond water on a slide. She notices that the paramecia move faster in the area where the light is brightest than they do in an area where the light is less bright. Linh hypothesizes that the paramecia are trying to get away from the light. Describe what she could do to test her hypothesis.

She could go back and get some more paramecia from the pond and see if they act the same way as the other paramecia acted.

Scorer Comments:

Student response mentions repeating the actions already taken without describing any

elements of a test for the hypothesis.

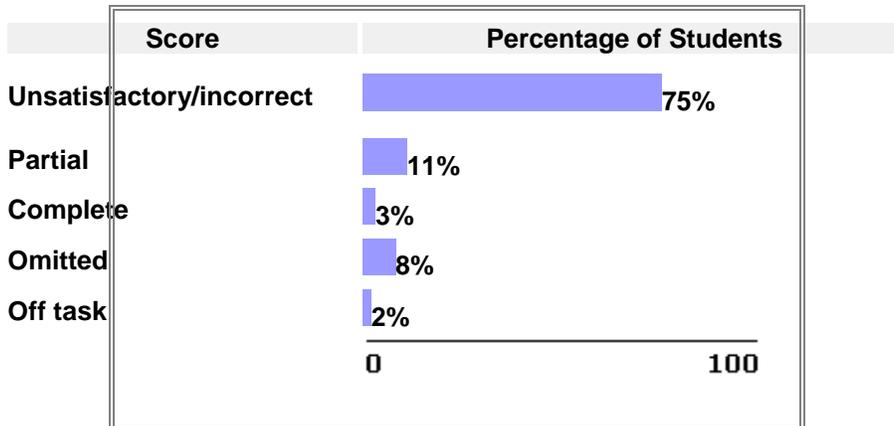
Using a microscope, Linh observes some paramecia in a drop of pond water on a slide. She notices that the paramecia move faster in the area where the light is brightest than they do in an area where the light is less bright. Linh hypothesizes that the paramecia are trying to get away from the light. Describe what she could do to test her hypothesis.

She could shine light on different parts of the pond, and test the water samples to see if her hypothesis works in all cases.

Scorer Comments:

Student response only discusses a light source without mentioning a suitable environment to test the hypothesis, or the direction of movement of the paramecia.

2000 National Performance Results



Note:

- These results are for public and nonpublic school students.
- Percentages may not add to 100 due to rounding.

The Fields of Science: *Life Sciences* (Sub content classification: *Cells and Their Functions*)
Knowing and Doing Science : *Scientific Investigation*

The Fields of Science

Life Sciences

This question measures basic knowledge and understanding of the following:

Knowing and Doing Science

Scientific Investigation

Scientific investigation probes students' abilities to use the tools of science, including both cognitive and laboratory tools. Students should be able to acquire new information, plan appropriate investigations, use a variety of scientific tools, and communicate the results of their investigations.