

Name:

16.3

Photons and Atoms



Question: How does light fit into the atomic theory of matter?

1 How is light produced?

There are no questions to answer in Part 1.

2 Examine the effects of light on glow-in-the-dark material

There are no questions to answer in Part 2.

3 Recording and analyzing your results

In answering these questions, think in terms of light and energy. Explain what happens to the energy in each of these situations:

- a. What happened when the light was not allowed to strike the glow-in-the-dark material? Explain.

- b. What happened when your hand was allowed to rest on the glow-in-the-dark material? Explain.

4 Examining the effect of different colors of light

There are no questions to answer in Part 4.

5 The quantum theory of light

There are no questions to answer in Part 5.

6 Thinking about what you learned

- a. Based on the observations you made in Part 4, what color light has the highest energy? What color light has the lowest energy? Your answer should state how your observations support your conclusion.

- b. Intuitively you might think the more intense the light is that you shine, the more brightly the phosphorus should glow. Explain how your observations support or refute this hypothesis.

- c. How does what you observed support the quantum theory of light and atoms? HINT: What would have happened if electrons were free to absorb any energy rather than just certain energies?
