

# Physical Principles in Living Systems

Name:

## Private Eye Exam

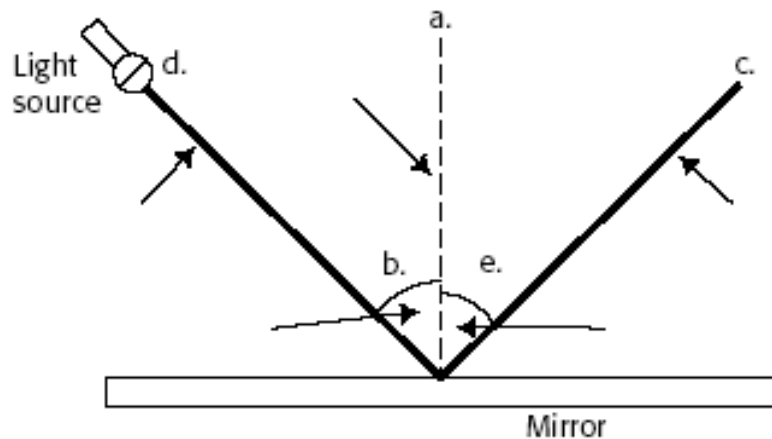
Period:

Fiona wants to be a detective. In order to pass the entrance exam to Private Eye University, she is practicing her spy skills on her friends Jorge, Charles, and Tamika. Reflection is one of the hardest sections on the exam. Use what you have read about in Chapter 3, Section 2 to help Fiona learn about the law of reflection.

Figure 1 in Fiona's notes shows a beam of light hitting and reflecting off a mirror. Label the following parts on the diagram below by writing the term next to the correct arrow:

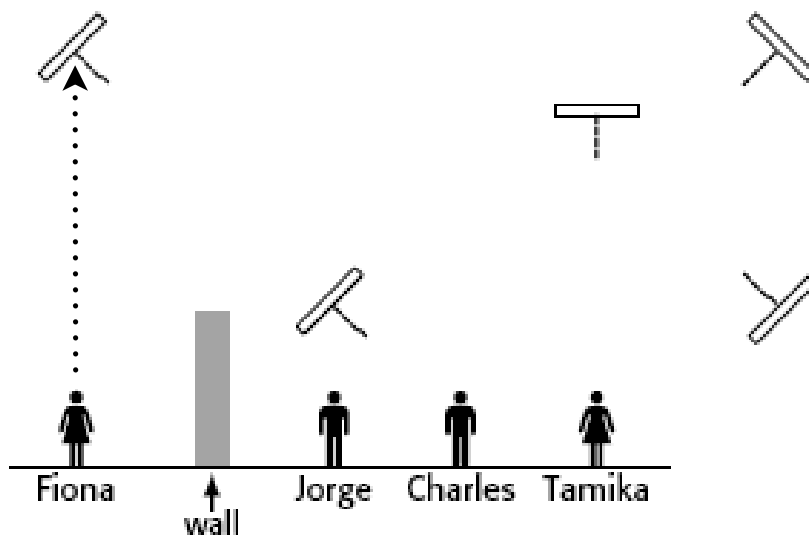
normal    incident beam    reflected beam    angle of incidence    angle of reflection

**Figure 1**



Fiona knows from the law of reflection that the angle of incidence always equals the angle of reflection. She uses this law to plan a system of mirrors that will allow her to spy on her friends. With her special arrangement of mirrors, Fiona can watch her friends walk by as she hides behind a brick wall. Figure 2 shows the arrangement of mirrors. Using the law of reflection, draw the path of light as it would reflect off each of the mirrors. The normals have been drawn on the reflecting surfaces for you. (Hint: Not all the mirrors will be used.) The diagram starts you off by showing an arrow where Fiona looks up.

**Figure 2**



Which of her friends is Fiona able to see with her mirrors in their current arrangement? \_\_\_\_\_