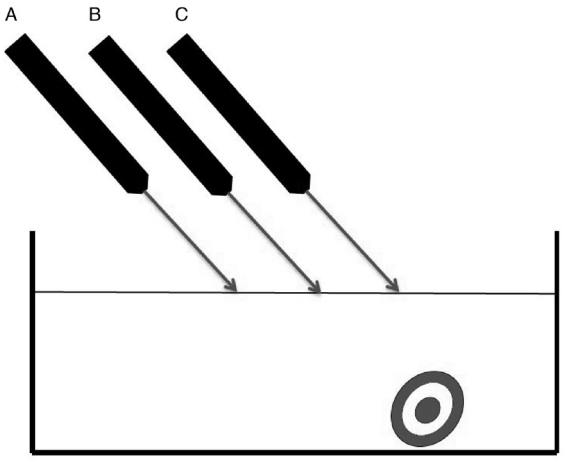
Checkout Questions

Lab 20. Reflection and Refraction

How Can You Predict Where a Ray of Light Will Go When It Comes in Contact With Different Types of Transparent Materials?

1. A student is conducting an investigation in which she wants to shine a laser pointer into a tank of water so that the beam of light hits the center of a target on the bottom of the tank. Which position for the laser pointer gives her the best chance of hitting the center of the target: position A, position B, or position C?



Explain why you chose that position as the best choice for the beam of light to hit the center of the target.

2. An engineer is designing a piece of equipment that will help change the path of a beam of light. The new piece of equipment needs to change the path of the light as much as possible. The table below has all of the materials, and the index of refraction for each one, that the engineer can choose from to help change the path of the light. Which material is the best choice?

Material	Index of refraction
Crown glass	1.52
Ice	1.31
Pyrex glass	1.47
Clear plastic	1.60
Liquid water	1.33

Explain why you chose that material as the best choice for the piece of equipment.

3. Once scientists learn about something new, their ideas do not change.

   a. I agree with this statement.
   b. I disagree with this statement.

   Explain your answer, using an example from your investigation about reflection and refraction.

4. Scientists are objective, so they are not influenced by the culture of society.

    a. I agree with this statement.
    b. I disagree with this statement.

    Explain your answer, using an example from your investigation about reflection and refraction.

5. Scientists study patterns in nature and patterns within the data that they collect. Explain why it is important for scientists to understand patterns, using an example from your investigation about reflection and refraction.

6. Models are useful tools that help scientists better understand what they are studying. These models can be conceptual, mathematical (such as equations or relationships), or physical (such as a drawing). Using an example from your investigation about reflection and refraction, explain why it is important for scientists to develop and use models in their work.