

Part I - Reflection Activity

Materials:

plane mirror, rubber band, support block, small cube, protractor

1. Center the mirror along this line, facing the "X".



X
object

2. Place a small object on the "X". View the image in the mirror from three different angles. Use a ruler to draw a line on the paper between you to the image you see in the mirror each time. The first line has been drawn for you. These lines represent the **reflected rays** of light that bounced off the mirror and went into your eye. Remove the mirror. Extend the two lines you drew until they intersect the mirror line.

3. Draw lines from the "X" to the points where the reflected rays intersect the mirror line. You have just drawn where the **incident rays** of light actually left the object and struck the mirror.

4. Draw **normal lines** at each point where a reflection takes place. Measure the angles of incidence and reflection to verify the law of reflection. Write the measurements on each angle.

5. Now, place a ruler along one of the reflected rays. Extend the ruler across the mirror line and draw a dashed line extending the reflected ray "behind" the mirror line. Do this for all 3 reflected rays. Label where these dashed lines meet as "I". This should be where the image "appeared to be". Measure how far behind the mirror "I" is compared to how far the "X" is in front of the mirror.

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Objective: To verify the law of reflection and to determine the distance of a virtual image behind the mirror.

First...Complete the procedures on the provided lab sheet.

Second...Answer the following questions:

1. What is the definition of a normal line?
2. What is the law of reflection? Do your measurements of the incident and reflected angles verify this law?
3. How did the image appear inside the mirror? Bigger or smaller or same size? Right side up or upside down? (When you look at a flat mirror, how does your image appear?)
4. Given the choice, real or virtual...do you think the image of the block is real or virtual? Why?
5. How does the distance from the block to the mirror and the distance from the image to the mirror compare?
6. What would be some examples of experimental error that may have occurred while performing this experiment?