



## Introduction

Light has many interesting aspects. An example is **reflection**. Reflection occurs when light bounces off a surface.

A guideline to working with mirrors is the **Law of Reflection**: The angle light hits a mirror will be the same angle light leaves the mirror.

You can use this principle to make a triangle. In this experiment you are going to use a laser and several mirrors to bounce the light around until it forms a triangle.

## Materials

- Laser pointer
- Binder clips
- White paper (8.5 x 11 inch)
- Protractor
- Ruler
- 3 front-silvered mirrors

## Procedure

1. Draw an equilateral triangle on the paper. Use a protractor to be sure the angles are all the same. Use a ruler to be sure all the sides are the same length.
2. Draw a laser-shaped space along one of the sides. It should point to one of the corners.
3. At each corner, draw where you think the mirror should go so that the laser light will complete the triangle. Keep in mind the following:
  - use a protractor to measure the angle between the laser and mirror exactly
  - Remember that the incoming angle is the same as the outgoing angle.
4. Devise a way to position the mirrors vertically. Front-silvered mirrors are

easily damaged. **Do not touch the front of the mirror.**

5. Line up the mirror exactly on the line you drew for it.
6. Turn the laser on. **Never look directly at the laser beam or allow it to shine in someone's eyes.** Use the binder clip to maintain the laser pointer in the ON position.
7. If you need help seeing the laser beam, try water mister, chalk dust, or baby powder.
8. If your angles were measured properly, you should be able to see the laser bounce off each mirror and end up back at the laser.
9. If you move any mirrors, be sure to draw where the new placement of the mirror was. Measure any new angles. Note the size of the error in your notebook.

## Questions

1. What were the lengths of the sides of the triangle you drew?
2. What were the angles of the triangle you drew?
3. What were the measurements of the angles for your first mirror?
4. What were the measurements of the angles for your second mirror?
5. What were the measurements of the angles for your third mirror?
6. What pattern did you notice about all of the angles you measured?

## Conclusion

Does the incoming angle equal the outgoing angle? Use evidence from your lab to backup your claim.