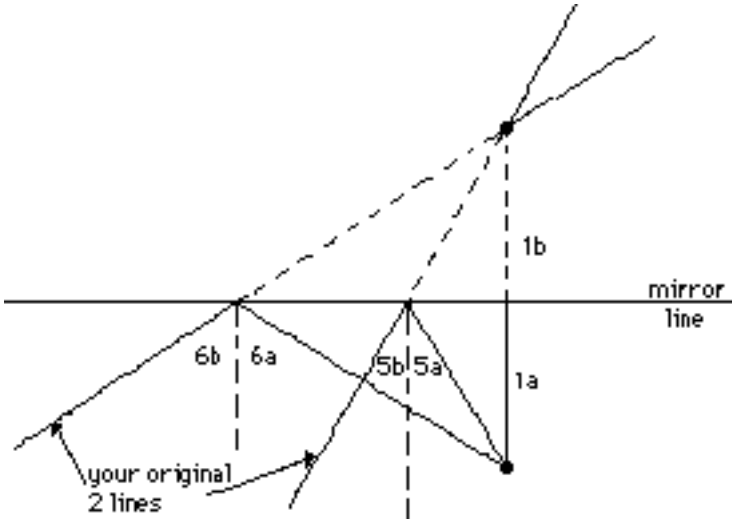
Reflection (Plane Mirror) Lab Name_____

Purpose:

Materials: Cardboard, Blank paper, Pin, Ruler, Pencil, Protractor.

Procedure:

1. Place your mirror (with stand) so that the back of the mirror rests on the line. Place your ruler in the middle of the bottom half and sight along your ruler so that the ruler points toward the image of the dot. Draw a line along the edge of your ruler. Now move your ruler to the left about 8 cm and repeat the sighting procedure. Be careful not to move the mirror at any time during these procedures!



2. Take your mirror off the paper. Extend your lines in back of the mirror line until they intersect, then draw a straight line from the dot to the intersection point. Label segments as in diagram. Draw straight lines from the dot to the places where the two lines cross the mirror line. This should make V's that represent the actual direction the light traveled. Make normal lines out from these apexes (perpendicular to the mirror line) and label the angles as shown in diagram A. Measure your line segments and angles and record them in the data table.

Data:

Line Segment	Length	Line Segment	Length	% difference
1a		1b		
Angle of Incidence		Angle of Reflection		% difference
5a		5b		
6a		6b		

Conclusions:

1. How did the angle of incidence compare with the angle of reflection? If there was a difference, what could have caused this?

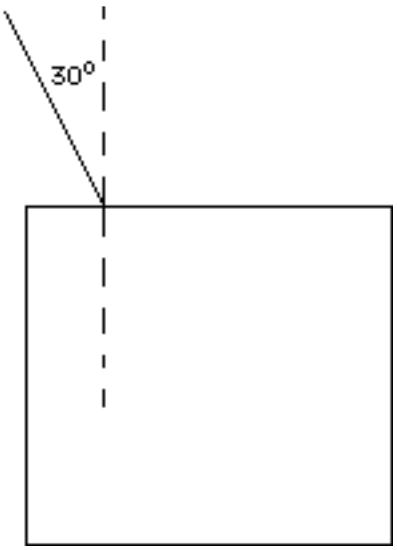
2. How did the distance of the object in front of the mirror compare with the distance the image appeared behind the mirror? What could have caused the difference?

3. At approximately what angle do your measured line segments intersect your mirror line? What angle should be here? Why?

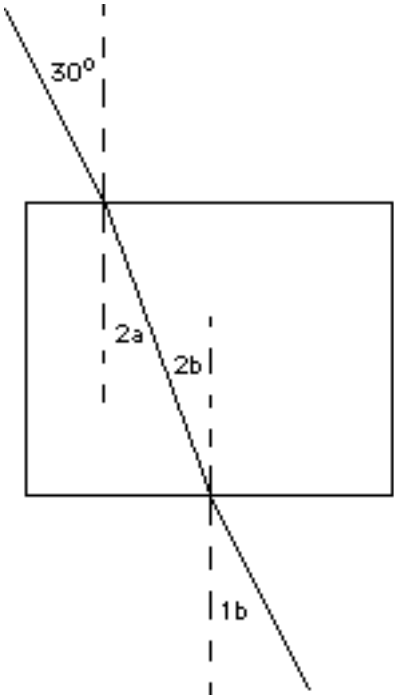
Name_____

Refraction Lab Name_____

Purpose: to calculate the index of refraction of plexiglass.



Procedure: 1. Place your plexiglass square in the center of your sheet. 2. Draw a tight square around your plexiglass. 3. (2) cm in from the top left corner construct a normal line. 4. Draw a line 6 cm long that forms a 30° angle with the normal as in Diagram A. 5. Placing your ruler on the opposite side of the plexiglass, sight along the edge of your ruler until it points at the image of the line **through** the edge of your plexiglass' edge. 6. Trace a line along the edge of your ruler. As you sight down the line you just drew, it should appear (through the plexiglass) to make one continuous line with the 30° line. 7. Move the plexiglass and extend your line until it hits the square. Construct a normal at that point. 8. Draw a straight line inside the square connecting the two outside lines. Your drawing should look like Diagram B now. 9. Measure the angles and put the data in the data table. 10. Turn the page over and repeat, this time using a 45° angle instead of 30°.



Data:

Angle	1b	2a	2b	index of refraction
30^0				
45^0				

Conclusions:

1. The solid line represents how light actually travels through the plexiglass. How is the light bent as it enters the more dense medium? Would this occur with a light ray that was parallel to the normal?

2. How is the light bent as it exits the more dense medium and reenters the air?

3. How does the entering angle compare with the exit angle? When would this **NOT** occur?

4. Get the actual index of refraction for plexiglass from your instructor and calculate your % difference. Name three sources of error in this lab - be specific!