

Lab Report Template

Title: Refraction of Light Through a Glass Slab

Objective:

To study how light goes through different mediums and measure the refractive index of the glass slab to help understand refraction.

Hypothesis: The angle of incidence of light will affect the angle of refraction as it passes through the glass slab. The angle of refraction will be less than the angle of incidence because light tends to bend towards the normal when passing from a less dense medium to a denser medium, such as air to glass.

Materials:

- Glass slab
- Protractor
- Ruler
- Paper
- Pencil
- Pins
- Plate

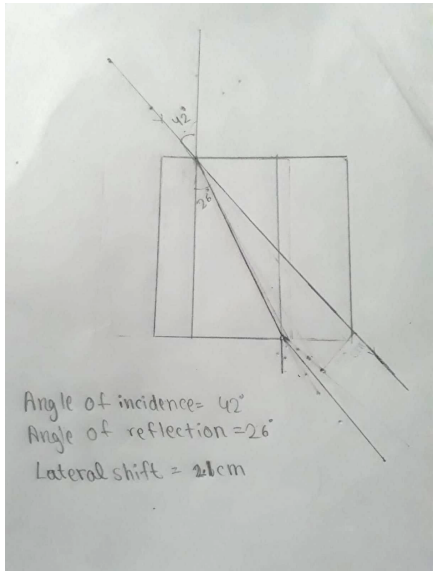
Procedure:

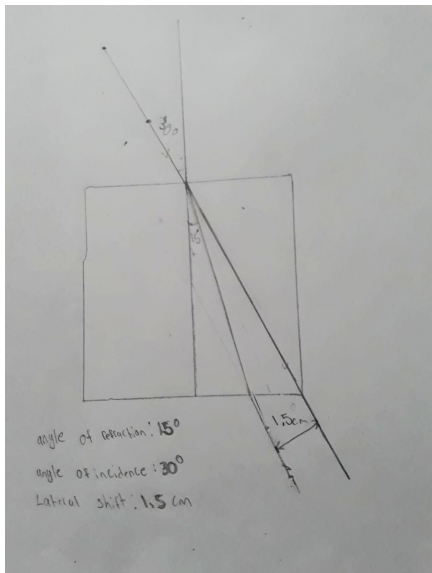
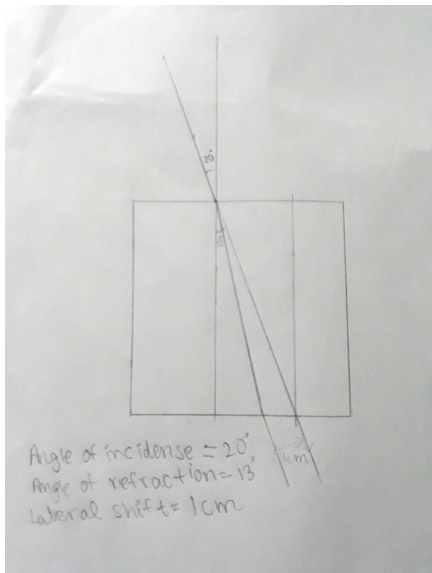
- Place the plate upside down on the table, then cover it with a sheet of paper.
- Position the glass slab on the paper and trace its outline with a pencil. Remove the glass slab once the outline is complete.
- Mark a point at the center of the top edge of the outline.
- Using a protractor, draw a normal line at a 90-degree angle to the top edge of the outline, passing through the marked center point.
- From the normal line, mark an additional point at a 30-degree angle.

- Draw a line connecting the center point of the outline to the 90-degree normal point, then extend a line from the center point to the 30-degree point. Extend the 30-degree line until it intersects with the opposite edge of the outline.
- Place two pins along the 30-degree line.
- Carefully place the glass slab back inside its traced outline.
- Look through the opposite side of the glass slab and align your view so the pins appear in a straight line.
- Once the alignment is achieved, place two additional pins on your side of the glass slab, ensuring all four pins are visible in a straight line.
- Remove the two pins that were just placed.
- Draw a line from the edge of the bottom outline to the point where the pins were just removed.
- Where the previous line touches the bottom edge, mark that point.
- Draw additional normal there.
- Draw a dashed line from the point where the previous normal line touched the top edge to the previous point on the bottom edge.
- Find the angles of incidence, refraction, and lateral shift.

Observations:

Include a table for measurements.

Trial	Angle of incidence	Angle of refraction	Lateral shift	Pictures of the work
1	42°	26°	2.1cm	 <p>Angle of incidence = 42° Angle of refraction = 26° Lateral shift = 2.1cm</p>

2	30°	15°	1.5cm	 <p>angle of refraction: 15° angle of incidence: 30° Lateral shift: 1.5 cm</p>
3	20°	13°	1cm	 <p>Angle of incidence = 20° Angle of refraction = 13° Lateral shift = 1 cm</p>

Analysis:

I think my results are pretty accurate because I followed every step. The angle of incidence, angle of refraction, and lateral shift were measured accurately during the experiment. The results in the table show consistency with the laws of refraction.

Conclusion:

In conclusion, the experiment successfully demonstrated the principles of refraction and accurately measured the angle of incidence, angle of refraction, and lateral shift.

Reflection Questions:

1. Why does the light bend when passing through the glass slab?

It bends because of the change in speed of light as it enters a different medium with a different refractive index. This change in speed causes the light to change direction, resulting in refraction.

2. How does the angle of refraction change with the angle of incidence?

The angle of refraction changes with the angle of incidence as one goes down, the other too.