

WJEC England Physics A Level

SP C3 03 : Refraction of Light

Practical notes



1. Measurement of the Refractive Index of a Material

Equipment:

- White light source and/or ray box
- Power supply
- Rectangular block of glass/perspex
- Plain paper
- Pencil
- Protractor
- 30cm ruler

Method:

1. Place the block on the paper and trace around it.
2. Draw a normal (shown as a dotted line on the diagram) to the block, ensuring it is at 90 degrees using the protractor. Then draw some guidelines for incident rays, measuring the angles using the protractor. Use regular intervals, eg. 10 degrees.
3. Darken the room and turn on the ray box.
4. Point rays of light down the guidelines and trace the light rays coming out the other side of the box.
5. Turn on the lights, and connect the incoming and outgoing rays using a ruler and pencil.
6. Measure the angles of refraction.
7. Plot a graph of $\sin(i)$ against $\sin(r)$.
8. Calculate the gradient of the graph.
9. This is equal to the refractive index of the block.

Safety:

- The light source may get hot during use. Do not handle immediately after use, and do not leave on for long periods of time.
- Do not look directly at the light source.

