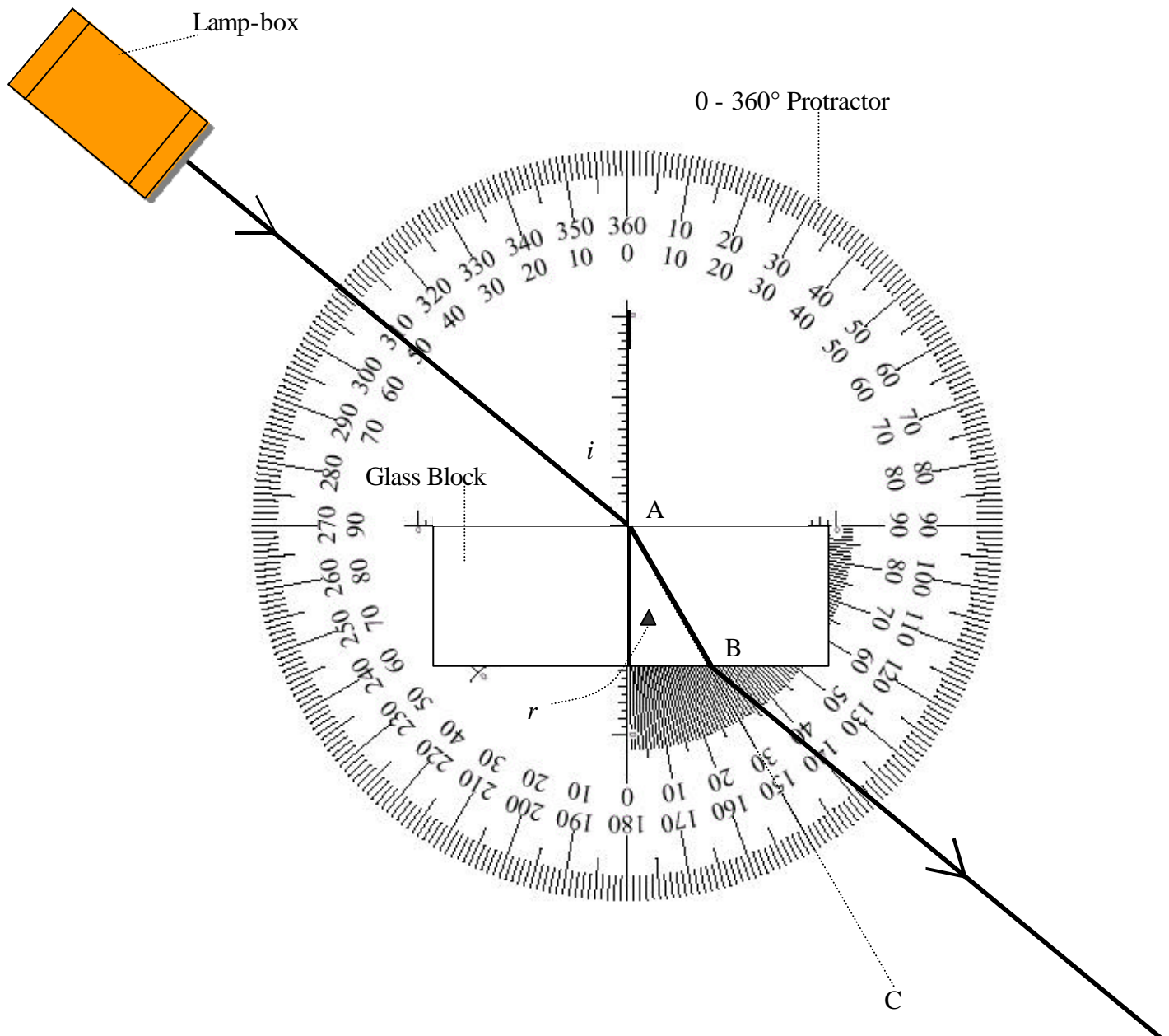


VERIFICATION OF SNELL'S LAW OF REFRACTION

Apparatus

Glass block, lamp-box, 0-360° protractor, (photocopied from page 56 of Physics A Teacher's Handbook)



Procedure

1. Place a glass block on the $0-360^\circ$ protractor in the position shown on the diagram and mark its outline.
2. Shine a ray of light from a lamp-box at a specified angle to the near side of the block and note the angle of incidence.
3. Observe the ray of light leaving the glass block and similarly mark the exact point B where it leaves the glass block.
4. Remove the glass block. Join BA and extend to C.
5. Note the angle of refraction r .
6. Repeat for different values of i .
7. Draw up a table as shown.
8. Plot a graph of $\sin i$ against $\sin r$.

Results

$i/^\circ$	$r/^\circ$	$\sin i$	$\sin r$	$\frac{\sin i}{\sin r}$

Average value of $\frac{\sin i}{\sin r} =$

A straight line through the origin verifies Snell's law of refraction i.e. $\sin i \propto \sin r$.

The slope of the line gives a value for the refractive index of glass.

The refractive index of glass is equal to the average value of $\frac{\sin i}{\sin r}$.

Notes

Look directly down through the glass or plastic block to measure the angle of refraction.

Print the 360° protractor directly from page 56 of 'Physics A Teachers Handbook' to obtain the clearest delineation of the marked angles.

A semi-circular glass block can be used instead of the rectangular block.

A commercial model of the 360° protractor is also available. The model has a 'rotating' protractor housed in a horizontal rectangular base.