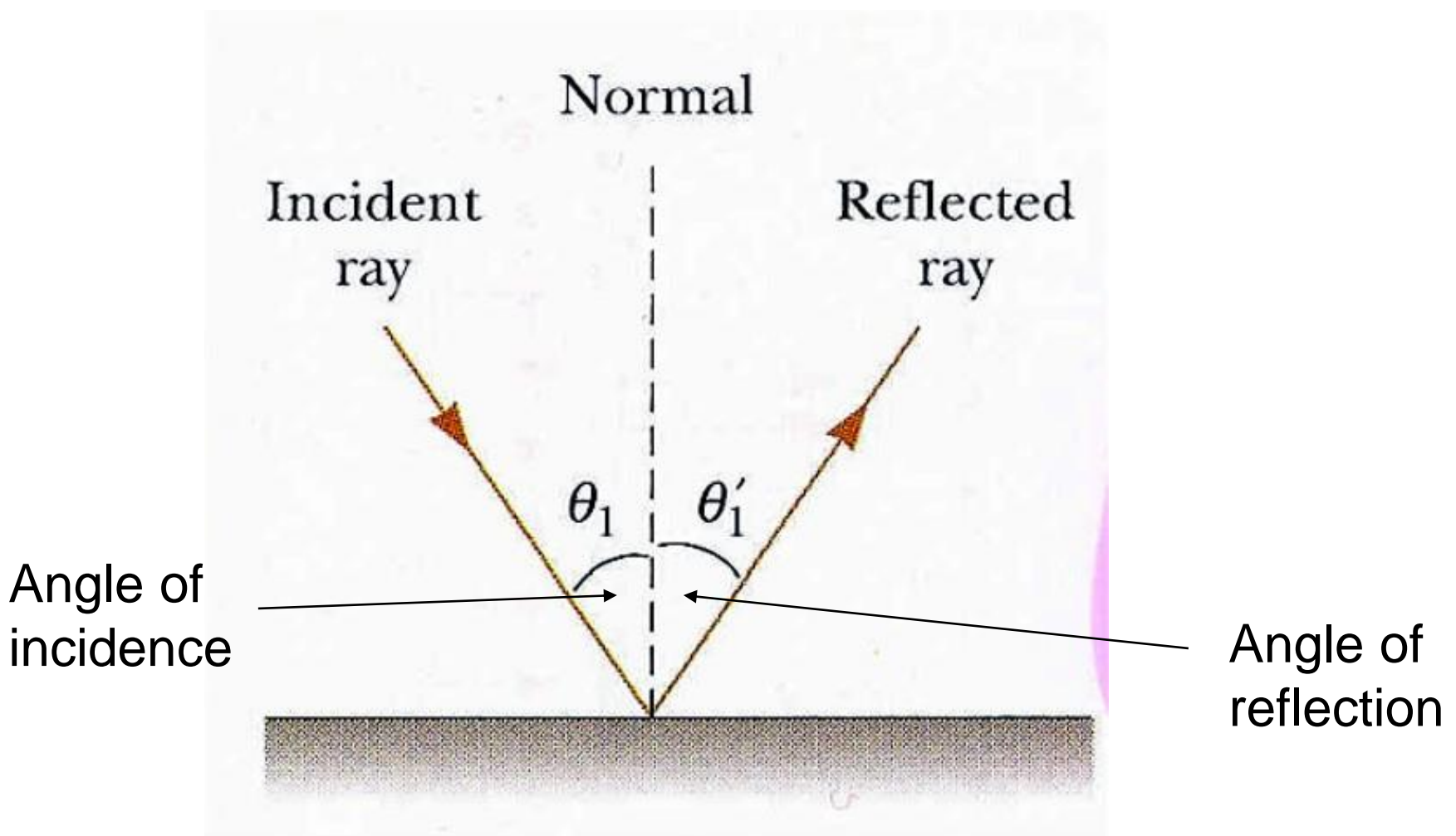


Lesson 2

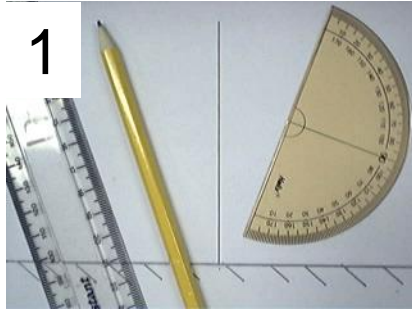
Light: reflection and refraction

Law of reflection

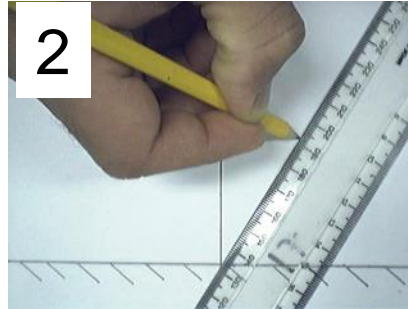


The angle of incidence = the angle of reflection

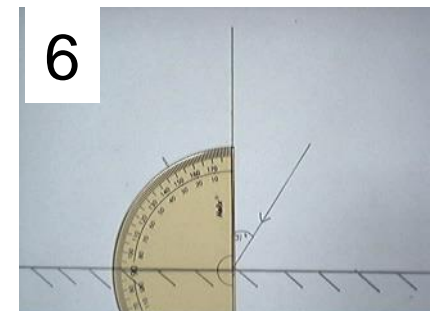
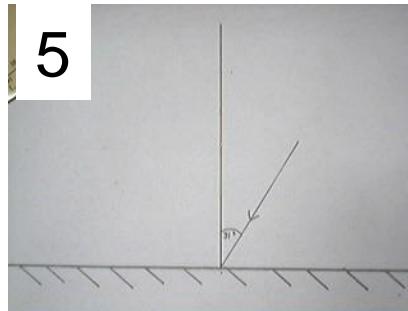
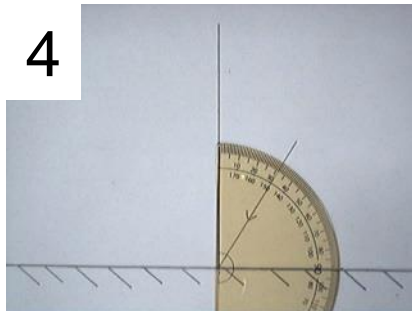
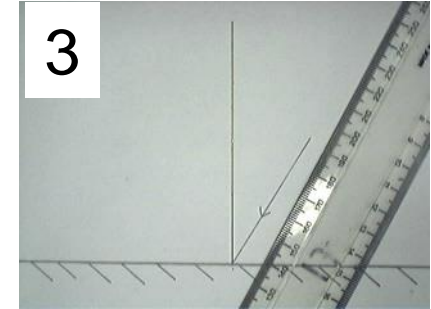
Drawing reflections accurately



1
You will need a ruler, sharp pencil and protractor.

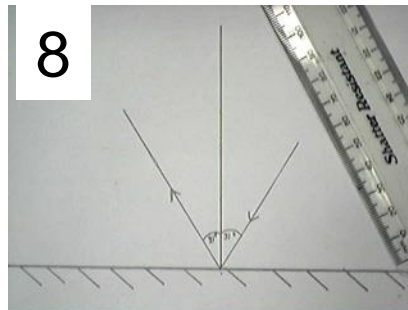
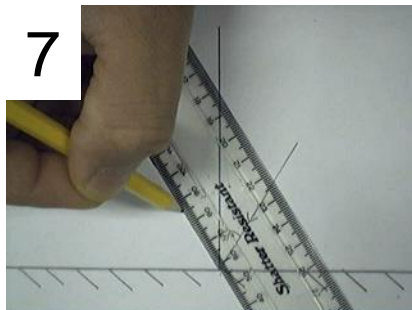


2
Draw the ray of incidence (unless one is drawn in for you).



4
Measure angle with protractor (do it as shown in the picture) and mark the angle on the ray of incidence.

6
Turn protractor around and mark on the same angle. This will be the angle of reflection.

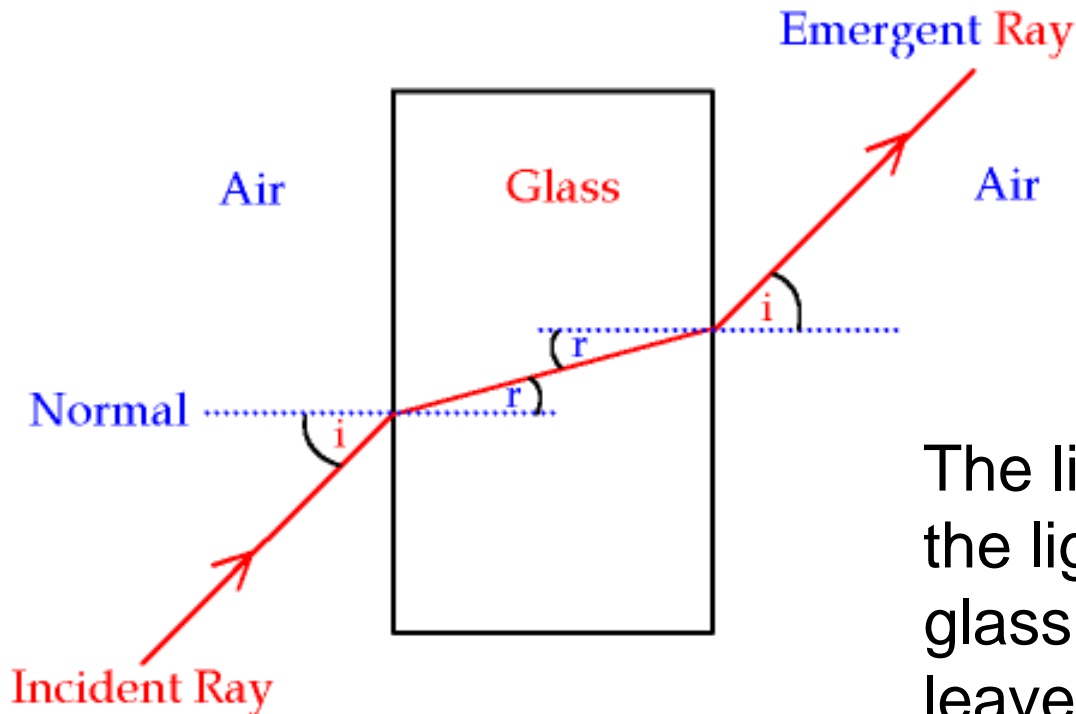


7
8
Draw the ray of reflection and mark on the angle of reflection.

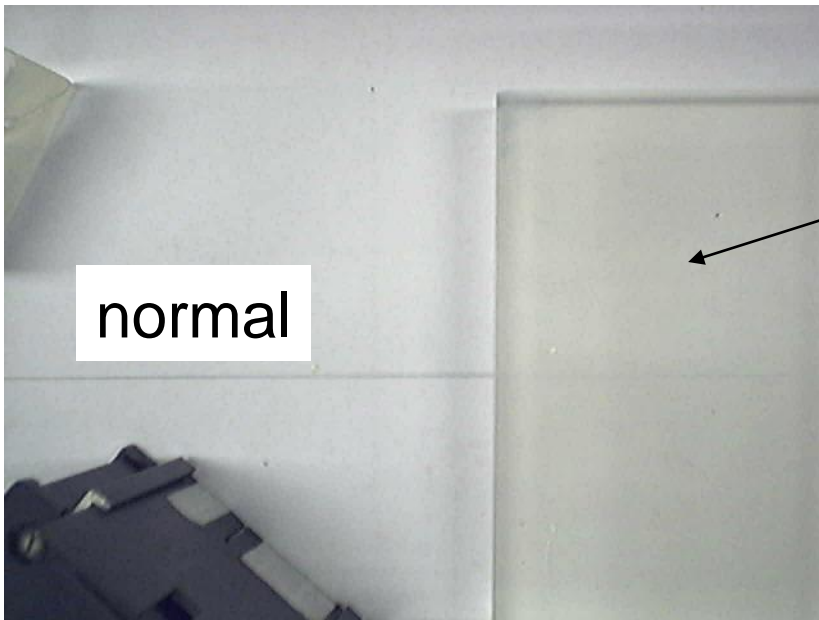


What is refraction?

Light will change speed and direction when it passes from one substance into another, e.g., from air to water or air to glass. The bending of light is called REFRACTION.

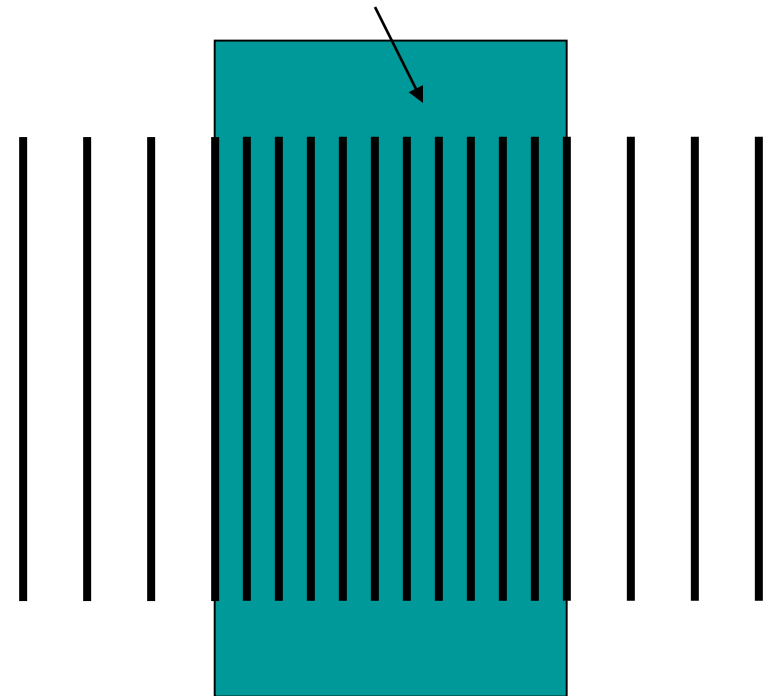
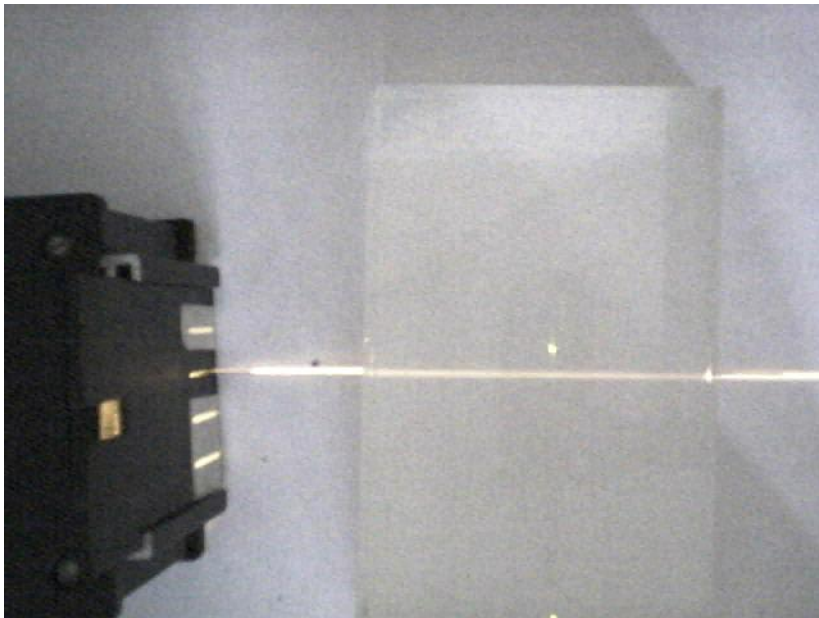


The light ray bends towards the light as it passes into the glass block. As the ray leaves it goes back to its original angle.



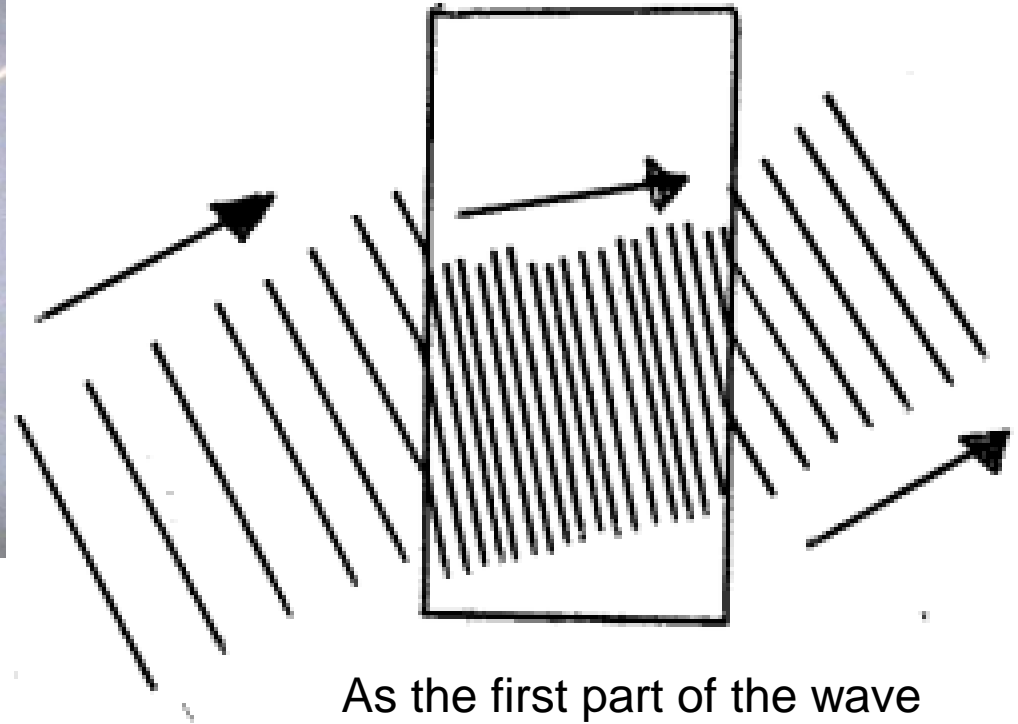
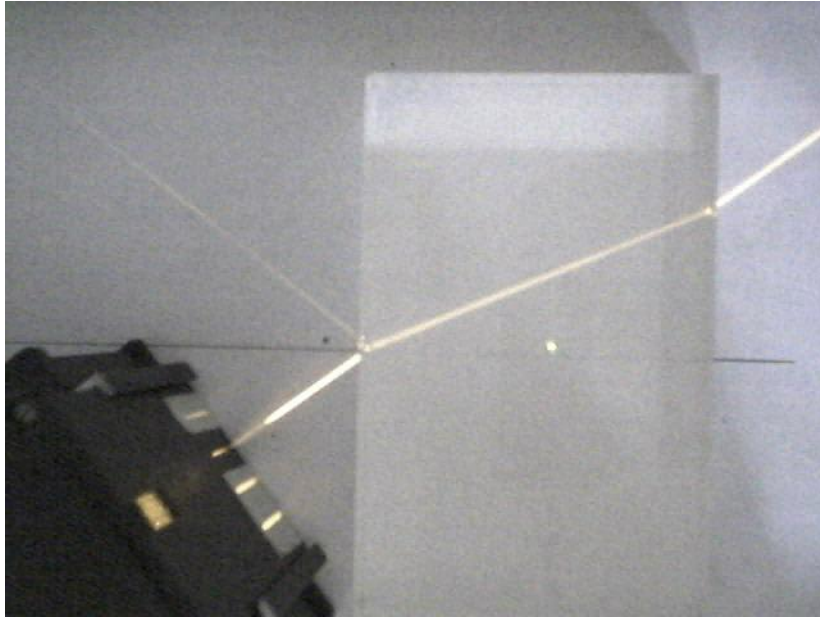
Glass block

Waves slow down so wavelength decreases but frequency stays the same.

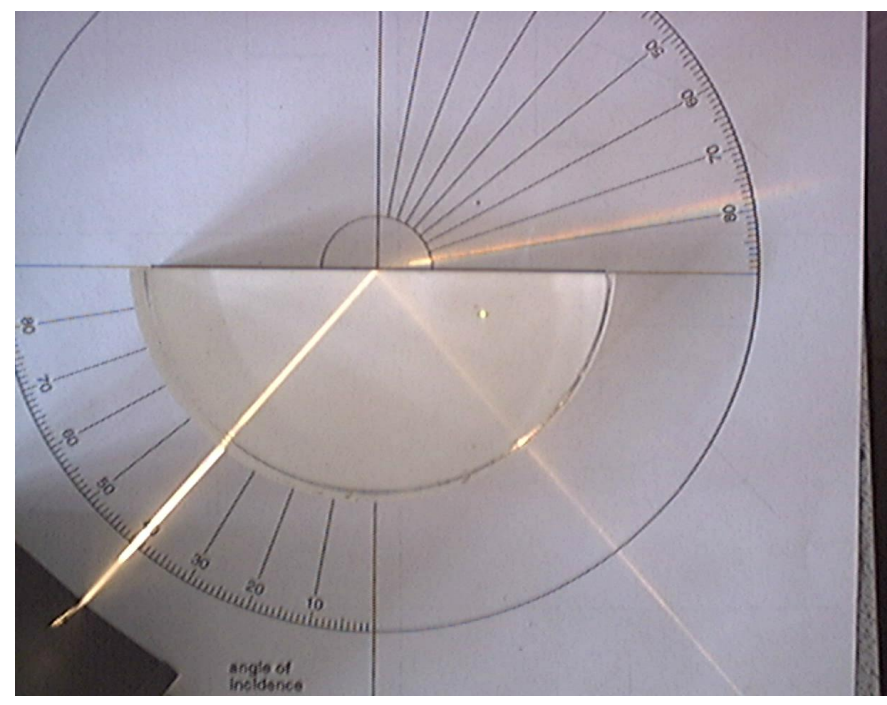
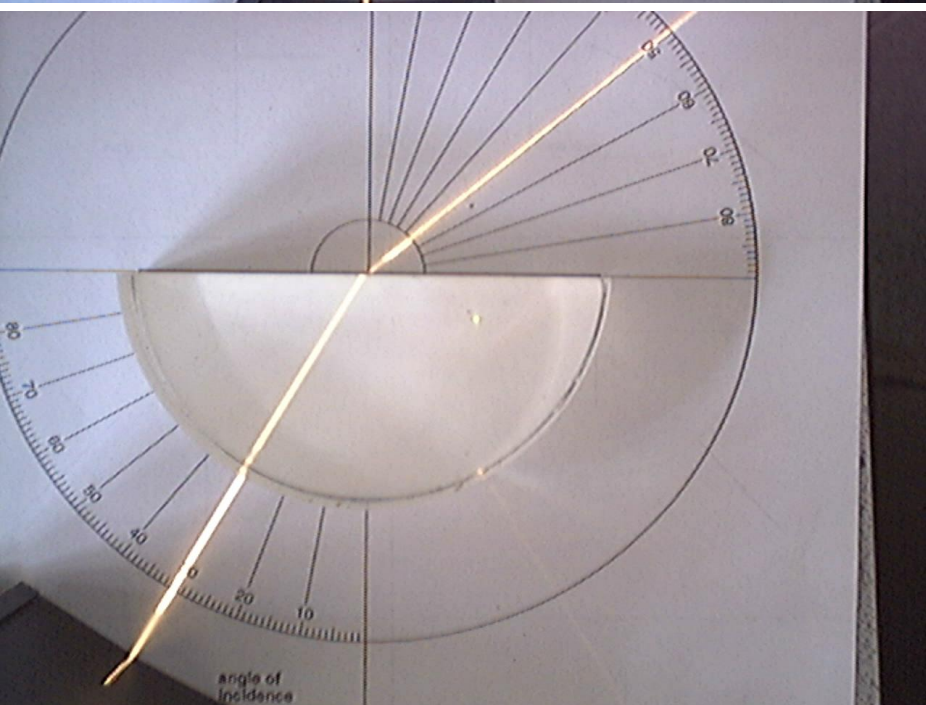
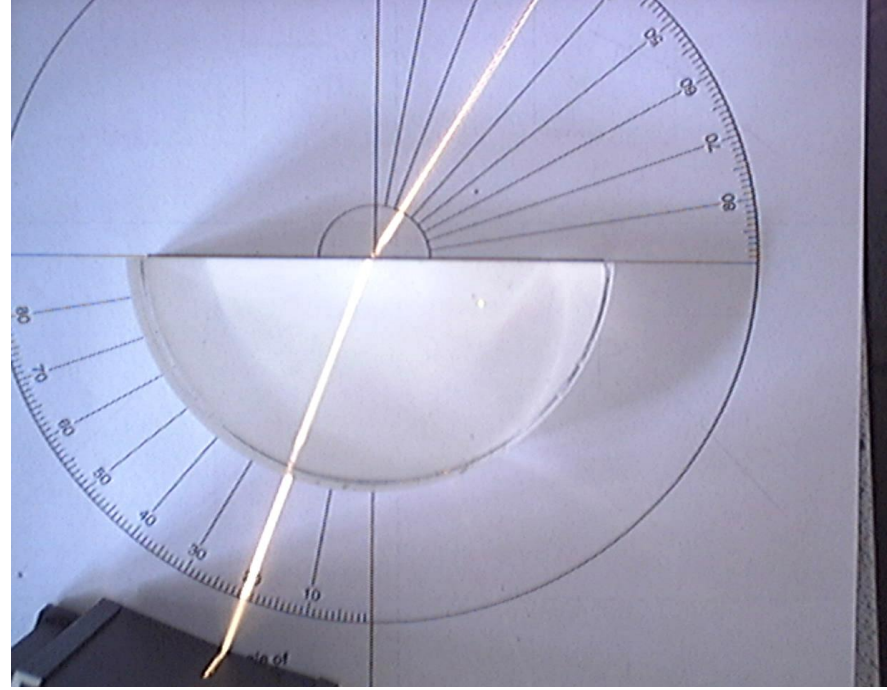
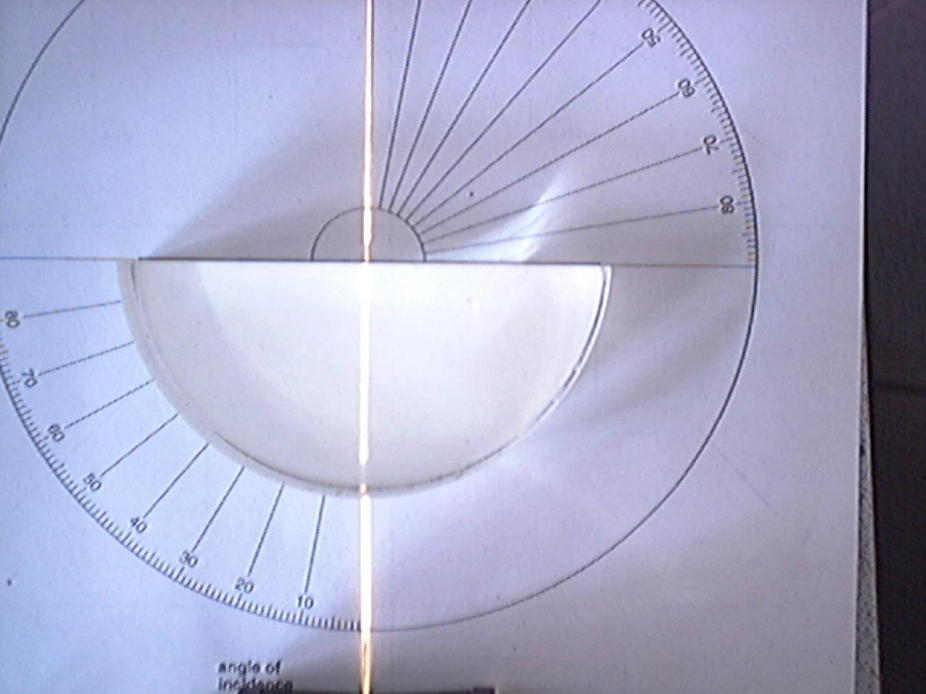


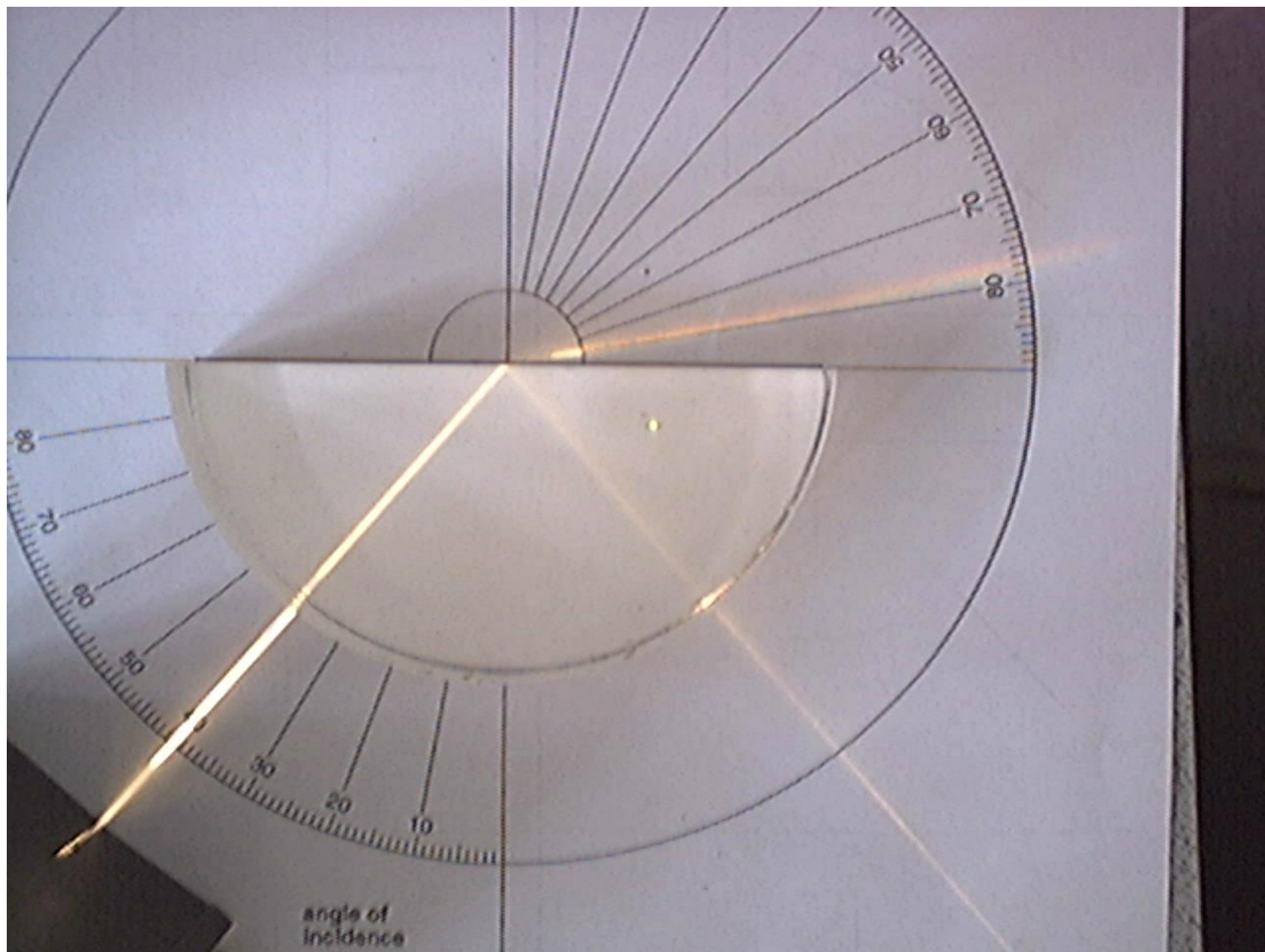
Direction of light wave

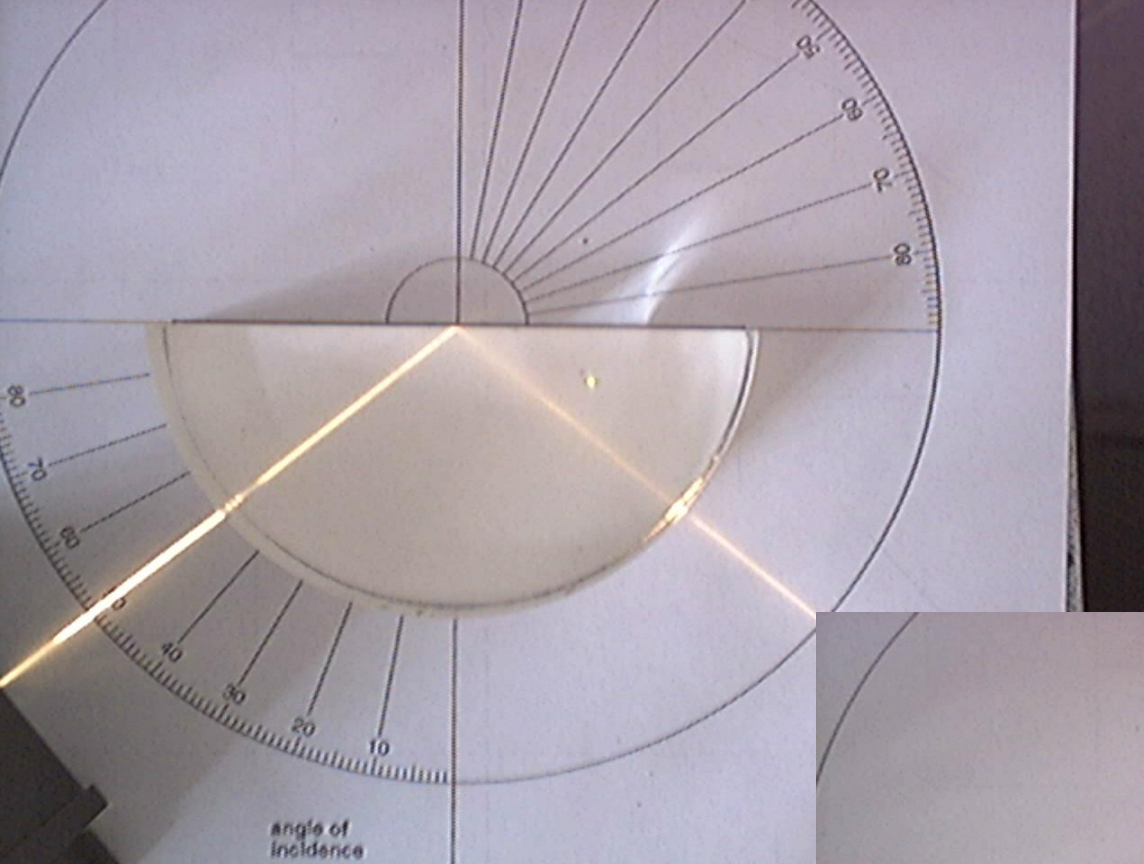




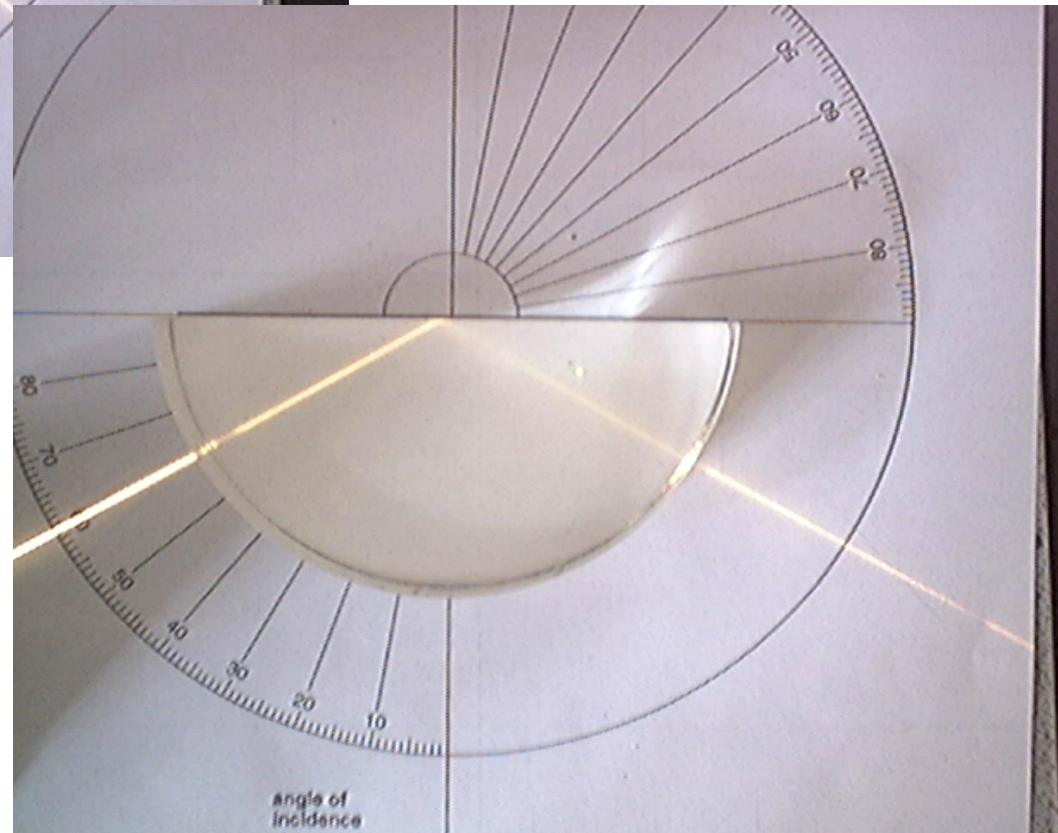
As the first part of the wave enters the glass block it is slowed down while the other part is still travelling at the same speed. This causes the waves to bend as it enters the glass block. The opposite happens when the wave leaves the glass block.

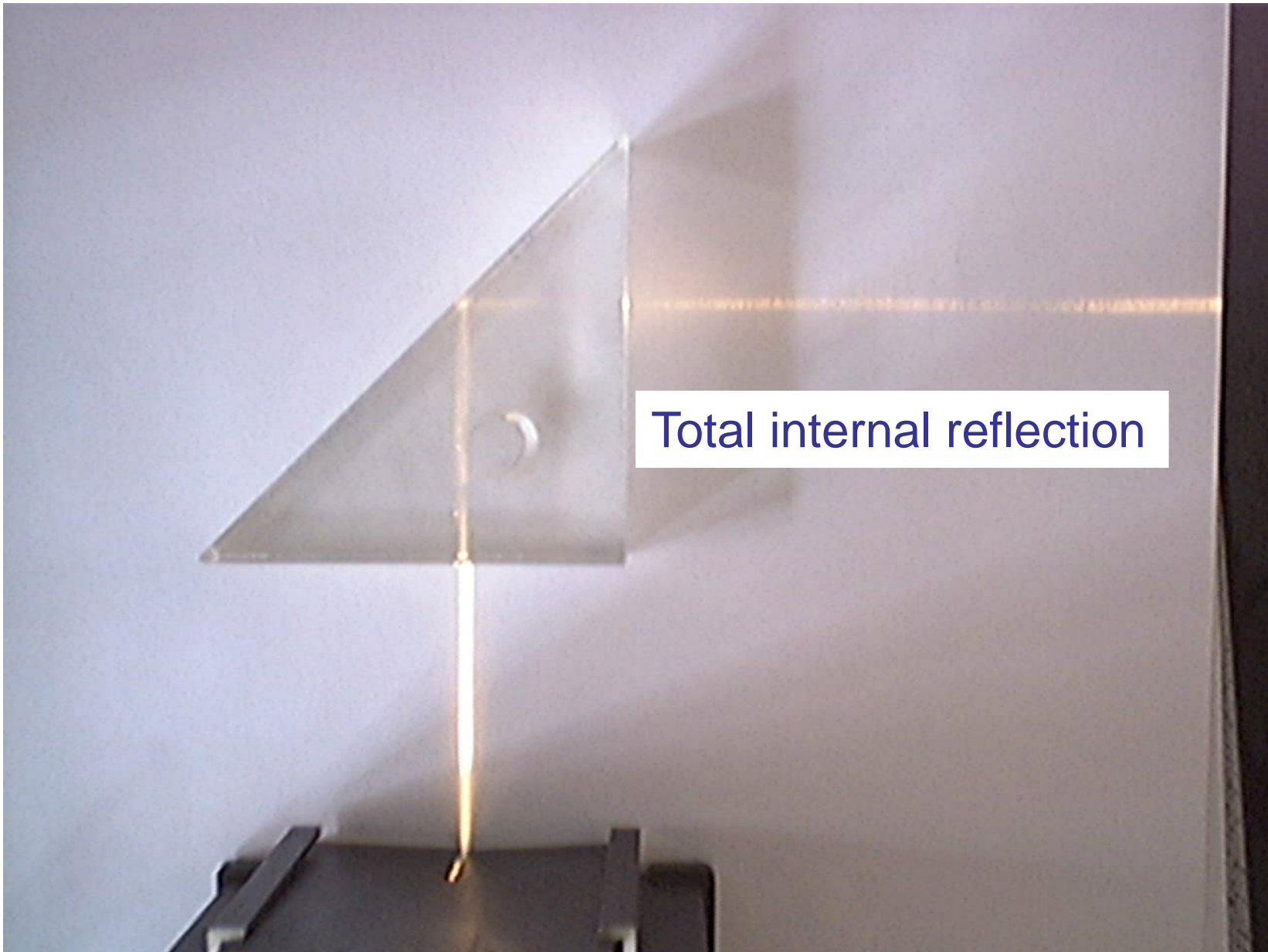






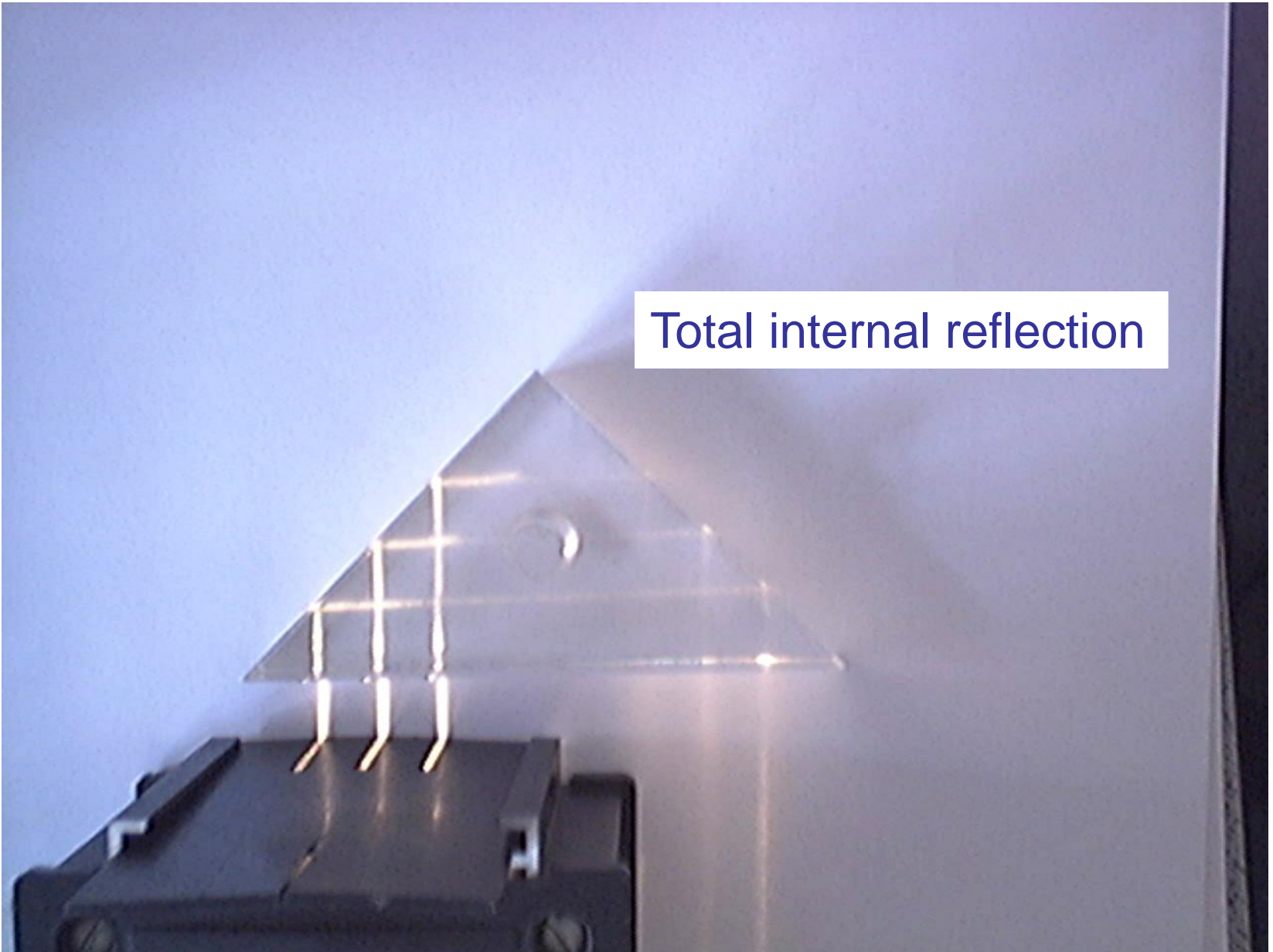
Total internal reflection





Total internal reflection

Total internal reflection





Focal point

Light bends as
it passes
through lens