

# REFRACTION

Name: \_\_\_\_\_

**Aim:** to observe the refraction of light as it passes from air to perspex;  
to measure the angles of incidence and the angles of refraction of six different light beams.

**Apparatus:** Light box, single-ray-forming plate, 12 V power supply, semi-circular Perspex prism.

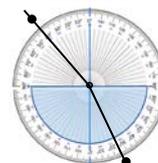
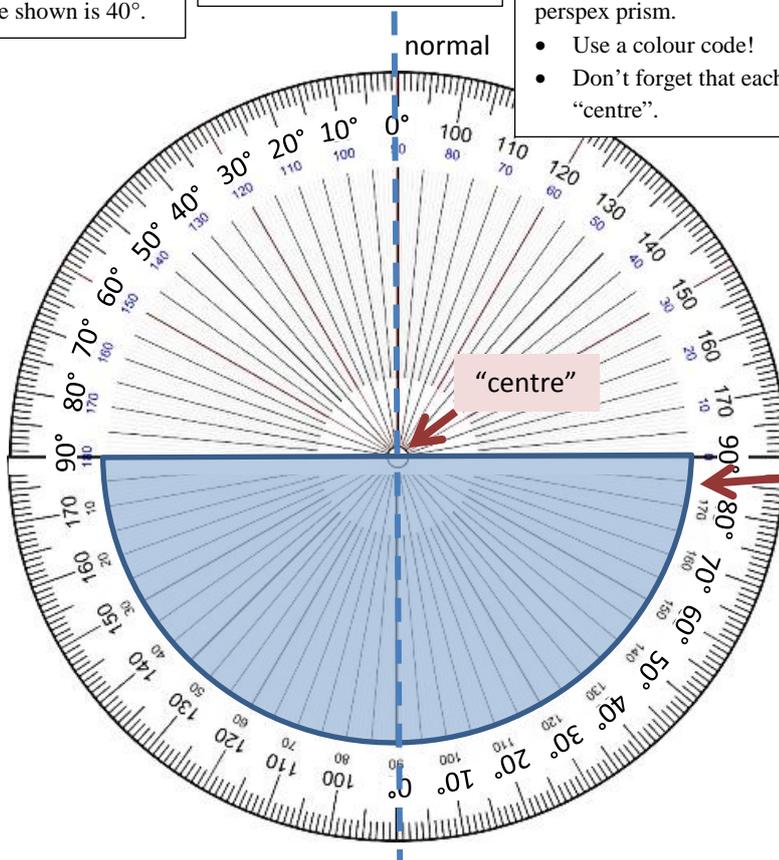
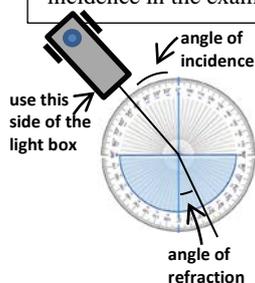
## Method:

1. From the flat side, **direct a single ray** of light towards the “centre” of the semi-circular perspex prism (at the angles **shown in the table** below). The angle of incidence in the example shown is 40°.

2. **Record the angle of refraction** for each angle of incidence **in the table**.

3. **Mark in the path** of the six rays by  
(a) placing a dot on the incident ray and a dot on the refracted ray and then  
(b) ruling **two** lines to connect the dots after you remove the perspex prism.

- Use a colour code!
- Don't forget that each line will connect each dot to the “centre”.



Note: The ray exiting the perspex prism shouldn't refract because it exits at an angle of incidence of 0°.

Angle of Incidence (i)	Angle of Refraction (r)	Angle of deviation (i - r)	i / r	sin i (to 3 decimal places)	sin r (to 3 decimal places)	sin i / sin r (to 2 decimal places)
0°			-	-	-	-
15°						
30°						
45°						
60°						
75°						
Average						

## Questions:

1. What happens to the angle of refraction and the angle of deviation as the angle of incidence increases?

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2. The refractive index of perspex (also called PMMA and Plexiglas) is 1.49. What do you notice about the values of sin i/sin r in your table?

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3. What are some possible sources of error in this prac?

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