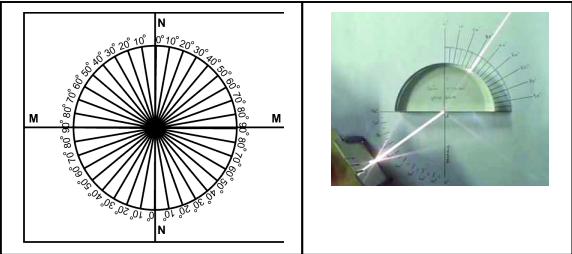
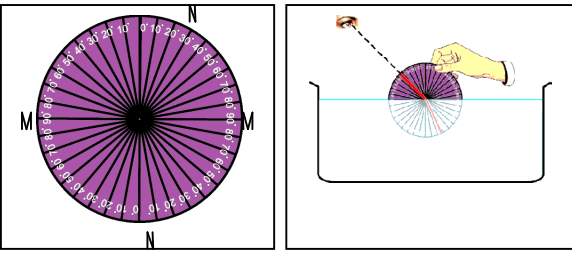


CLASS-10 PHYSICAL SCIENCES
NEW TEXT BOOK
2014 - 2015

CHAPTER: 05 – REFRACTION OF LIGHT AT PLANE SURFACES

PERIOD PLAN-03 : Relation between angle of incidence and refraction
Rarer media – denser media

Content Analysis	Class Room Environment	Teaching Learning Material
<p><u>Relation between angle of incidence and refraction:</u> Take a wooden plank. Cover with white chart. Draw two perpendicular lines, passing through the middle of the paper. Mark one line as NN which is normal to the another line marked as MM. Here MM represents the line drawn along the interface of two media and NN represents the normal drawn to this line at 'O'. Take a protractor and place it along NN (its centre coincides with O). Then mark the angles from 0° to 90° on both sides of the line NN. Repeat the same on the other side of the line NN. Now place a semi-circular glass disc so that its diameter coincides with the interface line (MM) and its center coincides with the point O. Point a laser light along NN in such a way that the light propagates from air to glass through the interface at point O and observe the path of laser light coming from other side of disc.. Send Laser light along a line which makes 15° (i) with NN and see that it passes through point O. Measure its corresponding angle of refraction (r). Note these values in table. Find sin i, sin r and also the ratio $\frac{\sin i}{\sin r}$.</p>	<p>Conversation: About relation between angle of incidence and refraction. Explanation: i, r are the angles then $\frac{\sin i}{\sin r}$ is constant. $i > r$, if light passes from rarer medium to denser medium.</p> 	<p style="text-align: center;">Semi circular glass slab Laser light Wooden plank Pencil protractor</p>
<p><u>Rarer media – denser media:</u> Cover with white chart on circular disc. Mark one line as NN which is normal to the another line marked as MM. Here MM is the line drawn along the interface and NN is the normal drawn to this line at 'O'. Take a protractor and place it along NN (its centre coincides with O). Then mark the angles from 0° to 90° on both sides of the line NN. Repeat the same on the other side of the line NN. Arrange two straws at the centre of the disc in such a way that they can be rotated freely about the centre of the disc. Adjust one of the straws to make an angle 10° with the normal NN (angle of incidence). Immerse half of the disc vertically into the water, filled in a transparent vessel. From the top of the vessel try to view the straw which is inside the water. Then adjust the other straw which is outside the water until both straws appear to be in a single straight line. Then take the disc out of the water and observe the two straws on it. They are not in a single straight line. Measure the angle between the normal and second straw. (r). We observed that the angle of refraction(r) is always greater than the angle of incidence (i).</p>	<p>Conversation: About relation between angle of incidence and refraction. Explanation: i, r are the angles then $\frac{\sin i}{\sin r}$ is constant. $i < r$, if light passes from denser medium to rarer medium.</p> 	<p style="text-align: center;">circular metal disc plastic straws glass tub Pencil Protractor water</p>