

Total Internal Reflection

Recall, if light passes from a less dense to a more dense medium it will bend towards the normal and vice versa.

What will happen in each case as the angle of incidence approaches 90 degrees?

Less dense to more dense medium:

More dense to less dense medium:

Critical Angle

The critical angle is the angle of incidence for which the angle of refraction is 90° . At this angle, the refracted ray glances parallel to the boundary between the media.

Total Internal Reflection

When light passes from a more dense to less dense medium at an angle greater than the critical angle and there is no refracted ray, only a reflected ray (total internal reflection).

The critical angle, θ_c , can be determined from Snell's Law. At the critical angle, $\theta_R = 90^\circ$

ex.

What is the critical angle between water and diamond?