

Refraction Problems

Solve all problems on a separate sheet of paper. Draw diagrams for questions 3 - 5 and 9 - 11.

1. The speed of light in plastic is 2.00×10^8 m/s. What is the refractive index of the plastic?
2. Given the speed of light in air is 3.00×10^8 m/s, find the speed of light in:
a) fused quartz
b) flint glass
2. What is the index of refraction of a medium if the angle of incidence in air is 63° and the angle of refraction is 38° ?
3. What is the angle of refraction in a medium if the angle of incidence in air is 48° and the index of refraction of the medium is 1.58?
4. Light travels from air into water. What is the angle of incidence if the angle of refraction is 30.0° ?
5. If light travels through a liquid at 2.50×10^8 m/s, what is the index of refraction (n) of that liquid?
6. What is the speed of light in a substance that has an index of refraction of 2.42? What is that substance?
7. How much does the speed of light slow down as it passes from air into zircon?
8. What is the angle of refraction when light passes from air into diamond at an angle of incidence of 60.0° ?
9. Light passes from air into another substance that has an index of refraction of 1.30. If the angle of refraction is 45° , then what is the angle of incidence?
10. If the angle of refraction of a substance is 40.0° and the angle of incidence is 50.0° , what is the index of refraction?

Indices of Refraction	
Substance	Index (n)
vacuum	1.0000
air	1.0003
water	1.33
ethyl alcohol	1.36
fused quartz	1.46
glycerine	1.47
Plexiglas	1.51
crown glass	1.52
sodium chloride	1.53
crystal glass	1.54
ruby	1.54
flint glass	1.65
zircon	1.92
diamond	2.42

