

Chapter 25

Reflection and Refraction

25.1 (a) 1 meter, (b) 50 cm, (c) 75 cm

25.2 (a) True, (b) True (although the effect depends on the wavelength of the water waves)

25.3 (a) when the direction of a wave bends as it crosses the boundary between two materials (in which it travels at different speeds), (b) the index of refraction of the first material (that incident ray is located in) and the index of refraction of the second material (that the refracted ray is located in), (c) the angle at which the incident ray hits the interface (relative to the normal) and the angle at which the refracted ray leaves the interface (relative to the normal)

25.4 48.2° or 48.3° (depending on which “red” you chose in Table 25.1)

25.5 (a) 50.3° , (b) 56.2° , (c) There is no angle – no matter what angle we send in the light, the light will bend such that it will stay inside the slab

25.6 47.8° for blue and 48.2° for red