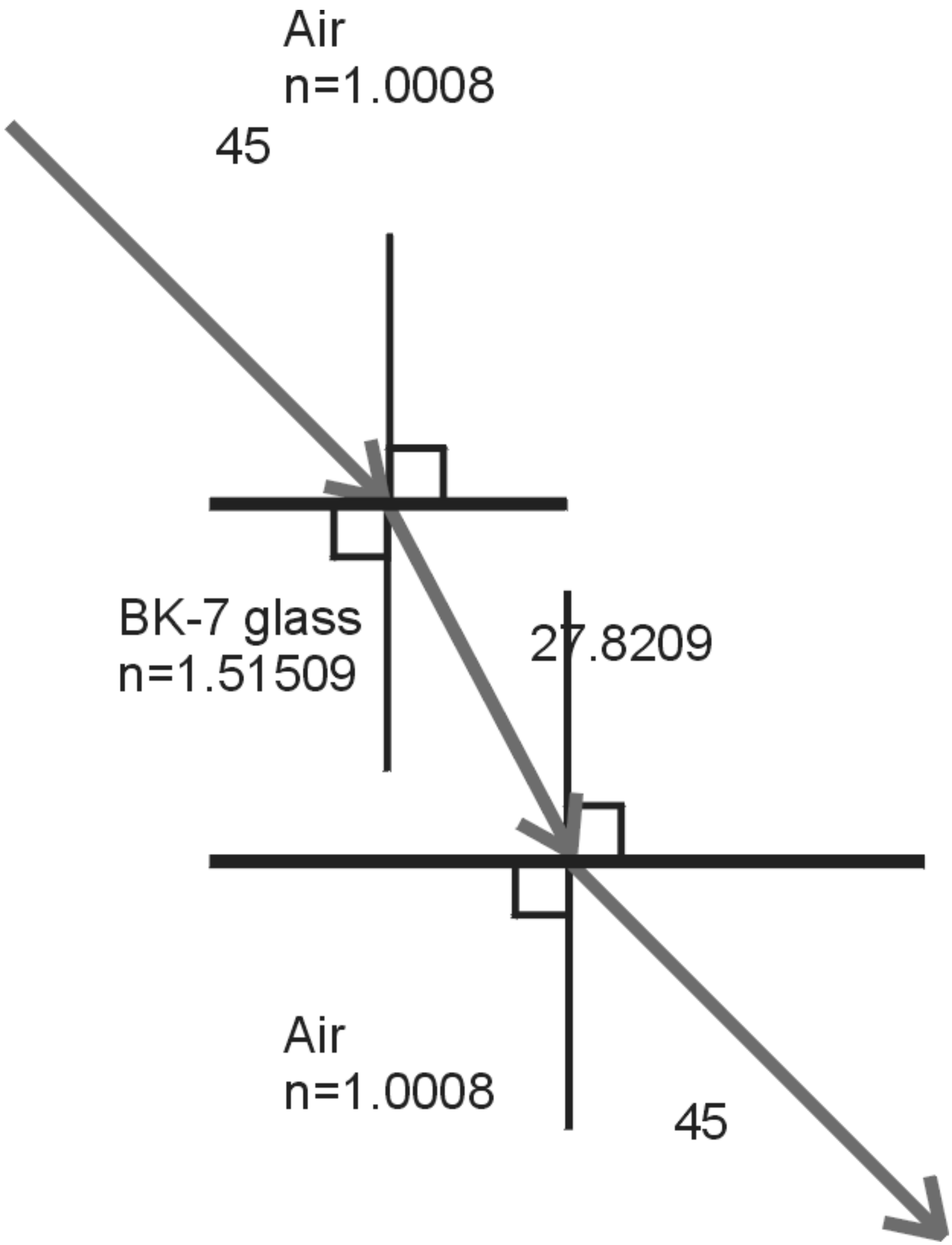
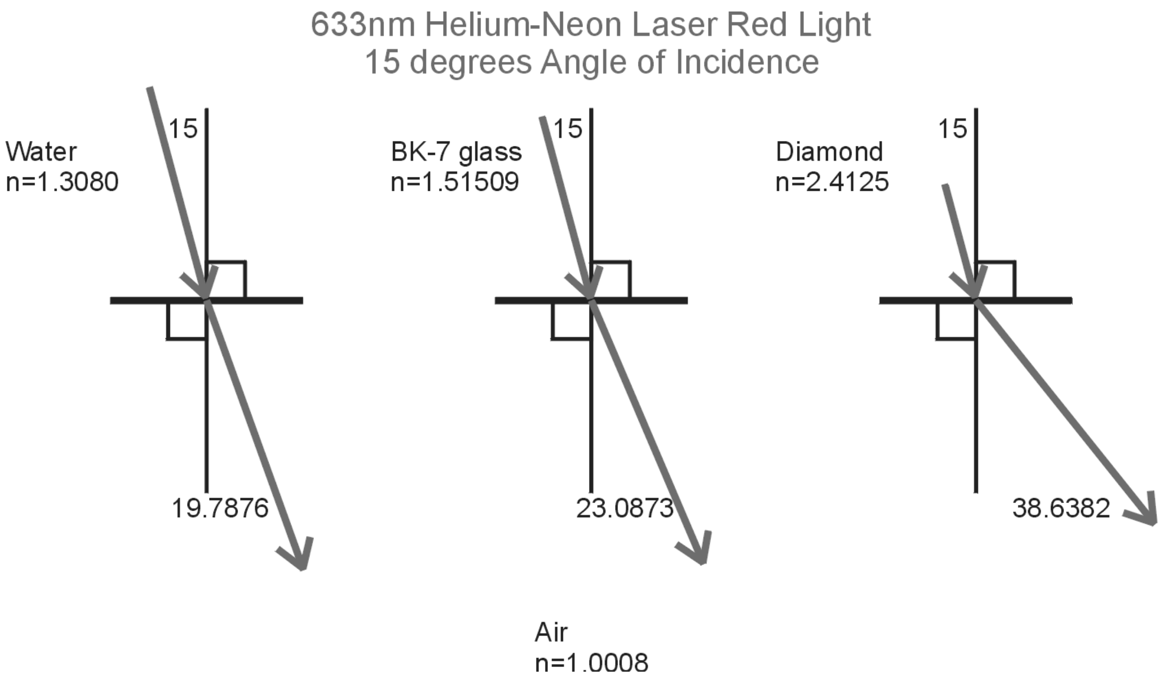
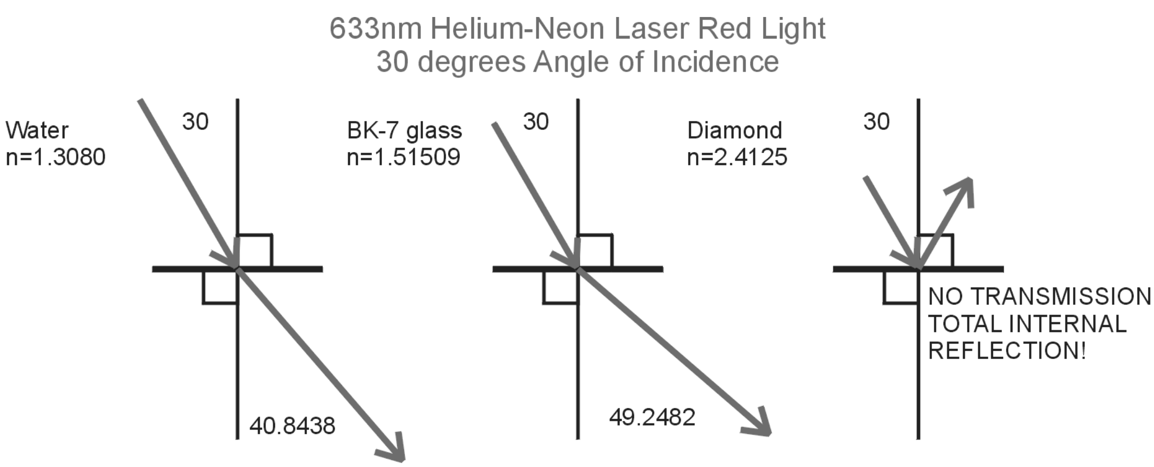
When the light has passed through the medium and exits it, it will refract or change its direction once again. The same equation is invoked, and if the entrance and exit faces are parallel to each other, the entering and exiting beams are parallel to each other.



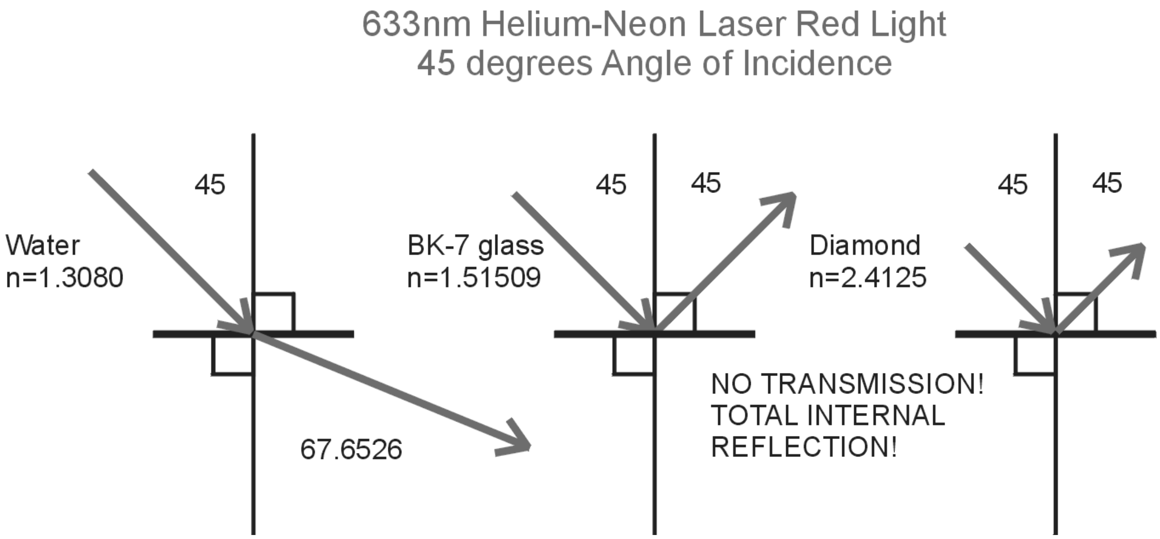
In this series of illustrations, the top ray is inside the slower medium, and it exits the lower face. The relative sizes of the rays are there to show the relative distances traveled in the same length of time.



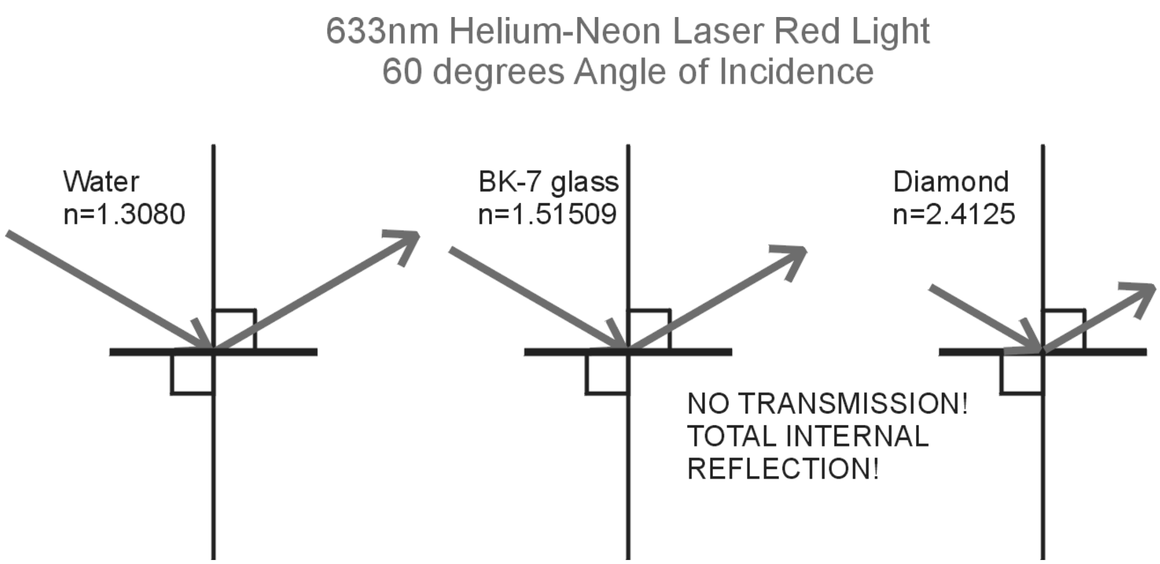


Notice that the internal ray is not transmitted in the case of the diamond! It is a case of Total Internal Reflection, TIR, and at such a steep interior angle the exit face acts like a perfect mirror. When the valuses of the two refractive indices and the sine of the interior angle are plugged into Snell's law, the value of the sine of the exit angle is greater than 1, which is mathematically impossible.

Notice that in the next figure the interior angle is so steep for the exiting ray for the glass that its ray also falls victim to TIR!



And finally, the ray cannot exit the water when the interior angle is so steep.



The first angle that this effect occurs, where the light cannot escape from the medium, is called the **CRITICAL ANGLE**, and is equal to 49.8648 degrees for water, 41.3019 degrees for the BK-7 glass, and only 24.4883 degrees for diamond.