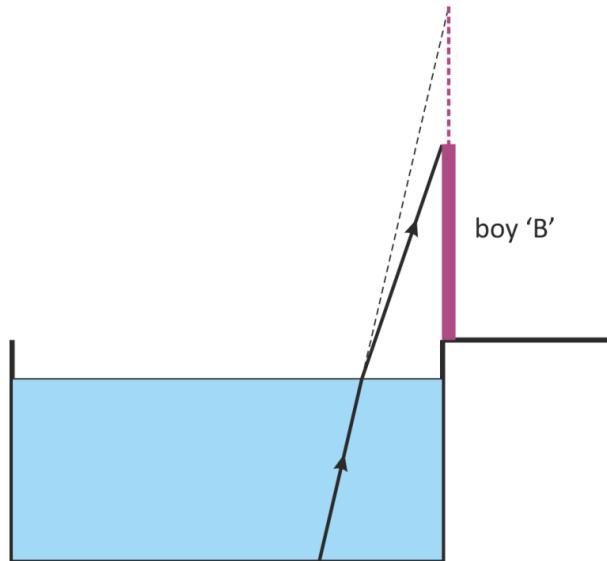


Answer on Question #39443, Physics, Optics

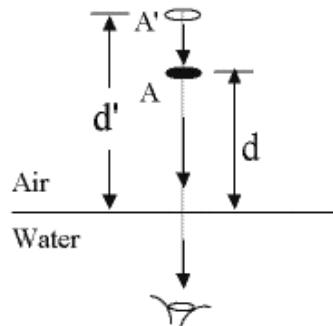
Suppose a boy 'A' is inside swimming pool near an edge. Suppose his friend 'B' is standing on the edge. Will 'A' find 'B' taller or shorter than usual height? Explain.

Solution:

This diagram shows the boy 'B' as seen by the boy 'A':



From below water, objects in air are virtual images that have an apparent position (height in air) greater than their real position.



The apparent position d' can be found from the formula

$$d' = d \frac{n_2}{n_1}$$

where d is the actual height and n_2 and n_1 are the refraction indices of the final and initial media for the ray of light. A is the object and A' is its virtual image. The image is virtual because it cannot be formed on a screen.

Answer. The boy 'A' find 'B' taller than usual height