

72. Any phase changes associated with the reflections themselves are rendered inconsequential by the fact that there are an even number of reflections. The additional path length traveled by wave  $A$  consists of the vertical legs in the zig-zag path:  $2L$ . To be (minimally) out of phase means, therefore, that  $2L = \lambda/2$  (corresponding to a half-cycle, or  $180^\circ$ , phase difference). Thus,  $L = \lambda/4$ .