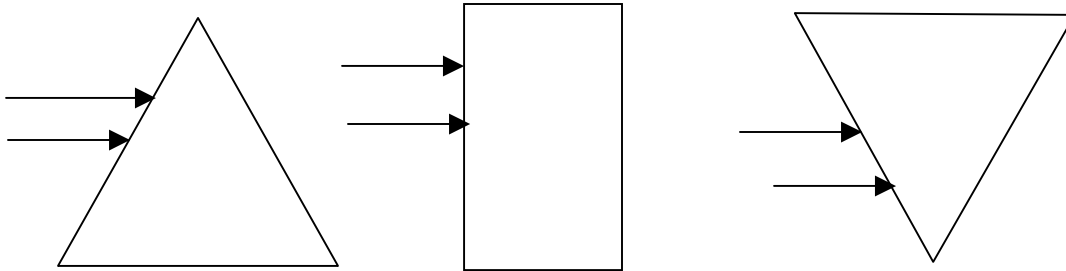




# Workshop Physical Science

## WS4: Refraction in Special Shapes

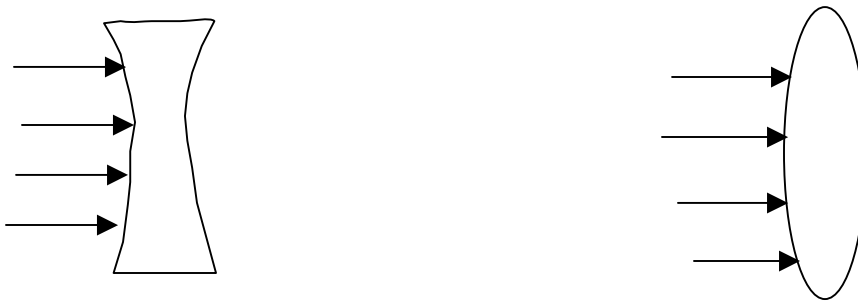
1. Each of these *shapes of glass* ( $n = 1.45$ ) is surrounded by air. Draw the paths of the parallel light rays from air into glass and back out into air again.



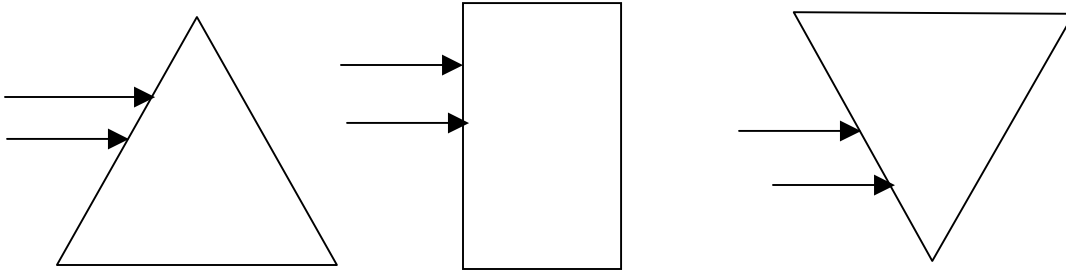
2. Draw the paths of the selected light rays as they enter the glass and exit into the air again.



3. What will the following *shapes of glass* surrounded by air do with the parallel light rays? (Draw your prediction for the parallel rays provided.)



4. What would the following shapes of air do with the parallel light incident in water? (In other words these are air bubbles surrounded by water.)



5. What would the following shapes of air do with the parallel light incident in water?



6. What would the following shapes of air do with the parallel light incident in water?



7. How would the results for 1-3 be different if the glass pieces were surrounded by water instead of air? Be specific and complete.
8. How would the results for 1-3 be different if the glass pieces were placed in a liquid that has an index of refraction of 1.45 (matching the glass)? Be specific and complete.