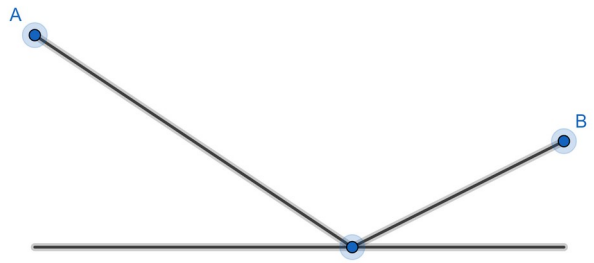
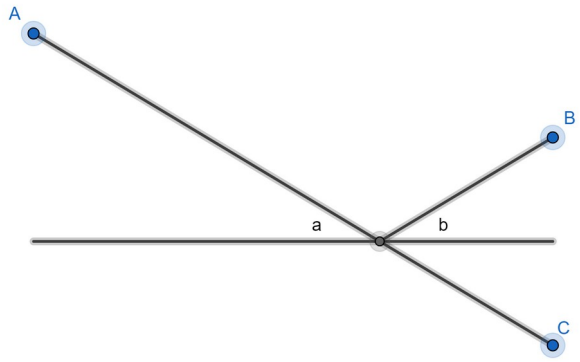
Heron’s Theorem

We want to find the shortest path from point A to the line and back to point B.



Reflect point B in the line to get point C



The distance from point A to the line and back to point B, is the same as the distance from point A to the line and on to point C. The shortest path from point A to the line and on to point C is a straight line. So the shortest path from point A to the line and back to point B is where angle a is equal to angle b This is Heron’s theorem.

Incidently, if light travelled from point A to the line (which acts as a mirror) and back to point B then it would take this path (remember, angle of incidence equals angle of reflection)