

42. The angle of incidence for the light ray on mirror  $B$  is  $90^\circ - \theta$ . So the outgoing ray  $r'$  makes an angle  $90^\circ - (90^\circ - \theta) = \theta$  with the vertical direction, and is antiparallel to the incoming one. The angle between  $i$  and  $r'$  is therefore  $180^\circ$ .