A small plane mirror is placed 21 cm in front of a concave mirror of focal length 21 cm. An object is placed 42 cm in front of the concave mirror. If light from the concave mirror strikes the plane mirror, where is the final image?

Answer:
The distance from plane mirror is equal to focal length of concave mirror and the distance from object is equal to double focal length of concave mirror, according to this: without plane mirror the final image will be at 42 cm in front of concave mirror (drawing above). A small mirror reflect light to concave mirror and the final image should be formed on a plane of a perpendicular optical axis tangentially to a mirror surface (drawing down - red line).
But such as all points (except one) of a plane are behind the surface of mirror, **the final image is not formed.**