# Physics

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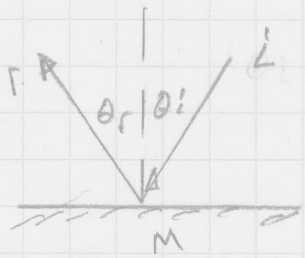
1. The angle of incidence is equal to the angle of reflection.

$$\theta_i = \theta_r$$

$$\theta_i + \theta_r = 60^\circ$$

$$2\theta_i = 60^\circ$$

$$\boxed{\theta_i = 30^\circ}$$



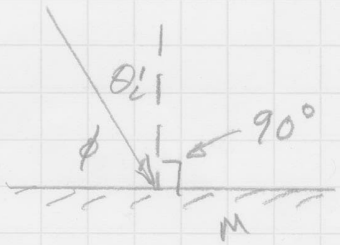

2. $\theta_i = 20^\circ$

a. $\theta_i = \theta_r = 20^\circ$

$\theta_r = 20^\circ$

b. $\phi = 90^\circ - \theta_i$

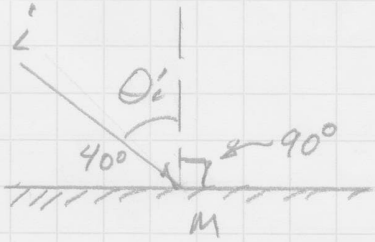
$\phi = 70^\circ$



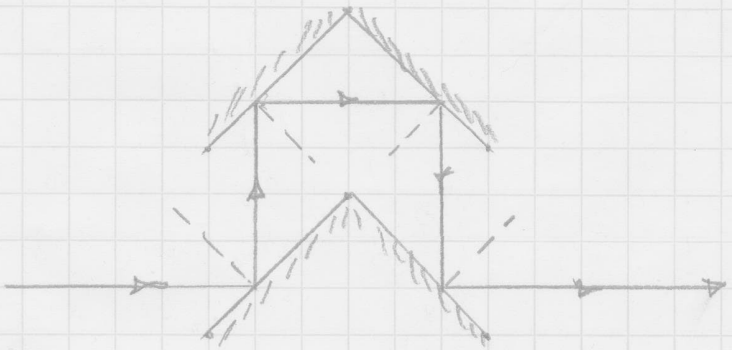

3. $\phi = 40^\circ$

$\theta_i = 90^\circ - 40^\circ$

$\boxed{\theta_i = 50^\circ}$




4.



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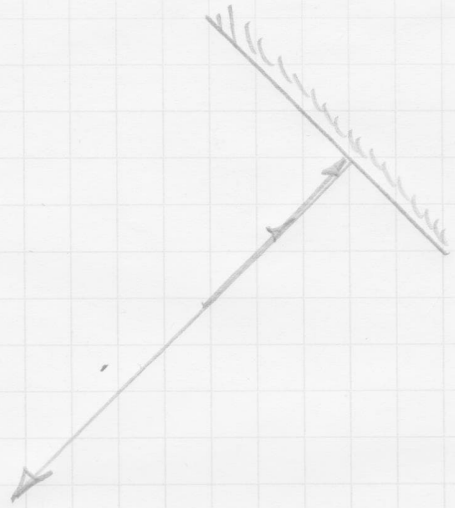
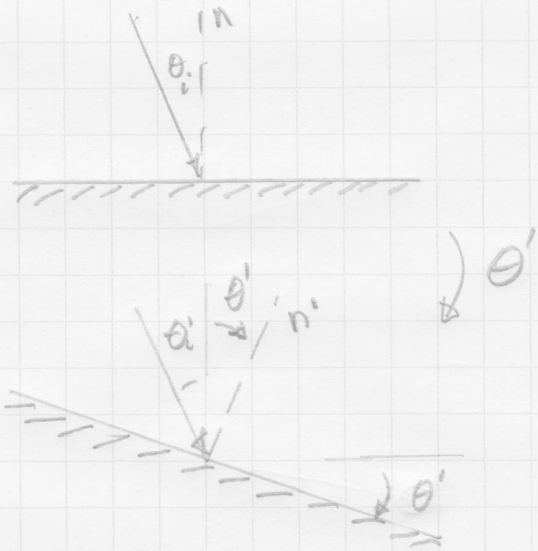
5.



6.




$$\theta_i' = \theta_i + \theta'$$

$$\theta_r' = \theta_i' = \theta_i + \theta'$$

$$\boxed{\theta_r' = \theta_i + \theta'}$$

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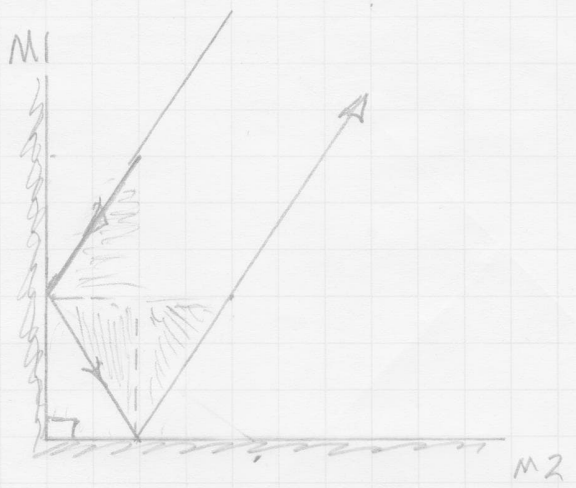
7.




I used 3 by 2 triangles.

By using the shaded right triangles I am able to draw $\theta_i = \theta_r$ for both reflections.

8. The corner cube reflector functions in an analogous way in three dimensions as the two perpendicular mirrors in two dimensions. The beam of light is reflected off the three perpendicular mirrors in succession, redirecting the ray, anti-parallel to the incident ray.

see

kightleys.photoshelter.com/image/1000wvwc7F.nY6k

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