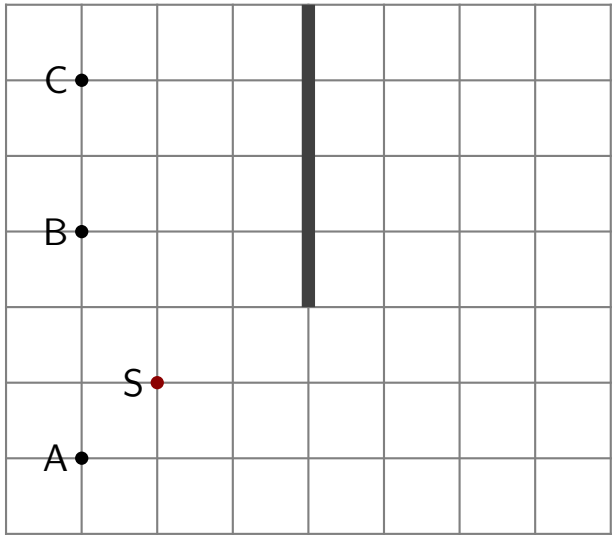
Warm Up Question 1

Suppose that you stand $2.0\,\mathrm{m}$ in front of a plane mirror that is mounted on a vertical wall. Explain as precisely as possible where your image produced by the mirror is located in relation to the wall (e.g. at the wall, in front of the wall, etc,...).

1. Behind the wall.
2. Behind the wall; $2\,\mathrm{m}$ behind.
3. On the wall.
4. In front of the wall.

Question 1

Three observers, A, B and C, and an object, labeled S, are placed in front of a mirror as illustrated.

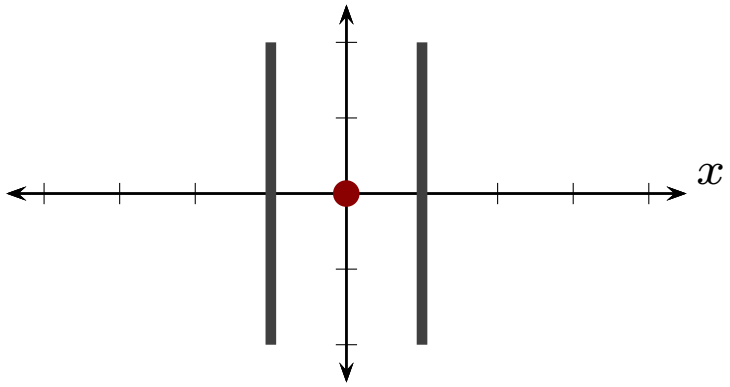


Which of the observers can see the image of the object?

1. Only C
2. Only B
3. Only B and C
4. Only A and C
5. Only A and B

Question 2

An object is placed between two parallel mirrors as illustrated. The horizontal units are marked in meters.

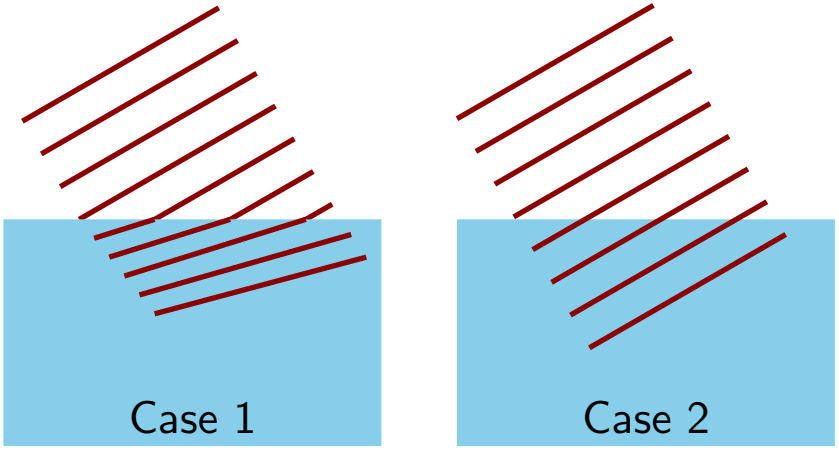


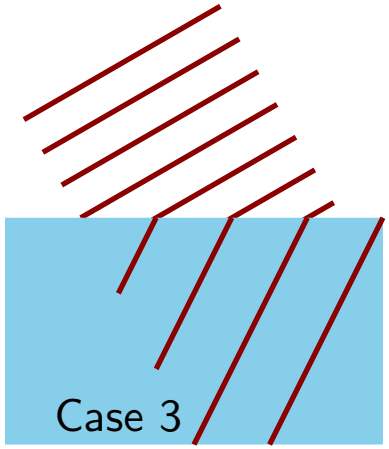
The images produced by the mirrors are located at:

1. $x = 2\,\text{m}, 3\,\text{m}, \ldots$
2. $x = \pm 2\,\text{m}, \pm 3\,\text{m}, \pm 4\,\text{m}, \ldots$
3. $x = \pm 2\,\text{m}, \pm 4\,\text{m}, \pm 6\,\text{m}, \ldots$
4. $x = \pm 2\,\text{m}$

Question 3

Light passes from air into water. Light travels at a smaller speed in water than in air. Which of the following is possible for the waves?





Warm Up Question 2

A beam of light travels from water (higher index of refraction) into air (lower index of refraction). Consider the angle between the incident beam and the surface of the water versus the angle between the refracted beam and the water. How do these angles compare (e.g. same, incident larger, etc,...)? Explain your answer.

1. Refracted (air) larger. Use Snell's law $n_1 \sin\theta_1 = n_2 \sin\theta_2$.
2. Refracted (air) larger. Light bends toward normal when going from higher to lower.
3. Refracted (air) smaller. Light bends away from normal when going from higher to lower.
4. Refracted (air) smaller. Easier to travel through air.
5. Same.