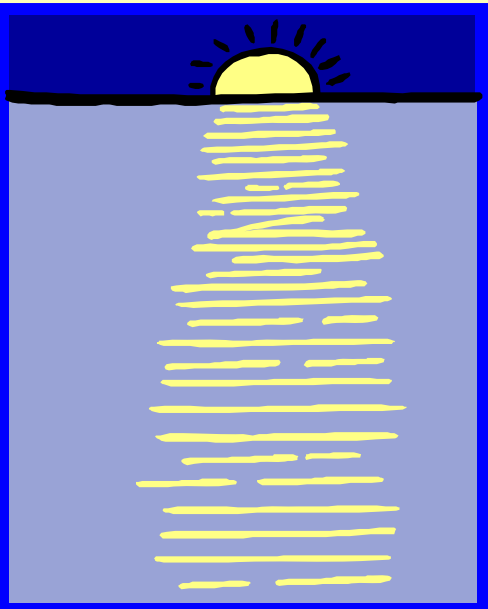
ConcepTest 32.1 Reflection

When watching the Moon over the ocean, you often see a long streak of light on the surface of the water. This occurs because:

1) the Moon is very large
2) atmospheric conditions are just right
3) the ocean is calm
4) the ocean is wavy
5) motion of the Moon



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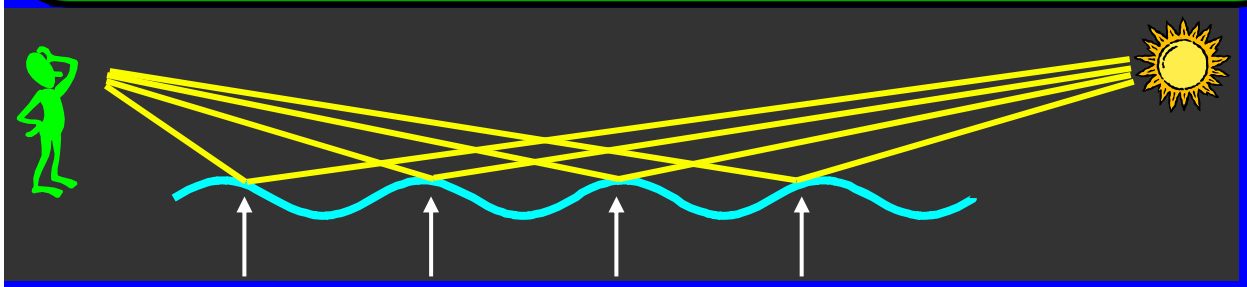
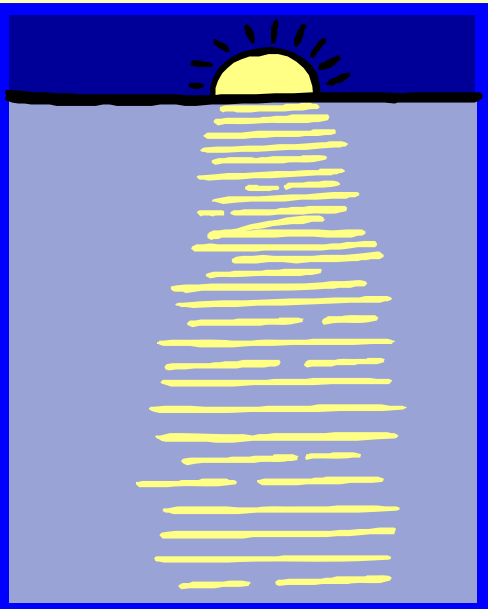
When the water surface changes, the angle of incidence also changes. Thus, different spots on the water can reflect the Moon into your eyes at different times.

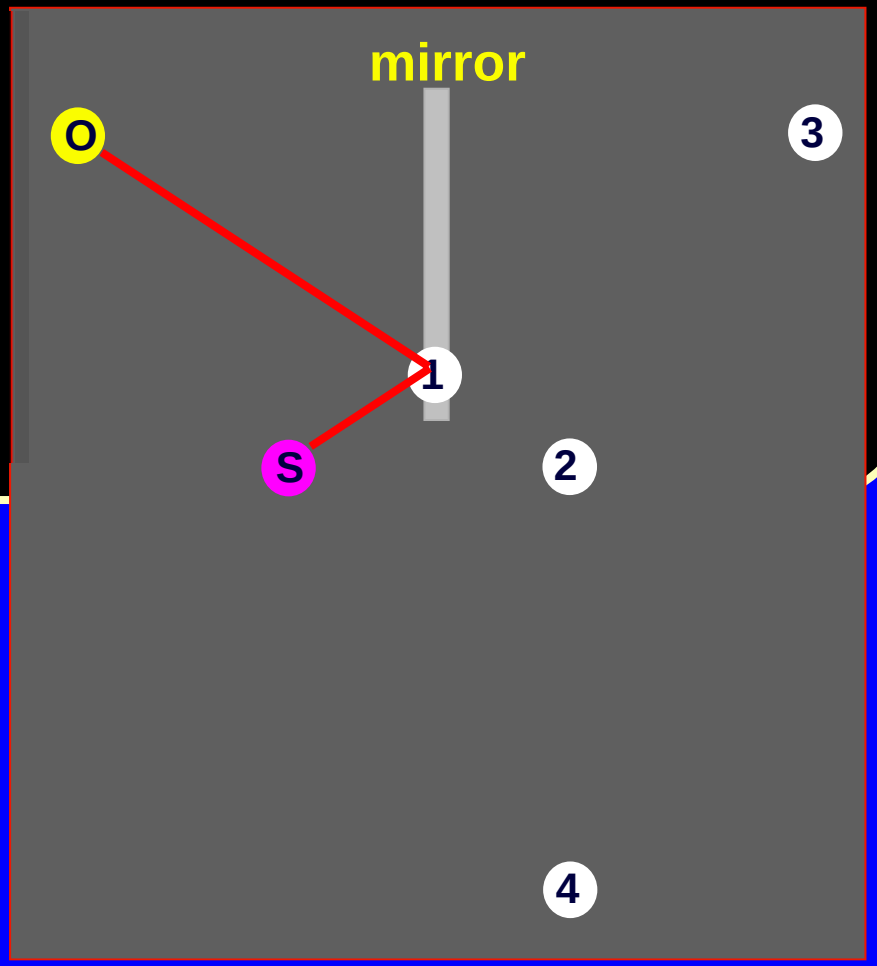




Follow-up: Where else does this occur?

ConcepTest 32.2a Mirror I

An observer at point O is facing a mirror and observes a light source S. Where does the observer perceive the mirror image of the source to be located?



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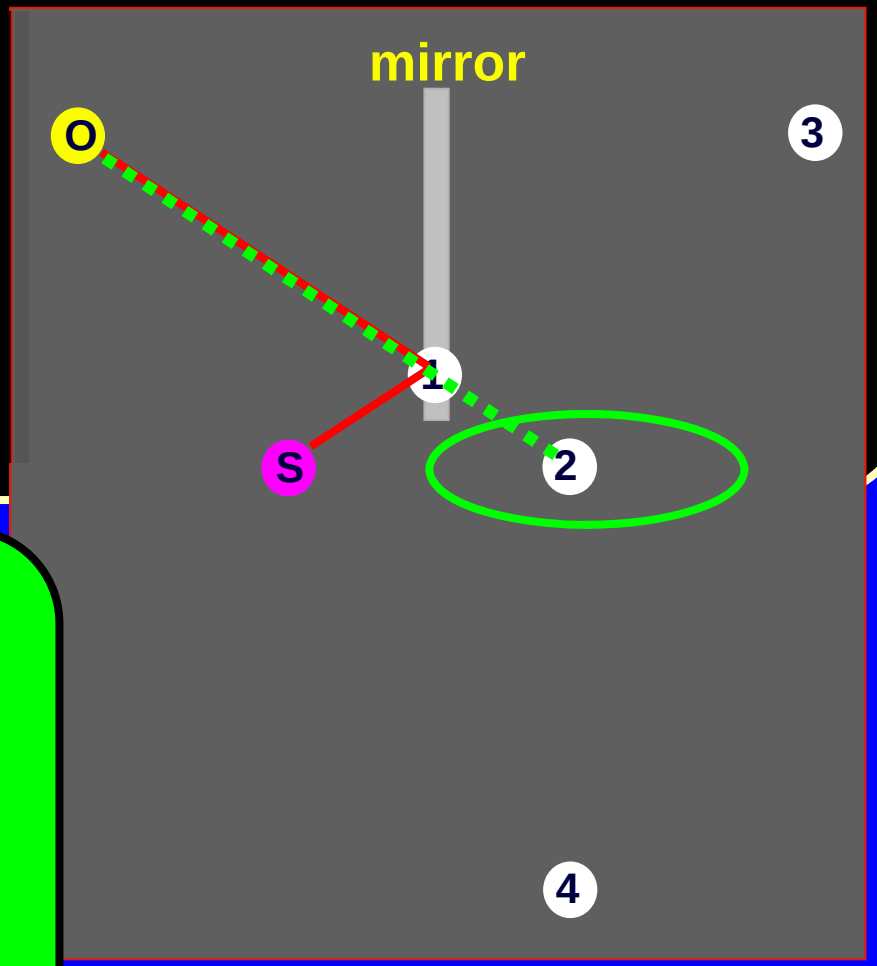


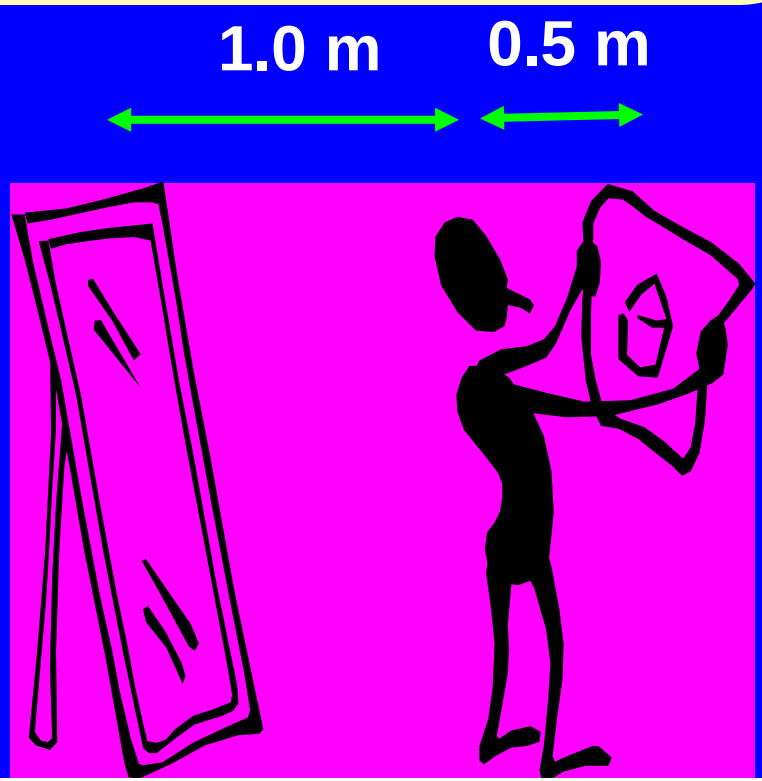
Trace the light rays from the object to the mirror to the eye. Since the brain assumes that light travels in a straight line, simply extend the rays back behind the mirror to locate the image.

Follow-up: What happens when the observer starts moving toward the mirror?

ConcepTest 32.3 All Smoke and Mirrors

You hold a hand mirror 0.5 m in front of you and look at your reflection in a full-length mirror 1 m behind you. How far in back of the big mirror do you see the image of your face?

1) 0.5 m
2) 1.0 m
3) 1.5 m
4) 2.0 m
5) 2.5 m



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3) 1.5 m
4) 2.0 m
5) 2.5 m

The image of the face reflected in the **small mirror** appears **0.5 m** behind the small mirror. This image (which is the ***object*** for the **big mirror**) is **2.0 m** away from the big mirror. The final image is **2.0 m** behind the **big mirror**.