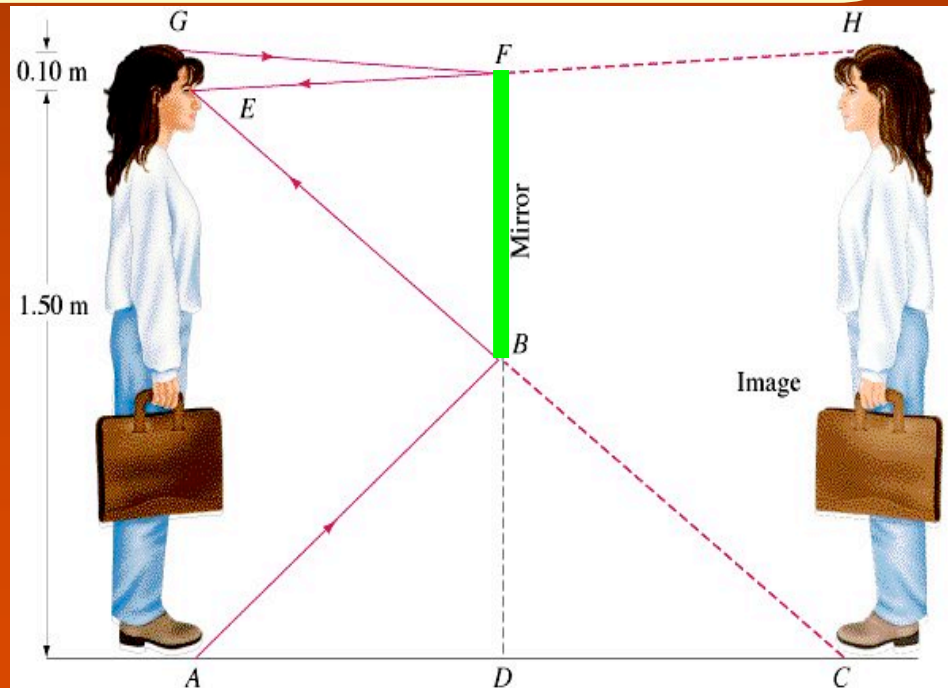


## ConceptTest 35.2b Mirror II

You stand in front of a mirror. How tall does the mirror have to be so that you can see yourself entirely?

- 1) same as your height
- 2) less than your full height but more than half your height
- 3) half your height
- 4) less than half your height
- 5) any size will do

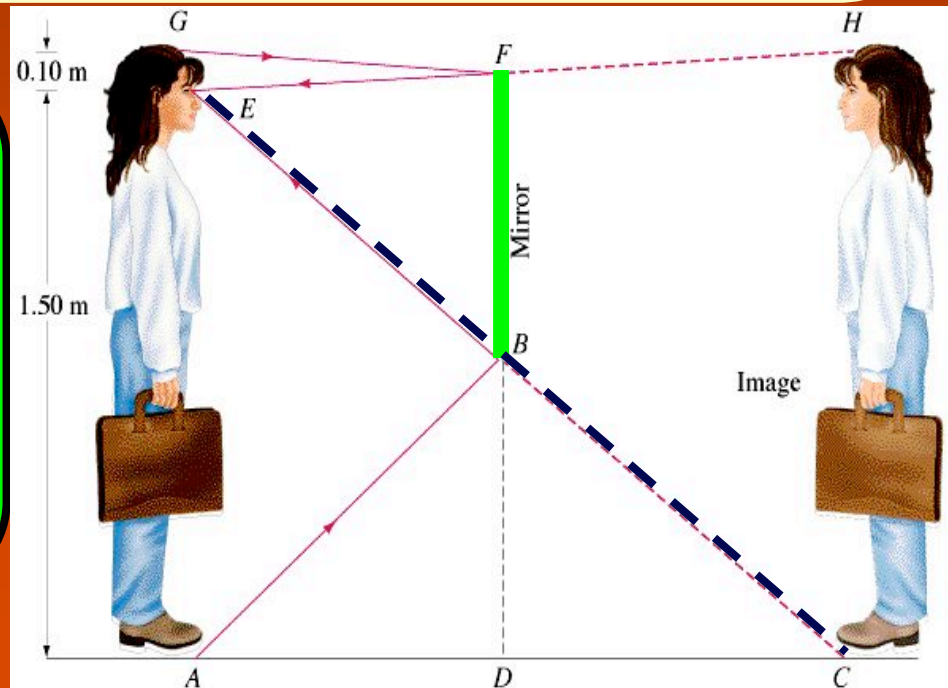


## ConceptTest 35.2b Mirror II

You stand in front of a mirror. How tall does the mirror have to be so that you can see yourself entirely?

- 1) same as your height
- 2) less than your full height but more than half your height
- 3) half your height
- 4) less than half your height
- 5) any size will do

Trace the light rays from the image's foot to the mirror and then to the eye. Since we know that  $\theta_i = \theta_r$ , you need a mirror only half your size.

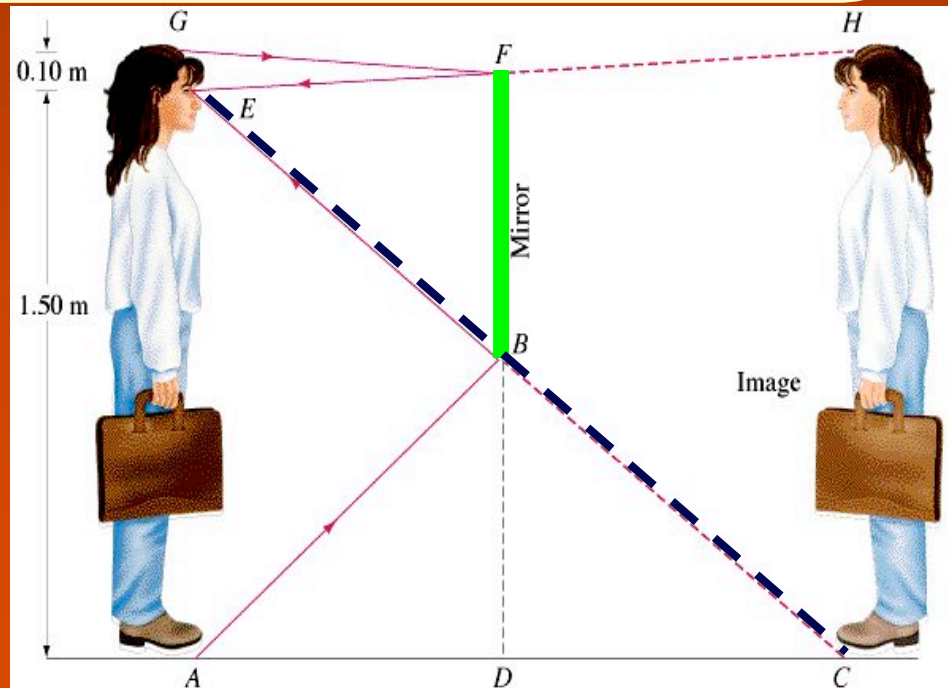


## ConceptTest 35.2c

## Mirror III

Does this depend on your distance from the mirror?

- 1) No.
- 2) Yes.
- 3) Depends on the mirror.
- 4) Depends on the person.



## ConceptTest 35.2c

## Mirror III

Does this depend on your distance from the mirror?

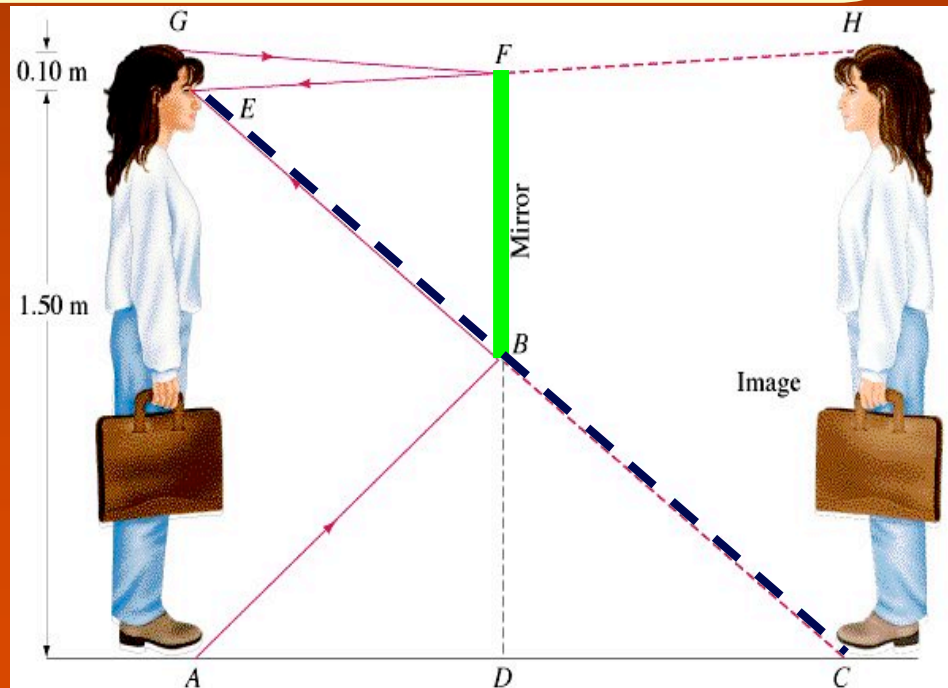
1) No.

2) Yes.

3) Depends on the mirror.

4) Depends on the person.

The further you step back, the smaller the incident and reflected angles will be. But the rays will still be reflected at the same points, so the ray from the foot will still be reflected at mid-height.

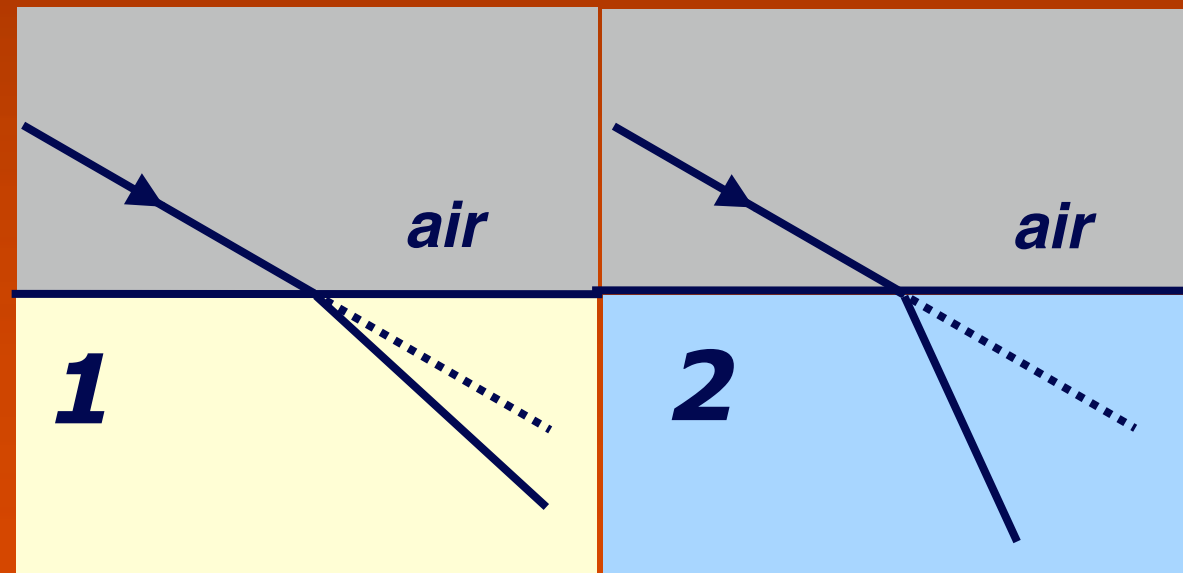


## ConceptTest 35.4a

## Refraction I

Parallel light rays cross interfaces from air into two different media, **1** and **2**, as shown in the figures below. In which of the media is the light traveling **faster**?

- 1) medium 1
- 2) medium 2
- 3) both the same



## ConceptTest 35.4a

## Refraction I

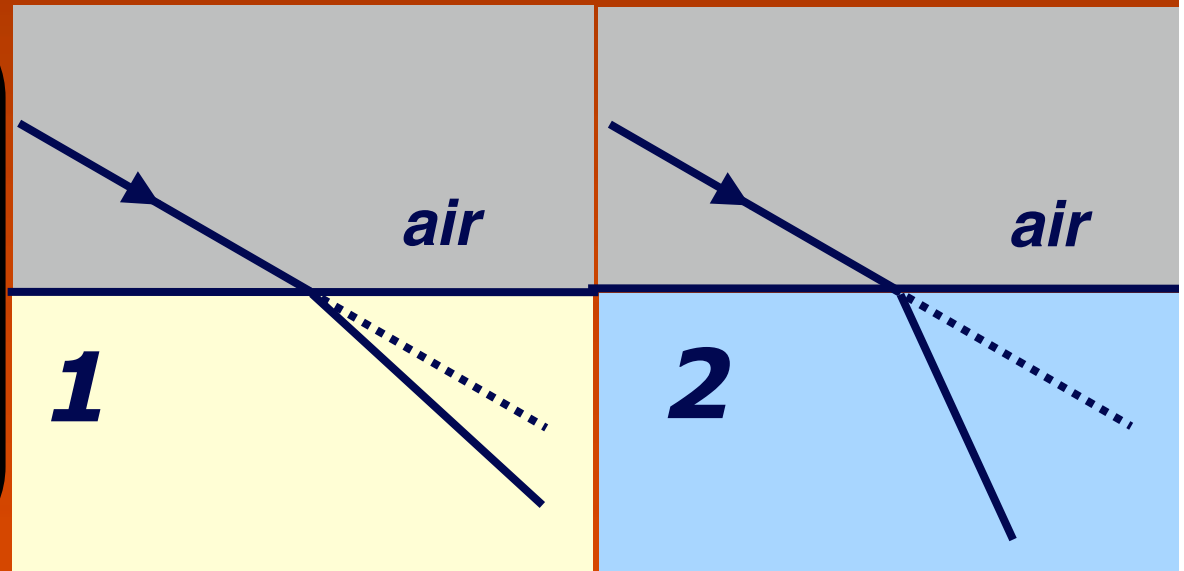
Parallel light rays cross interfaces from air into two different media, **1** and **2**, as shown in the figures below. In which of the media is the light traveling **faster**?

1) medium 1

2) medium 2

3) both the same

The greater the difference in the speed of light between the two media, the greater the bending of the light rays.



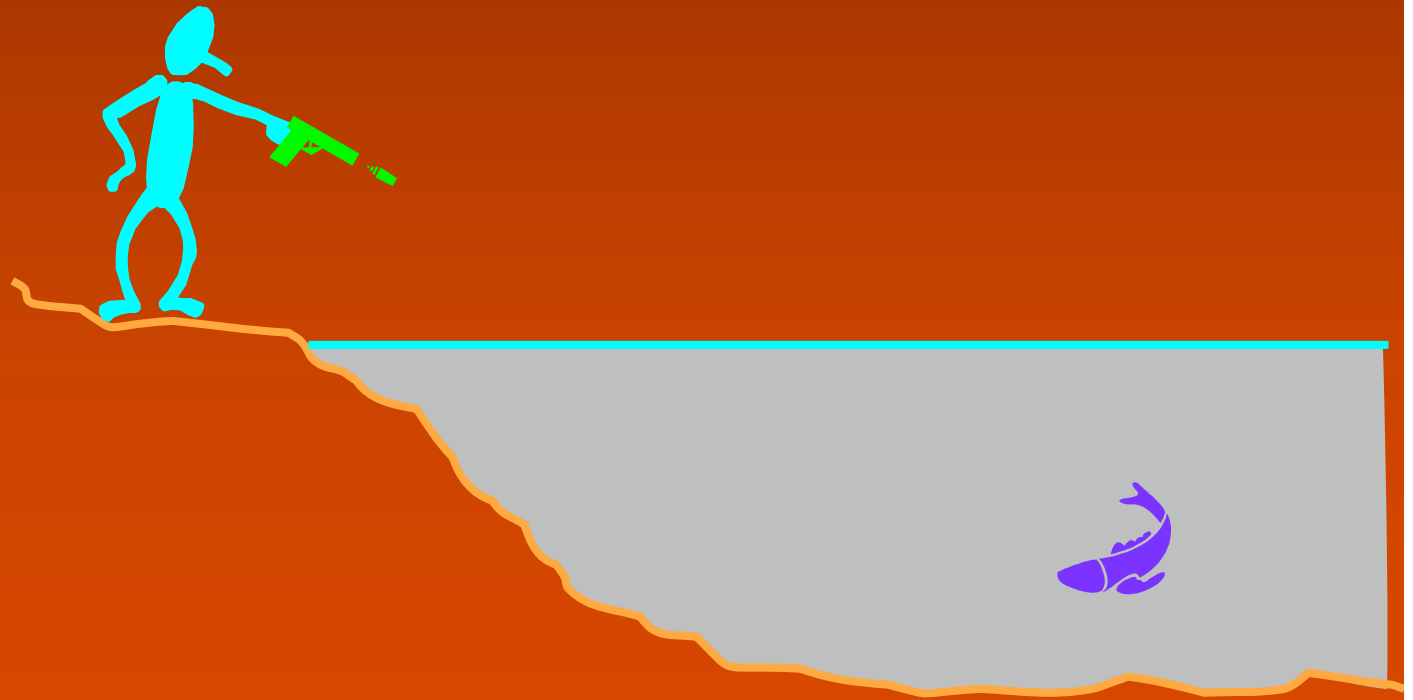
Follow-up: How does the speed in **air** compare to that in **1** or **2**?

## ConceptTest 35.5a

## Gone Fishin' I

To shoot a fish with a gun, should you aim directly at the image, slightly above, or slightly below?

- 1) aim directly at the image
- 2) aim slightly above
- 3) aim slightly below

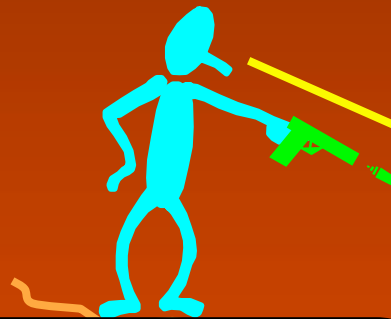


## ConceptTest 35.5a

## Gone Fishin' I

To shoot a fish with a gun, should you aim directly at the image, slightly above, or slightly below?

- 1) aim directly at the image
- 2) aim slightly above
- 3) aim slightly below



Due to refraction, the image will appear **higher** than the actual fish, so you have to **aim lower** to compensate.