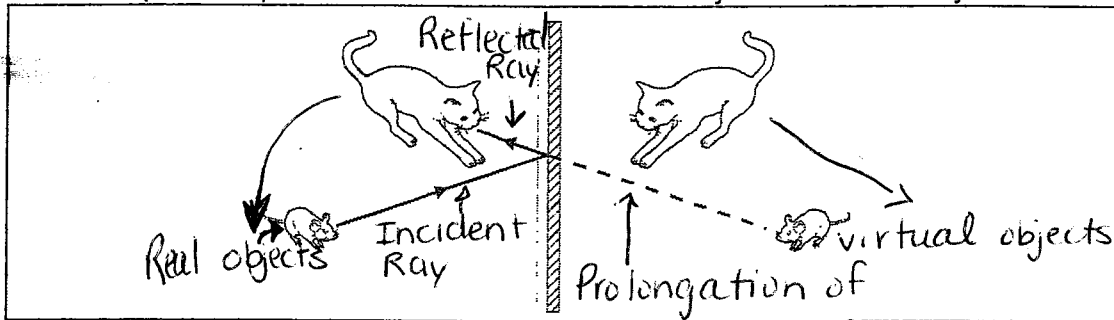


## Refraction and reflection worksheet

1. What is the specular reflection?

-when parallel light rays contact a smooth surface, their reflections are parallel producing a mirror image.

2. Explain the picture below. Label the incident rays and reflected rays.



the reflected rays

\* by prolonging the reflected rays, it is possible to locate the virtual image behind the mirror. The cat is able to locate the mouse

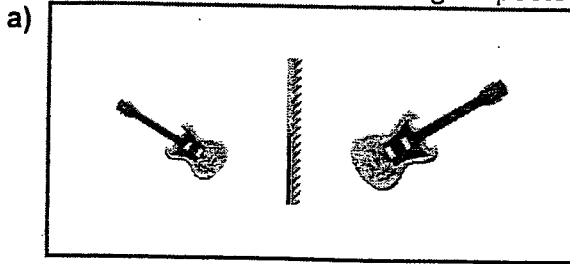
3. Look at the following photo. based on it's position (reflected image in the mirror.



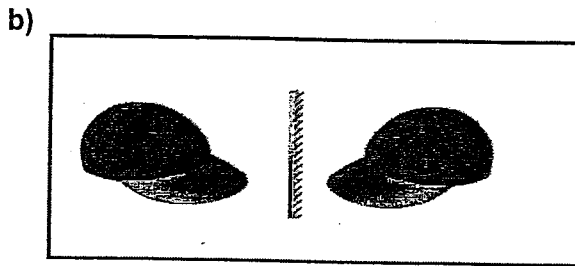
a) Name the phenomenon that allows the penguin to see its reflection in the water. Reflection

b) Name the phenomenon that makes the stones in the water seem closer than they really are. Refraction

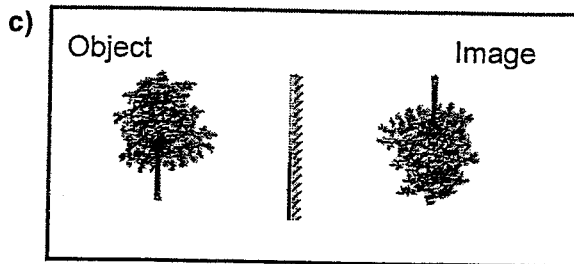
4. For each of the following illustrations, indicate whether the principles of reflection in a plane mirror are being respected. Explain your answer.



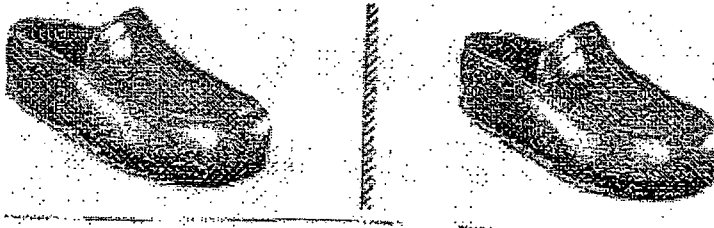
No  
Virtual Image  
is larger than object



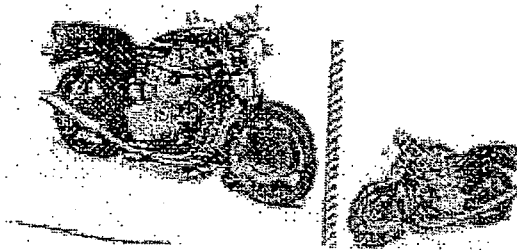
No  
Virtual image is close  
to mirror.



No  
Virtual image is  
vertically inverted  
(upside down)



No  
Virtual image  
should be facing  
the other way.



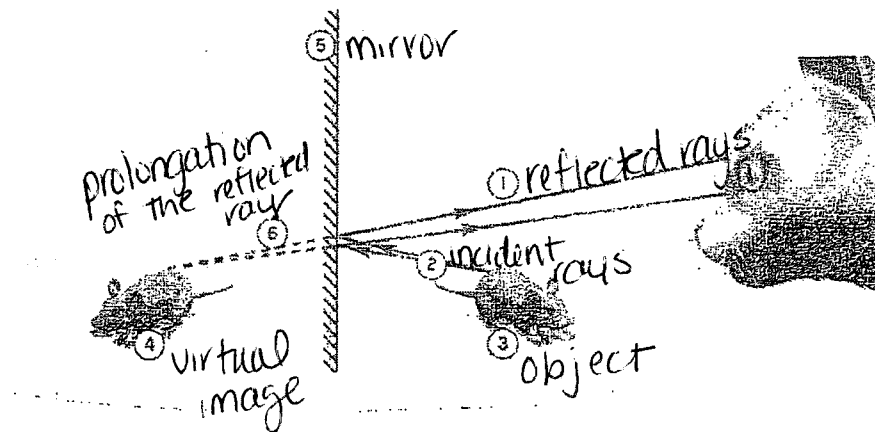
No  
Virtual image  
is smaller than  
object.

5. Light can be deviated by reflection or refraction. Identify the deviation that corresponds to each of the following statements.

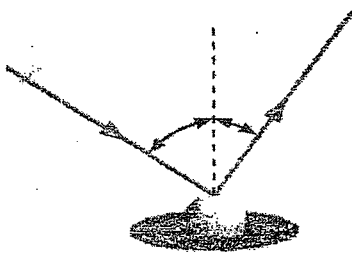
- a) I am the deviation of a light ray when it passes from air to water.
- b) The deviation of this light ray is put into use with lenses.
- c) I am a change in direction of a light ray on contact with a new medium and the return to the medium of origin.
- d) Thanks to this phenomenon, objects that do not emit light can be seen.

refraction  
refraction  
reflection  
reflection

6. Label parts 1 to 6 on the diagram below.

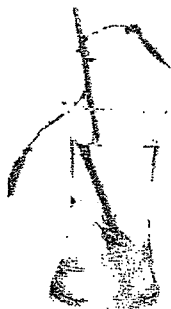


7. Explain if the path of the rays respect the laws of reflection in the illustration below.



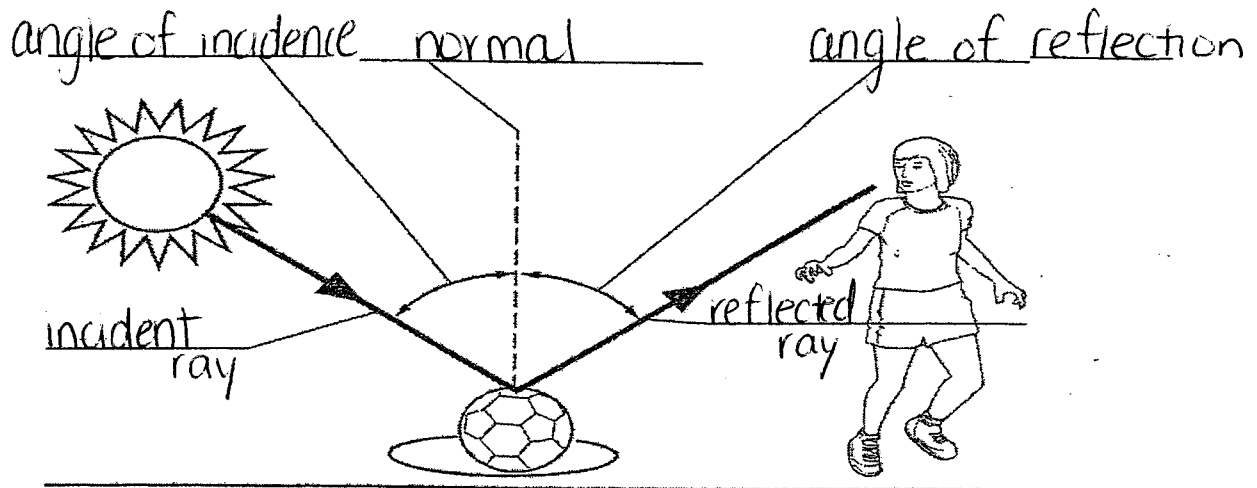
No: the angle of incidence is not equal to the angle of reflection

8. Explain why the flower looks broken.

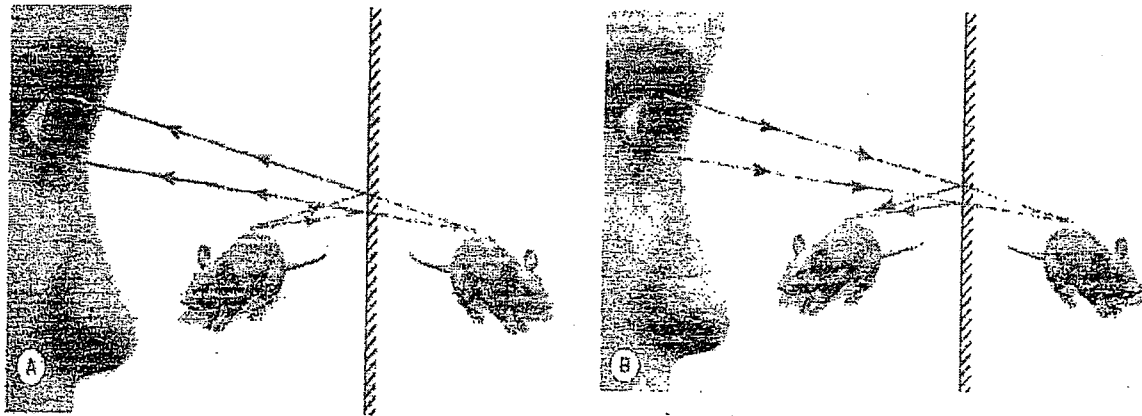


It looks broken, due to the different densities of the mediums (air, glass, water) that the light travels through (refraction). The light is deviated.

9. Label all the parts in the picture below.



10. Which of the two figures below represents the image formed by a plane mirror? Explain your answer.



A: because the object (mouse) deviates the incident rays, the reflected rays allowed the individual to see, through the prolongation of the reflected rays.

\* Reflected rays from mouse are going to eye.

\* Light bounces onto the object (mouse) and is reflected off the mirror to the eyes of the person.