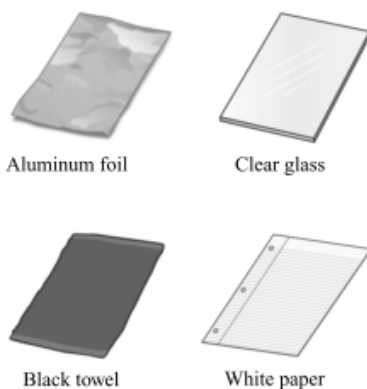


MCAS Questions: Light

Reporting Category: Physical Sciences

Standard: 12 - Recognize that light travels in a straight line until it strikes an object or travels from one medium to another, and that light can be reflected, refracted, and absorbed.

1. (2013) The pictures below show four objects that a student placed outside in the sunlight.

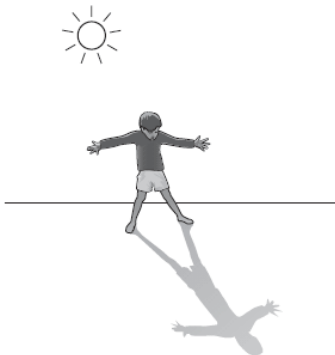


Which object should absorb the greatest amount of light?

- A. aluminum foil
 - B. black towel
 - C. clear glass
 - D. white paper

2. (2009) Heat, light, and sound are all different forms of
 - A. fuel.
 - B. energy.
 - C. matter.
 - D. electricity.

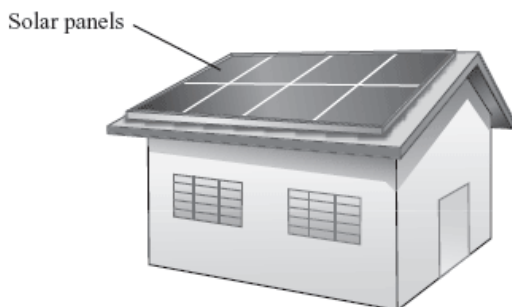
3. (2008) The picture below shows Brandon and the shadow he creates while standing on the playground one day.



Which of the following best explains why Brandon creates a shadow?

- A. Brandon changes the color of sunlight hitting the ground.
 - B. Brandon reflects sunlight onto the ground.
 - C. Brandon bends light waves from the Sun.
 - D. Brandon blocks light from the Sun.
4. (2007) A student places a sheet of black construction paper on her desk. What happens to most of the light that strikes the black construction paper?
- a. The light is bent by the paper.
 - b. The light reflects off the paper.
 - c. The light is absorbed by the paper.
 - d. The light passes through the paper.

5. (2007) A solar panel is used to collect energy from the Sun and change it into other forms of energy. The picture below shows some solar panels on the roof of a building.



Which form of energy is collected by the solar panels?

- A. wind
 - B. sound
 - C. magnetic
 - D. light
6. (2005) The picture below shows a duck swimming in a lake.



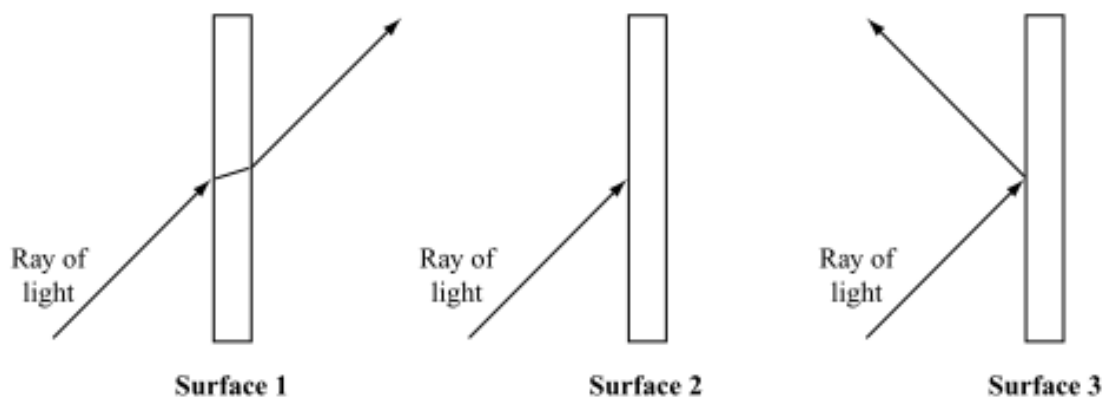
A student sees a mirror image of a duck in the water of the lake. What causes this mirror image?

- A. black light
- B. refracted light
- C. reflected light
- D. absorbed light

7. (2005) What happens to the path of a light ray as it passes from air into water at an angle?
- a. Its path widens.
 - b. Its path bends.
 - c. Its path becomes shorter.
 - d. Its path continues in a straight line.

Open Response Questions

Each picture below shows a ray of light interacting with a different surface. One surface is a shiny metal, one surface is clear plastic, and one surface is painted black.



- Identify which surface is most likely made of a shiny metal. Explain your answer.
- Identify which surface is most likely made of clear plastic. Explain your answer.
- Identify which surface is most likely painted black. Explain your answer.

**MCAS Questions: Light
Multiple Choice Answers**

1. B
2. B
3. D
4. C
5. D
6. C
7. B

Open Response Answers

1. Surfaces

Score Point 4

A. Surface 3 is made of a shiny metal because light reflects off of shiny metal objects.

B. Surface 1 is made of clear plastic because clear plastic bends or refracts light.

C. Surface 2 is painted black because dark colored objects absorb light.

Score Point 4

A. Surface 3 is most likely made of shiny metal because if light strikes something shiny, it bounces off the metal and onto a different substance.

B. Surface 1 is most likely to be made of clear plastic because when light hits clear plastic, the light bends and comes out the other side of the clear plastic.

C. Surface 2 is most likely painted black because in the picture, Surface 2 doesn't have another arrow going through the other side of the surface because black absorbs light.

Score Point 3

- (a) Surface 3 is most likely to be the shiny metal because usually when shine a light on a mirror or shiny metal it reflects off of the object.
- (b) Surface 1 most ^{is} likely to be made of clear plastic because the plastic bends the light and then it goes back out.
- (c) Surface 2 is most likely to be painted black because it can't bounce off because it's a solid and light doesn't go through solids.

Score Point 2

- (a) surface 3 is made out of shiny metal.
- (b) Surface 1 is made out of clear plastic.
- (c) Surface 2 is painted black.

Score Point 1

- Ⓐ Surface 3 is shiny metal because ray of the light just shines right off the shiny metal surface.
- Ⓑ Surface 2 is clear plastic because the surface is so clear ray of the light just stays right on the surface
- Ⓒ Surface 1 is paint black because just like a black shirt in a sunny day the rays of the light right through the shirt just like it is doing to Surface 1

Score Point 0

A. I think surface 2 is most likely made of a shiny metal. I think so because the arrow is pointing only on the front surface.

B. Surface 3 is clear plastic because the arrow is pointing at the front of Surface 3 and another arrow is pointing through Surface 3.

C. Surface 1 is most likely painted black because the ray of light is reflecting the surface. The arrow is pointing toward the surface and the other arrow is pointing over, so that mean the surface is opaque.