When Light Strikes

**INSTRUCTIONS**

Answer the following questions in the space provided.

1. What does a sharp shadow tell us about the way light travels?

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2. Describe how light is affected by

(a) A transparent object \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(b) An opaque object \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(c) A translucent object \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. Why is frosted glass often used for bathroom windows instead of clear glass or a solid wall?

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4. Complete the table below. In the second column, classify each material as transparent, opaque, or translucent. In the third column, state whether light is absorbed, reflected, transmitted, or scattered when it strikes the material. In the last two boxes of the first column, write your own examples.

|  |  |  |
| --- | --- | --- |
| Material | Classification | Behaviour of light |
| glass |  |  |
| white clouds |  |  |
| stained glass window |  |  |
| aluminum foil |  |  |
| fog |  |  |
| cellophane |  |  |
| cardboard |  |  |
| wax paper |  |  |
| black chalkboard |  |  |
| mirror |  |  |
|  | transparent |  |
|  |  | scattered |

ANSWER KEY

When Light Strikes

1. A sharp shadow indicates that light travels in straight lines past the edge of the object to the surface on which the shadow falls. It also indicates that the light source is very small, very far away, or focused to emit parallel light beams. A fuzzy shadow results from a nearby large light source, as some light rays travel past the edge of the object at different angles.

2. (a) Light passes through a transparent object without scattering (so images can be seen).

(b) An opaque object casts a black shadow. It prevents light from passing through it by reflecting or absorbing the light.

(c) A translucent object allows light to pass through, but it scatters the light rays so that clear images cannot be seen through the object.

3. Frosted glass in a bathroom window allows light to pass through but provides privacy by preventing outside observers from seeing clear images of people inside.

4.

|  |  |  |
| --- | --- | --- |
| Materials | Classification | Behaviour of light |
| glass | transparent | transmitted |
| white clouds | opaque | reflected |
| stained glass window | translucent | scattered |
| aluminum foil | opaque | reflected |
| fog | translucent | scattered |
| cellophane | transparent | transmitted |
| cardboard | opaque | absorbed |
| wax paper | translucent | scattered |
| black chalkboard | opaque | absorbed |
| mirror | opaque | reflected |
| water | transparent | transmitted |
| frosted glass | transparent | scattered |