REFRACTION: LIGHT CHANGES DIRECTION

**Introduction**

When light moves from one medium (such as air) to another (such as water), the light bends. This is called refraction. The light bends because it changes speed when it moves between materials that have different densities.

**INSTRUCTIONS**

For each diagram, draw the normal at the point of contact. Measure the incident angle and the angle of refraction. Then complete the sentences using greater, less, toward, or away from.



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| 1. Air to glass  ..\..\..\art\Unit2\art\jpg\blm2-17a.jpg  (a) The angle in air is \_\_\_\_\_\_\_\_\_\_ than the angle in the glass.  (b) The light entering the glass bends \_\_\_\_\_\_\_\_\_\_ the normal. | 2. Water to air  ..\..\..\art\Unit2\art\jpg\blm2-17b.jpg  (a) The angle in air is \_\_\_\_\_\_\_\_\_\_ than the angle in the water.  (b) The light entering the air bends \_\_\_\_\_\_\_\_\_\_ the normal. |
| 3. Air to water  ..\..\..\art\Unit2\art\jpg\blm2-17c.jpg  (a) The angle in air is \_\_\_\_\_\_\_\_\_\_ than the angle in the water.  (b) The light entering the water bends \_\_\_\_\_\_\_\_\_\_ the normal. | 4. Transparent plastic to air  ..\..\..\art\Unit2\art\jpg\blm2-17d.jpg  (a) The angle in air is \_\_\_\_\_\_\_\_\_\_ than the angle in the plastic.  (b) The light entering the air bends \_\_\_\_\_\_\_\_\_\_ the normal. |

DIFFERENT MIRROR SURFACES

**INSTRUCTIONS**

Identify the type of mirror (**plane, convex, or concave**) used in each situation below. Write your answer on the line provided.

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| 1. bathroom wall mirror  ..\..\..\art\Unit2\art\jpg\blm2-18a.jpg  Purpose: to show your exact appearance  Type of mirror: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 2. car headlights and flashlights  ..\..\..\art\Unit2\art\jpg\blm2-18b.jpg  Purpose: to project a strong beam forward  Type of mirror: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 3. store surveillance mirror  ..\..\..\art\Unit2\art\jpg\blm2-18c.jpg  Purpose: to show a wide view  Type of mirror: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 4. cosmetic mirror  ..\..\..\art\Unit2\art\jpg\blm2-18d.jpg  Purpose: to show a magnified view of parts of your face.  Type of mirror: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 5. one-way mirror  ..\..\..\art\Unit2\art\jpg\blm2-18e.jpg  Purpose: to see into a brightly lit room; looks like a mirror to the people being observed  Type of mirror: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 6. car mirror  ..\..\..\art\Unit2\art\jpg\blm2-18f.jpg  Purpose: to show a wide-angle view behind and beside the car  Type of mirror: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 7. dental mirror  ..\..\..\art\Unit2\art\jpg\blm2-18g.jpg  Purpose: to make teeth visible and to  magnify them  Type of mirror: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 8. reflecting ball at a dance  ..\..\..\art\Unit2\art\jpg\blm2-18h.jpg  Purpose: to project portions of lights hitting it in many different directions  Type of mirror: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |