Name: Class:

Student worksheet

4.7 Light refracts when moving in and out of substances

Pages 82–83 and 199–200

Refraction of light

1 What is refraction?

_____

_____

2 What is the result of refraction?

_____

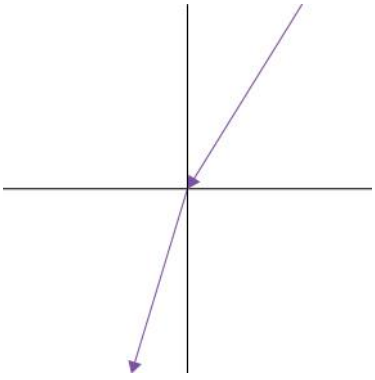
_____

3 What does the bending of light depend on?

_____

_____

4 On the following diagram label the normal, incident ray, the angle of incidence, the refracted ray, and the angle of refraction



5 Is this form or refraction from water into air or air into water? Explain how you know.

_____

_____

6 Explain how refractive index relates to density.

_____

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7 Why does light bend and how does this relate to a materials refractive index?

8 When is the only time that light does not bend?

9 What is a lens?

10 Draw a diagram of a concave and convex lens, demonstrating their convergence or divergence and focal length and focus point or virtual focus.

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Extend your understanding

11 Light bends and disperses when it passes into a prism and then back out into the air again. The refractive index of air is 1.0 and of the glass prism is 1.5.

a Why does light refract multiple times when moving through a prism?

_____

_____

b What is dispersion and how does white light disperse?

_____

_____

c Why does light disperse as it moves from air into a glass and then back out into the air?

_____

_____

d Describe the direction that the light will bend (toward or away from ther normal) when it moves from the air into the glass.

_____

_____

e Describe the direction that the light will bend (toward or away from ther normal) when it moves from the glass into the air.

_____

_____

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