DATE: NAME: CLASS:

CHAPTER 5 **Lenses and Light** BLM 2-22

Goal • Complete this page to show your understanding of how lenses bend light.

What to Do

Review pages 191–193 of BC Science 8. Then answer these questions and complete the diagrams.

1. Describe a concave lens.

_____

_____

2. Light rays _____ when passing through a concave lens.

3. Describe a convex lens.

_____

_____

4. Light rays _____ when passing through a convex lens.

5. Sometimes people use the phrase double convex or double concave to describe a lens. They are referring to the shape of each surface. To identify concave and convex lenses, it is the thickness of the glass in the middle compared to the thickness at the edges that counts. Classify the following lenses as convex or concave.

_____ _____ _____ _____

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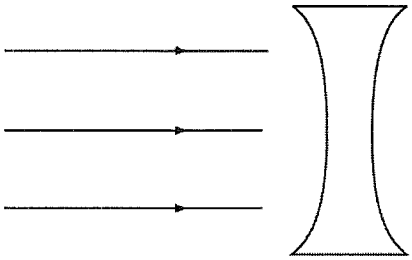
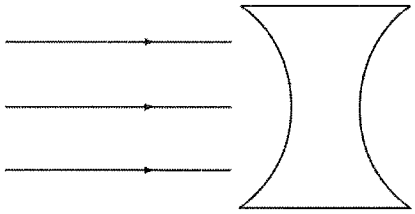
BLM 3-16
continued

6. Draw the paths of the light through each of the following lenses.

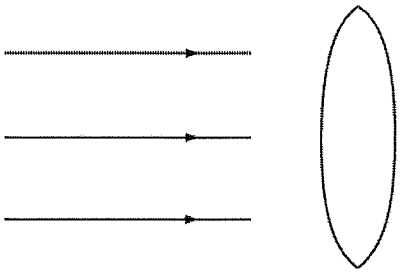
Concave lens with small curve



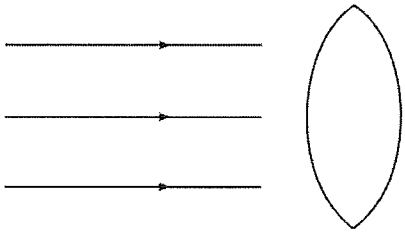
Concave lens with large curve



Convex lens with small curve



Convex lens with large curve



Name Date

Section 5.3 Summary

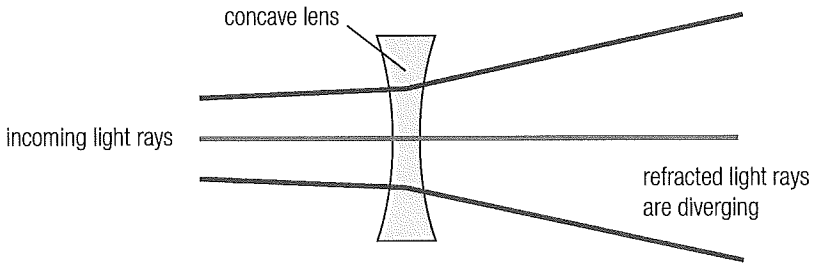
Using Lenses to Form Images

Textbook pages 190–199

Before You Read

Many common devices, such as eyeglasses and magnifying glasses, have lenses. What are lenses used for? Record your ideas in the lines below.

State the Main Ideas
As you read this section, stop after each paragraph. Put what you have just read into your own words.



What is a lens?

A **lens** is a piece of transparent material that is curved so that light rays will refract as they pass through it. The more curved the sides of a lens are, the more a ray of light will refract as it passes through the lens. There are two types of lenses: concave and convex.

What is a concave lens?

A **concave lens**

- is thinner in the middle and thicker at the edges
- refracts light rays that pass through it away from the normal. The light rays diverge and do not meet at a focal point.
- forms images that are upright
- forms images that are smaller than the object ✔

Reading Check

1. What happens to light rays that pass through a concave lens?

What is a convex lens?

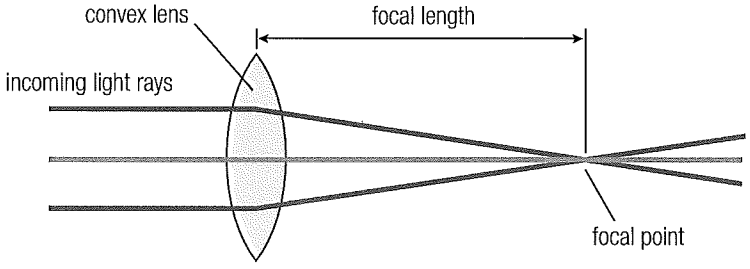
A **convex lens**

- is thicker in the middle and thinner at the edges.
- refracts light rays that pass through it toward the normal. The light rays converge at a focal point.

The image formed by a convex lens depends on how far the object is from the focal point. The distance from the centre of the lens to the focal point is called the **focal length**.

- If an object is between the lens and the focal point (less than one focal length), the image is upright and larger than the object.
- If an object is more than one focal length away from the lens, the image is upside down and smaller than the object ✔

Distance of an object from the convex lens	How the image compares with the object
more than two focal lengths	upside down and smaller
between one and two focal lengths	upside down and larger
directly at the focal point	no image forms
less than one focal length	upright and larger



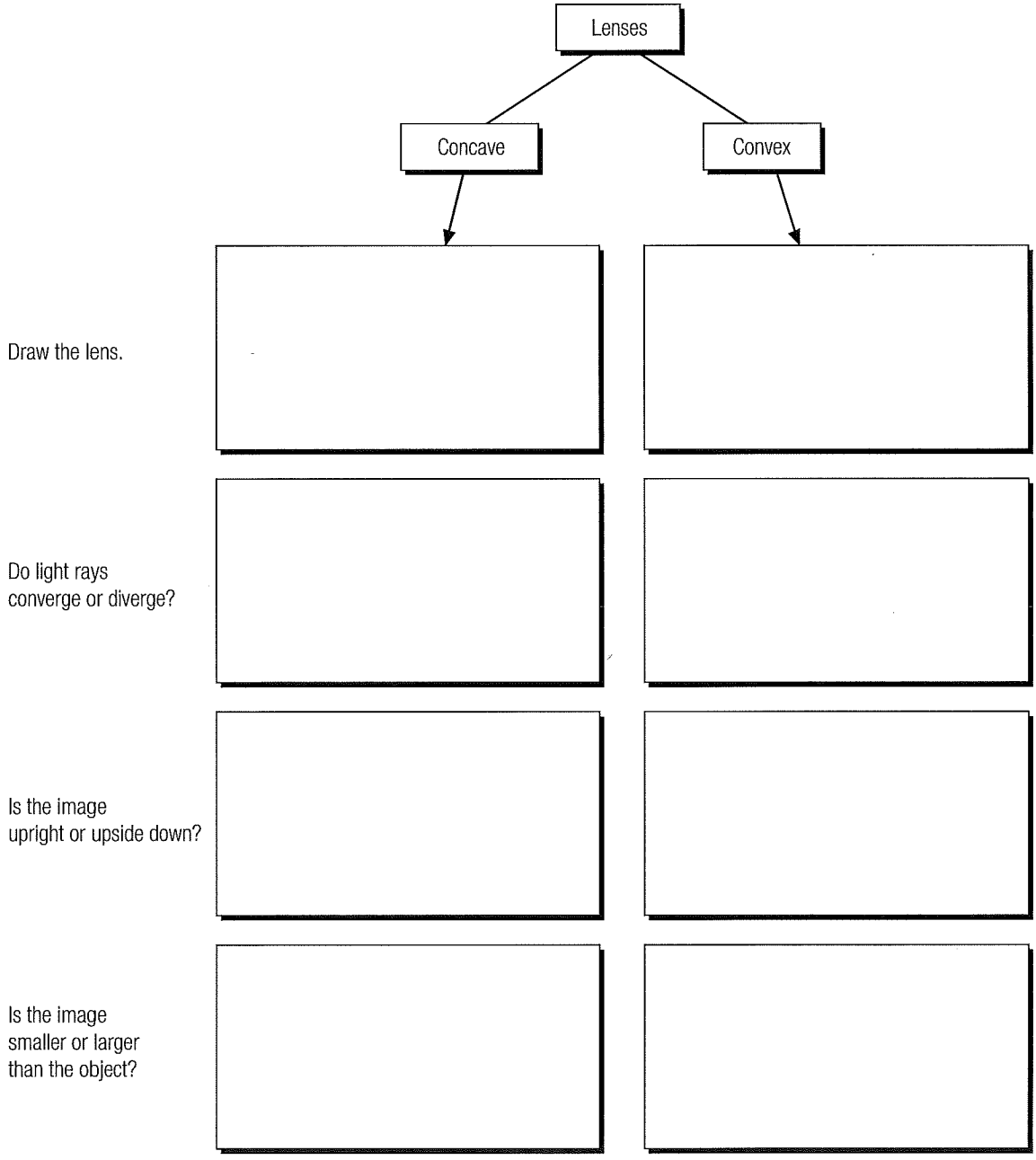
✔ *Reading Check*

2. What is the focal length of a lens?

Use with textbook pages 190–193.

Concave lenses and convex lenses

Compare and contrast concave lenses and convex lenses.



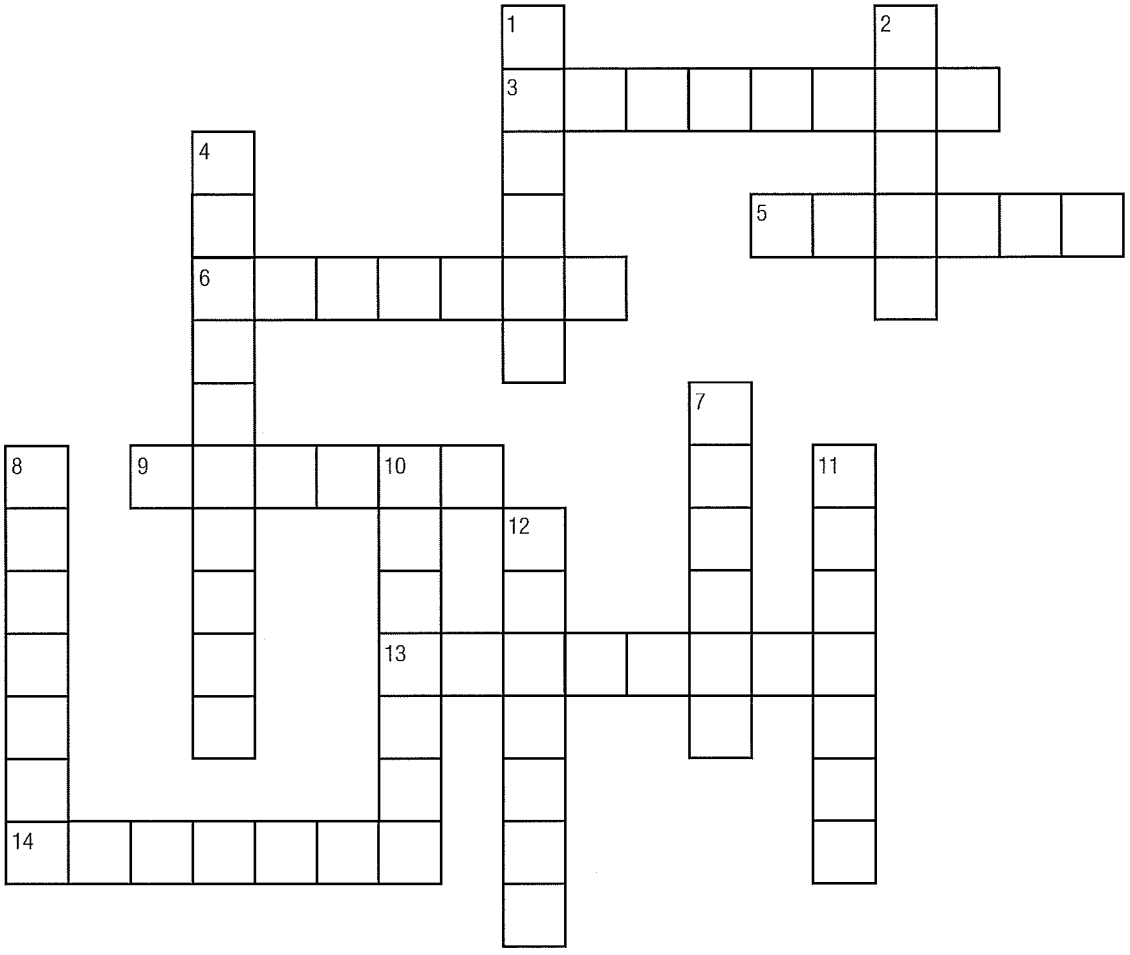
Name Date

Vocabulary
Section 5.3

Use with textbook pages 167–193.

Lenses puzzle

Use the clues to help you solve the crossword puzzle.



Across	Down
3. a concave lens refracts light rays _____ the normal 5. mirror that curves outwards 6. if the object is more than two focal lengths from a convex lens, it will appear to be _____ 9. the focal _____ is the distance from the centre of the lens to where light rays converge 13. light rays coming together 14. a concave lens is _____ in the middle	1. if the object is less than one focal length from a convex lens, it will appear to be upright and _____ 2. light rays meet at the focal _____ 4. if the object is one or more focal lengths from a convex lens, it will appear to be _____ 7. a convex lens refracts light rays _____ the normal 8. images formed by concave lenses are always smaller and _____ 10. a concave lens is _____ at the edges 11. light rays spreading apart 12. mirror that curves inward