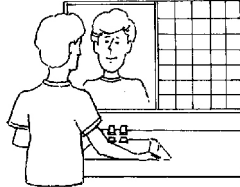


**Goal** • Show your understanding of the kinds of mirrors used for different purposes.

### What to Do

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

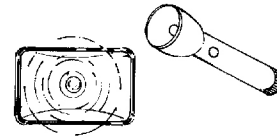
1. bathroom wall mirror



Purpose: to show your exact appearance

Type of mirror: plane

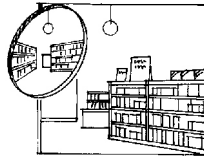
2. car headlights and flashlights



Purpose: to project a strong beam forward

Type of mirror: concave

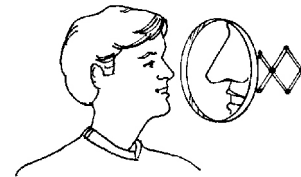
3. store surveillance mirror



Purpose: to show a wide view

Type of mirror: convex

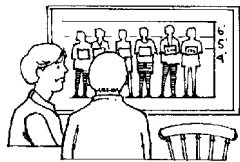
4. cosmetic mirror



Purpose: to show a magnified view of parts of your face.

Type of mirror: concave

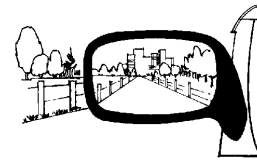
5. one-way mirror



Purpose: to see into a brightly lit room; looks like a mirror to the people being observed

Type of mirror: plane

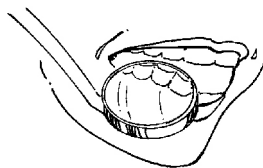
6. car mirror



Purpose: to show a wide-angle view behind and beside the car

Type of mirror: convex

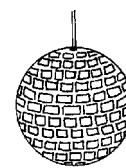
7. dental mirror



Purpose: to make teeth visible and to magnify them

Type of mirror: concave

8. reflecting ball at a dance



Purpose: to project portions of lights hitting it in many different directions

Type of mirror: convex

Use with textbook pages 182–186.

## Flat mirrors and curved mirrors

Complete the following table describing the three different types of mirrors.

	Plane Mirror	Concave Mirror (object near to mirror)	Concave Mirror (object far from mirror)	Convex Mirror
Is the reflecting surface of the mirror flat, curved inward, or curved outward?	Flat	curved inward	Curved Inward	Curved outward
Is the image smaller, larger, or the same size as the object?	Same size	larger	smaller	smaller
Is the image upright or upside down?	upright	upright	inverted	upright
Is the image the same shape as the object?	yes	no	no	no
Does the image seem to be behind the mirror or in front of the mirror?	behind	in front	behind	behind
Draw and label one example of how this type of mirror might be used.				

**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.

- Describe a concave lens. Lens that is thinner in the middle than at outside edges
- Light rays diverge when passing through a concave lens.
- Describe a convex lens. lens that is thicker in the middle than at outside edges
- Light rays converge when passing through a convex lens.
- 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.



convex



concave



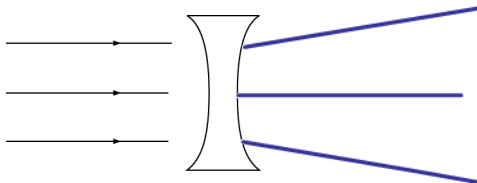
concave



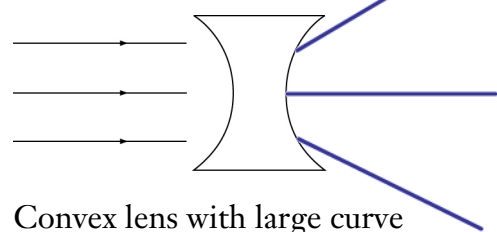
convex

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

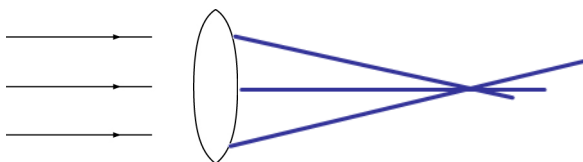
Concave lens with small curve



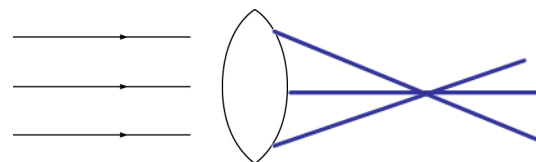
Concave lens with large curve



Convex lens with small curve



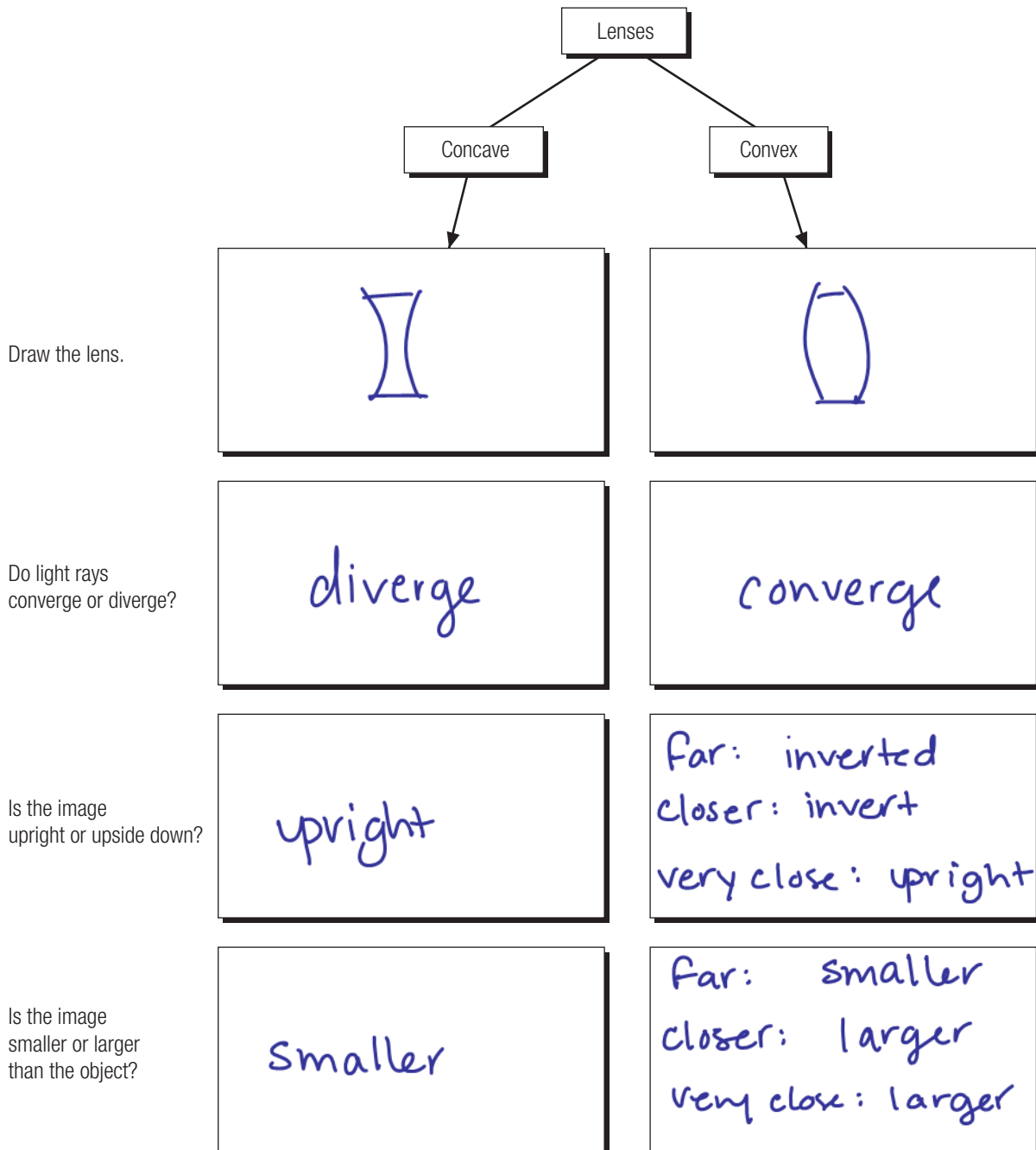
Convex lens with large curve



Use with textbook pages 190–193.

## Concave lenses and convex lenses

Compare and contrast concave lenses and convex lenses.



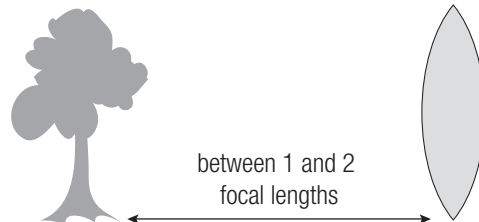
Use with textbook pages 190–193.

## Light rays and lenses

1. Will the image be

(a) larger, smaller, or the same size as the object?  
\_\_\_\_\_smaller(b) upright or upside down?  
\_\_\_\_\_inverted

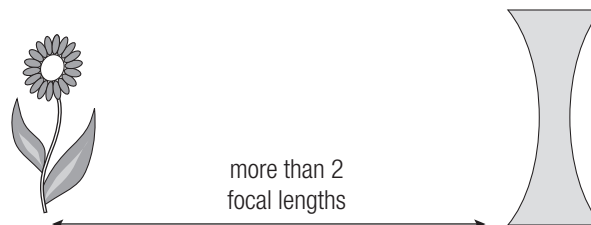
2. Will the image be

(a) larger, smaller, or the same size as the object?  
\_\_\_\_\_larger(b) upright or upside down?  
\_\_\_\_\_inverted

3. Will the image be

(a) larger, smaller, or the same size as the object?  
\_\_\_\_\_smaller(b) upright or upside down?  
\_\_\_\_\_upright

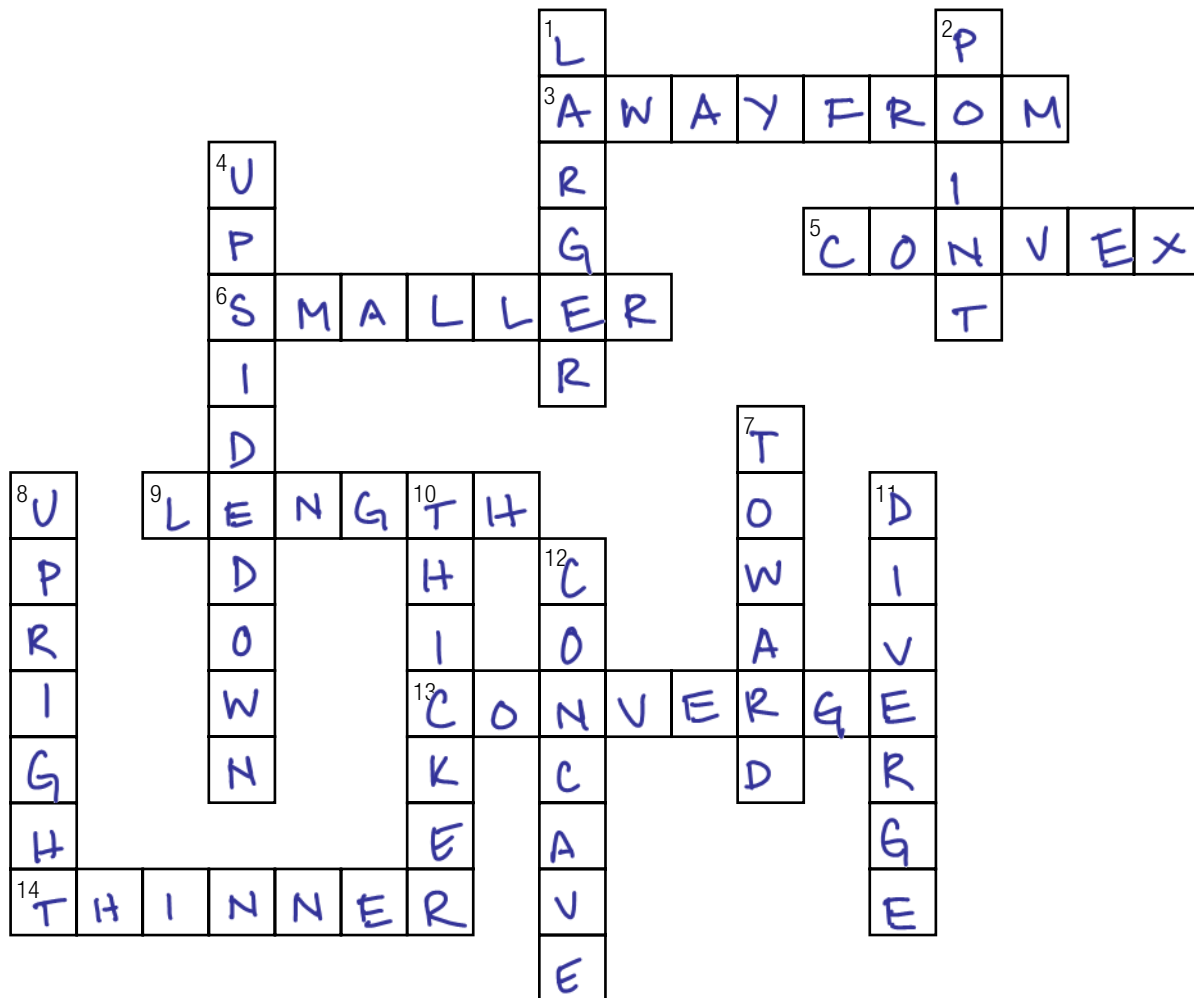
4. Will the image be

(a) larger, smaller, or the same size as the object?  
\_\_\_\_\_smaller(b) upright or upside down?  
\_\_\_\_\_upright

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