4 Curved mirrors

When light is bounced from curved mirrors, the image changes shape.

Look at a spoon. Both sides are bright and shiny, but curved (Picture 1). Both sides are curved mirrors. The outside is a mirror that bulges, whereas the inside is a dish-shaped mirror. We use the term **CONVEX MIRROR** for a bulging mirror and **CONCAVE MIRROR** for a dished mirror. (You can remember concave as dish-shaped if you think that con*cave* is like the inside of a *cave*.)

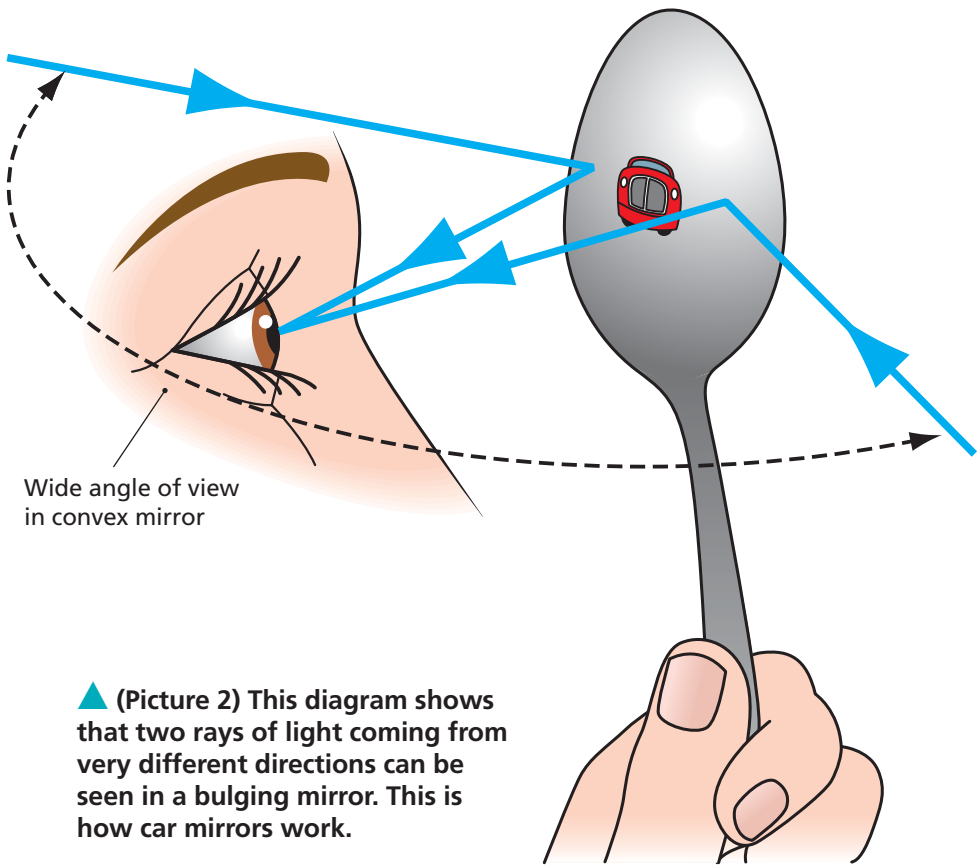
Curved mirrors give you some surprising views of the world.

Convex mirrors

Bulging, or convex, mirrors show you a small image. Look carefully and you will see that the shape has also been changed, or distorted and that you get a wide **FIELD OF VIEW** (Picture 2). As a result, what you see appears smaller than it really is.

Bulging mirrors are used for rear-view mirrors in cars and for security mirrors in shops.

▼ **(Picture 1) You can find curved (and flat) mirrors every time you eat. Your spoon and fork are curved mirrors. The fork is only curved in one direction, whereas the spoon is dish-shaped. The knife is a flat mirror. The spoon is shown here. Find out for yourself what the fork and knife do.**



▲ **(Picture 2) This diagram shows that two rays of light coming from very different directions can be seen in a bulging mirror. This is how car mirrors work.**

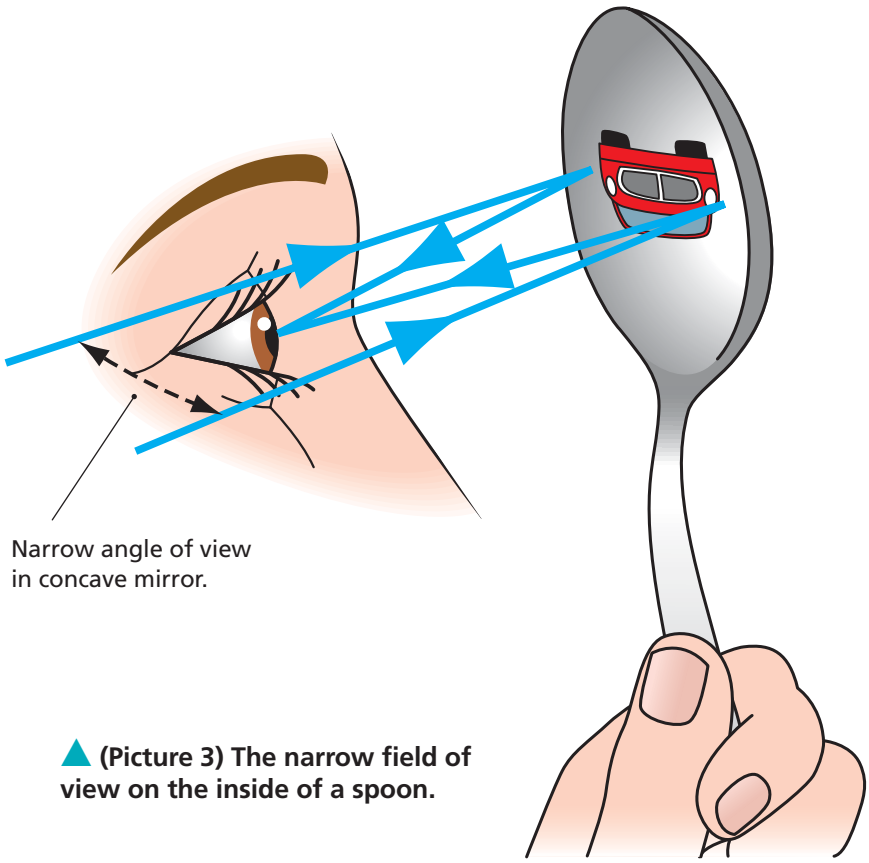
Concave mirrors

Dish-shaped, or concave mirrors, like the inside of a spoon, give you a narrow field of view (Picture 3), so you need to look at them from close-up. These mirrors give an enlarged image (Picture 4).

Dish-shaped mirrors are used for shaving and make-up mirrors, but they are also used behind bulbs, as in a torch (Picture 5). Here their purpose is to send out light in a parallel beam.

Dish-shaped mirrors are also used to collect light. The world's biggest telescopes use dish-shaped mirrors to gather as much light as possible from distant stars. In this way, dished mirrors allow us to see other worlds.

▲ **(Picture 4) You can see the effect of a curved mirror more clearly with a large, flexible mirror like this one. When curved inwards, the face appears wider.**



Narrow angle of view in concave mirror.

▲ **(Picture 3) The narrow field of view on the inside of a spoon.**

▲ **(Picture 5) A concave mirror can be found behind the light in a torch.**

Summary

- **Bulging mirrors give a smaller (reduced) view of our surroundings.**
- **Dished mirrors give us an enlarged view.**
- **Curved mirrors always distort shapes.**