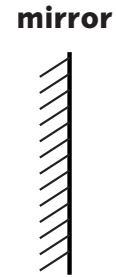


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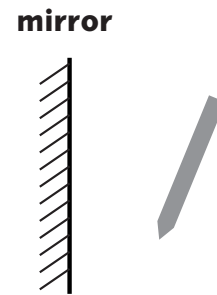
Programme 5: Waves

Activity 1 worksheet: Reflections

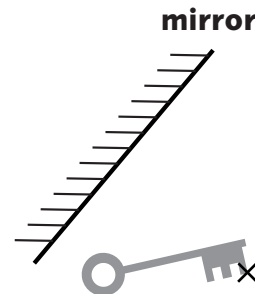
a) The picture shows a ball in front of the mirror. Someone looking in the mirror would be able to see a mirror image of the ball. Where would the image be?



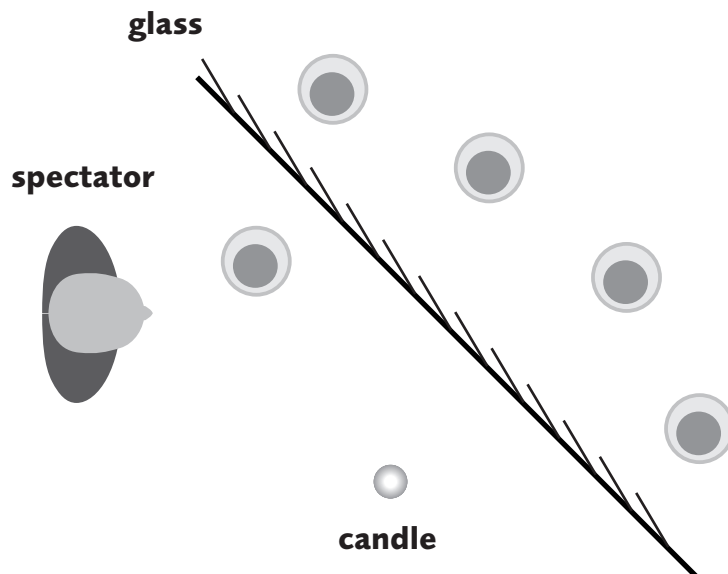
b) The picture shows a pencil in front of a mirror. There will be a virtual image of the pencil behind the mirror. Where will the point of the pencil's image be?



c) The picture shows a key in front of a mirror. There is a point marked X on the key. Where will the virtual image of this point be?



d) The Great Maldini is an illusionist. In one of his tricks he puts a beaker of water behind a reflective sheet of glass and lights a candle on the other side. A spectator will think that the candle is burning underwater. The diagram shows the candle, the spectator and the sheet of glass. It shows five possible positions for the beaker. Which one will make the trick work?

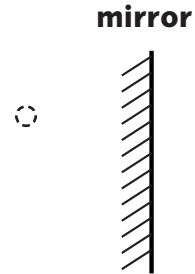


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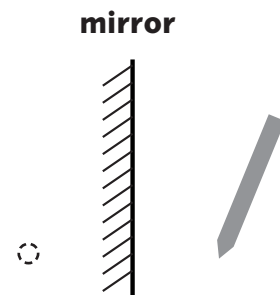
Programme 5: Waves

Activity 1 answersheet: Reflections

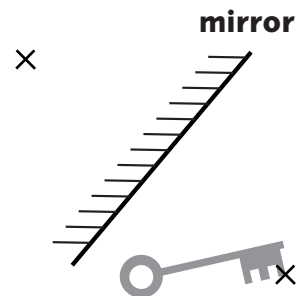
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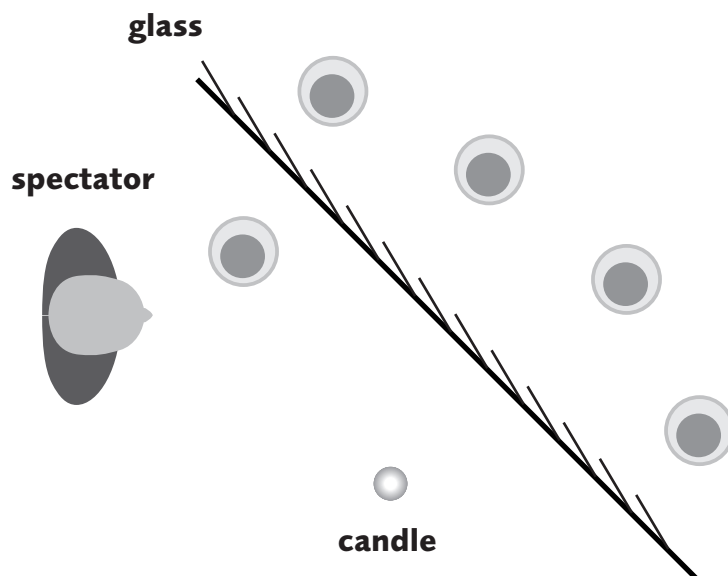
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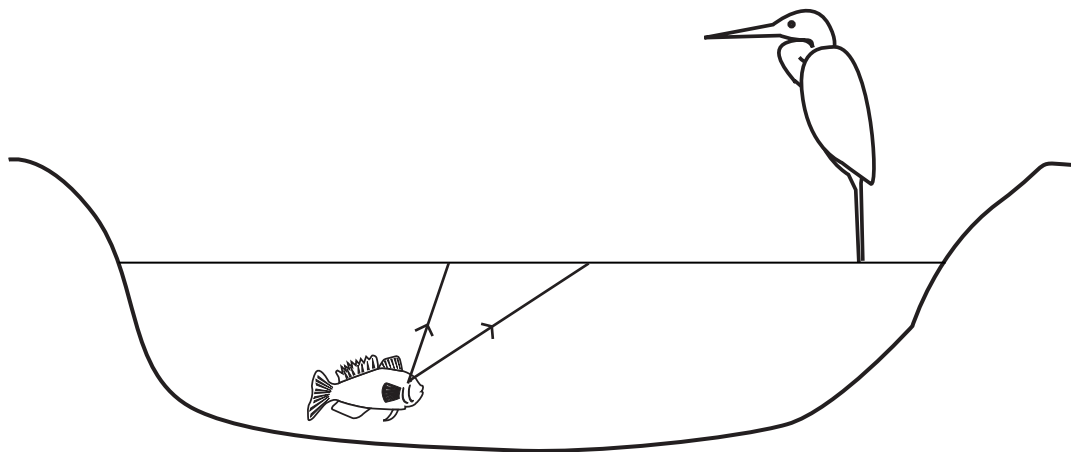
The image is the same distance behind the mirror along a line that goes through the mirror at a right angle.

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Activity 2 worksheet: Where is the Fish?

The diagram shows a fish in a pond. There is a heron above the pond. When the heron looks in the pond, it can see the fish. But does it see the fish in the correct place?



The diagram shows two rays of light coming from the fish. These rays will bend when they go from the water to the air. One of the rays will reach the heron's eye.

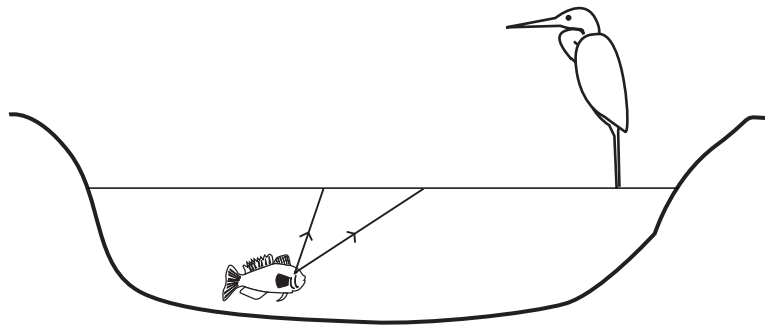
1. Draw the path that the rays follow when they pass out of the water.
2. The rays reach the heron. Its brain will think that the rays have come in a straight line. So it thinks that the rays took a different path before they came out of the water. Draw dotted rays on the diagram to show the path that the heron thinks the rays took.
3. The dotted lines show virtual rays. They appear to have come from a point above the fish. Draw on the diagram where the heron will see a virtual image of the fish. .

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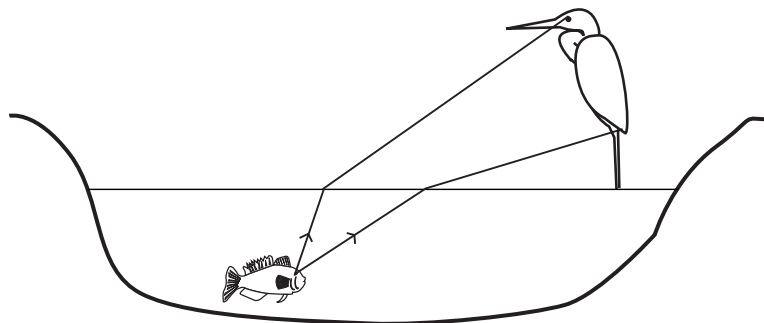
Activity 2 answersheet: Where is the Fish?

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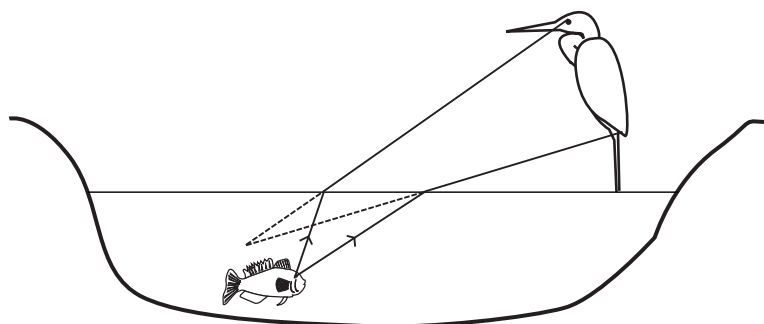


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2. The rays reach the heron. Its brain will think that the rays have come in a straight line. So it thinks that the rays took a different path before they came out of the water. Draw dotted rays on the diagram to show the path that the heron thinks the rays took.



3. The dotted lines show virtual rays. They appear to have come from a point above the fish. Where the dotted lines meet, the heron will see a virtual image of the fish. .

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Activity 3 worksheet: Colour Monitors

When you look at a page, you can see lots of colours. However, each of these colours is made up of only three primary colours. These primary colours are mixed in different amounts to make the wide variety of colours you can see.

In this activity, you will find out how different colours are made. You will need a magnifying glass or an eye glass.

A. Look at the white background on a page of text on a computer screen. Bring the eye glass up to your screen - about 5 cm from the screen. Now move your head until you get a focused and magnified view of the screen. You should be able to see that the white background of a page is made from three stripes of colour. It should look something like this:

[Close up photograph of a monitor that is displaying white. This should clearly show the stripes of pixels that make up the white colour. It should look like the picture in colour 1 but as a photograph.]

The little coloured picture elements are called pixels. They are arranged in strips of the three primary colours - red, green and blue.

In a white part of the screen all three of the colours are switched on. White is an equal mixture of red, green and blue.

But what about the other colours? Each of the colours below has a blank next to it. This represents the pixels of the screen but none of them has any colour in it.

B. Use the blanks to make a record of which pixel colours are on to make each block of colour. The first one (white) is done for you.

1. White [block of white - ffffff] [PICTURE 1]
2. Yellow [block of yellow - ffff00] [PICTURE 2]
3. Lime green [block of green - 00ff00] [PICTURE 2]
4. Magenta [block of magenta - ff00ff] [PICTURE 2]
5. Cyan [block of cyan - 00ffff] [PICTURE 2]
6. Red [block of red - ff0000] [PICTURE 2]

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Activity 3 worksheet: Colour Monitors

7. Pink [block of pink - ffc0cb] [PICTURE 2]

How is this different from red?

8. Grey [block of grey - 708090] [PICTURE 2]

How is this different from the white background?

[Note to programmer

The layout of each question should be the name of the colour, followed by a block of that colour followed by the blank (picture 2). They should be in a row. I've put the colour codes in brackets.]