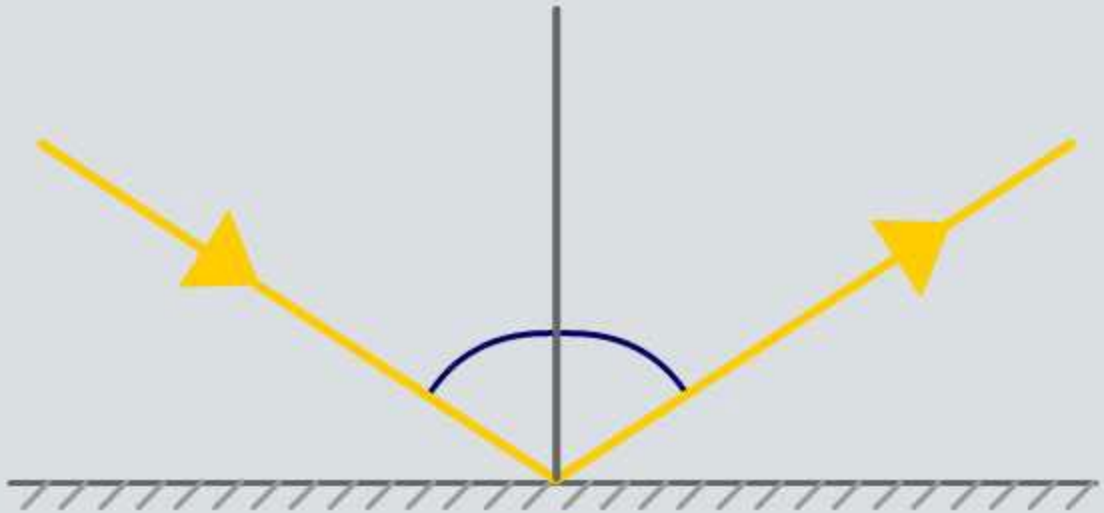
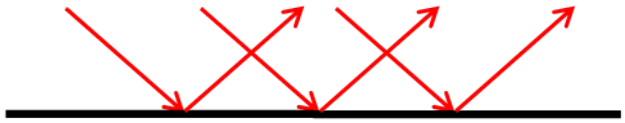
Reflection



Reflective materials

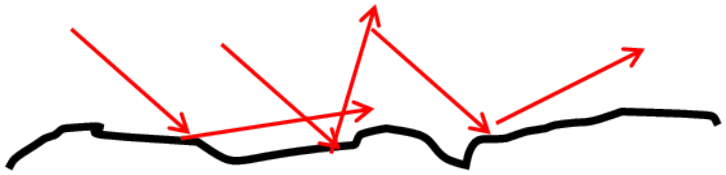
Objects that reflect light well:

- Have smooth, shiny surfaces and are usually pale colors.
- Give clear images because they reflect light regularly.



Objects that do not reflect light well:

- Have rough, matte surfaces and are usually dark colors.
- Give diffuse images (or do not give any images) because they reflect light irregularly. This is called scattering.



Reading in mirrors

Working in pairs, decide who is the ‘timer’ and who is the ‘reader.’

The ‘reader’ has to read a selection of words reflected in a mirror. They must read each word correctly before moving on to the next.

The ‘timer’ measures the time taken and the results for the whole class are recorded in a table like this:

Name	Time taken (s)
Dionne	
Shelby	
Roberto	

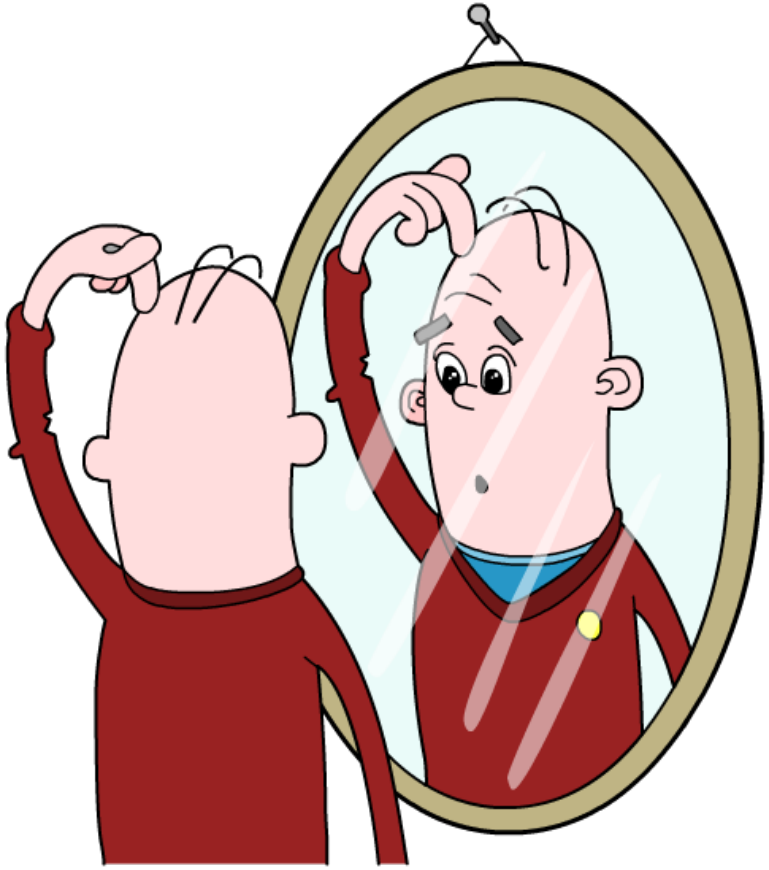
1. Why are the words so difficult to read in the mirror – how do they appear?
2. What was the average time taken in the class?
3. Plot a bar chart of results.

What is lateral inversion?

A plane mirror reflects light regularly, so it produces a clear image that is the same size as the object.

The image appears the same distance behind the mirror as the object is in front of it.

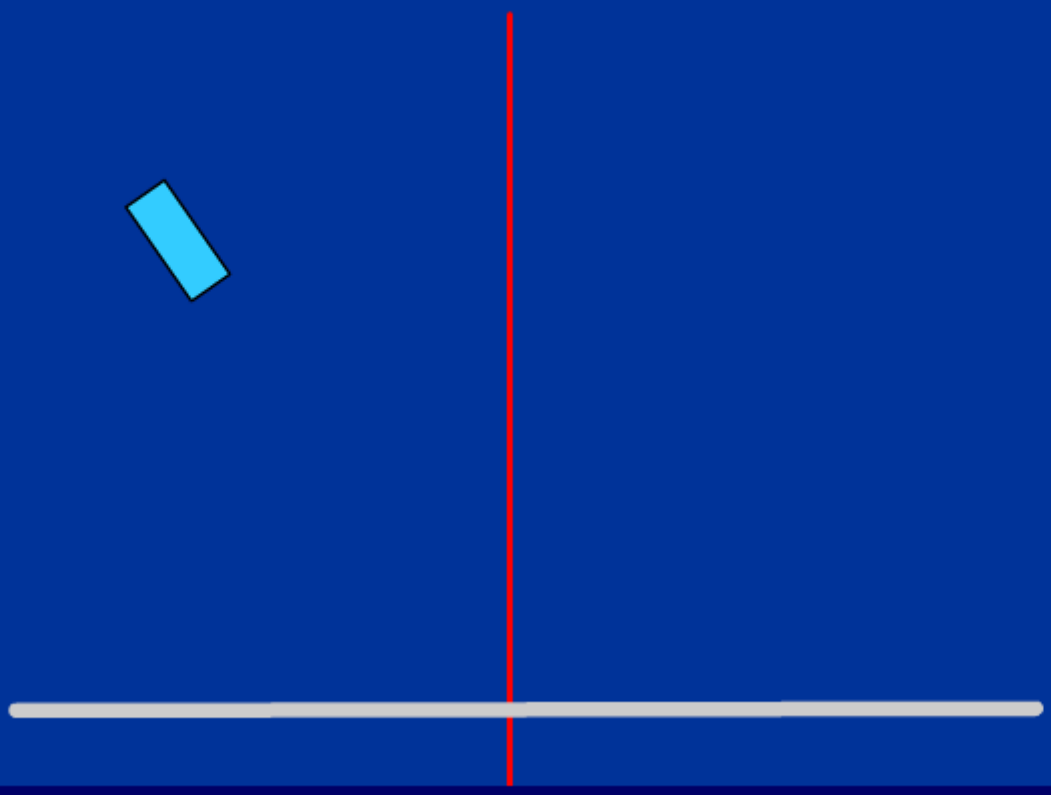
What is different about the image compared to the object?



When an object is reflected in a plane mirror, left appears as right and right appears as left. This type of reversal is called **lateral inversion**.

Reflection at a mirror

What happens when light hits a plane mirror?



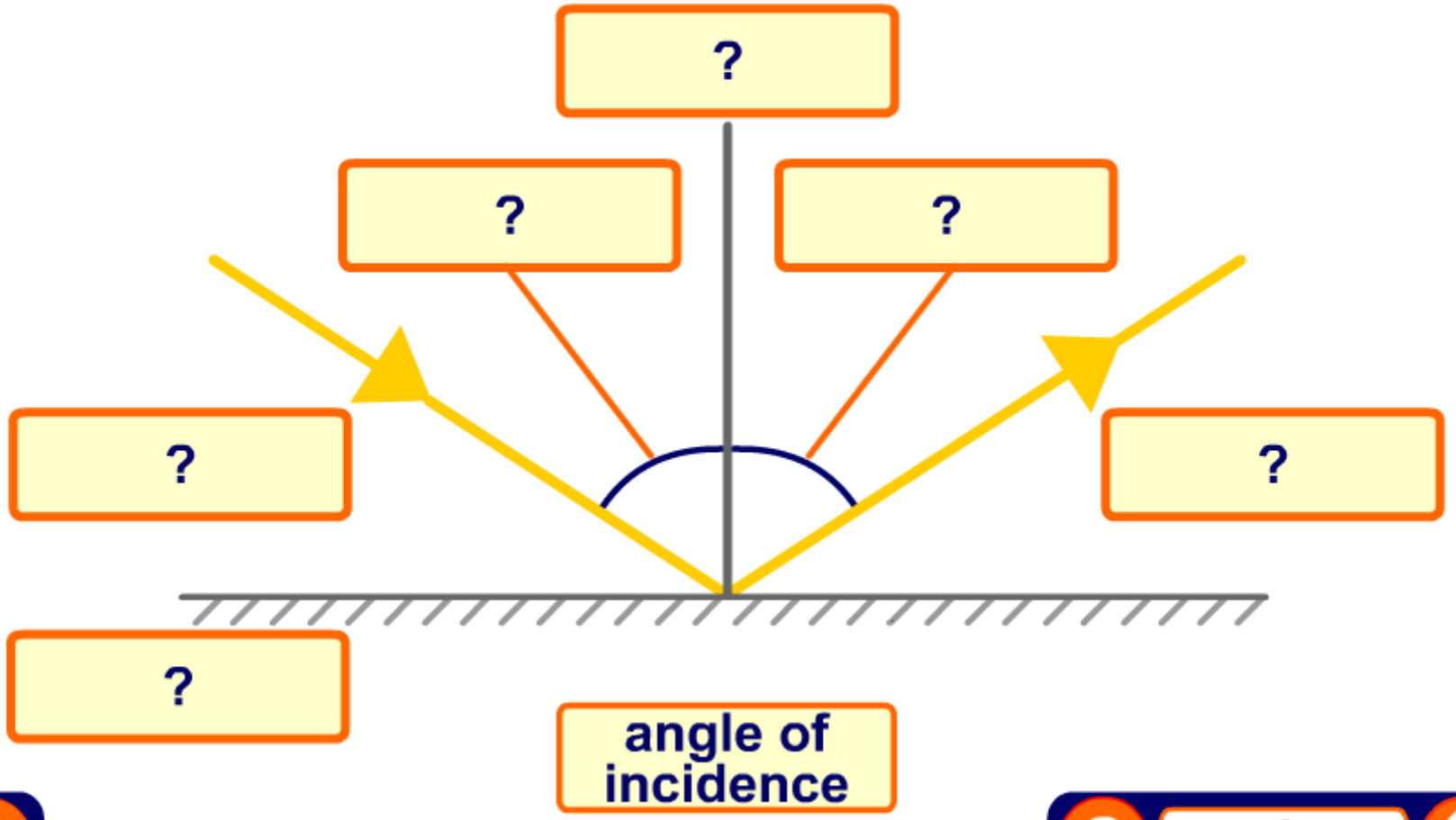
Ray box control

- (•) off
- ( ) on

?

Reflection ray diagram

What are the labels for this reflection ray diagram?



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Reflection investigation

Fix a plane mirror to a piece of paper and draw around it.

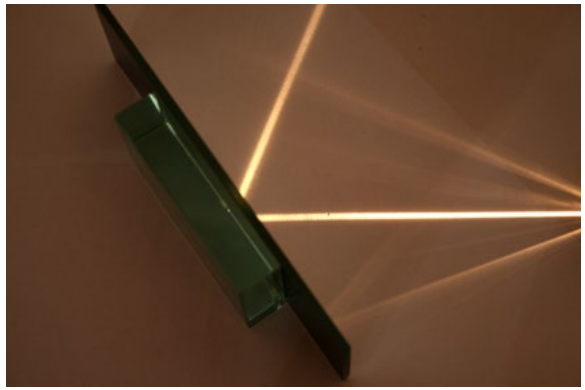
Draw a normal (a line at 90° to the mirror) through the center of the mirror outline.

Use a ray box to shine an incident ray at the mirror – plot the incident and reflected rays.

Measure the angles of incidence [i] and reflection [r].

Repeat for another four angles of incidence.

What do the results show?

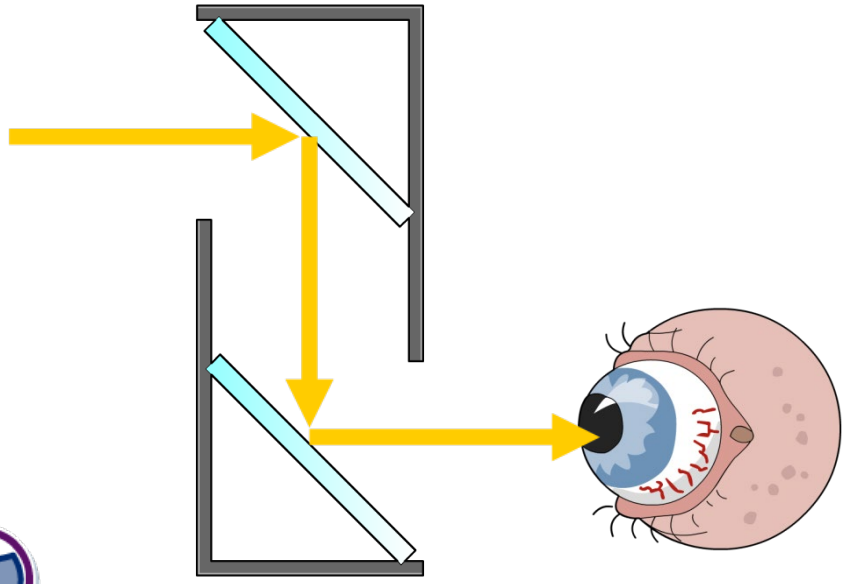


angle of incidence [i]	angle of reflection [r]

Using reflection

Reflection can be very useful. High-visibility strips are very reflective and make sure that this cyclist gets noticed when there is little light.

How does a periscope use reflection?



The two plane mirrors must be positioned at 45° from the vertical. Light is reflected at right angles from the top mirror onto the bottom mirror and into the eye of the viewer.

Reflection: summary

What are the missing words about reflection?

1. Pale and ? surfaces are good reflectors; dark and rough surfaces are not.

2. The image in a ? mirror is the same size as the object.

3. The image is the same ? behind the mirror as the ? is in front.

4. The image in a plane mirror is ? inverted.

?

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Reflection: true or false?

Are these statements about reflection true or false?

1.	Dark and rough surfaces are good reflectors.	
2.	The image in a plane mirror is laterally inverted.	
3.	Angle of incidence = angle of reflection.	
4.	Light travels faster than sound.	
5.	The image in a plane mirror is bigger than the object.	
6.	The image is the same distance behind the mirror as the object is in front.	

true false

?

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