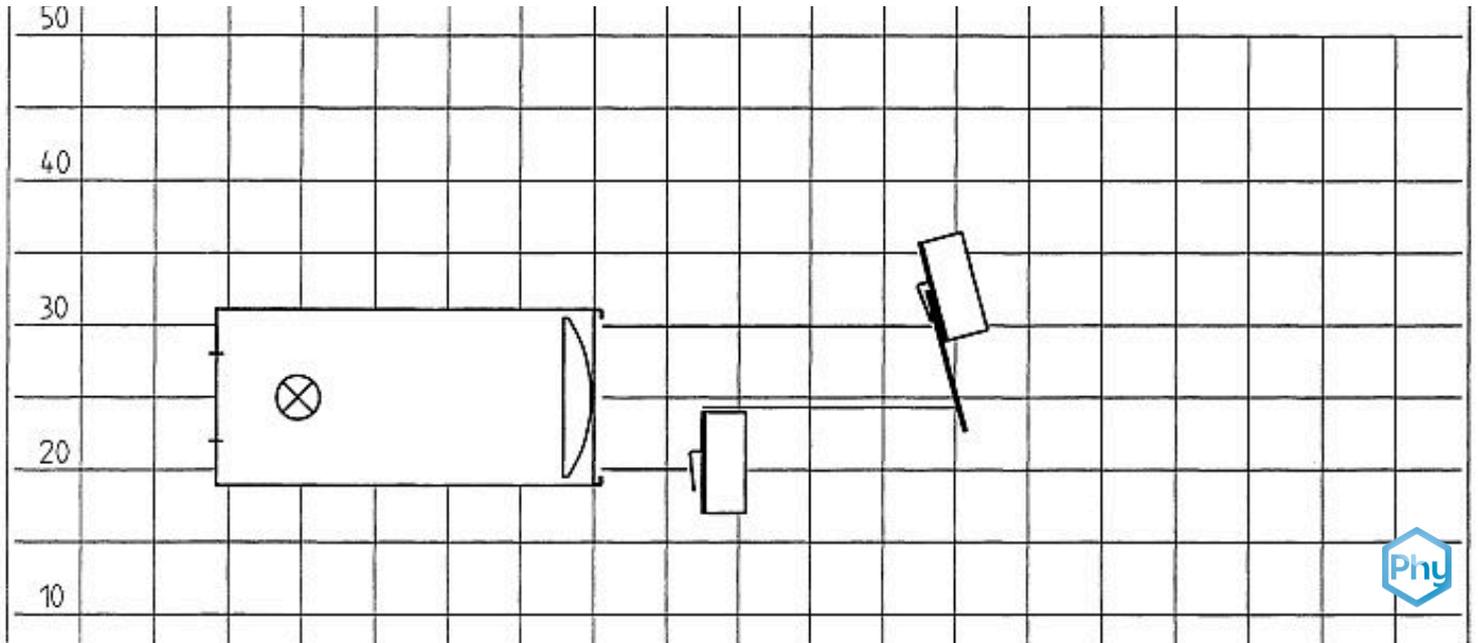


# Reflection of light



Physics

Light &amp; Optics

Reflection &amp; refraction of light



Difficulty level

easy



Group size

-



Preparation time

10 minutes



Execution time

10 minutes

This content can also be found online at:

<http://localhost:1337/c/642821875e30a7000275ea02>

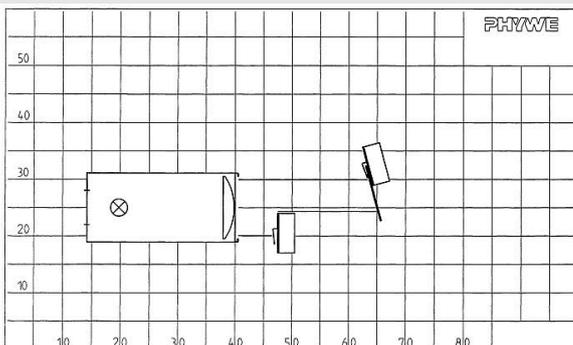
PHYWE



## Teacher information

## Application

PHYWE



Experimental set-up:

Adhesive luminaire with parallel light beam

Light spreads out in a straight line. If a ray of light hits an opaque object, a shadow is created behind the object.

In front of the object, however, the light is only absorbed in the rarest of cases. Almost every surface reflects the light. Some surfaces are particularly suitable (mirrors), others not so good (matt black).

The reflection of the light depends on the material properties and the colour of the reflector.

## Other teacher information (1/2)

PHYWE

### Prior knowledge



Students need prior theoretical knowledge about the straight-line, ray-shaped propagation of light.

### Principle



It is to be shown that light can be reflected by bodies and that the reflection depends on the nature of the body surface.

## Other teacher information (2/2)

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### Learning objective



The students should gain knowledge about the principles of light reflection. The focus should be on the surface properties of the reflector.

### Tasks



Students should understand that different surface roughness and colours result in different light reflections.

## Additional teacher information

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### Note



Suitable material would be, for example, white or black cardboard (06306-00 or 06306-01) or aluminium foil (06270-00).

You can also make more plates for this experiment by sticking different coloured paper with a smooth surface or velour paper from craft sheets onto cardboard cards.

With the results of this experiment, the concept of diffuse reflection can be illustrated at the same time.

## Safety instructions

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- The general instructions for safe experimentation in science lessons apply to this experiment.

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## Student information

### Motivation

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A swan in a body of water

Daily morning routine - looking in the mirror before leaving the house. Of course, mirrors are there so that we can see ourselves.

But how is this reflection created and what does reflecting light have to do with it? In the picture you see a swan in the water and directly below it a reflection that roughly reproduces its contours.

Why does the body of water reflect the swan and why not just as sharply as we see ourselves in the mirror in the morning?

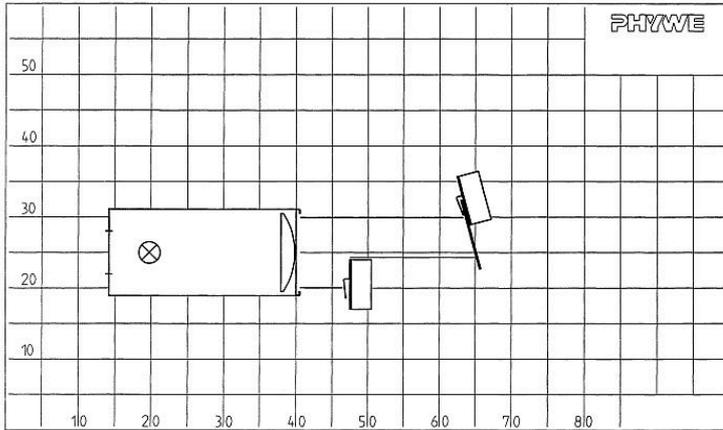
These are the kinds of questions that the present attempt aims to clarify by way of introduction.

## Equipment

Position	Material	Item No.	Quantity
1	PHYWE Demo Physics board with stand	02150-00	1
2	Halogen lamp for experiments, 12V/50W, with magnetic base	08270-20	1
3	Diaphragm w. holder, magnet held	08270-10	2
4	Plane mirror, magnet held	08270-13	1
5	PHYWE Multitap transformer DC: 2/4/6/8/10/12 V, 5 A / AC: 2/4/6/8/10/12/14 V, 5 A	13533-93	1
6	G-clamp	02014-00	2

## Set-up and Procedure

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Adhesive luminaire with parallel light beam and various reflectors

- Place the adhesive luminaire on the adhesive panel and create a parallel light beam several centimetres wide with one aperture.
- Bring the plates with different coloured surfaces one after the other into the beam path at a slight angle using the second aperture holder.
- Bring the plates with different rough surfaces one after the other into the beam path by means of the aperture holder.
- Bringing the plane mirror into the beam path

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## Report



## Task 1

PHYWE

Show what you have just learned by answering the following questions correctly.



Complete the sentences

The plates placed  in the beam path lead to a different  of the  behind the first aperture.

The plates  the light .

 Check

## Task 2

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When light hits bodies, it is reflected. The reflectivity of bodies depends on their surface:

The darker the surface, the stronger the reflection: black bodies reflect the light particularly strongly, white ones (almost) not at all.

 True False Check

The smoother the surface, the more clearly the reflection is visible. A (flat) mirror reflects the light almost completely.

 True False Check

Slide	Score / Total
Slide 12: Reflection through platelets	0/5
Slide 13: Multiple tasks	0/2

Total  0/7

 Solutions

 Repeat