

Lesson: 2 Reflection

Equipment: Ray boxes, power packs, one slit comb, protractor and A4 plain paper

Safety: Care with electricity, hot surfaces

Title Reflection

Time:

Noise Level

- Starter - Complete the sheet on 'Sources of light'.

light source

light

luminous

wave

eye

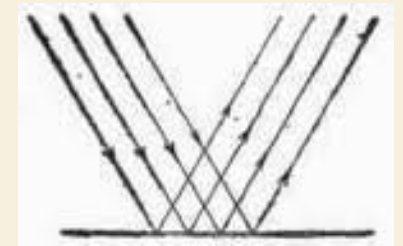
Energy that moves away from a light source in all directions. It moves very, very quickly.

Light travels using these.

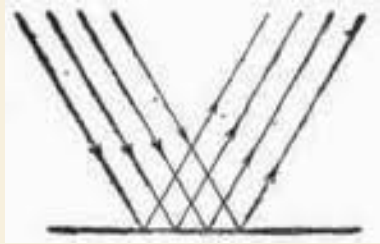
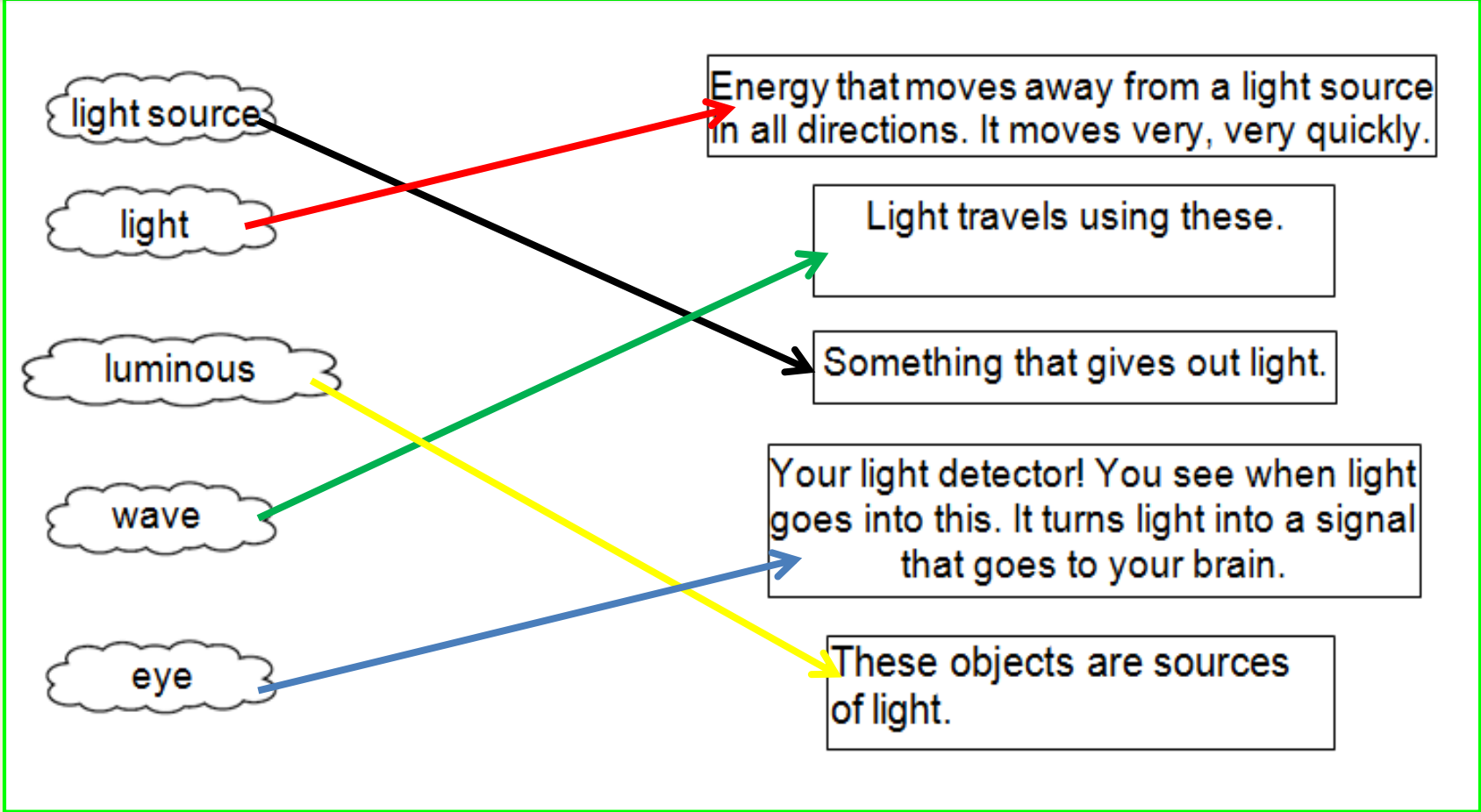
Something that gives out light.

Your light detector! You see when light goes into this. It turns light into a signal that goes to your brain.

These objects are sources of light.



Answers



Title Reflection

Time:

Noise Level

List all the light sources



candle



book



pencil



traffic lights



Sun



light bulb



television



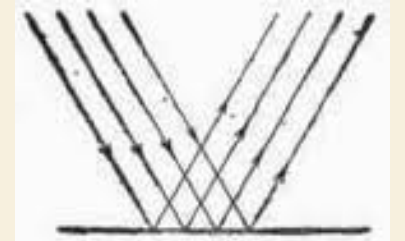
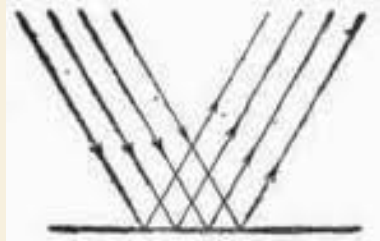
bonfire



cat



fireworks



Title Reflection

Time:

Noise Level

Answers

Draw a circle round all the light sources below.



candle



book



pencil



traffic lights



Sun



light bulb



television



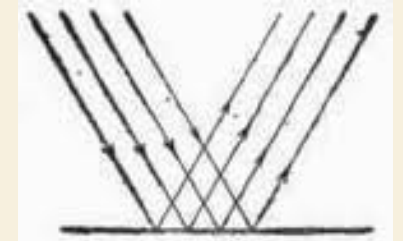
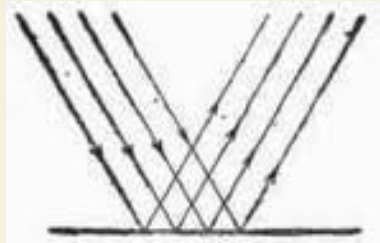
bonfire



cat



fireworks



AMCAN

Reflection

Learning Outcomes

Challenging:

Can I identify examples of specular reflection and diffuse scattering?

More Challenging:

Can I explain the difference between specular reflection and diffuse scattering?

Most Challenging:

Can I explain how images are made in a plane mirror?

Reflection

Reflection What is reflection? And do you know the 2 types?



Copy this in your book

Specular reflection

Reflection from a smooth surface

Eg still water, mirrors or glass surfaces

Diffuse scattering

Reflection from a rough surface

Eg walls, clothes, or pages in a book

Task:

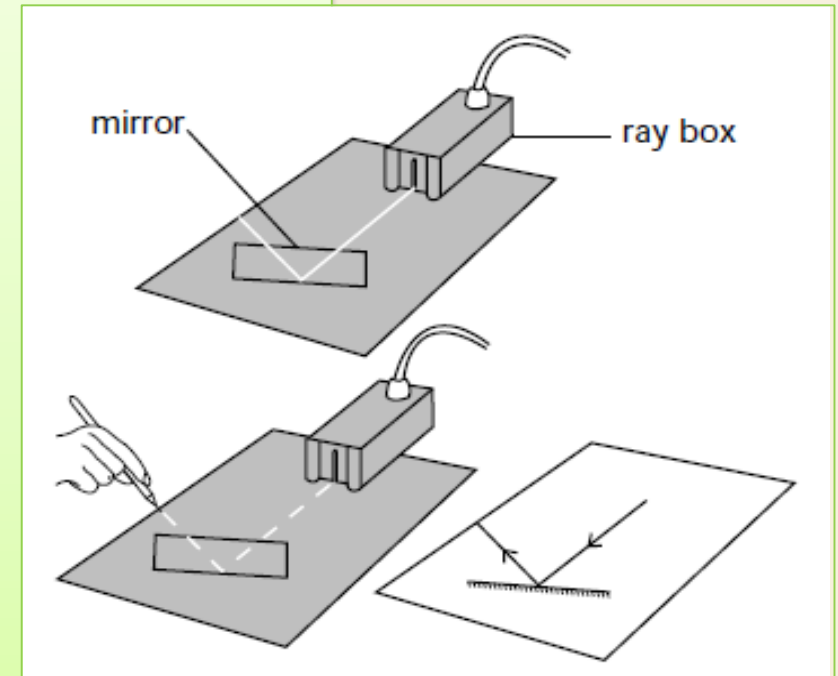
Time:

Noise Level

Use the link to be able to investigate what happens when light is reflected off a plain surface. You will need to draw the table on the next slide.

https://phet.colorado.edu/sims/html/bending-light/latest/bending-light_en.html

- 1 Set up a ray box on a piece of paper as shown.
- 2 Shine the light on the mirror so it is reflected.
- 3 Draw a line along the mirror using a pencil.
- 4 Mark the position of the ray by drawing dots along it.
- 5 Remove the ray box and mirror.
- 6 Draw in the light rays using a pencil and ruler, use arrows to show the direction.



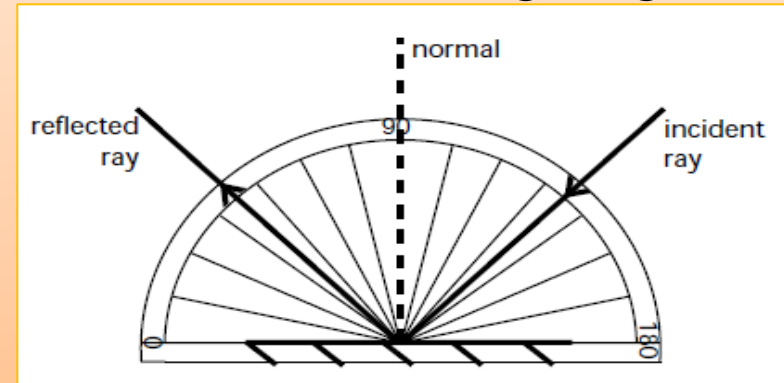
Light travelling in straight lines

Task: Reflection

Time:

Noise Level

- 1 Using a protractor, draw a normal line coming from the mirror.
- 2 Measure the angle of the ray going into the mirror and of the one going out. (Incident and reflected ray)
- 3 Write these angles at the end of each line.
- 4 Use the light ray to draw more lines at different angles and label the rays going into and out of the mirror.



Angle of incidence in degrees	10	20	30	40	50	60	70	80
Angle of reflection in degrees			30					

What did you notice about the angle of incidence (light hitting the mirror) and the angle of light being reflected?

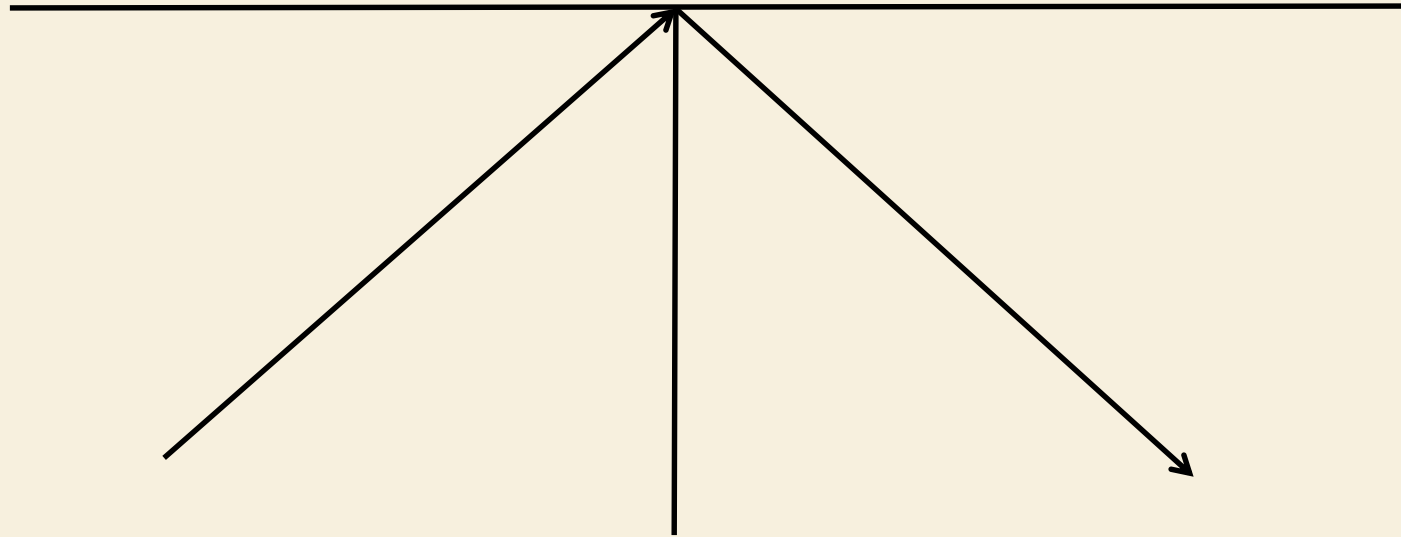
Copy this in your book

The angle the light ray hits a plain surface is the same angle at which it is reflected.

Angle of incidence = Angle of Reflection

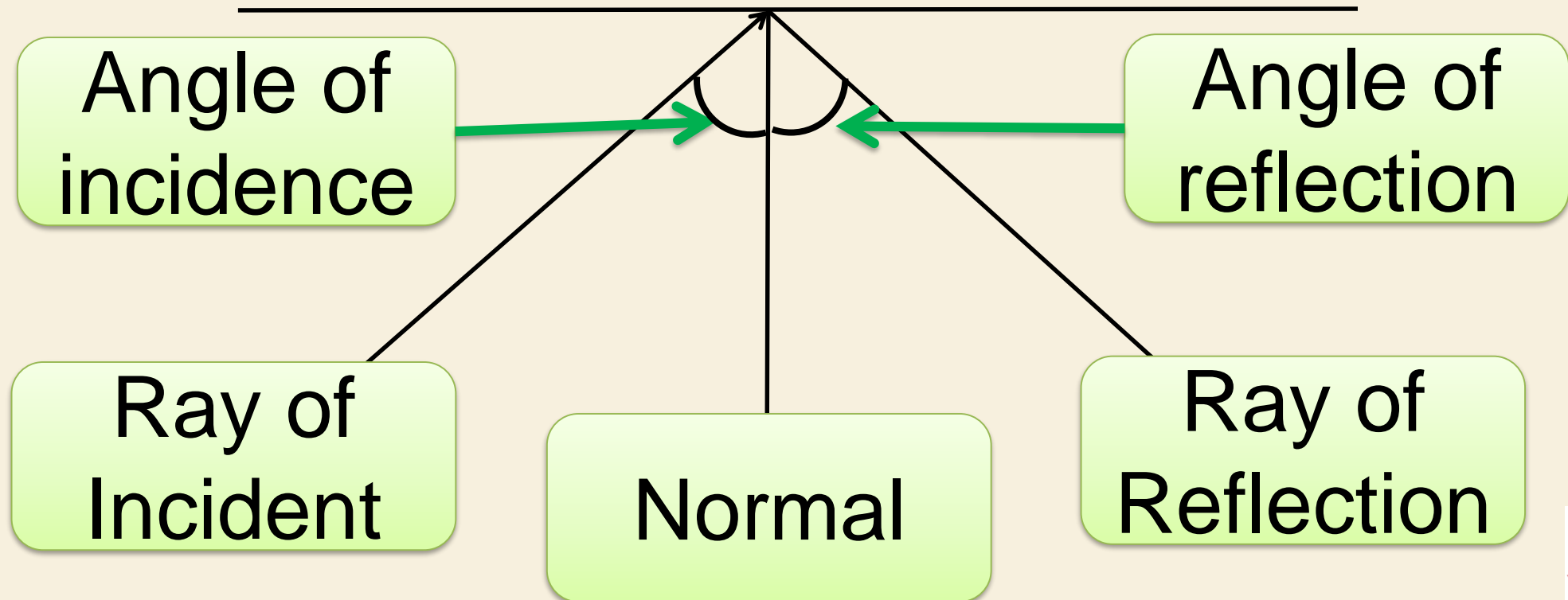
Knowledge Check Reflection

Copy and label the diagram and write a rule for reflection.



Knowledge Check Reflection

Answer



Knowledge Check

What are the missing words to describe your experiment to investigate the reflection of light.

In our experiment we light from a mirror. We used a to shine a ray of light on a mirror. We found the of reflection (our variable) was the same as the of incidence (our variable). Our variable was using the same set of equipment each time.

What are the missing words to describe your experiment to investigate the reflection of light.

In our experiment we **Reflected** light from a mirror. We used a **Ray box** to shine a ray of light on a **Plane** mirror. We found the **Angle** of reflection (our **Dependent** variable) was the same as the **Angle** of incidence (our **Independent** variable). Our **Control** variable was using the same set of equipment each time.

Plenary Reflection

Time:

Noise Level

Answers

- 1 Light striking a mirror curves back towards you, forming a reflection. **False**
- 2 Images in a mirror are inverted so that right is left. **True**
- 3 Light hits a mirror at 300 miles per hour. **False**
- 4 The angle between an incoming light ray and the mirror is twice the angle between the reflected light ray and a mirror. **False**
- 5 Reflected light leaves the mirror at 300 million m/s. **True**
- 6 The light goes into the mirror to make the reflection. **False**
- 7 Images in a mirror are inverted so that they are upside down. **False**
- 8 The angle of incidence equals the angle of reflection, or in other words: The angle between a flat mirror and the incoming ray equals the angle between the mirror and the reflected ray. **True**
- 9 Incoming rays and reflected rays are always straight lines. **True**
- 10 In a flat mirror your reflection is the same size as you. **True**
- 11 In all mirrors your reflection is always the same size as you. **False**

specular reflection



diffuse scattering

