

Light

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Name _____

Form _____

LIGHT

Light, like sound, is a form of energy and travels as waves

Something that gives out its own light is called a **LUMINOUS** source

Examples of luminous sources: The Sun, a candle, torch.

(Note: the Moon is NOT a luminous source and does NOT give out its own light)

Other luminous sources

HOW WE SEE THINGS

Light always travels in straight lines



Light hits the book and is **reflected** into our eyes

When you draw a light ray use a **RULER** and put **ONE** arrow on each ray

- Light always travels in
- Light comes from a such as a torch
- We see something because light is Into our eyes

Shadows

In order to get a shadow we need two things: a source of light and a material that blocks light

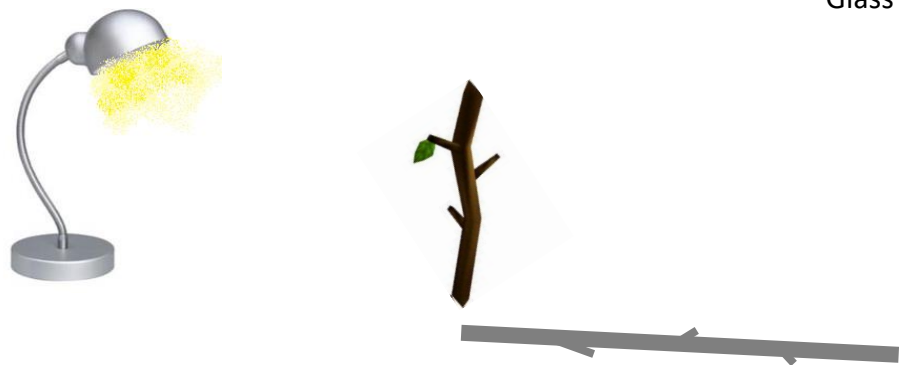
A stick forms a shadow because it blocks the light

Something that blocks *all* light is called **opaque**. Wood is opaque

Something that blocks *some* light is called **translucent**. Thin paper is translucent

Something that we can see through and does not block light is called **transparent**.

Glass is transparent



A opaque substance forms the best shadow

A translucent substance forms a slight shadow

A transparent substance may not form any shadow

OPAQUE No light goes through	TRANSLUCENT Some light goes through	TRANSPARENT Can see through it clearly

Give two examples of luminous objects: and

On a sunny day why does a stick form a shadow

.....

An object that blocks light is known as being *Opaque,* *Translucent,* *Transparent*

Give an example of a material which is translucent

Light assessment Test 1

1. Complete these sentences:

An object that is LUMINOUS gives out **Sound, Light, Smell**

Can you see a luminous object in the dark? (yes or no).....

Light always travels in

2. Put a tick by the objects below that are luminous

STAR

MOON

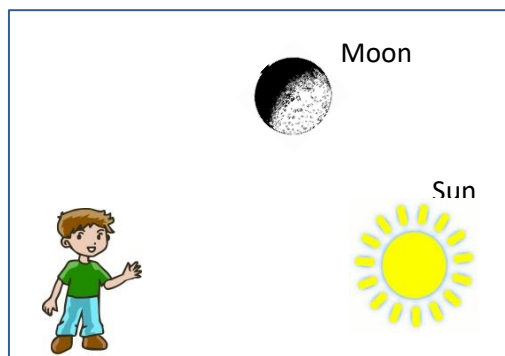
SUN

BURNING CANDLE

BOOK

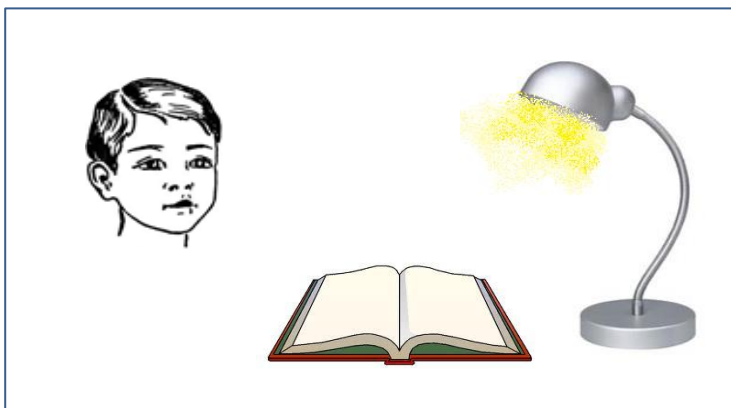
3. The boy in the picture can see the moon because light from the Sun is from the Moon and goes towards the boy.

Reflected Dissolved Given out



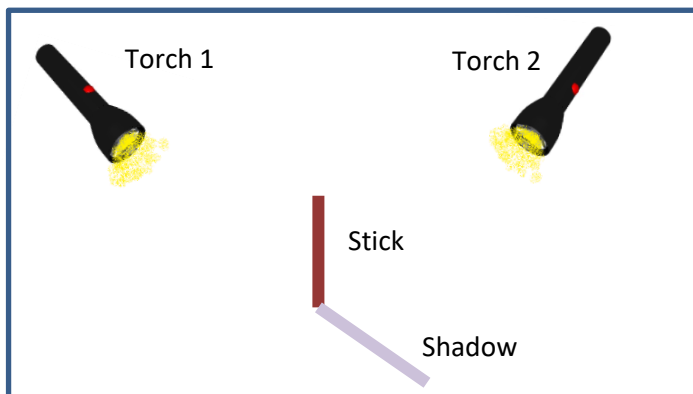
4.

Draw two arrowed lines on the diagram to show how light from the lamp reaches the boy's eyes



4. Look at this picture:

a) Which torch is producing the shadow (torch 1 or torch 2) ?



b) Why does the stick produce a shadow?

.....

5. Complete the following sentences by putting a circle around the correct word

a) A stick blocks the light because wood is

Transparent

Translucent

Opaque

b) A sheet of glass does not produce a shadow because glass is

Transparent

Translucent

Opaque

c) I can see when a torch is on through a sheet of paper because paper is

d) *Transparent*

Translucent

Opaque

End of Part 1

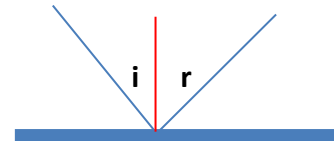
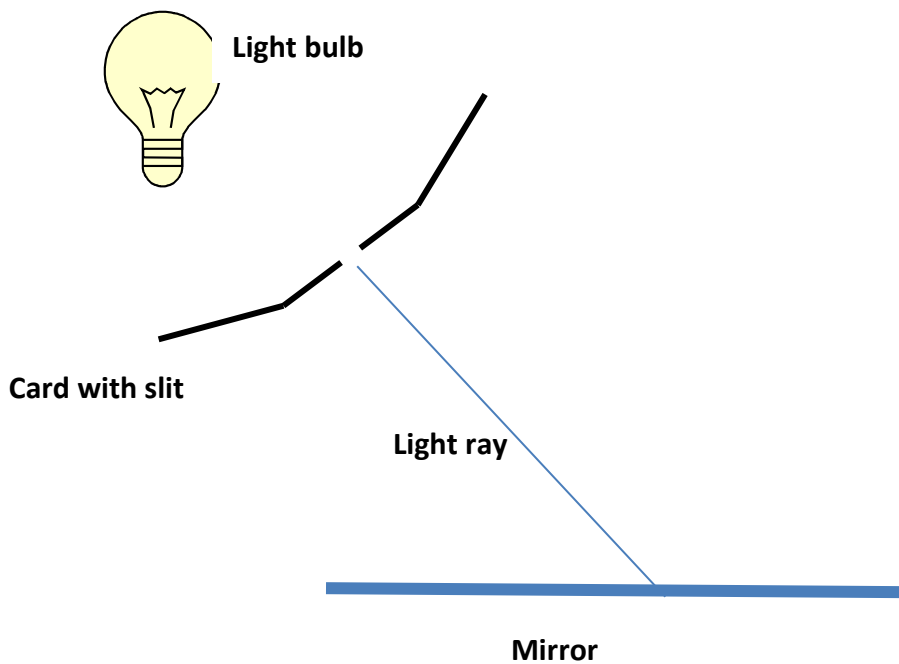
Part II

Reflection

Changing the path of a light ray

1. Method

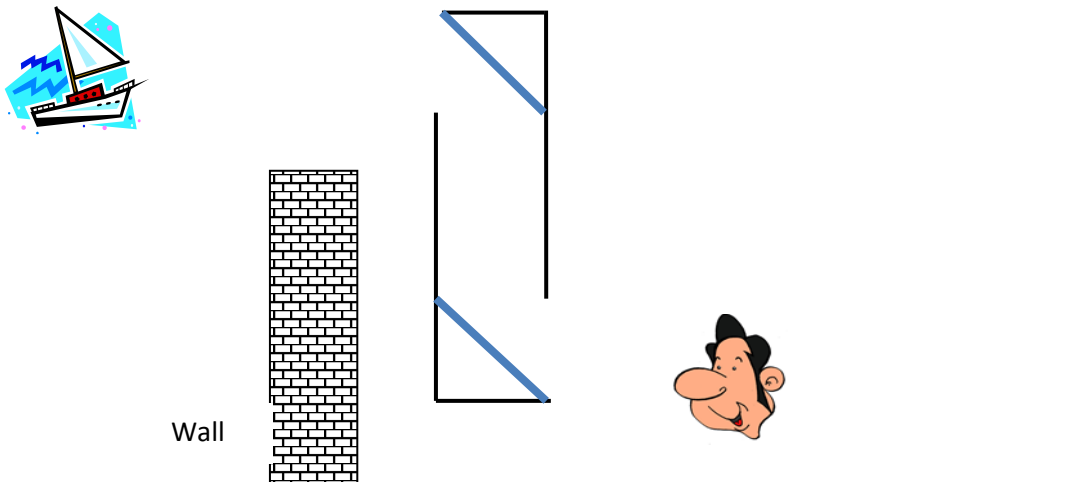
- Place a mirror on the line marked 'mirror'
- Adjust the light bulb and card slit so that the light ray goes along the line marked 'light ray'
- Draw in the reflected ray
- Measure the two angles marked i and r



A Periscope

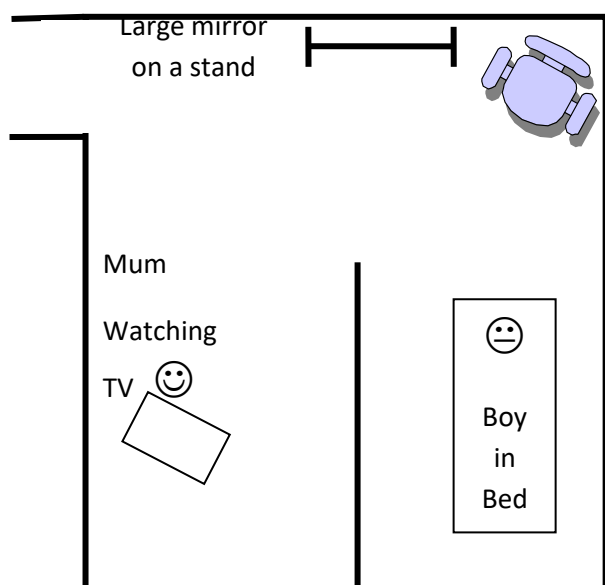
Label the mirrors and add the light rays

(remember to add the arrows to the rays)



Reflection

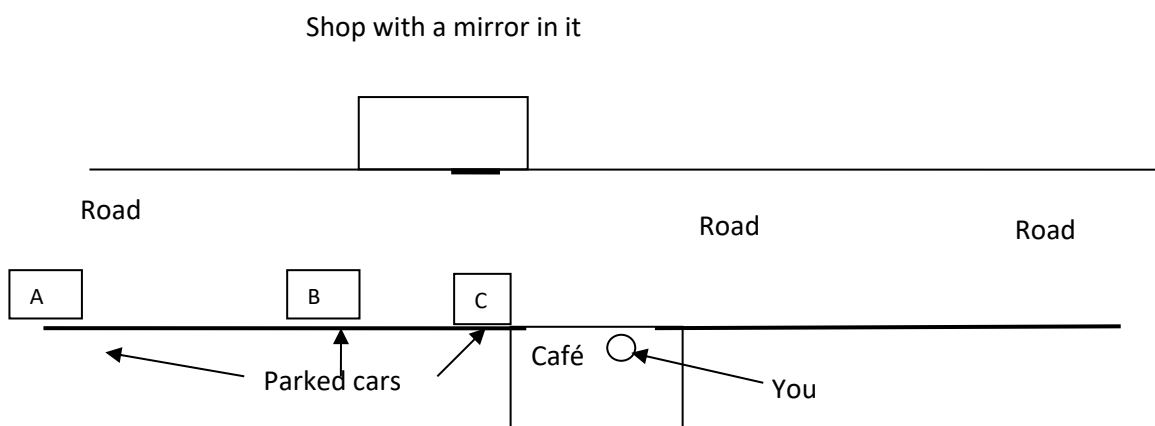
Example 1



You have a large mirror in your bedroom and you wish to use the reflection in the mirror to watch TV

Mark in two lines to show the light path taken by the light while you are watching TV.
Put arrows on the lines to show the direction that light is travelling in.

Example 2



You are sitting in a café and by looking in the window of the shop opposite you notice the reflection of a car parked further down the street.

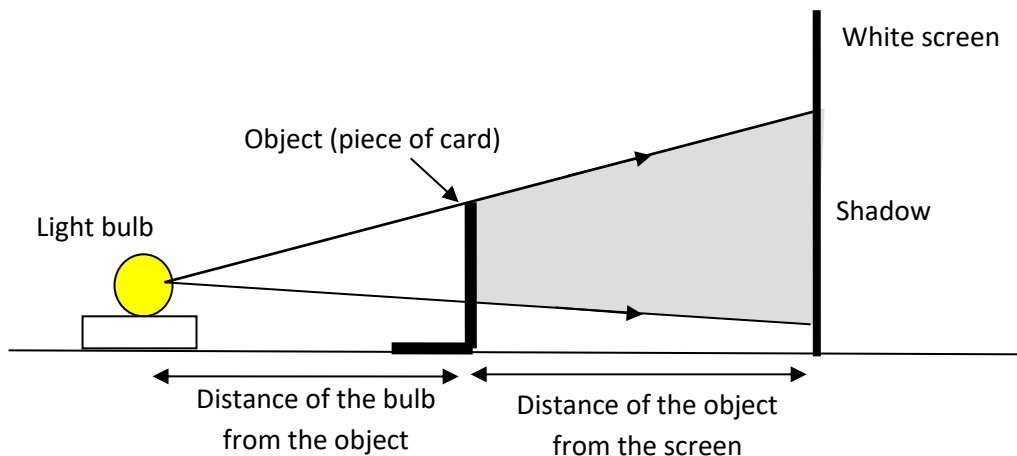
a) which car are you looking at?

b) Draw two lines (with arrows) to show how the light from the car reaches your eyes.

Date:

Investigating the size of a shadow

Diagram



What you do

Cut a strip of card 5cm wide and place it between a lit light bulb and a white screen so that a shadow falls on the screen

1. Explain what causes a shadow to be formed:

.....

2. What happens to the size of the shadow if the screen is moved nearer to the object?

.....

3. What happens to the size of the shadow if the bulb is moved nearer to the object?

.....

Now do this experiment

Place the screen exactly 15cm from the object and the bulb 30cm from the object.

Measure the width (not the height) of the shadow and write the result in the table.

Now move the bulb closer so that it is 20 cm from the object.

Measure the new size of the shadow and write down the result.

Repeat for 15cm, 10cm and 5 cm. You should now have 5 results.

Here are the results:

Distance of the bulb from card object	Width of shadow (cm)
5 cm	
10 cm	
15 cm	
20 cm	
30 cm	

Now draw a graph

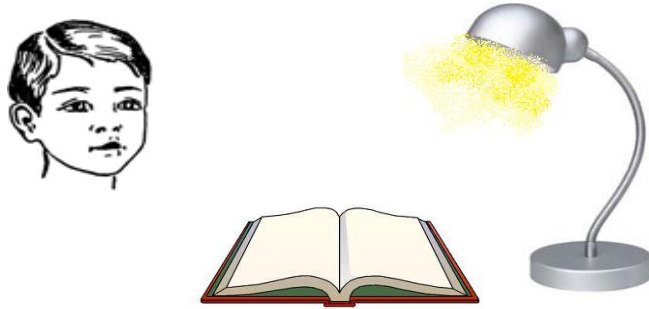
Put the distance of the object from the bulb on the X axis

Put the size of the shadow on the Y axis

Label each axis and draw a smooth curve through the points

1. ⚙️ Light always travels in

2 Look at this picture



3 ⚙️ Draw two arrowed lines on the diagram to show how light from the lamp reaches the boys eyes

4. ⚙️ A material that does not let light shine through it is referred to as being

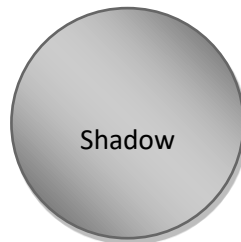
5 A tennis ball is placed between a light bulb and a large sheet of white paper.
A shadow of the ball falls on the paper.



Light bulb



Tennis ball



⚙️ If the light was moved nearer to the tennis ball what would happen to the shadow: (Underline the correct answer)

Get smaller

Not change

Get larger

6. What is meant by an object being 'luminous'

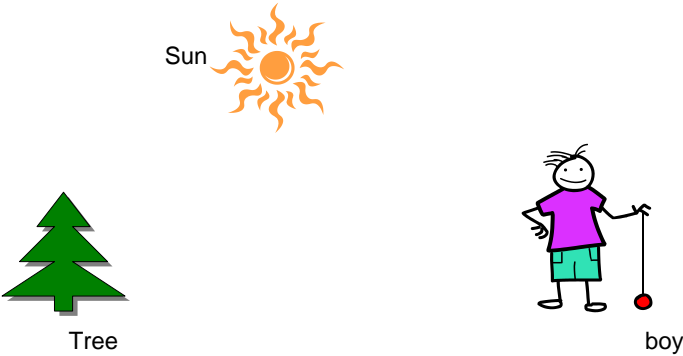
.....(1 marks)

7. Put a tick by the objects in the list below which are luminous sources and a cross by those which are not:

A burning candle	
The Moon	
The Sun	
Brightly lit tree	
Light bulb	
This page which you are reading now	

(3 marks)

8. Look at this diagram



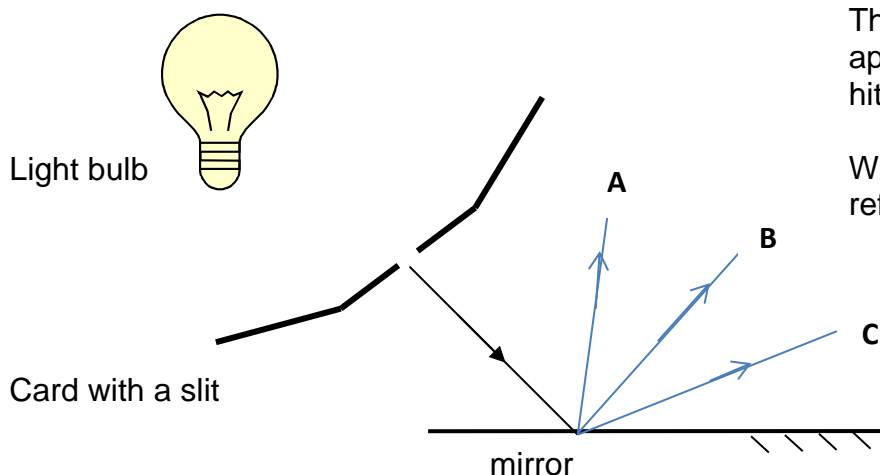
Explain in your own words how the boy can see the tree:

.....

.....(2 marks)

Add lines to the diagram to show the path the light is taking. (1 mark)

9.

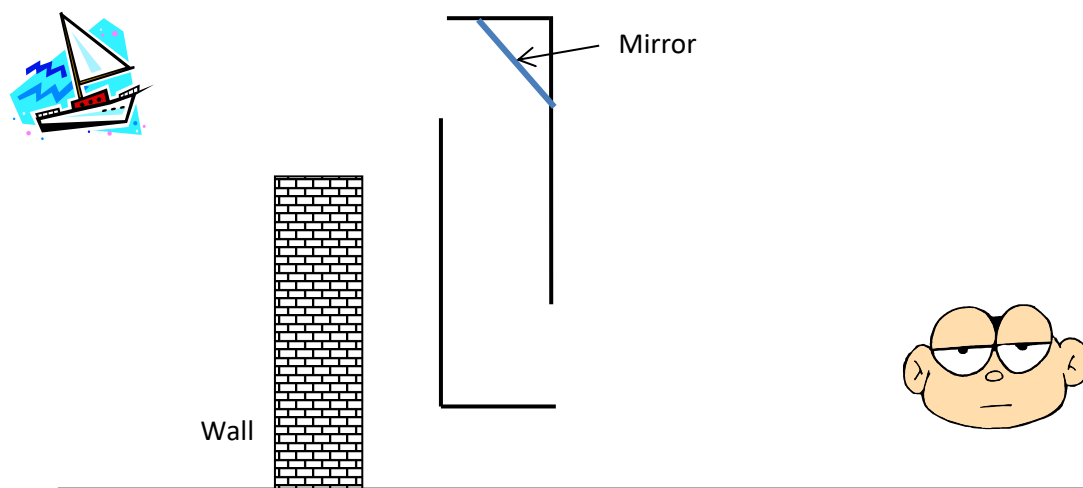


The diagram to the left shows the apparatus used to make a ray of light hit a mirror.

Which line shows the correct reflected ray A, B or C?.....

(1 mark)

10 The diagram below shows a periscope being used to look over a wall



A periscope needs two mirrors to work. One of them is already drawn onto the diagram.

⚙ Draw a second mirror on the diagram in the correct position it would need to be in order to make the periscope work.

(2 marks)

⚙ Draw a line that shows the path a ray of light takes as it travels from the ship to the man's eye (2 marks)

⚙ Put arrows on the line so we can see the direction the light travels in.

(1 marks)