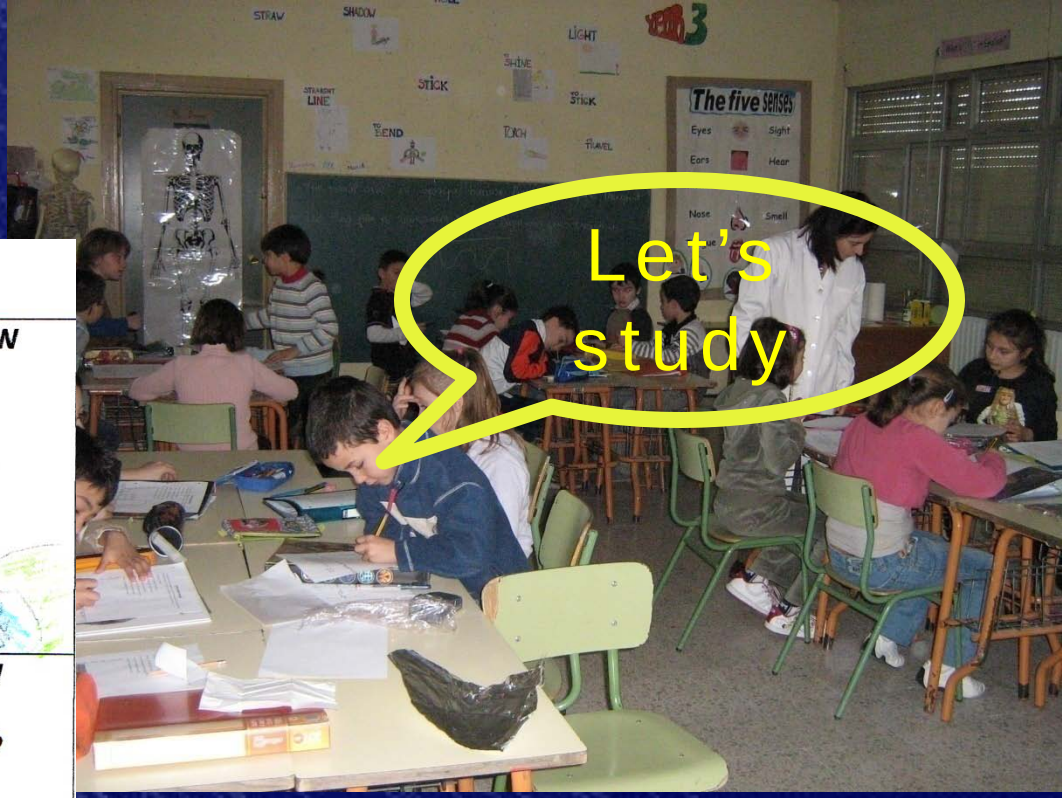
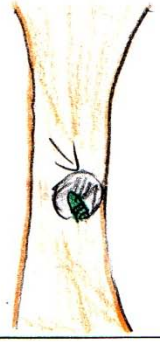
Teacher: Mª Luisa Casado
Subject: Science
Students: Primary year 3
School: CEIP “Narciso Alonso Cortés” Valladolid


What is light?
We don't know


Let’s investigate



Light Vocabulary

TORCH	TO SHINE	LIGHT	SHADOW
			 
HOLE	**TO TRAVEL**	**STRAIGHT LINE**	**STRAW**
			

SOURCES OF LIGHT

STICK	TO BEND	BENT STRAW	THROUGH
			


What is a source of light?
It is something that gives off light


How many types of sources of light are there?
Natural sources of light
Artificial sources of light

Alejandro

Sources of light

What is a source of light?

Is it That gives of light

There are two types of source of light: Natural an Artificial

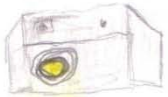
(sources of light that **aren't** manmade sources of light that **are** manmade)

NATURAL SOURCE OF LIGHT

Definition: (Sources of light That are't manmade

ARTIFICIAL SOURCE OF LIGHT

Definition: sources of light That are manmade



Julio

Sources of light

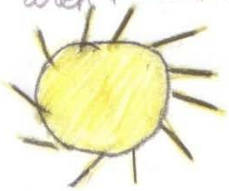
What is a source of light? It is something that gives off light.

There are two types of source of light:

(sources of light that **aren't** manmade sources of light that **are** manmade)

NATURAL SOURCE OF LIGHT

Definition: (Sources of light that aren't manmade)

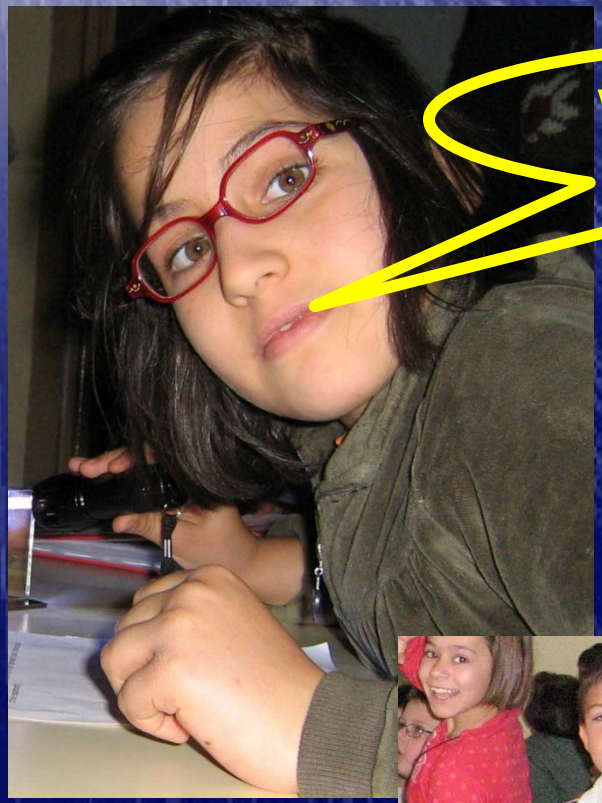


ARTIFICIAL SOURCE OF LIGHT

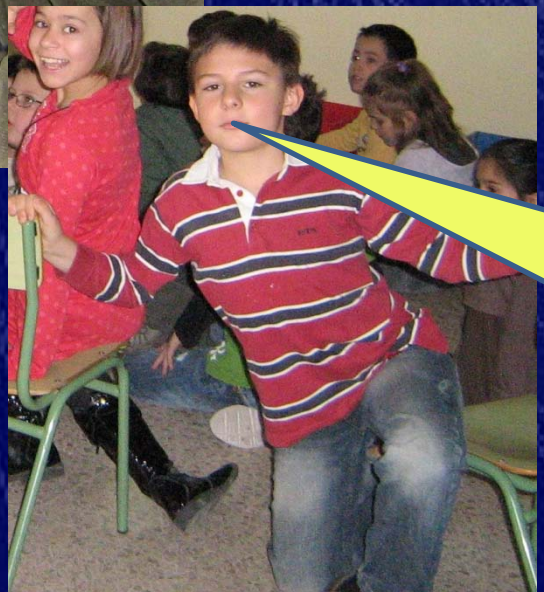
Definition: Sources of light that are manmade.)

✓6

Sources of light



What's this?

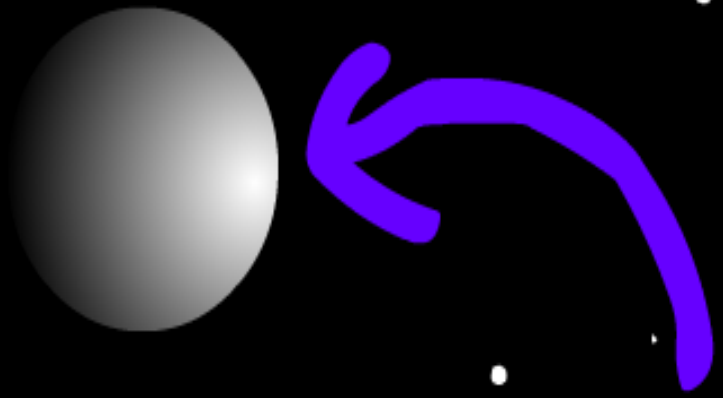


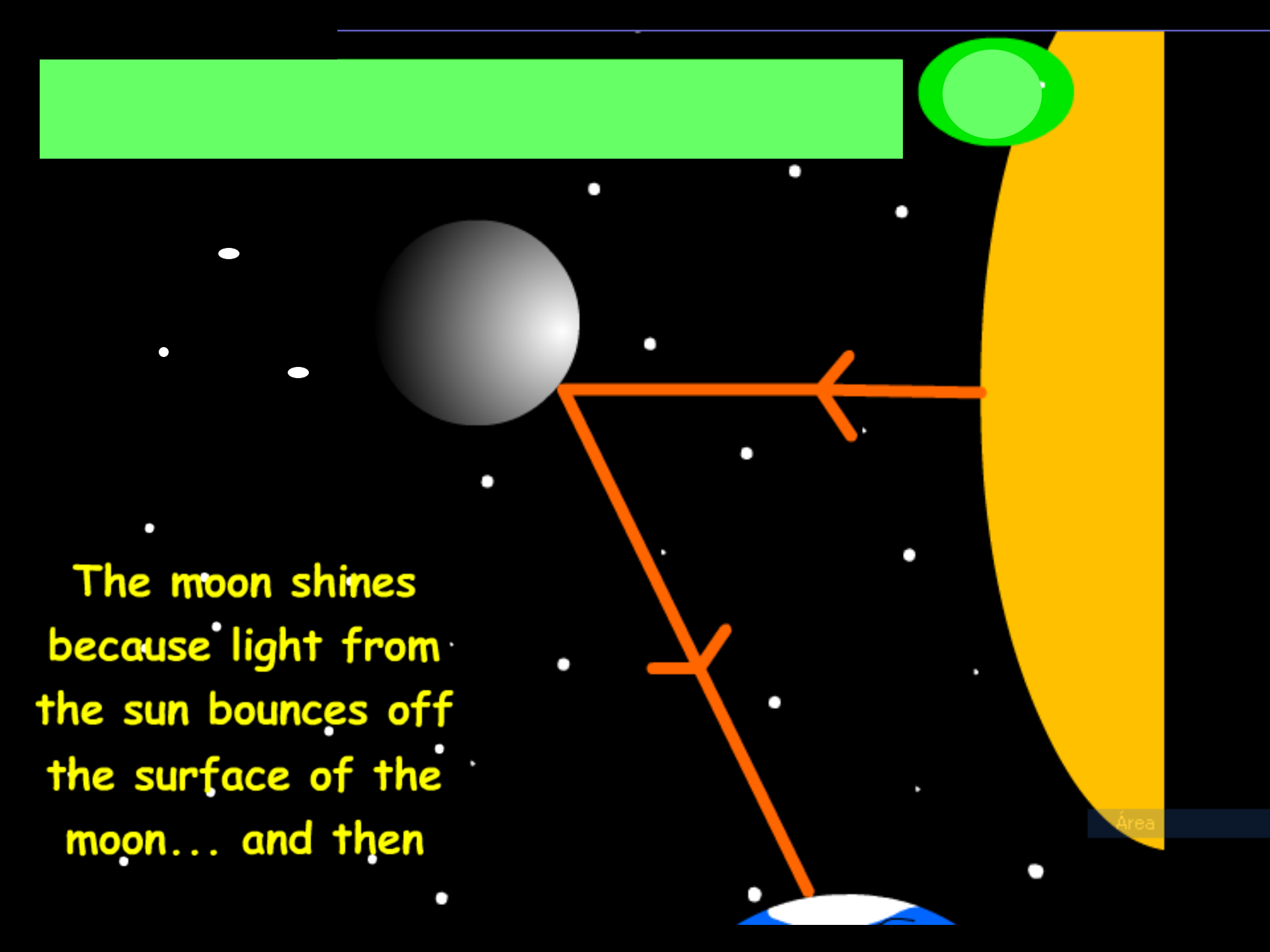
It's a glow-worm, a natural source of light


Are all objects that shine, sources of light?

Light Sources & Light Rays

Not all things that shine are light sources.




The moon shines because light from the sun bounces off the surface of the moon... and then


transparent
opaque
elastic
smooth
rough
dull
shiny
hard
flexible
rigid
heavy
Well done!
You have completed this module.
And then, the light hits the Earth and we can see the Moon.
The Moon doesn't give off light. It only reflects light

How does light travel?

Let’s carry out some experiments

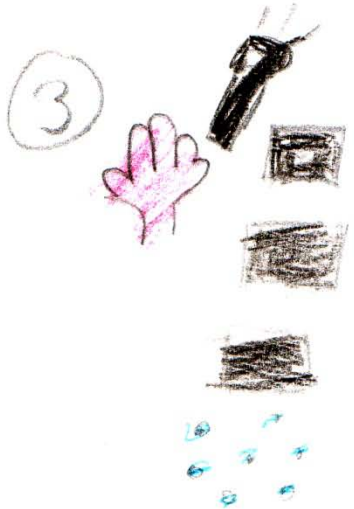

Can you still see the spot of light with three cards?


LooK! The spot of light is here!
Hands
Nose
Tongue


Yes, I can do it, because light travels in a straight line

Julia

How does light travel?



Let's make different experiments!

Experiment nº 1

- I will need
  - A torch
  - Some cards with a hole in the middle

- Instructions

1. Shine a torch onto one of the cards with a hole in it
2. Look at the spot of light on the wall
3. Take another card with a hole in it. Place the new card behind the first card so that there is still a spot of light.
4. Can you still see the spot of light with three cards?

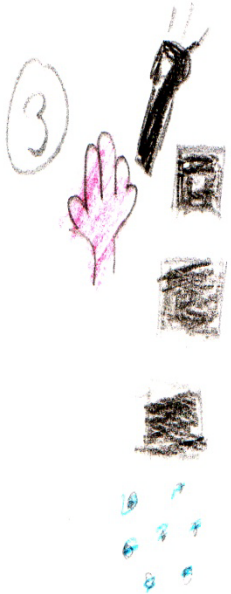
Yes

- Conclusion

How does light travel? In the straight line.

Julia

How does light travel?



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  1. Shine a torch onto one of the cards with a hole in it
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  3. Take another card with a hole in it. Place the new card behind the first card so that there is still a spot of light.
  4. Can you still see the spot of light with three cards? Yes

- Conclusion

How does light travel? In the straight line.

How does light travel?

Experiment nº 1

- I will need
  - A torch
  - Some cards with a hole on the middle.

- Instructions

1. Shine a torch onto one of the cards with a hole in it.
2. Look at the spot of light on the wall.
3. Take another card with a hole in it. Place the new card behind the first card so that there is still a spot of light.
4. Can you still see the spot of light with three cards.

Sara Gallego


1.Look at an object through a straw.
Can you see
the object?


1.Bend the straw.
2. Look at the object again through the bent straw.
Can you see the object now?

Let's make our model to explain how light travels


We imagine the stick is the ray of light

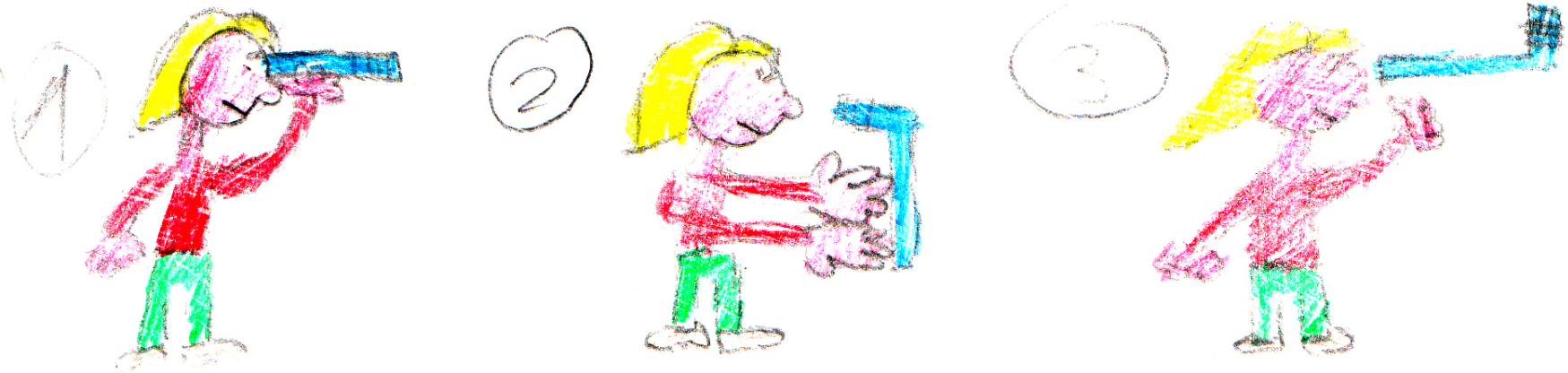
Light, the same as the stick, **cannot** bend, so it **cannot** reach our eyes and we can’t see the object.

Experiment nº 2

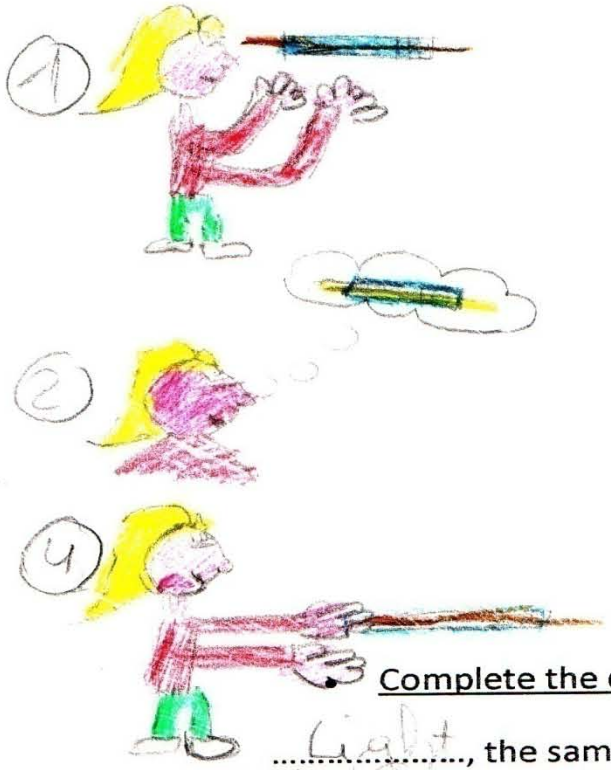
- I will need
  - A straw
- Instructions

1. Look at an object through a straw.
2. Bend the straw.
3. Look at the object again through the bent straw.
4. Can you see the object now? No

- Conclusion



- Instructions



1. Push the stick through the straw.
2. Imagine the stick is light.
3. Can the stick (light) pass through the straw? Yes
4. Now, try to do the same but bend the straw. Can you do it? Why? No because the stick are into the straw.

Complete the conclusion

Light, the same as the stick **can** /can't pass through the straw and it reaches our eyes.
Straight line

[redacted]

LIGHT TRAVELS IN A STRAIGHT LINE

Can light go through all kinds of objects?

Classify the objects depending on the quantity of light that passes through them.

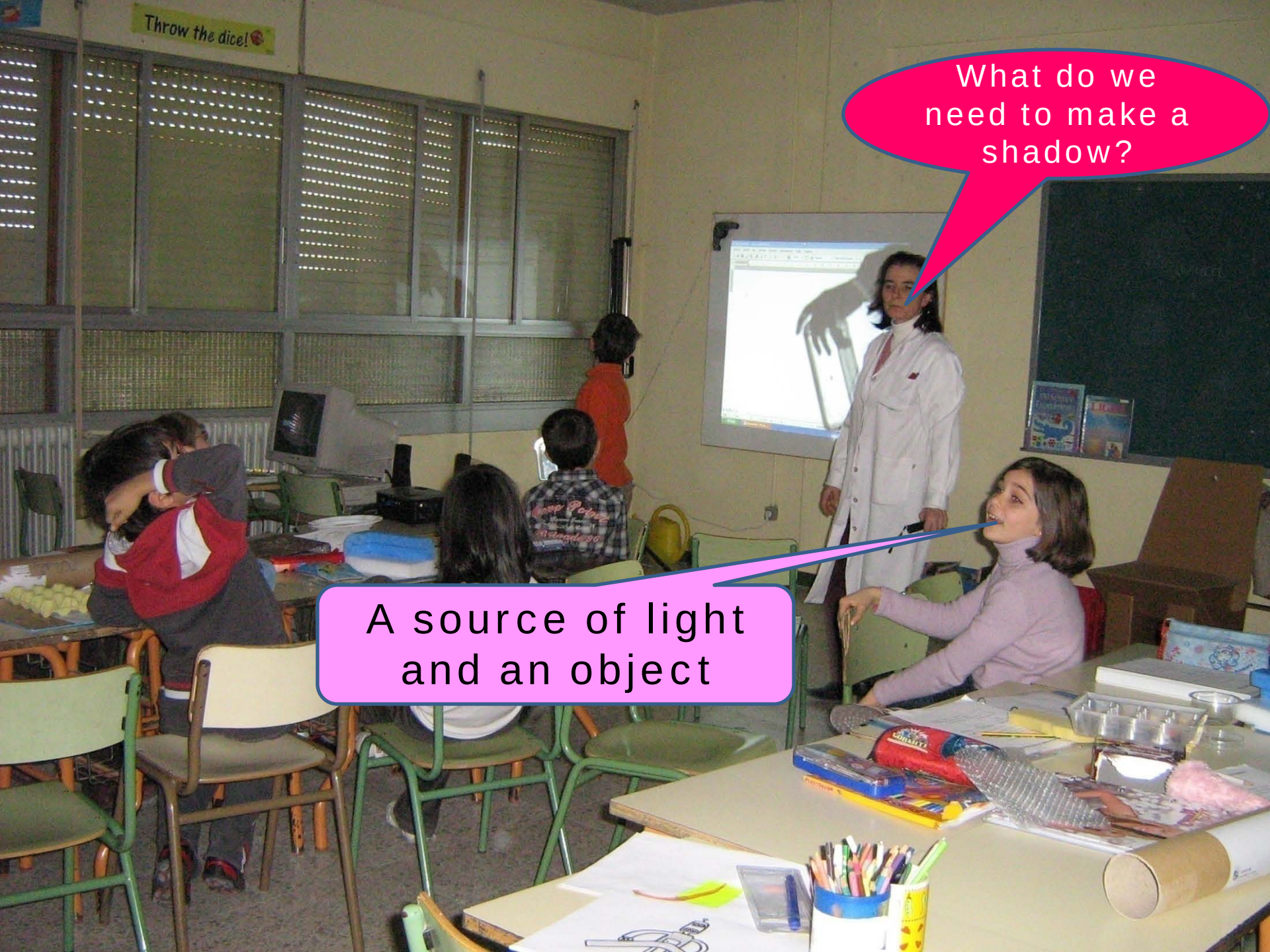

COLLINS
Copy Air


They are
TRANSPARENT
because they let
light pass through
them

They are **OPAQUE** because they **don't** let light pass through them


They are
TRANSLUCENT
because they let **a**
little bit of light
pass through them

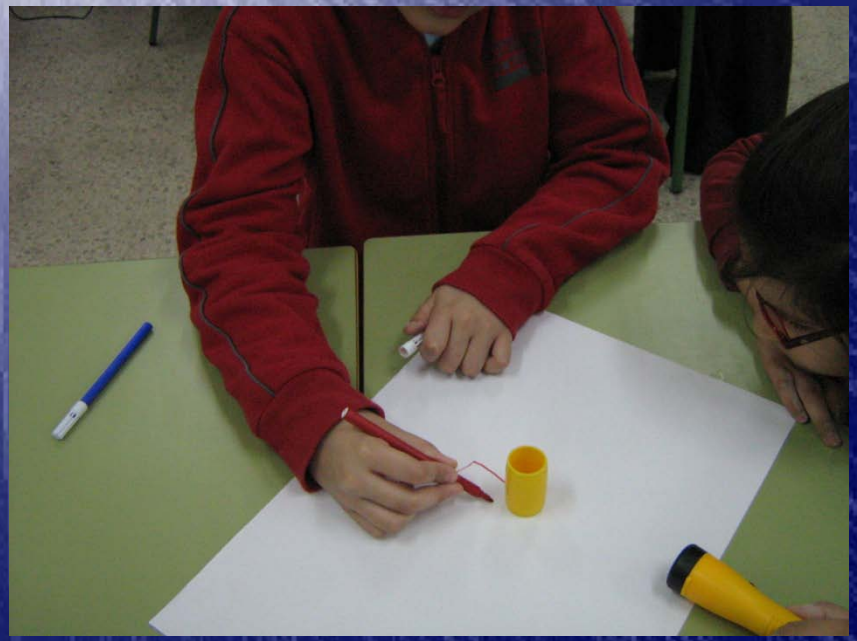
Let’s play with shadows

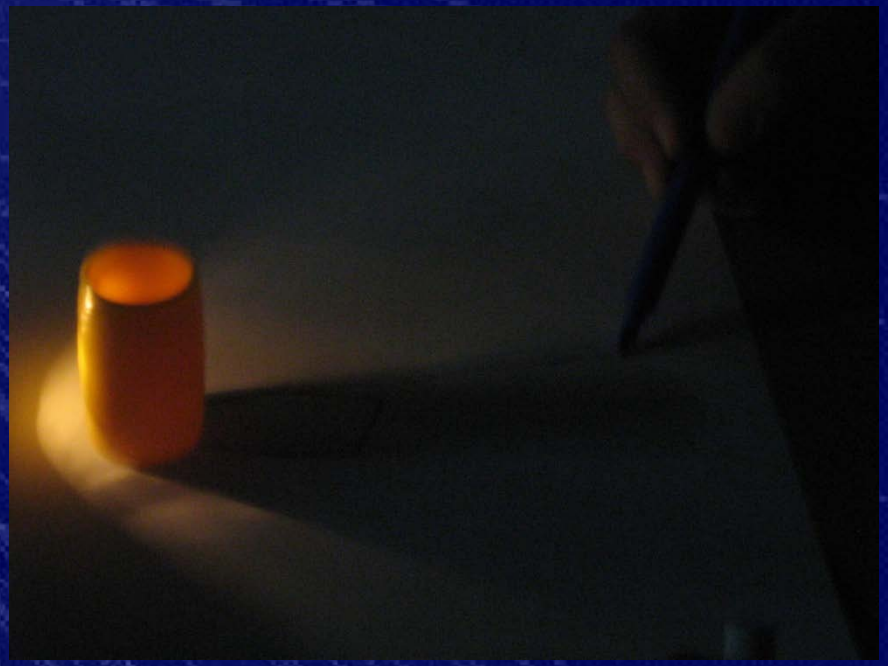

Throw the dice!
What do we need to make a shadow?
A source of light and an object

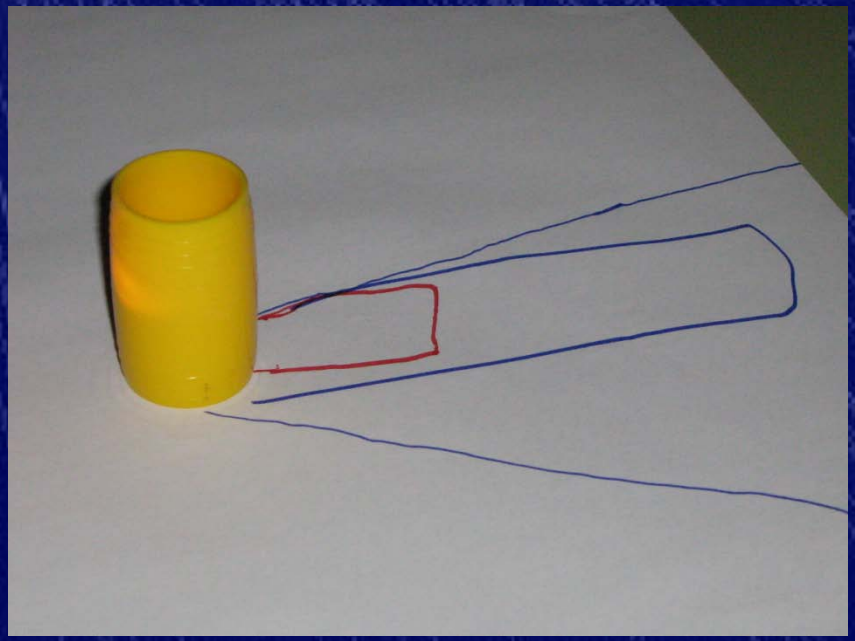

Any kind of object?
No, only opaque and translucent objects


When can you see a shadow?
When an object blocks the light


Let's make predictions:
where is the shadow going to cast?
Draw it with a red crayon
Shine the torch.
Draw the silhouette of the shadow with a blue crayon

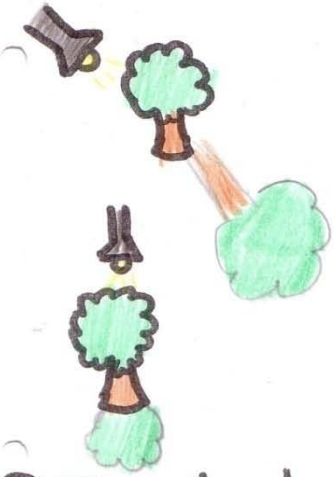






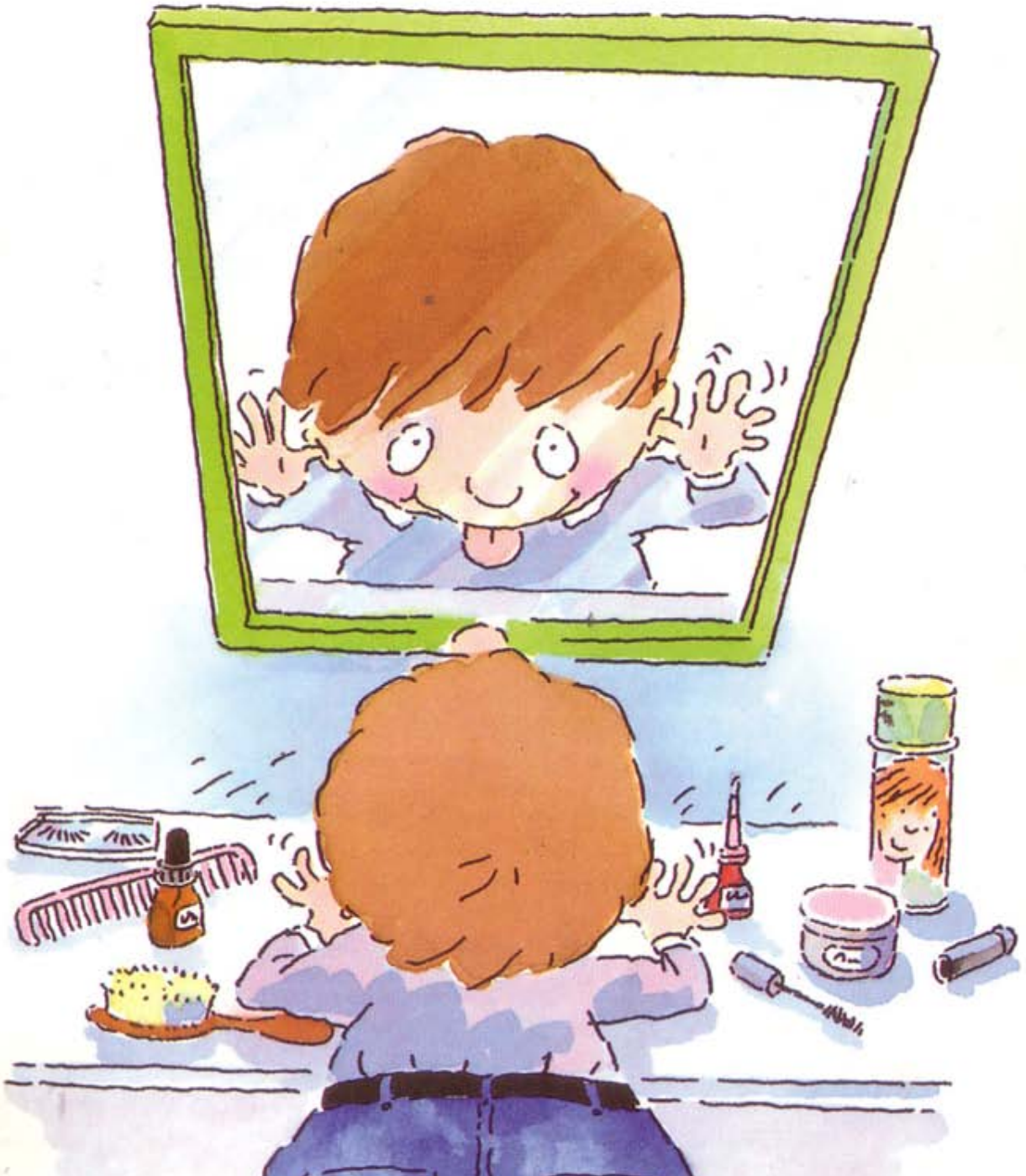
— DRAW the SHADOWS —

Draw the shadows



The shadow is going to be bigger / smaller

LIGHT



REFLECTION


We are going to split a ray of light


Athletic
Reflection
Make the ray hit the mirror


transparent
elastic
smooth
rough
dull
shiny
hard
soft
What's the matter with the ray of light?

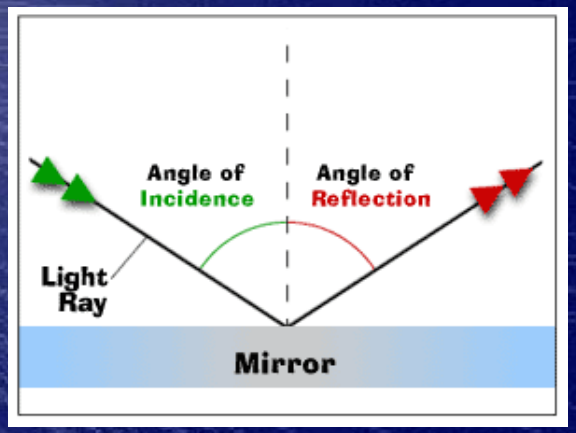

The ray of light bounces off the mirror

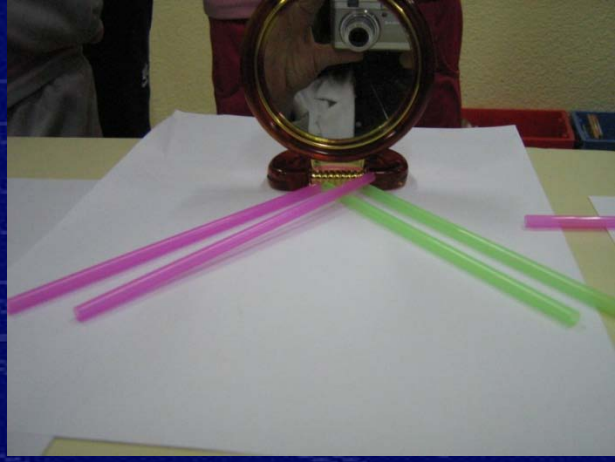

Now let's try with a curved mirror or spoon


What's the matter with the light now?


I don’t Know .
It isn’t very clear

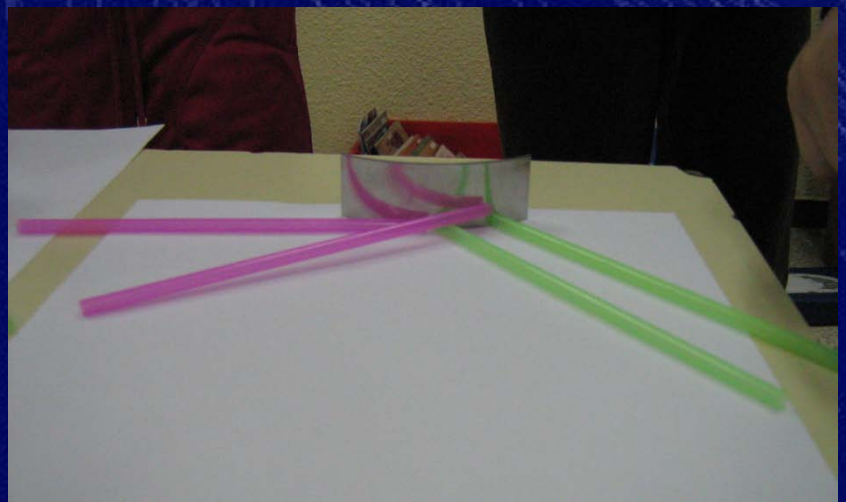
Let's make a model to undertand what is happening.

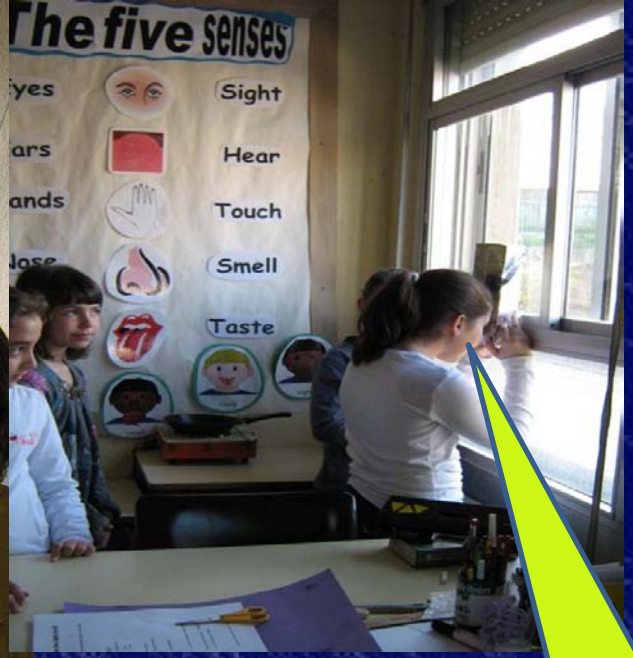




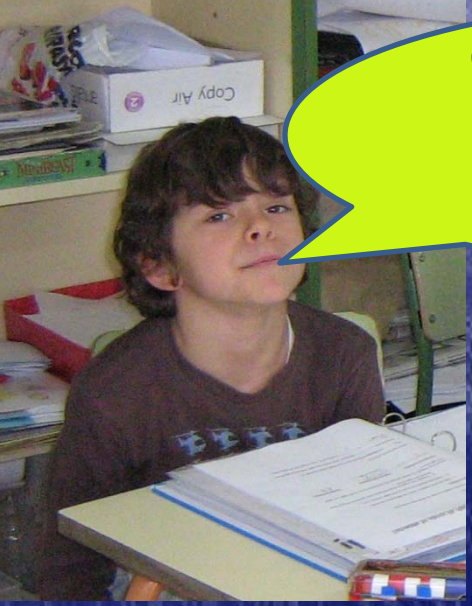
With flat mirrors the angle of reflection and the angle of incidence ARE the same

With curved mirrors the angle of reflection and the angle of incidence AREN'T the same



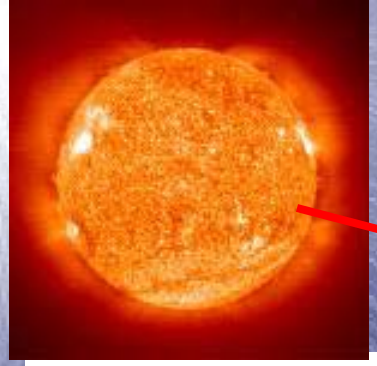


Thanks to light reflection our periscopes work



Oh! This is the other way round!

Oh no, I built it like this on purpose. This is a present for our teacher , to spy on us when she is writing on the blackboard



1. Light from the Sun hits the nest and then it bounces off …

2. And the light hits the top mirror…

3. ..And it bounces off again and

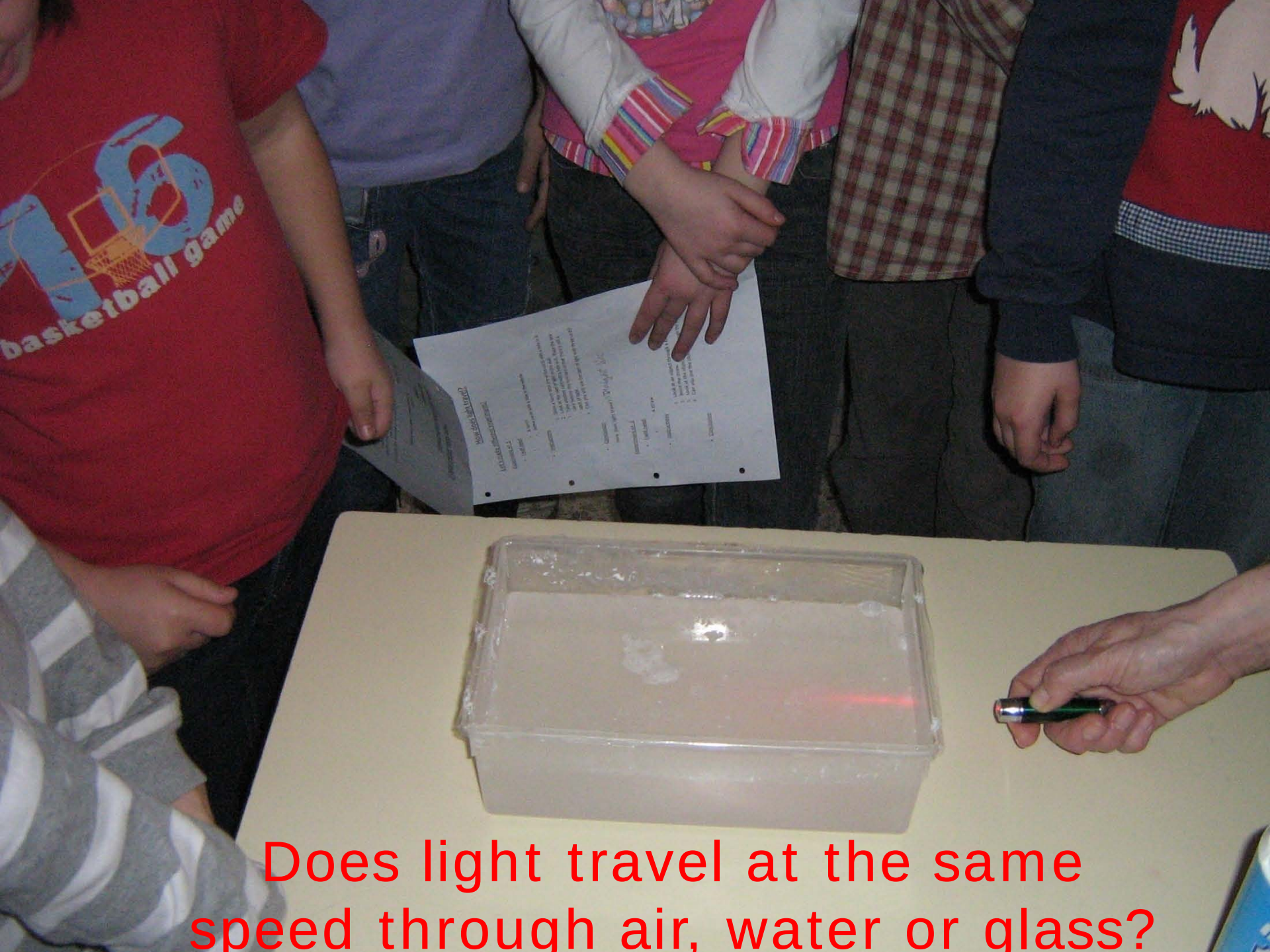
Mirror

4. And hits the bottom mirror…


LIGHT REFRACTION

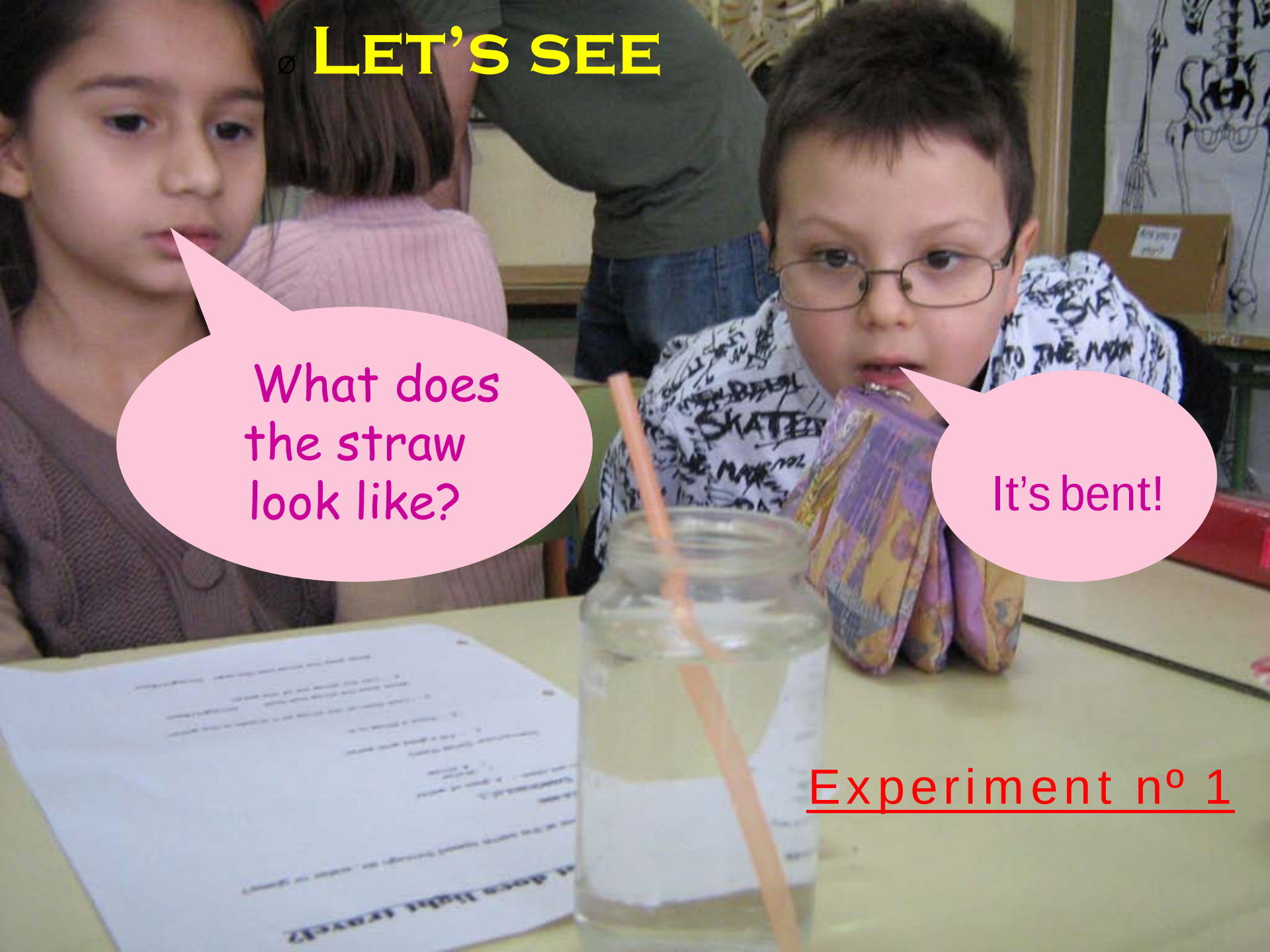

How fast
does
light
travel?


300.000 km/s



Does light travel at the same speed through air, water or glass?

Let's see



Experiment nº 1


Is it magic?
It's straight!

Experiment nº 2

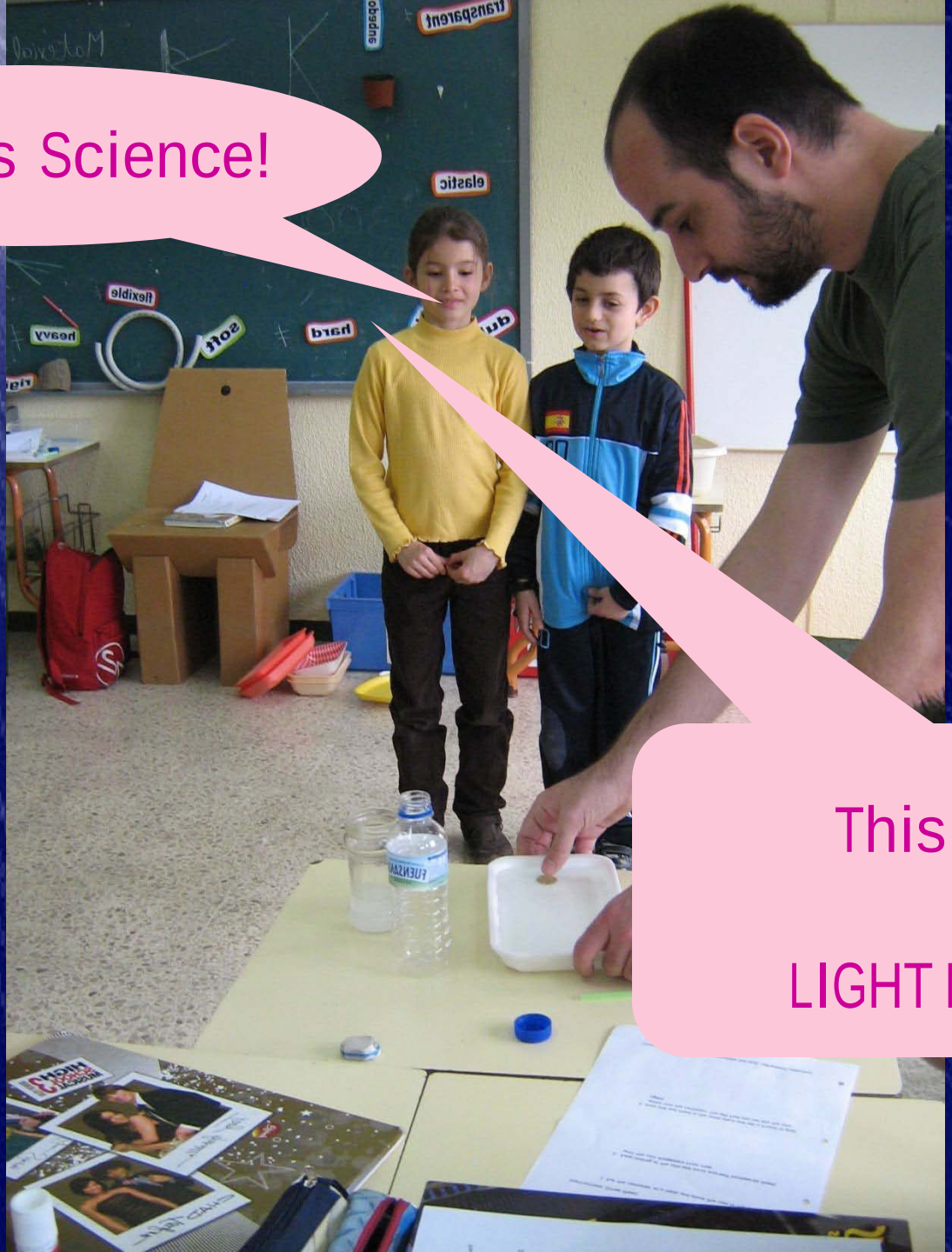
Instructions:

1. Put the container on a table and place the coin in the bottom.

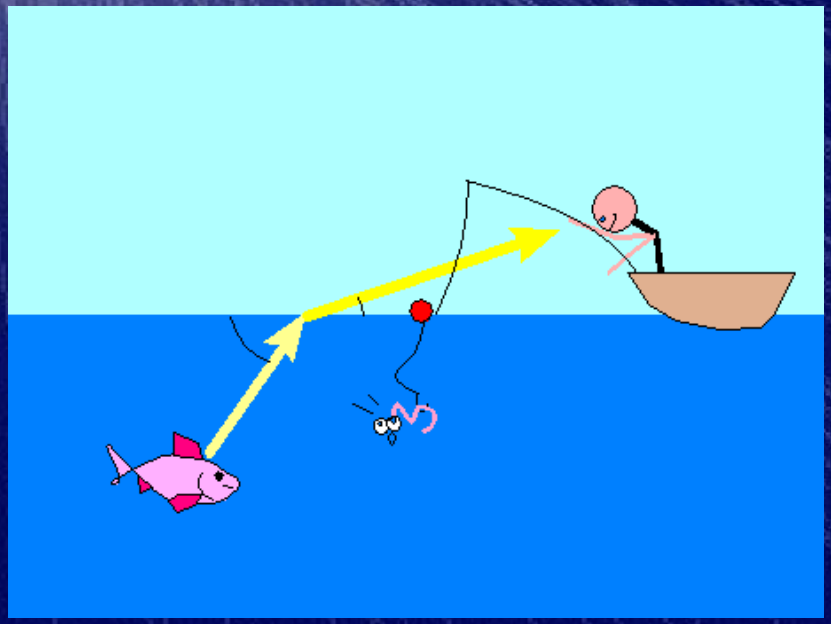
2. Keep looking at the coin and move yourself backwards slowly until the coin disappears from view.

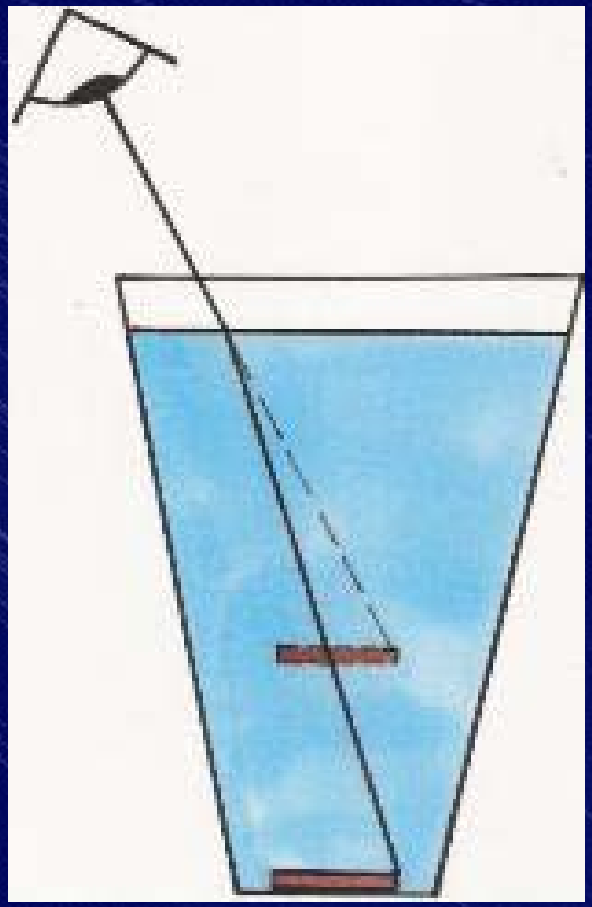
3. Stay still and stand in the same place and ask a friend to pour water into the container. You will find you can see the coin again!


I can see the coin again
This is magic!
Cork
Glass
plant
animal


This is Science!
This is called :
LIGHT REFRACTION

Light travels at different speeds through different substances. It travels more slowly through water or glass than it travels through air. As light slows down, it also changes direction a little.





THIS IS CALLED LIGHT REFRACTION

A BIT OF HISTORY

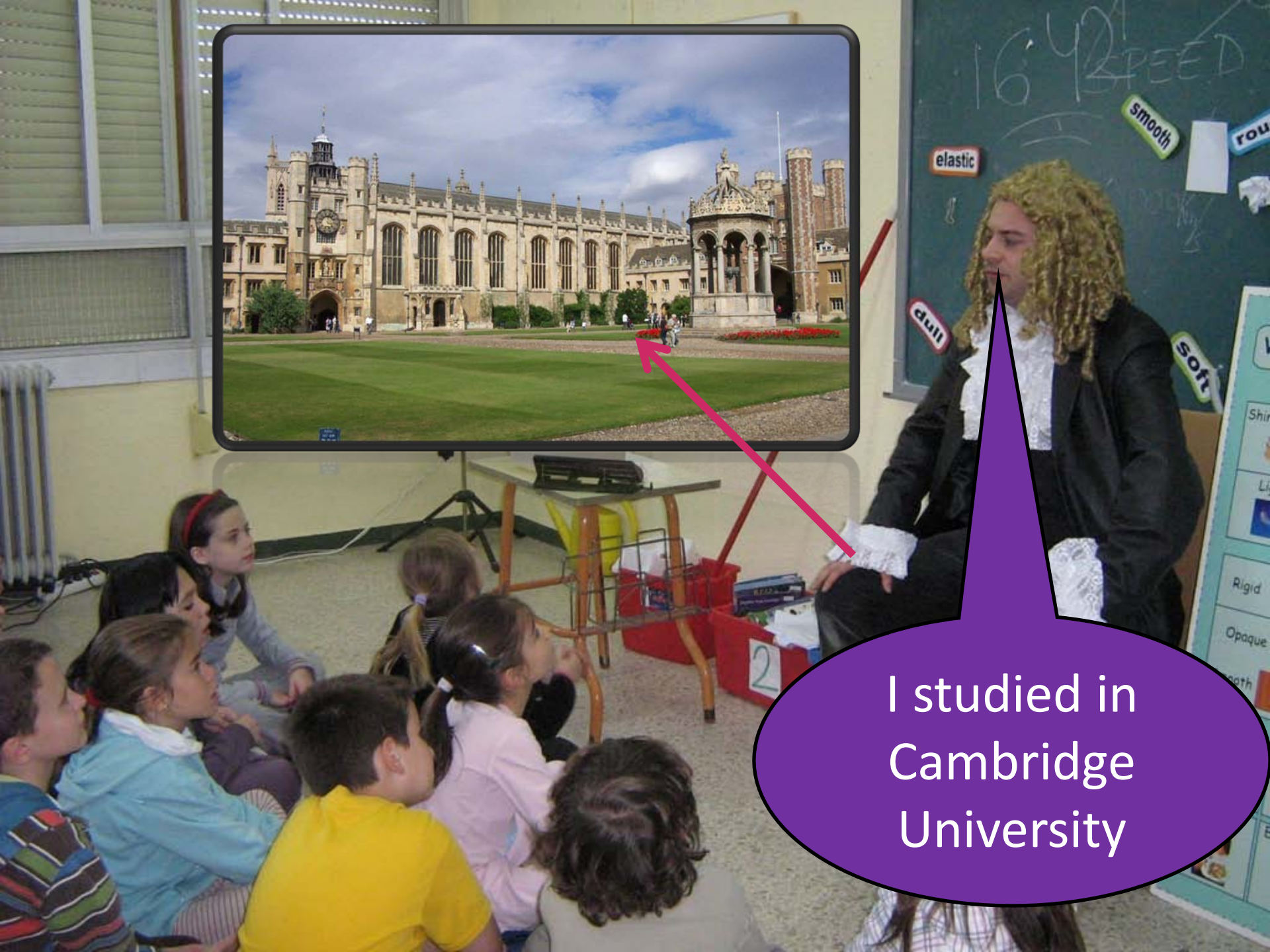

One day as we were working very hard, like real scientists, we were surprised

Newton came to see us!

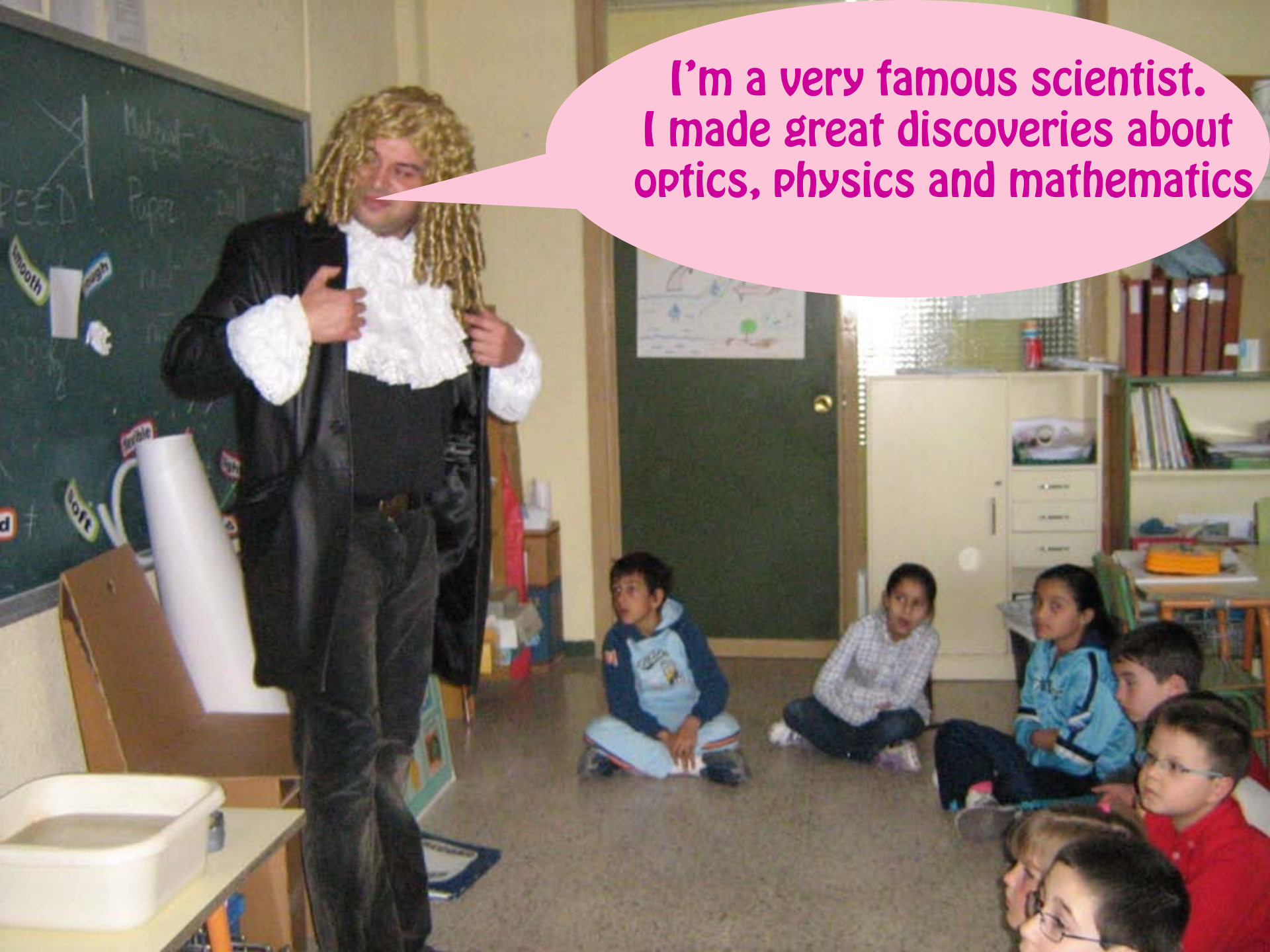
In the XVII century!

Where were you born?

I was born in England


elastic
smooth
dull
Soft
Rigid
Opaque
I studied in Cambridge University

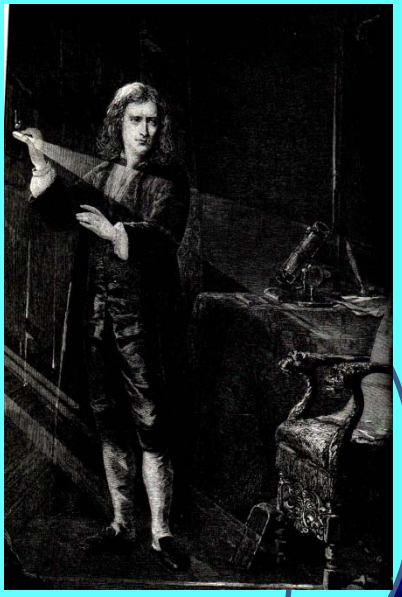

elastic
rough
WORDS
In my times very few people were interested in Science
They believed in magic and witchcraft.


I'm a very famous scientist.
I made great discoveries about
optics, physics and mathematics


opaque
One day I bought a prism and I decided to carry out some experiments with it

I closed the curtains of my room I left one window with the curtains open, then I covered the window with a piece of card and I cut a very small slit to make a single ray.

I made this ray hit the prism.



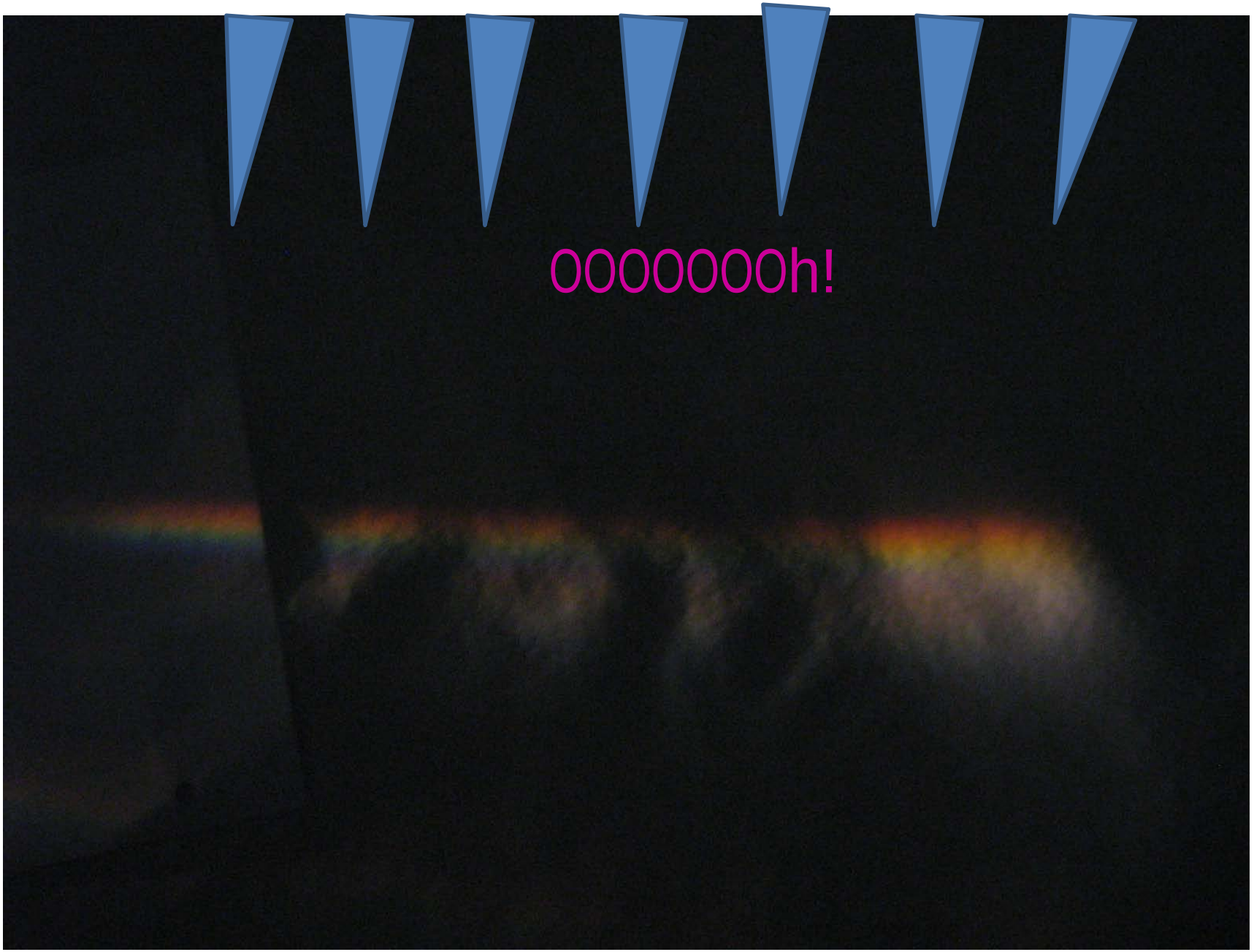

The light was white, of course, but when I made the ray go through the prism I could see the white light split into different colours.


INCREDIBLE.
SEVEN
COLOURS LIKE THE
RAINBOW !


Do you want me to show you how to carry out this experiment?


I don’t think
Newton knows how
to use a torch
properlyvery good
with the torch


Light
Heavy
Rigid
Elastic
Flexible
Opaque
Smooth


OOOOOOOh!


Do you want to try something similar?

Following Newton's path

Make a light spectrum

Instructions:

1. Pour water in the container.
2. Put a mirror on the water and stick it with plasticine to one side of the container.
3. Shine the torch on the part of the mirror which is under the water.
4. Hold a sheet of white paper over the torch.
5. Move the torch until you see the spectrum on the paper.

Excelle

Following Newton's path

Make a light spectrum

I will need:

- A container
- water
- A ball of plasticine
- A mirror
- A torch
- Some white paper

Instructions: (draw them)

1. Pour water in the container.

2. Put a mirror on the water and stick it with plasticine to one side of the container.

3. Shine the torch on the part of the mirror which is under the water.

4. Hold a sheet of white paper over the torch.

5. Move the torch until you see the spectrum on the paper.

Julia 3°B

Following Newton's path

Make a light spectrum

I will need:

- A container
- water
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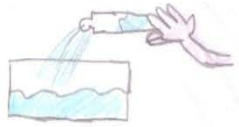
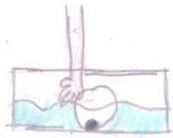
- Some white paper

Instructions: (draw them)

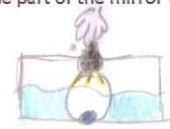
1. Pour water in the container.



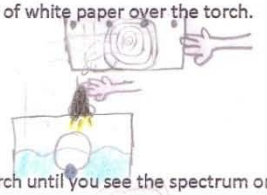
2. Put a mirror on the water and stick it with plasticine to one side of the container.



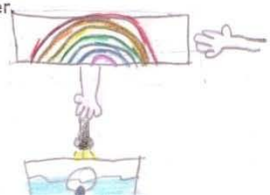
3. Shine the torch on the part of the mirror which is under the water.



4. Hold a sheet of white paper over the torch.



5. Move the torch until you see the spectrum on the paper.




Good bye Newton!
We are going to
continue with our
investigations