













# Light: Reflective Surfaces

<p><b>Aim:</b>          To notice that light is reflected from surfaces by choosing the most reflective material for a new book bag.</p> <p>I can investigate which surfaces reflect light.</p>	<p><b>Success Criteria:</b>          I can explain reflection.          I can identify reflective materials.          I can select the most reflective material for a purpose.</p>	<p><b>Resources:</b>  <b>Lesson Pack</b>          Torch per pair          A5 piece of white card per pair          6 materials to test such as CDs, tin foil, paper, different fabrics, bubble wrap, cardboard.</p>
	<p><b>Key/New Words:</b>          light, source, dark, reflect, see, illuminate, visible.</p>	<p><b>Preparation:</b>  <b>Testing Reflective Materials Activity Sheet</b> - 1 per pair  <b>Choosing a Material Activity Sheet</b> - 1 per child          [As a visual aid to discussing reflective materials there are many videos online linked to the use of reflective materials and retroreflectors.]</p>

**Prior Learning:** Children will have learnt about light sources in lesson 1.

## Learning Sequence

	<p><b>Reflective Materials:</b> Ask children some questions from the <b>Lesson Presentation</b> to aid discussion about reflective materials. Why do we use /need reflective materials? (to help us or things be seen, especially when outside at night, for safety reasons). Can you think of where you would see reflective materials? (e.g. on cyclists, runners, road signs, road workers, fire-fighters, builders, bike reflectors/stickers, etc.). Which colours do you think reflect most light? (white, light or fluorescent colours e.g. yellow, orange). What does it look like if a material reflects light well? (you will be able to see the material, it might look bright, etc.).          [If possible this would be a good opportunity to watch a clip about the use of reflective materials and retroreflectors, there are many available online.]</p>	
	<p><b>Reflecting Light:</b> Use the <b>Lesson Presentation</b> to explain reflection and its uses. Address any misconceptions.</p>	
	<p><b>Design a Reflective Book Bag:</b> Explain that the children have been asked to help design a new book bag with a reflective strip. They need to find the most reflective material for the bag. They should make a prediction and record it on their <b>Testing Reflective Materials Activity Sheet</b>.</p>	
	<p><b>Reflection Tester:</b> Explain how to make a reflection tester using the <b>Lesson Presentation</b>. Give children time to make their reflection testers in pairs. The children should then work together, using their reflection tester to test the reflectivity of the different materials on their tables. Children use the <b>Testing Reflective Materials Activity Sheet</b> to put them in order from most reflective to least reflective.</p>	
	<p><b>Which Material Is Most Reflective?</b> The children need to come to a conclusion as to which material would be best for the reflective strip on the new book bag. They should complete their differentiated <b>Choosing a Material Activity Sheet</b> to draw and label the material they choose, and explain why they have chosen it. <i>Look for children who have a good understanding of reflection, and who use their results to make their choice of material.</i></p>	
	<p> Provide children with key words to complete sentence starters.</p> <p> Encourage children to identify the things all reflective materials have in common.</p>	
	<p><b>How Are All Reflective Materials Similar?</b> HA children should give feedback on their thoughts to the class.</p>	

### Taskit

**Checkit:** Use a reflection tester to check whether your coat or bag reflects light well. Make sure your clothes make you easy to see in the dark!

**Designit:** Design a poster to tell people how to dress to be seen in the dark. Explain how to choose clothes that reflect light well.

**Spotit:** If you are going somewhere in the car when it is dark, look out for road signs, bike lights, cat's eyes or clothes that reflect light well. How do these help the driver?





# Science

## Light



# Reflective Surfaces



# Aim

- I can investigate which surfaces reflect light.

# Success Criteria

- I can explain reflection.
- I can identify reflective materials.
- I can select the most reflective material for a purpose.





# Reflective Materials



Why do we use/need reflective materials?

Can you think of where you would see reflective materials?

Which colours do you think reflect most light?

What does it look like if a material reflects light well?



When it is dark it is important to wear clothes that reflect light well so you can be safe and be seen.

Different colours and materials can affect how light is reflected and how well you can be seen.





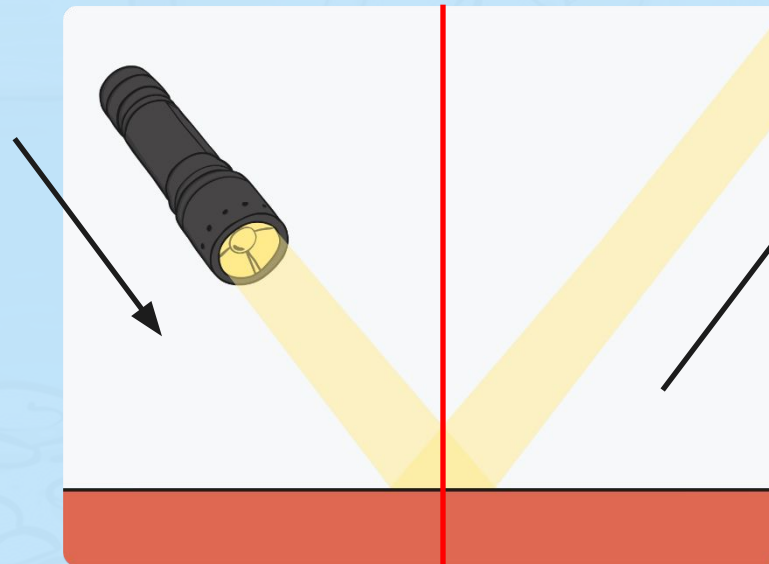
# Reflective Light

Light travels in a straight line.

When light hits an object, it is reflected (bounces off).

If the reflected light hits our eyes, we can see the object.

Light from the torch hits the object.



The light is reflected from the object.



# Reflective Light

Some surfaces and materials reflect light well. Other materials do not reflect light well.

Reflective surfaces and materials can be very useful:

- Reflective strips on coats or bags mean you can be seen at night. They are also useful for fire-fighters or builders who may work in a dark and dangerous environment.
- 'Cat's Eyes' help drivers see the road by reflecting light from headlamps.
- Mirrors let us see ourselves, and are also useful in cars, to allow drivers to see behind them.
- Retroreflectors are used for road signs so that drivers can see the signs from their car.

Can you think of any other uses?





# Design a Reflective Book Bag

The Brilliant Bags Company want to make a new book bag for children to use to carry their things to and from school.

They want to make sure the bag helps children stay safe while walking near roads on dark mornings or evenings.

They have decided to put a reflective strip on the book bag, so that drivers can see the book bag easily when their car headlights shine on it.





# Design a Reflective Book Bag

The Brilliant Bags Company want you to help them choose the best material for the reflective strip.

Look at the different materials.  
Which material do you think will be best for the bag? Write your prediction on your Testing Reflective Materials Activity Sheet.

You will need to test the different materials to see how reflective they are.

**Testing Reflective Materials**

You have been asked to help choose the best material for a reflective strip to make the Brilliant Bag Company's new book bag safer for children walking in the dark.

What materials will you test?

Which material do you think will be most reflective? Why?

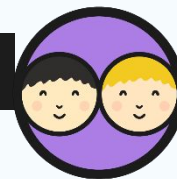
Put the materials you are testing in order.

<small>Most</small>						<small>Least</small>
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Science Year 5 | Light | Reflective Surfaces | Lesson 2



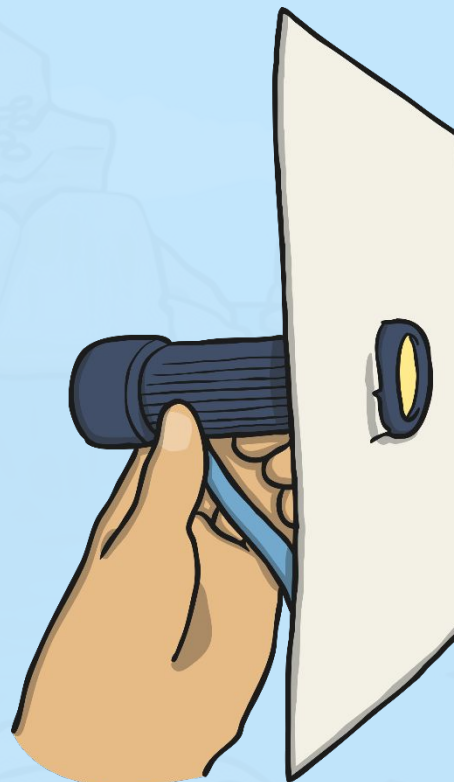
# Testing Reflective Material



In order to test the materials, you will need to make a reflection tester.

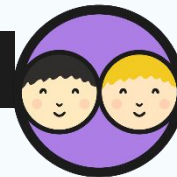
Attach a piece of white card to a torch:

1. Cut a hole in the centre of the card and push the torch through so that the card fits snugly around the torch without you having to hold it.
2. Shine the torch at the material you are testing.
3. If the material reflects light well, you will see the reflected light shine through the white card and light it up.



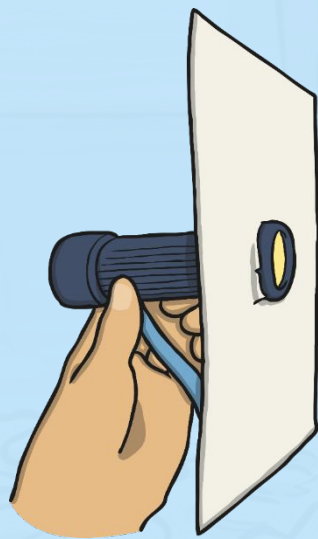


# Testing Reflective Material



Once you have made your reflection tester, use it to test the different materials you have been given.

Order the materials from most reflective to least reflective on your Testing Reflective Materials Activity Sheet.



**Testing Reflective Materials**

You have been asked to help choose the best material for a reflective strip to make the Brilliant Bag Company's new book bag safer for children walking in the dark.

What materials will you test?

Which material do you think will be most reflective? Why?

Put the materials you are testing in order:

Most reflective								Least reflective
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Science Year 51, 10/11/2016/2015/Science/1/Activity 7





# Which Material Is Most Reflective?

You need to decide which material is best for the Brilliant Bag Company to use on their book bag.

Choose the most reflective material from the ones you tested.

Use your Choosing a Material Activity Sheet to draw your chosen material on the book bag in the place you think it should go, and label it.

Write an explanation to the Brilliant Bag Company so they know why you have chosen this material.





# How Are All Reflective Surfaces Similar?

Some of you have been thinking about the ways in which all reflective materials are similar.

How do they look similar?

How do they feel similar?

Share your thoughts with the class.





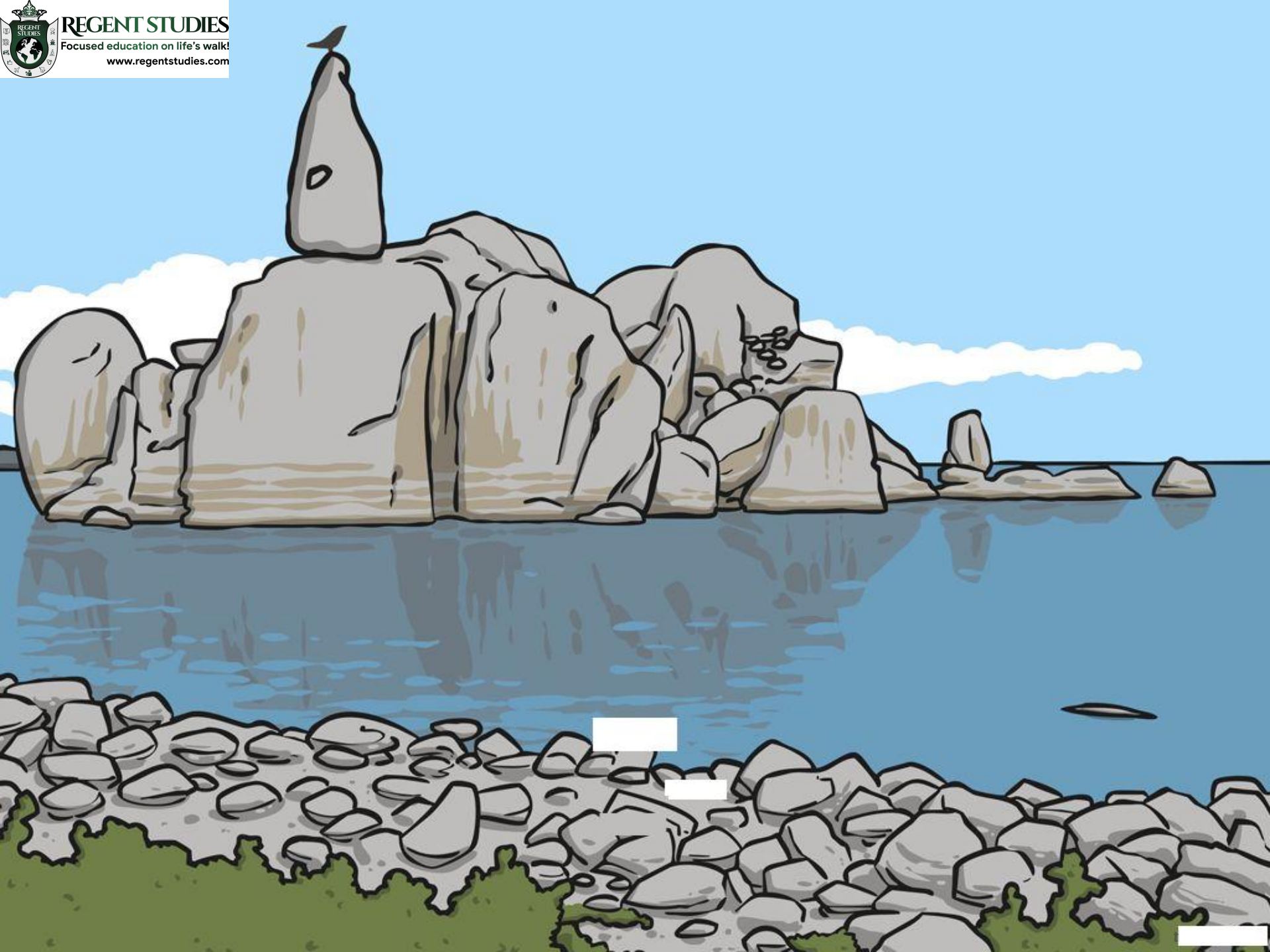
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