

Making Shadows



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WALT: Investigate which materials block light to form shadows.

WILF: I can explain how light travels. I can sort different materials according to whether they are opaque, transparent or translucent. I can use these materials in an investigation into different shadows.

Light

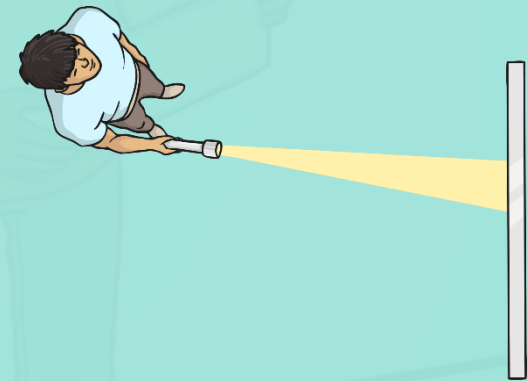


Light is a beam of energy that travels in a wave from a source.

A wave of light can only travel in a straight line. Waves of light are called light rays.

Try this activity to demonstrate how light travels:

- Punch holes in the centre of three equal-sized pieces of card.
- Hold the pieces of card so that the holes line up.
- Shine a torch so that the beam of light can travel straight through the holes.



What happens if you move one of the pieces of card so the holes don't line up?

Blocking Light



When you moved one of your pieces of card so the holes did not line up, the card blocked the ray of light. This is because light can only travel in a straight line, so it can not travel around the card.

Some objects, like the card, block light well and don't let any get through. These objects are called opaque.

Other things let some light through, but scatter the light so we can't see through them properly. These things are called translucent. Transparent objects let light travel through them easily.

Can you think of some items that are opaque, translucent and transparent?

Look around your house for ideas!

What's the Use?



Opaque, translucent and transparent materials are all useful for different things. Look at the items below and decide which type of material would be best for each one:

bathroom window

living room curtains

car windscreen

sun hat

window with a
lovely view

shower curtain

Making Shadows

Opaque objects do not let any light through.

They completely block the light and stop it travelling any further.

These objects create shadows.

Shadows are areas of darkness where light has been blocked.



Choosing Materials

This is Isaac.

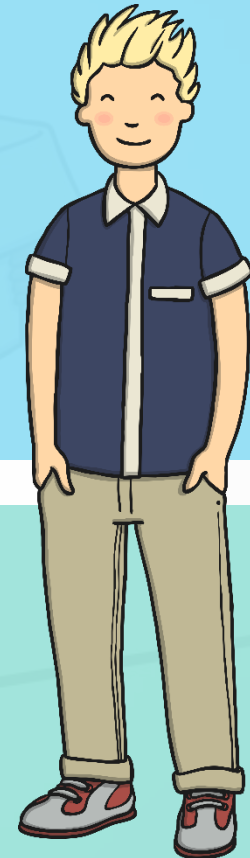
He has a new baby sister.

She is a very good baby, but she keeps crying early in the morning because too much light is getting into her bedroom and waking her up.

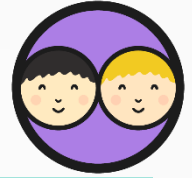
Isaac wants to choose the best material to make some new curtains for her bedroom.

He wants to make sure that her new curtains block as much light as possible.

Can you help him?



Choosing Materials



Look at different materials you can find in your house and test how well each one blocks light by shining a torch onto it and seeing if it makes a dark shadow. If it does, it is opaque and may be a good choice for the new curtains.



Decide whether each material you test is opaque, translucent or transparent.

Record this on your Choosing Materials Activity Sheet.

Choosing Materials

Can you help Isaac choose the best material for the new curtains in his baby sister's bedroom?

What materials are you testing? Draw or list them below.

Shine the torch on each material to see what sort of shadow it makes. Put each material in the correct column below.

| Opaque Blocks all light and makes a dark shadow. | Translucent Lets some light through and makes a faint shadow. | Transparent Lets all the light through and does not make a shadow. |
|---|--|---|
| | | |

Which material have you chosen for the new curtains? Draw the curtains on the window and label the material.

Write a message to Isaac to explain why you think he should use this material.

I chose _____ for the new curtains.

When I tested it, this material _____

The shadow it made was _____

I think it will be good for the new curtains because _____

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Science Year 5 (High Learning) Studies, Lesson 2

Which Material Is Best?



Now you have tested your materials, you need to choose which material is best for Isaac to make the curtains out of.

Choosing Materials

Can you help Isaac choose the best material for the new curtains in his baby sister's bedroom?

What materials are you testing? Draw or list them below.

Shine the torch on each material to see what sort of shadow it makes. Put each material in the correct column below.

| Opaque Shine at face and makes a dark shadow | Translucent Less some light through and makes a dark shadow | Transparent Lets all the light through and does not make a shadow |
|---|--|--|
| | | |

Which material have you chosen for the new curtains? Draw the curtains on the window and label the material.

Write a message to Isaac to explain why you think he should use this material.

I chose _____ for the new curtains.

When I tested it, this material _____

The shadow it made was _____

I think it will be good for the new curtains because _____

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Draw curtains on the window on your Activity Sheet, and label them to show which material they are made out of. Write a message to Isaac to explain to him why you chose this material. Think about how you could tell it blocked light and why this would be useful.



Plenary

What is light?

What are shadows?

Can you think of some items that are **opaque**, **translucent** or **transparent**?