

LO: BLW WTS EXS GDS	I	WS	VF	FG
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Date: Wednesday 1 st July 2020

LO: Can I investigate how light enables us to see colours?
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Isaac Newton

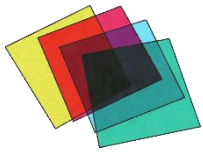
Isaac Newton made many famous discoveries and had many important ideas.

Read the Fact Sheet on your Isaac Newton Comprehension Activity Sheet and answer the questions to learn more about his work.



Investigation time

In the packs that were given last week, there was a packet of skittles and some cellophane. For this investigation, you will use the cellophane as your optical filter and the skittles as your coloured objects.

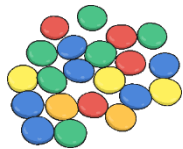


An optical filter is a device that lets some colours of light through, but not others.

coloured

You will use the different coloured filters to look at some objects.

What do you think they will look like through the different filters?



think they will look like through the different filters?

Make a prediction on your Fun with Filters Activity Sheet, and then try it out!

Did you notice that when you look at a red object through a red filter, it still looks red?

But did you discover that a red object looks black through another colour of filter?

Why does this happen?

Filtering facts

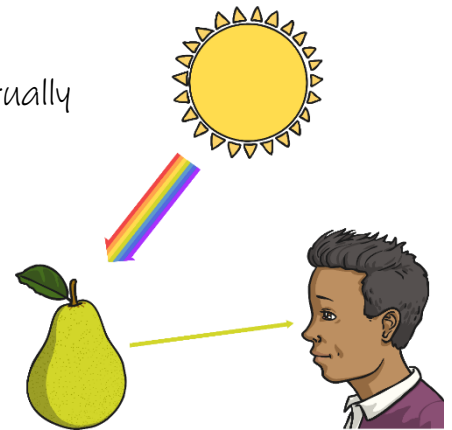
As you found out in the last lesson, white light is actually made up of all the colours of the rainbow.


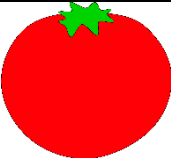


This is called the 'visible spectrum'.

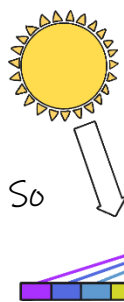
When a ray of white light shines on an object, the object absorbs some colours and reflects others.

A pear reflects the green light and absorbs the other colours of light.

It is only the green light that bounces back into our eye. The pear looks green to our eyes



Blue objects absorb all colours of light but blue, which they reflect.	Red objects absorb all colours of light but red, which they reflect.	White objects <u>reflect all</u> the colours of light.	Black objects <u>absorb all</u> the colours of light.
			



So

A filter only allows certain colours of light through. For example, a green filter allows green light through, but absorbs the other colours.

if you look at a green pear through a green filter, it will still look green, because the green light will get through the filter to your eyes.

But if you look at it through a red filter, it will look black, because there is no red light reflecting off the pear, and the green light that is reflecting off it will be absorbed by the filter.

Secret messages

Your challenge is to use your knowledge of light, colour and filters to create a secret message!

The message should be impossible to read unless you look at it through a coloured filter.

Follow the instructions on your Secret Message Activity Sheet to prepare your message.



Fun with Filters

I can investigate and understand how light enables us to see colours.



Use coloured filters to look at different coloured objects. What do you predict you will see? What do you actually see?

Colour of object	Colour of filter	Prediction: What colour do you think it will look?	What do you see? What colour does it actually look?

Look at your results. Do you notice anything interesting? Can you complete the sentences below to make your conclusion?

When I looked through a red filter, the red objects looked...

But when I looked through a blue filter, the red objects looked...

I think this is because...

Use these words to help you.

red



black



blue



colour



light



filter



through



stop





Secret Message

I can use my knowledge of light and colour to create a secret message.



Can you write a secret message that is only visible when you look through a coloured filter?

Choose a coloured filter and try looking at different colours of pens or pencils through it. Choose the colour that looks blackest through your filter, and use this to write your secret message. Then choose colours that look light or disappear when you look at them through the filter, and use these to draw a pattern around and over your message, hiding it from view. Your partner should be able to decode the message by looking at it through your filter.

Ask your partner to decode the message and complete this sentence:

The secret message says _____.

How does the red filter make your message easy to read? Explain your ideas by filling in the gaps below.

The _____ writing in my message reflects _____. When I look at it through a _____ filter, _____.

The _____ patterns over and around my message make it hard to read in normal light, but the patterns reflect _____. When my partner looks at them through the _____ filter, _____.

This is how my partner can read the message by looking through the red filter.