

Unit - K3
Refraction + Colour

Form Group 8_0

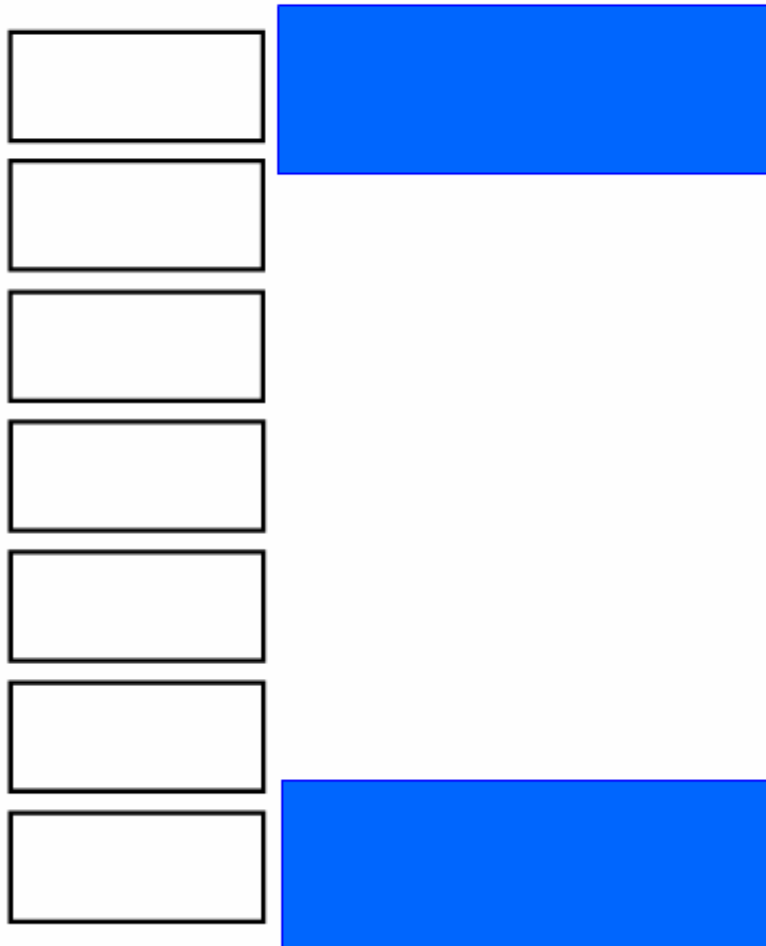


6th June 2007

Colours of the spectrum



Complete the diagram of the spectrum by dragging the colours and the labels to the correct box.



Violet

Red

Green

Yellow

Indigo

Orange

Blue

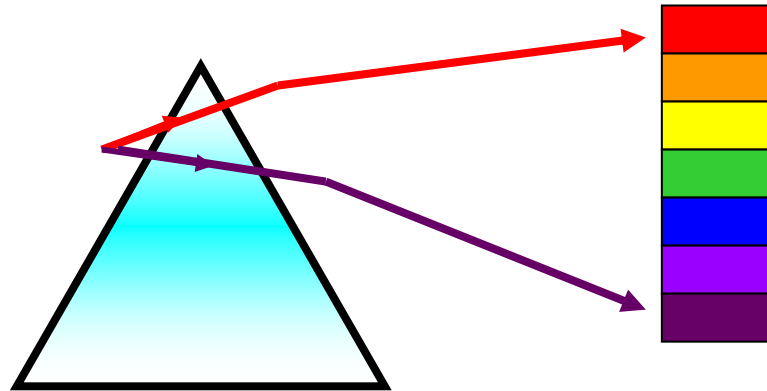
Long wavelength,
refracted the least

Short wavelength,
refracted the most

Splitting white light into colours

A prism splits a ray of white light into a spectrum of colours.

This is known as **dispersion**.



When white light is split, the colours always follow the same order.

Use this phrase to remember the order of colours:

Richard **O**f **Y**ork **G**ave **B**attle **I**n **V**ain

Filters

A coloured filter changes white light by only allowing part of the spectrum through it.

What colour do you think we will see if we put a red filter in front of the light source?

Why?

Filters



Therefore what colour would the light be if we had a green filter?

Filters

What we have learned:

If a **red** filter is present, **red** light is seen
and if a **green** light is present then **green**
light is seen!!

So...what happens when if we have a **red** filter
first giving **red** light and then a **green** filter?

What colour light will
you see?

Filters



Primary Colours

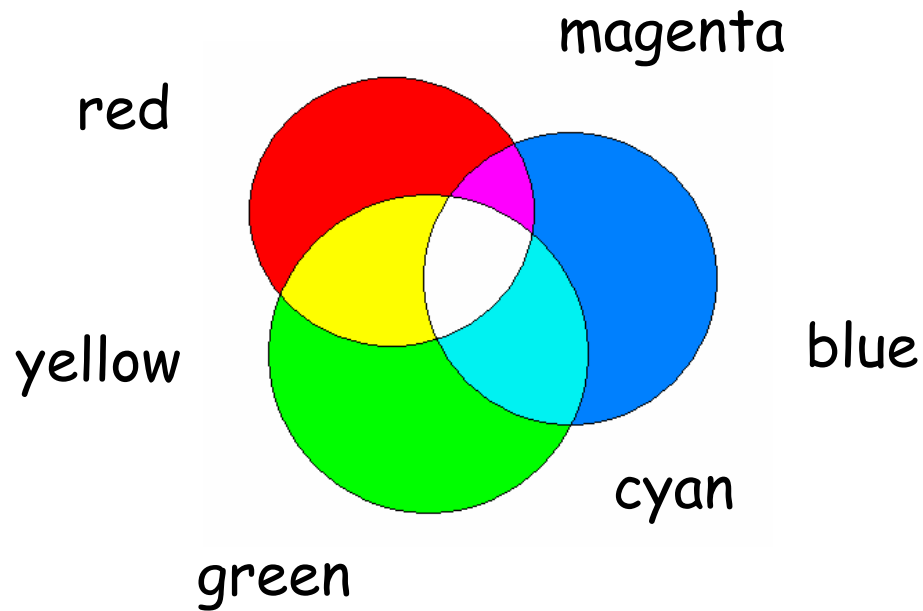
Three primary colours in science are

Blue

Red

Green

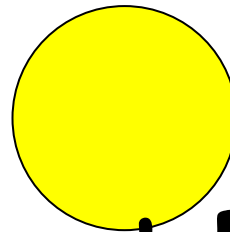
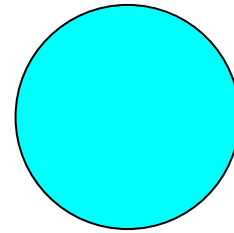
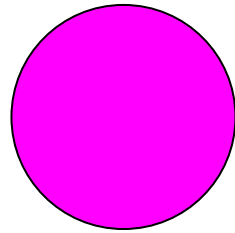
Primary and Secondary Colours



What can you see when all the primary colours are together?

Primary Colours

What will happen if we mix all of the secondary colours together, i.e magenta, yellow and cyan?



We get BLACK!!!

Coloured objects

The colour of an object is the colour of light that it reflects.

There are two exceptions....

White objects reflect all colours and absorbs none

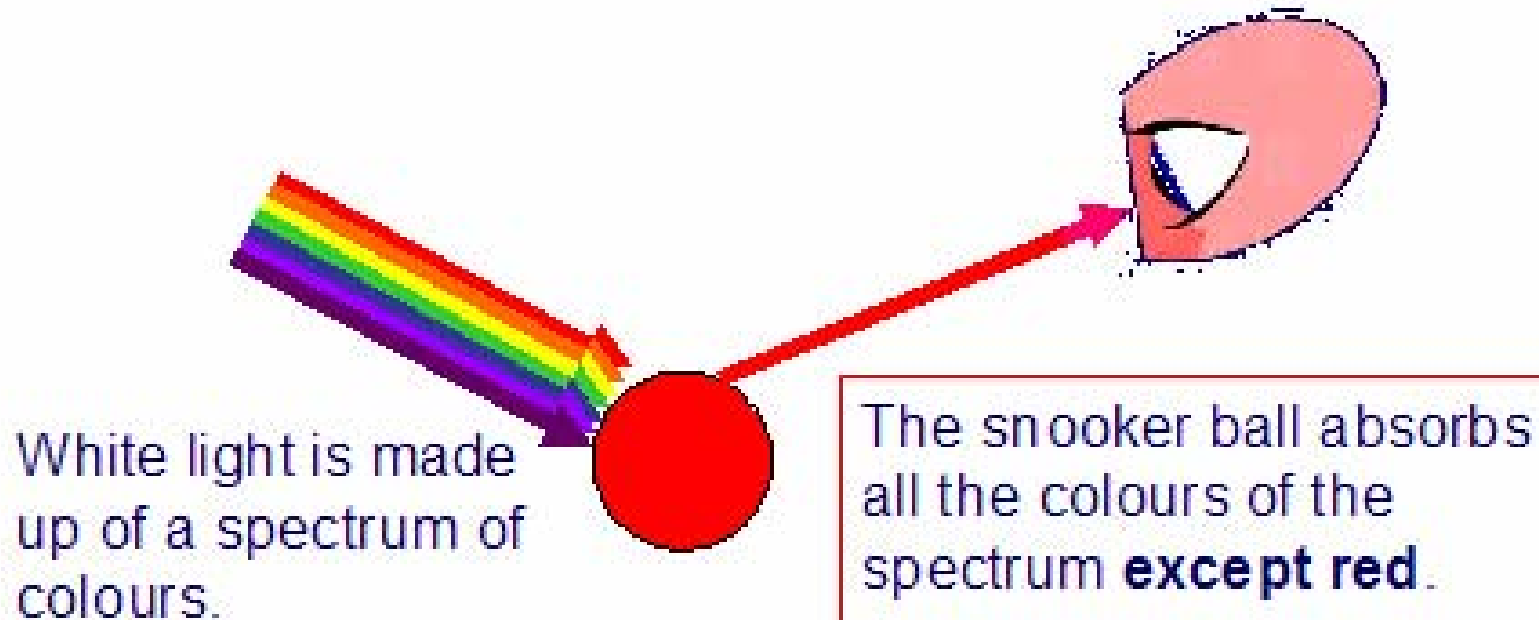
Black objects reflects no colours and absorbs all

Coloured objects

| Object in white light | Object in red light | Object in green light | Object in blue light |
|-----------------------|---------------------|-----------------------|----------------------|
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| | | | |
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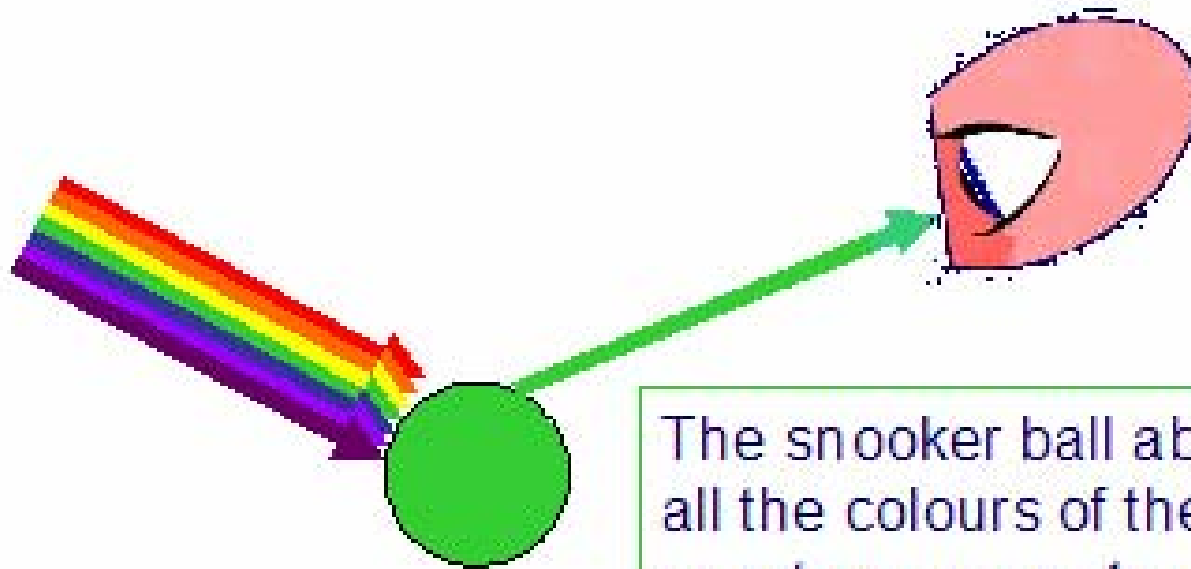
You will need the 3 coloured filters (green, blue, red)

Why does a **red** snooker ball look **red** in white light?



Seeing red

Why does a **green** snooker ball look **green** in white light?

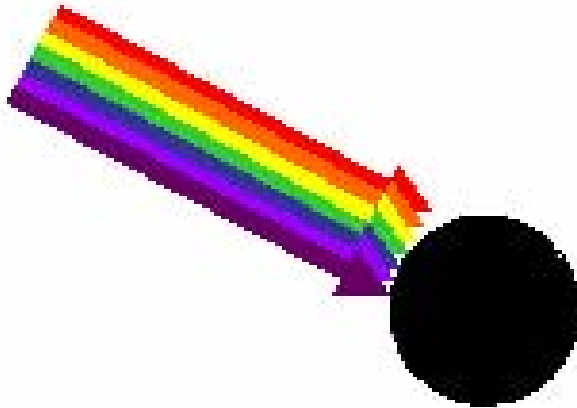


Seeing green

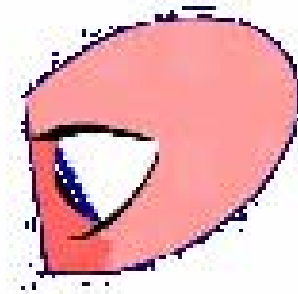
The snooker ball absorbs all the colours of the spectrum **except green**.

Only green light is reflected into your eye, so the snooker ball appears green.

Why does a **black** snooker ball look **black** in white light?



Seeing black

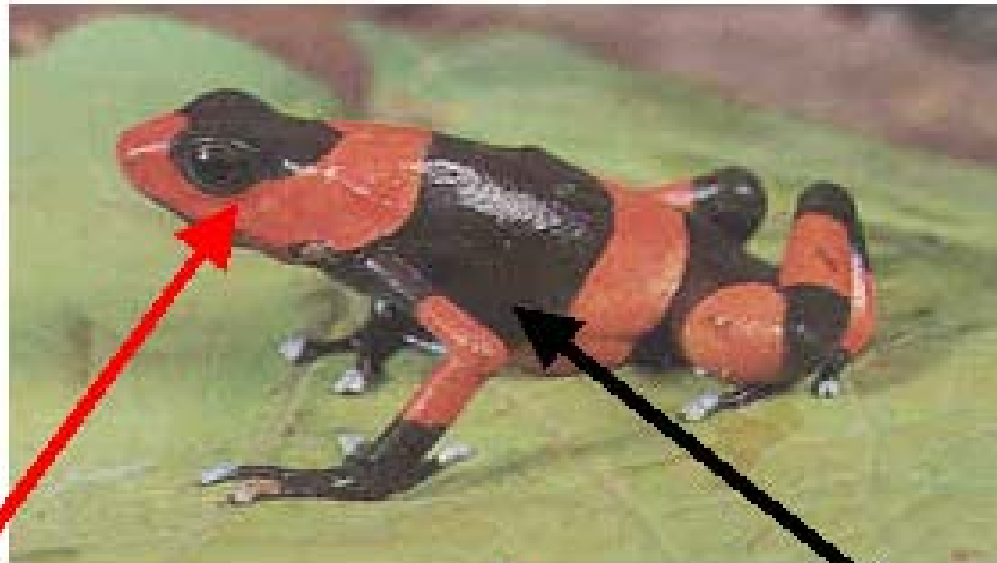


The snooker ball absorbs all the colours of the spectrum.

No light is reflected into your eye, so the snooker ball appears black.

SCIENCE EXAMPLE...

What colours are absorbed by this frog's skin?
What colours are reflected into your eyes?



This part of the skin absorbs all the colours of the spectrum except red, and so reflects red light.

This part of the skin absorbs all the colours of the spectrum and none are reflected.