

Seeing Light

Learning Objective:

To investigate the colours
in white light.

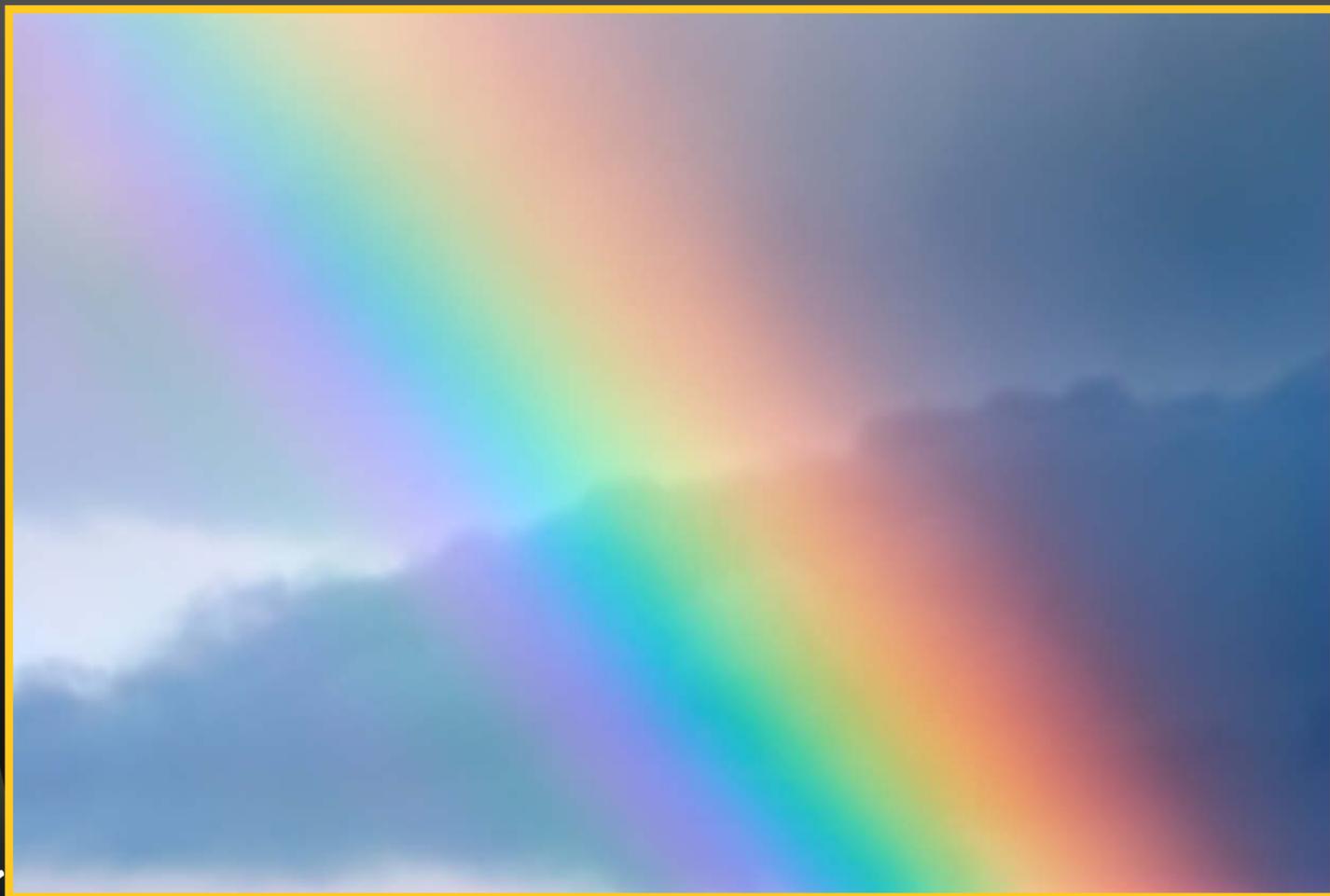


What colour is
light?

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Light is actually a combination of all the colours of the rainbow. All the colours that you see in a rainbow are within what we call 'white light'.



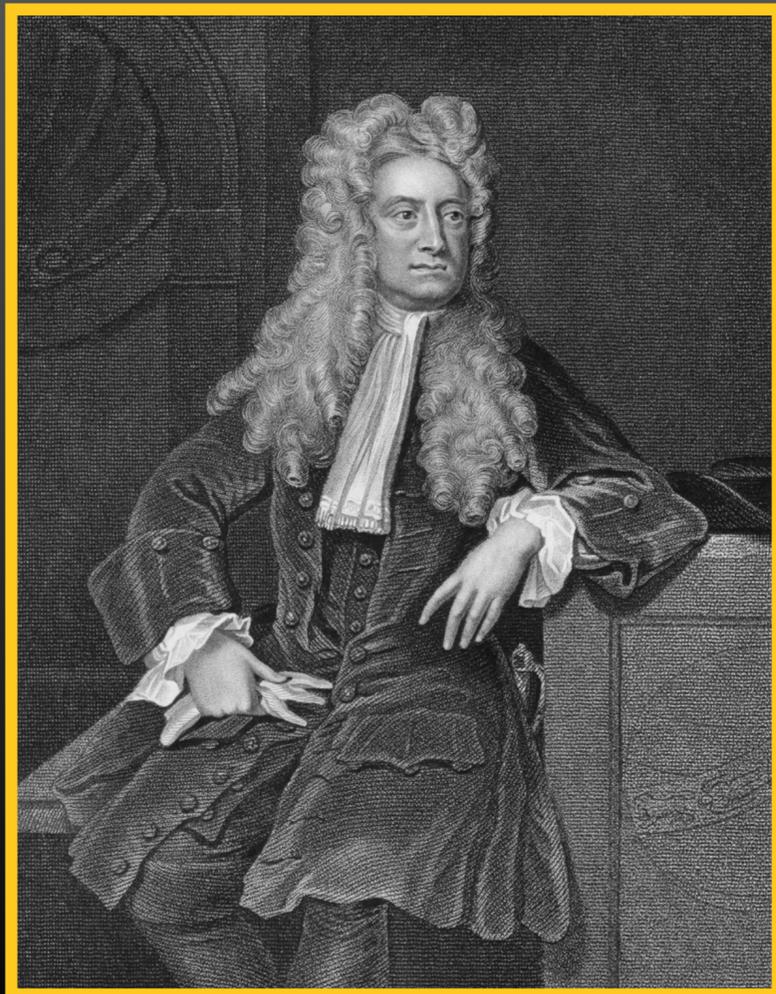
This was discovered by a scientist named Isaac Newton. Have you heard of him before?



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Sir Isaac Newton is known for studying many different aspects of physics, including gravity, and creating the three laws of motion.



He discovered that you can split white light into seven colours using prisms or water droplets.



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Newton discovered that by refracting the light at a certain angle, it would be split.



What do you notice?
Have you seen this happen before?

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He concluded that white light must be a mixture of these seven colours.



Do you know which seven colours he identified?
What order were they in?

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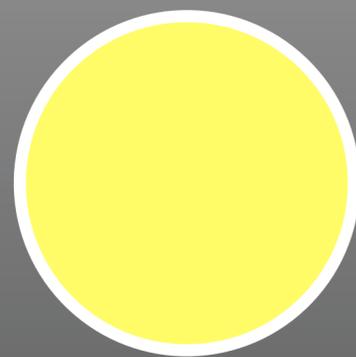
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Red



Orange



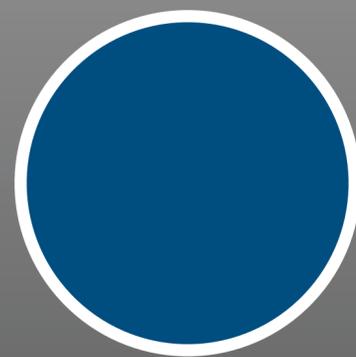
Yellow



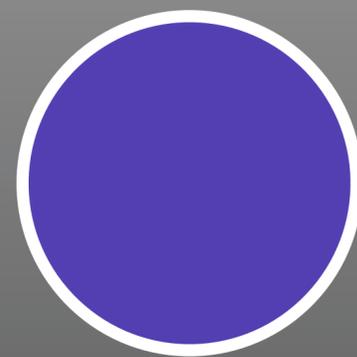
Green



Blue



Indigo



Violet

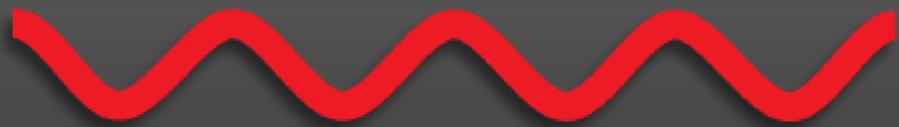


Did you get them right?

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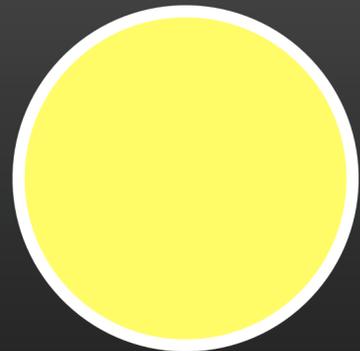
Each colour has its own wavelength.
Red has the longest wavelength and
violet has the shortest.



Red



Orange



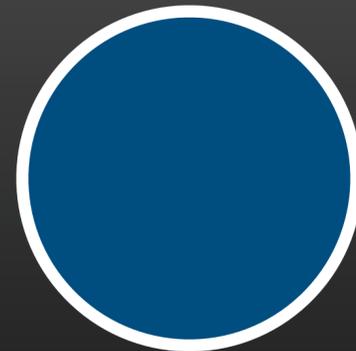
Yellow



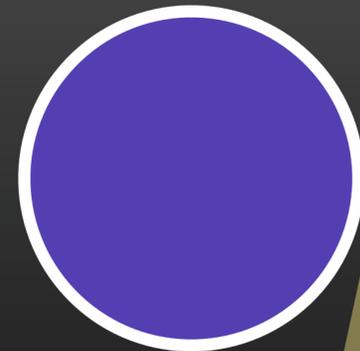
Green



Blue



Indigo

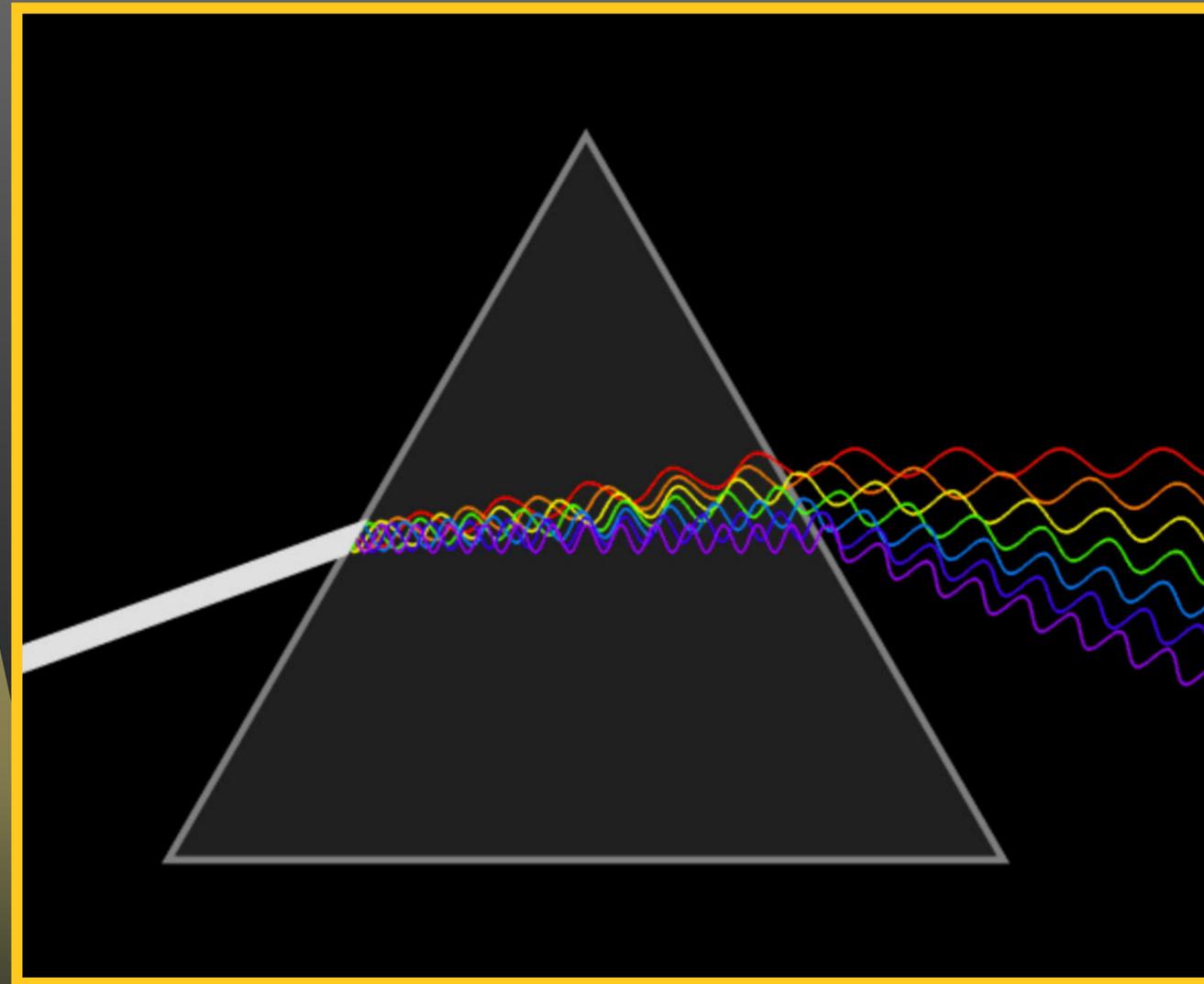


Violet

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This means that the colours behave differently as they're refracted in the prism; some are slowed more than others.



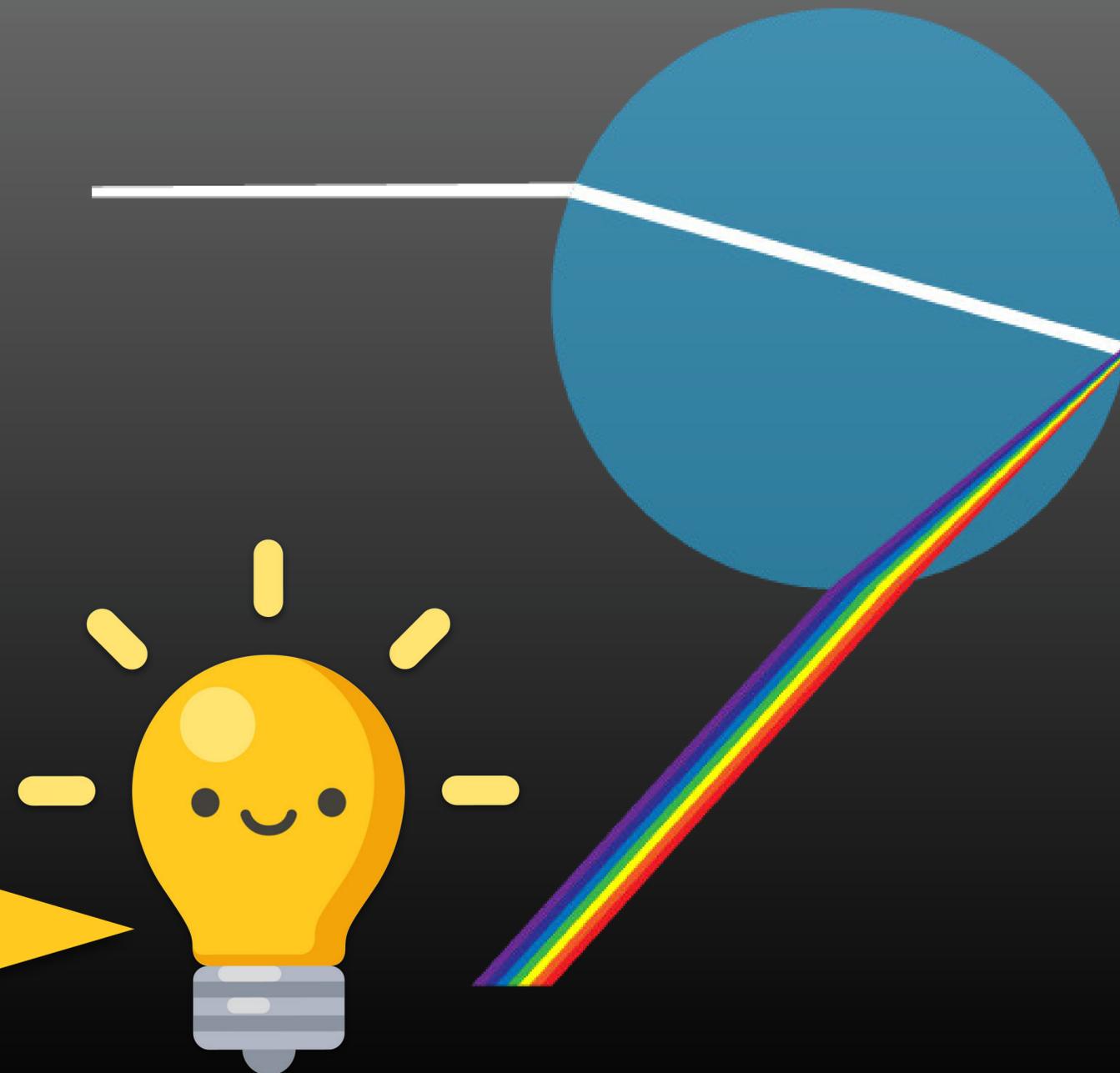
The different speeds mean they are bent more, or less, than the other colours, splitting them into the rainbow.

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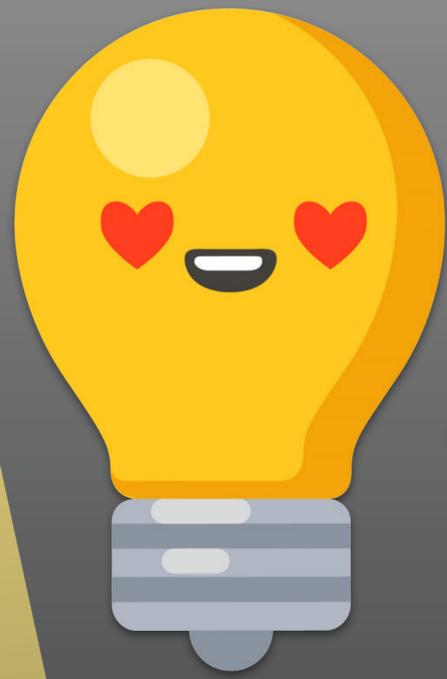
Water droplets can act in the same way as a prism. They refract the light, splitting it into the seven colours.

This is how rainbows are created! There needs to be a little rain in the air, as well as sunlight.



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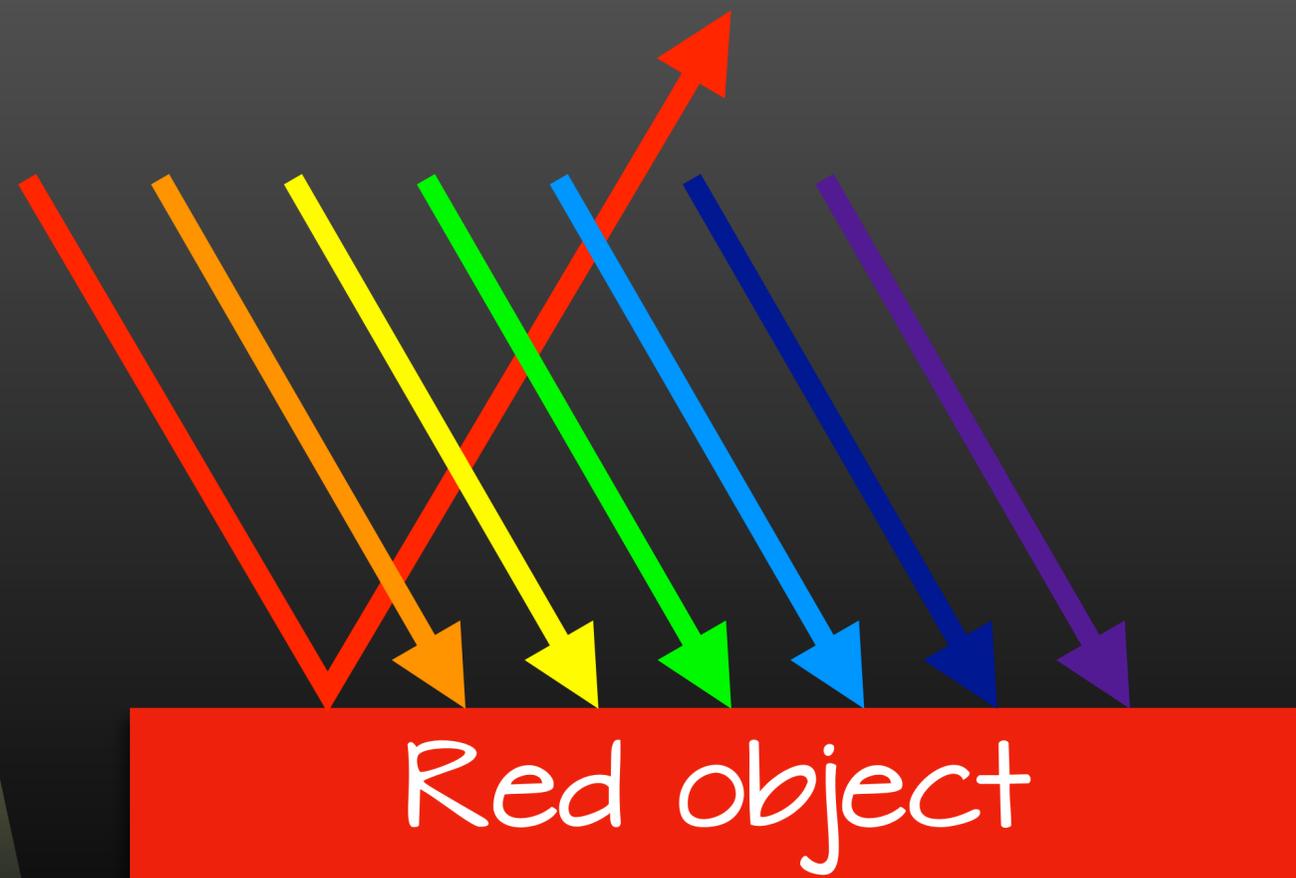
How do we see these colours?
How is the same white light making
these balls look different colours?



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The white light hits the object. The object absorbs some colours and reflects others. The reflected colour matches the colour of the object.



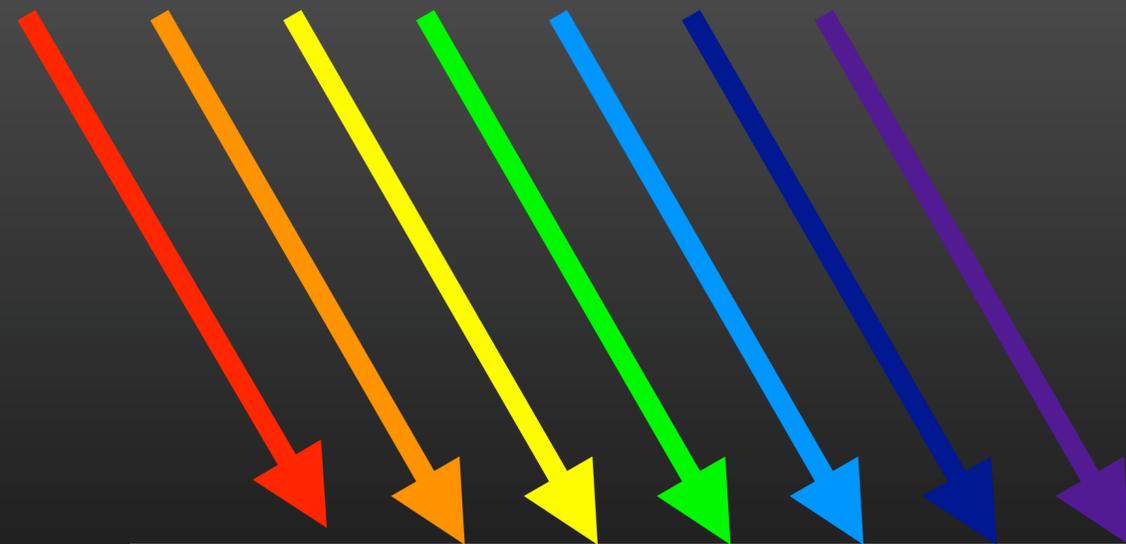
The colour we see is a combination of the reflected colours.



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Which colours would a white object reflect?

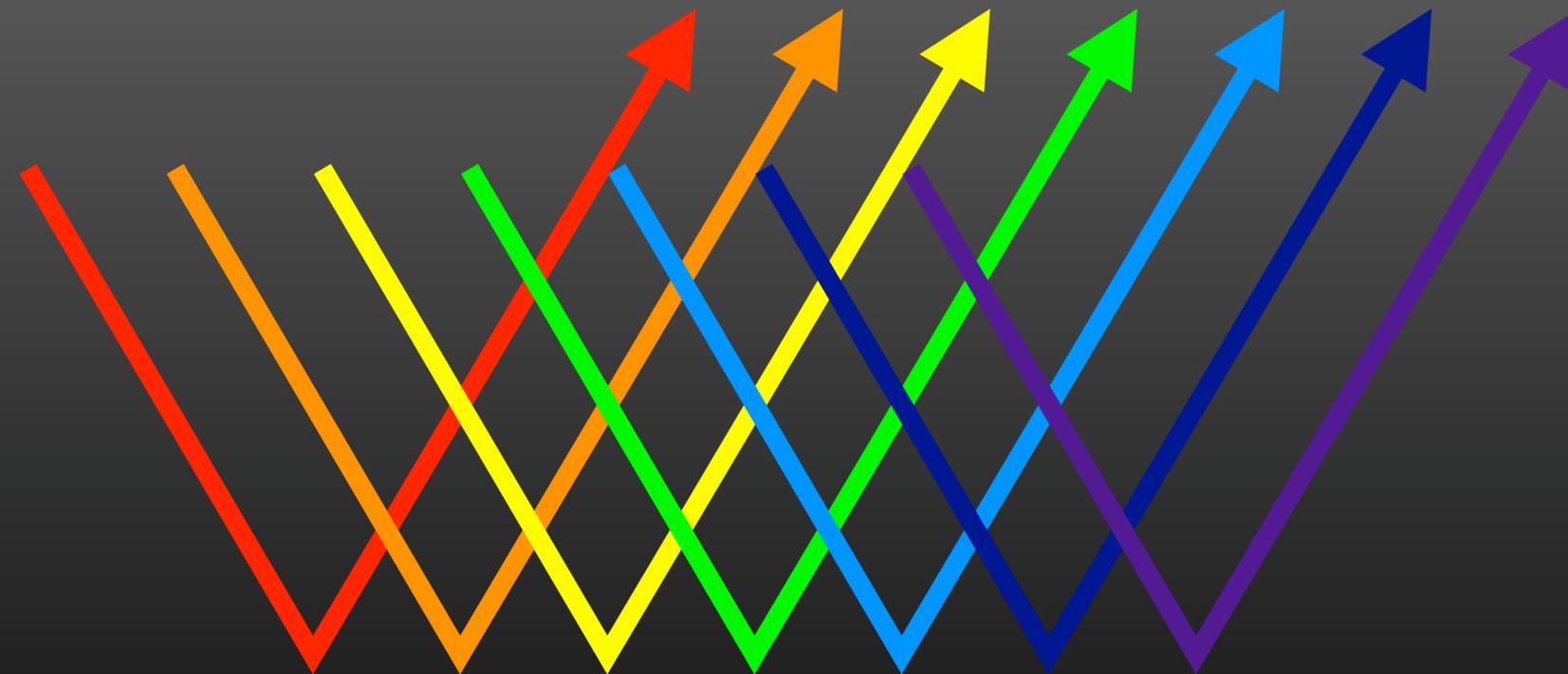


White object

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A white object will reflect all of the colours, which combined make white.

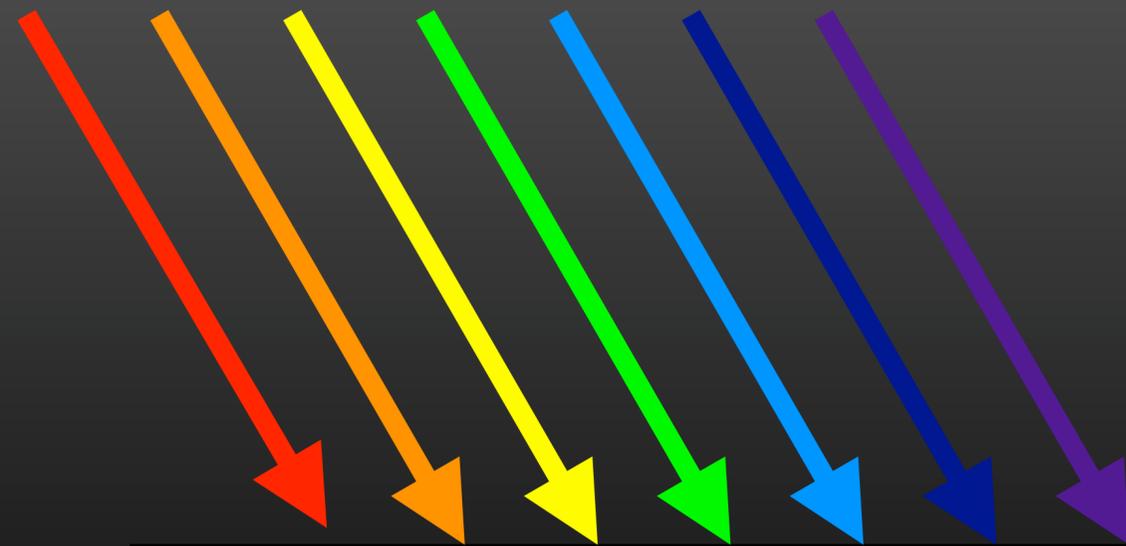


White object

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Black is the absence of any colour. When white light hits a black object, no colour is reflected.



Black object

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End of unit
quiz!

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