

Lesson 4-Visible Light (Color) vs Non-Visible Light

Think of what it is like to wake up just before sunrise. There is enough light to see what is around you, but everything appears either grey or black.

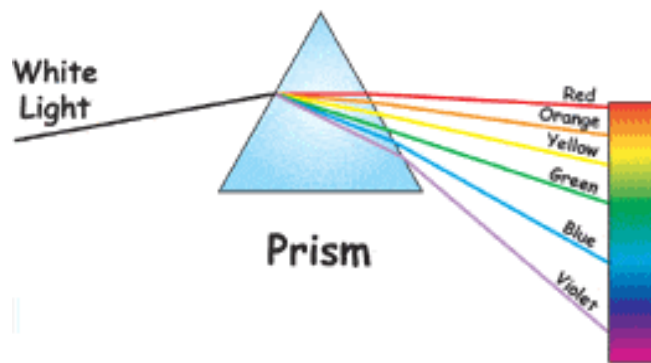
Then when the sun rises (or you turn on a light) the room is filled with color. Why do you think this happens?

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What color is a beam of sunlight?

How is a rainbow created? Does anyone know the colors of the rainbow in order?

What color is a beam of sunlight?



When you shine a light ray through a prism and it bends (refracts) you can split light into its colors.

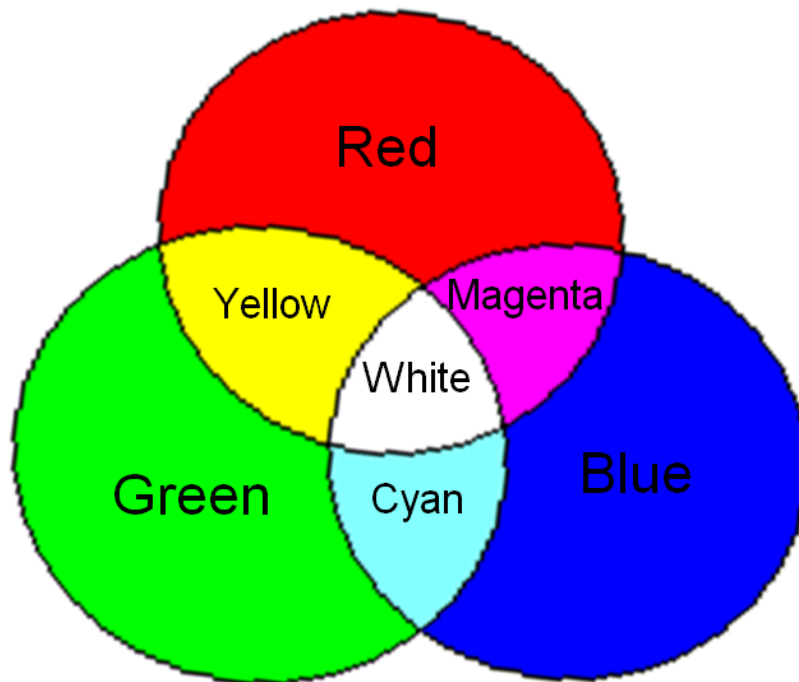
How is a rainbow created?

A rainbow is formed as sunlight changes direction as it enters single raindrops.

Inside the raindrop, the colored rays are bounced off the inside wall which acts like a mirror and reflects the rays back out.

The colors of light together form the **visible light spectrum**. Every color you see is a mixture of these colors.

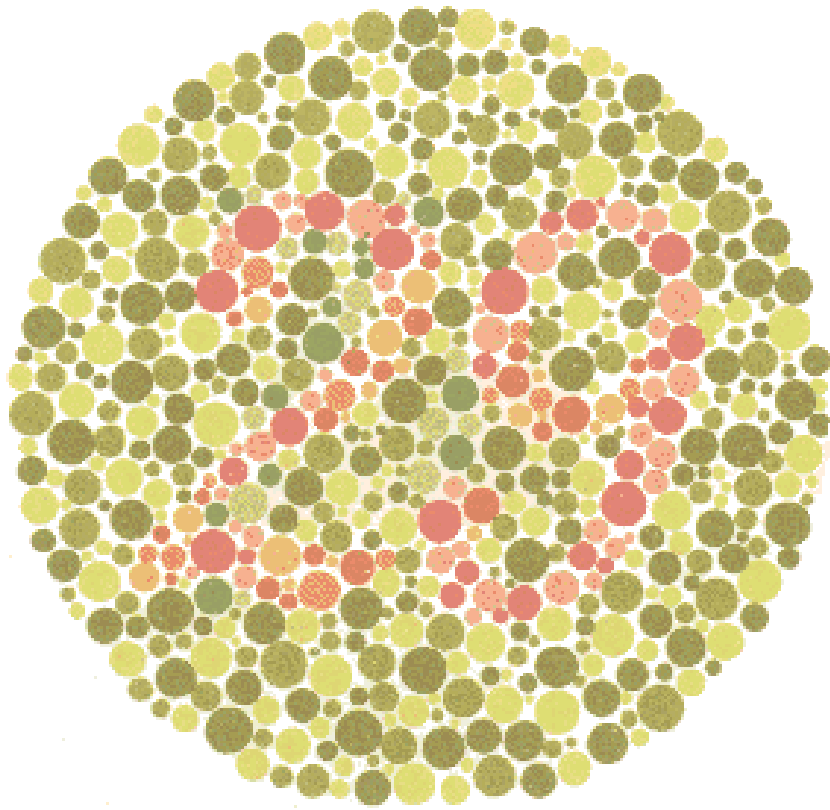
The Primary/Secondary Colors of Light.



Remember the retina of the eye. (The lining at the back that reacts to light.)

The retina is made up of three cones, each sensitive to either red, green or blue. When light hits the cones, the cones send messages to your brain. The color that you see depends on the type and number of cones responding to the light entering your eye.

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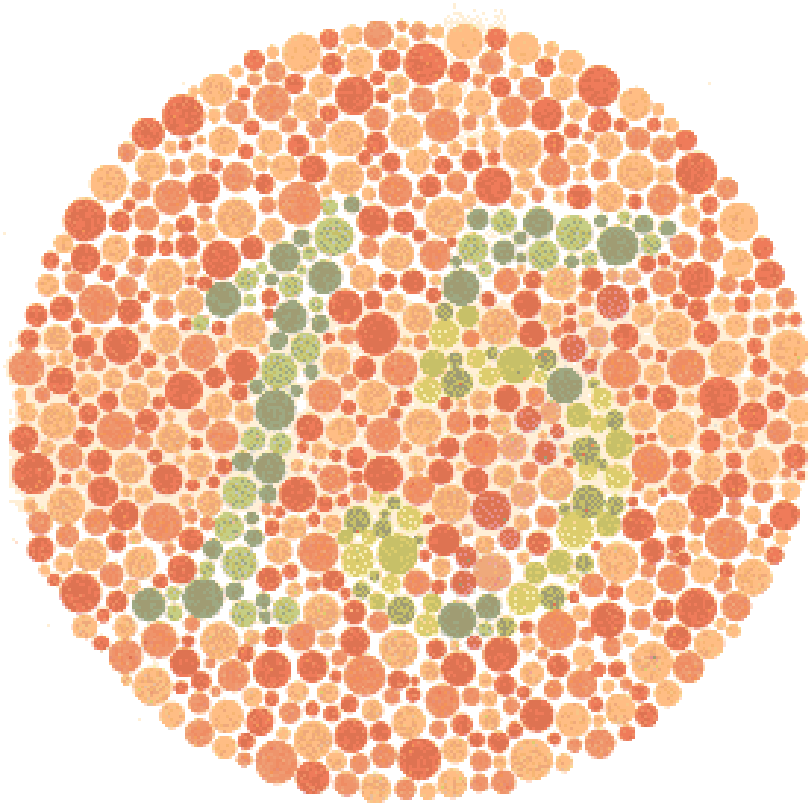


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What did you see?	
“29”	Those with normal color vision see a 29.
“70”	Those with red green color blindness see a 70.
Nothing	Those with total color blindness see nothing.

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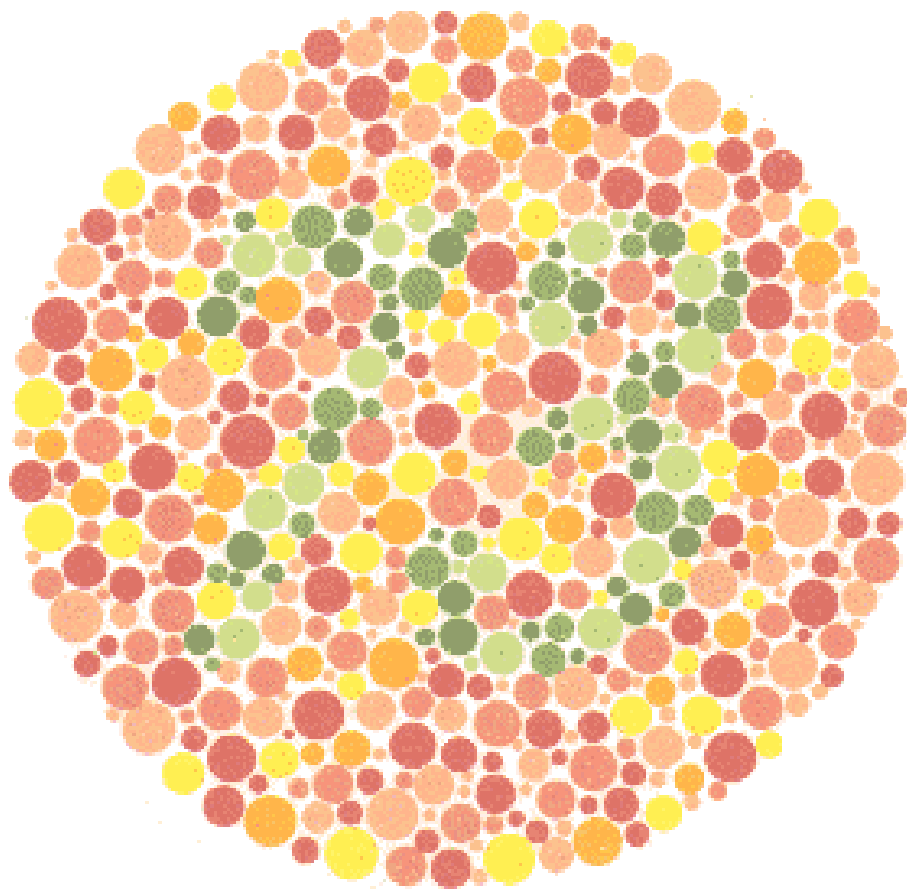


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What did you see?	
“15”	Those with normal color vision see a 15.
“17”	Those with red green color blindness see a 17.
Nothing	Those with total color blindness see nothing.

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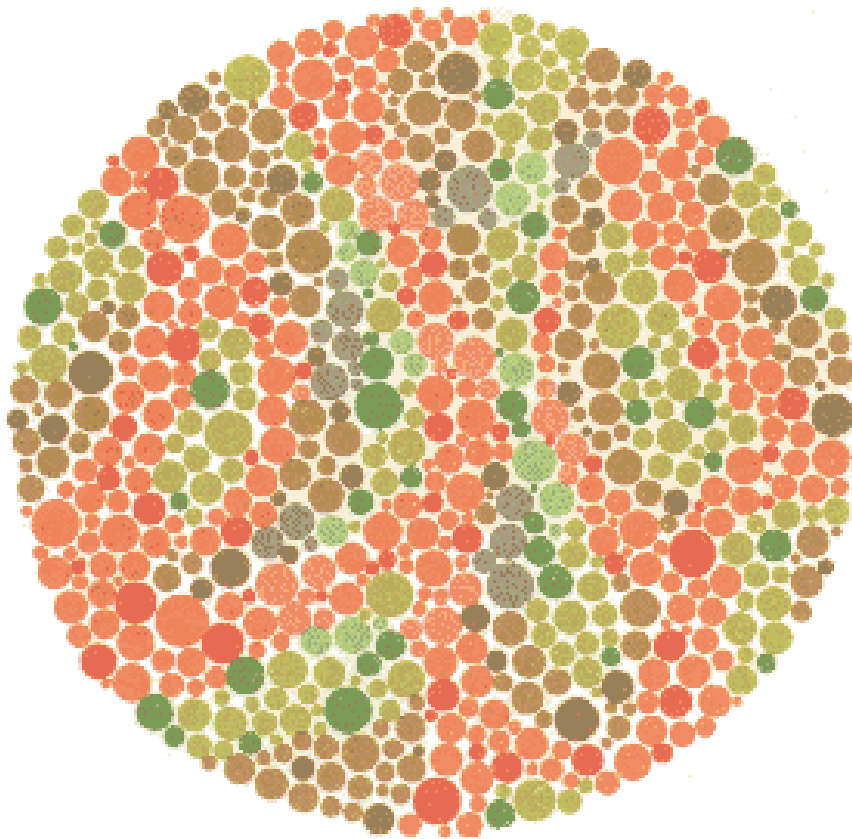


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What did you see?	
“73”	Those with normal color vision see a 73.
Nothing	The majority of color blind people cannot see this number clearly.

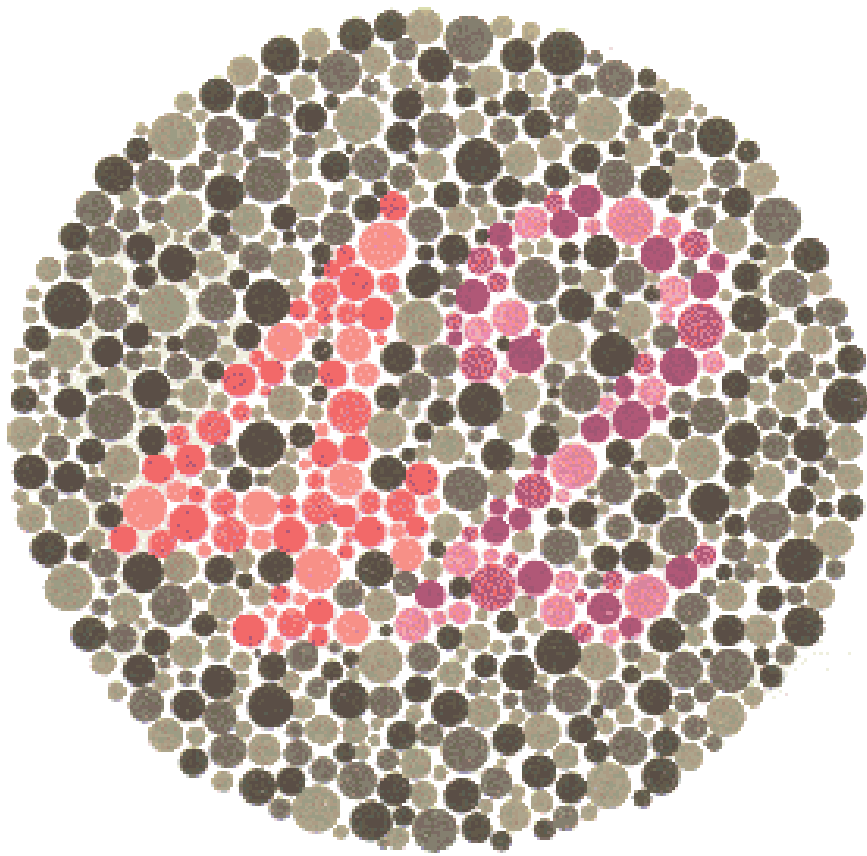
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What did you see?	
Nothing	People with normal vision or total color blindness should not be able to see any number.
“5”	Those with red green color blindness should see a 5.

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What did you see?	
“42”	Those with normal color vision should see a 42.
2, faint 4	Red color blind (protanopia) people will see a 2, mild red color blind people (prontanomaly) will also faintly see a number 4.
4, faint 2	Green color blind (deutanopia) people will see a 4, mild green color blind people (deutanomaly) may also faintly see a number 2.

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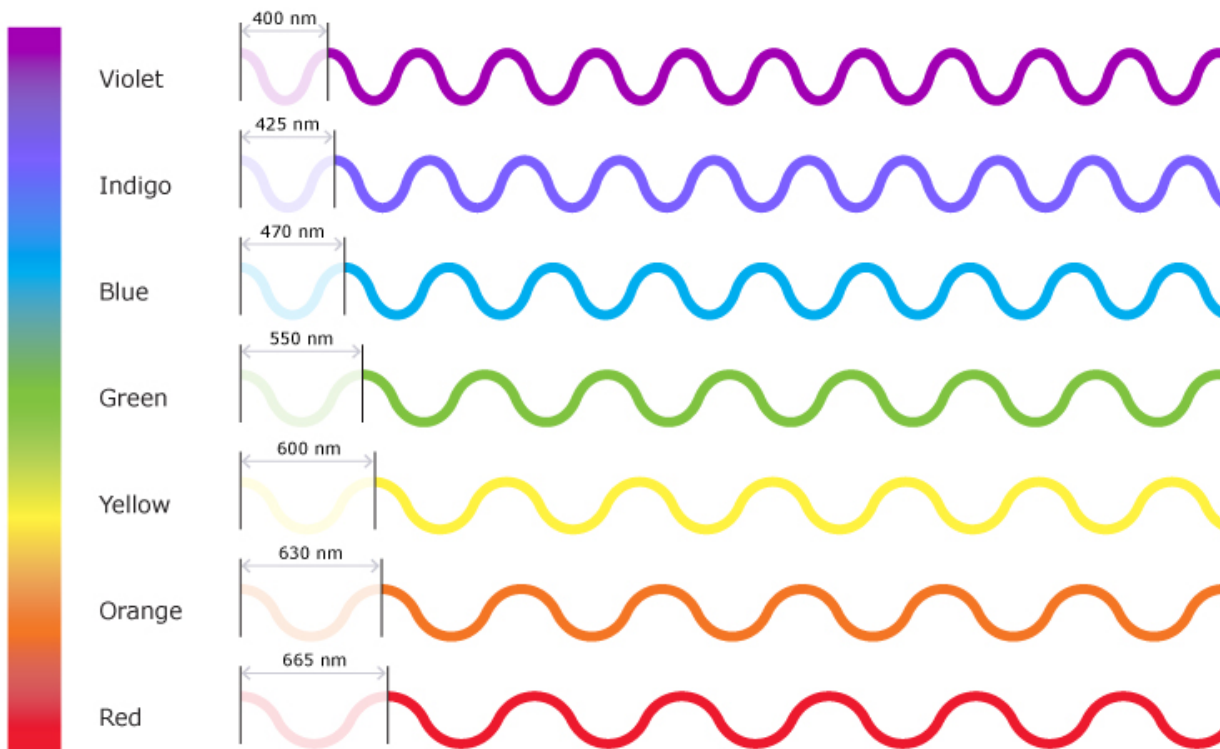
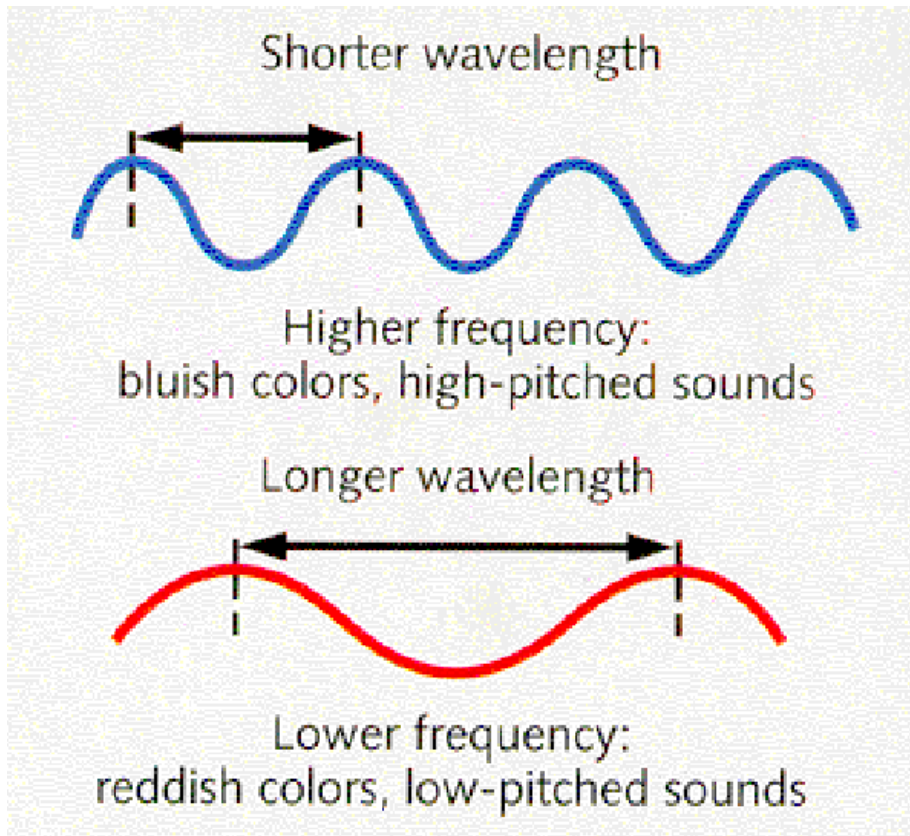
When we discussed how a rainbow is formed, we referred to that group of colors as the....

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visible light spectrum.

The visible light spectrum is part of the **electromagnetic spectrum** which includes all forms of radiant energy, including those we can't see such as UV rays, radio waves, and Xrays.

Light, like sound, travels in waves



The visible light spectrum includes just the waves you can see.

There is a lot more that we cannot see! All are included in the electromagnetic spectrum.

THE ELECTROMAGNETIC SPECTRUM

