Science 8

Optics 2

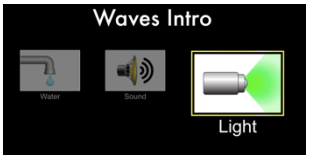
Name:
Date:
Block:

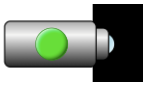
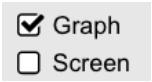
1. **Wave Model of Light**
2. **Visible Light**
3. **Electromagnetic Spectrum**

Wave Model of Light

- A _____ is a way for scientists to explain what they see.
- The Wave Model of Light pictures light travelling as _____.
- Light waves travel in _____ lines.

Activity: https://phet.colorado.edu/en/simulation/waves-intro

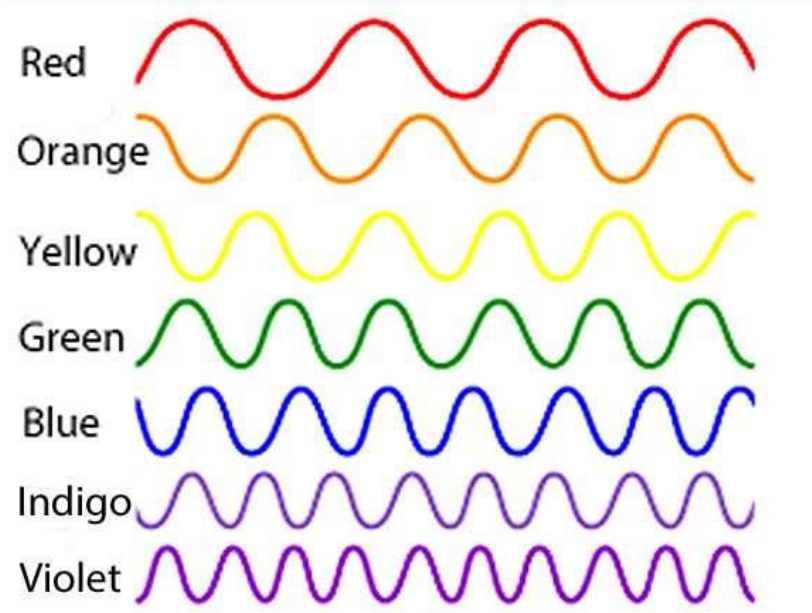


1. Click "light" at the bottom of the page to set up the light wave simulation.
2. Click the green button to turn the light on. 
3. To have a graph, click the checkbox next to "Graph". 

4. After the graph has appeared and stabilized, pause the simulation.
5. Click and drag the measuring tape to the graph. Place the orange "+" sign closest to the measuring tape on top of a wave crest. Next, click and drag the orange "+" sign at the end of the measuring tape to the closest wave crest. 
6. What is the wavelength for green? _____
7. Complete the following table:

Colour	Wavelength
Red	
Orange	
Yellow	
Green	
Blue	
Purple	

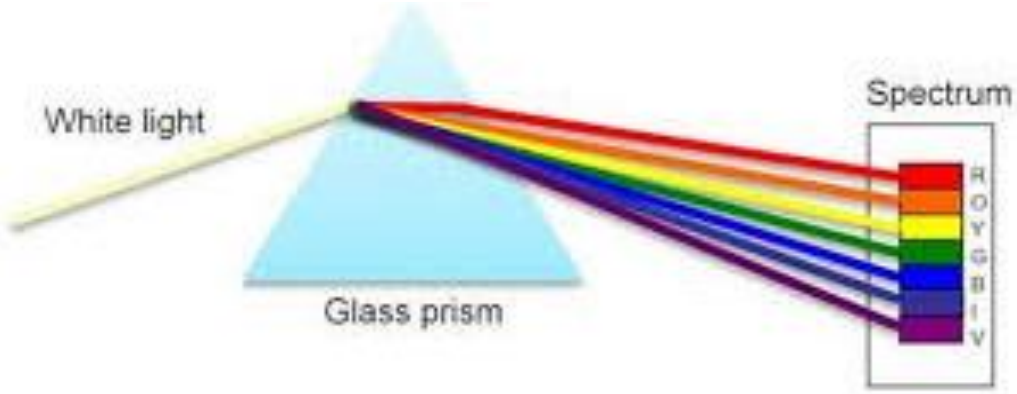
8. Set the colour to whatever you prefer.
9. Next, set to MAXIMUM amplitude. What do you notice about the colour from the light source?
10. Set to MINIMUM amplitude. What do you notice about the colour from the light source?



Which colour has the longest wavelength?

Which colour has the shortest wavelength?

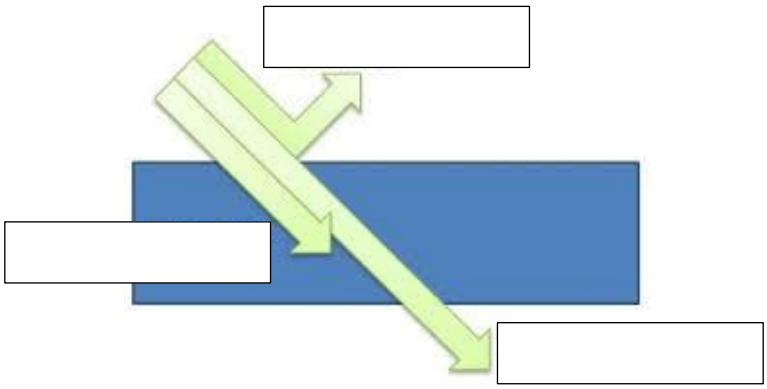
Different wavelengths = different degree of bending



- A _____ is used to separate the colours.
- The different _____ of the walls cause the bending of light.
- The longer the wavelength, the _____ the light will bend.
- The shorter the wavelength, the _____ the light will bend.

Visible Light

- Reflection occurs when a light wave strikes an object and bounces off. When we see an object, we are actually seeing the light reflected off that object!

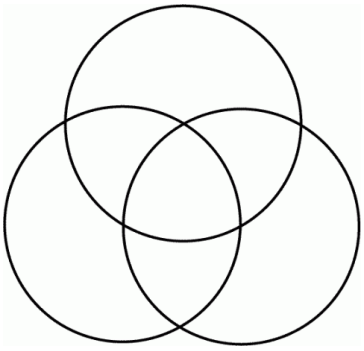
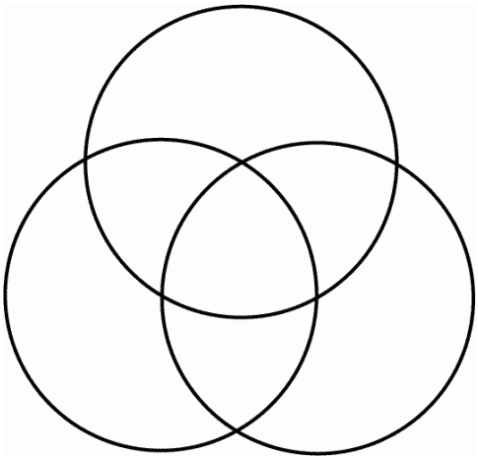


- Some colours are _____ and seen and other colours are _____.
  - For example: To see a blue T-shirt, we are seeing:

How do we see colours?

- Only _____ colours are needed to produce all the colours of the rainbow!

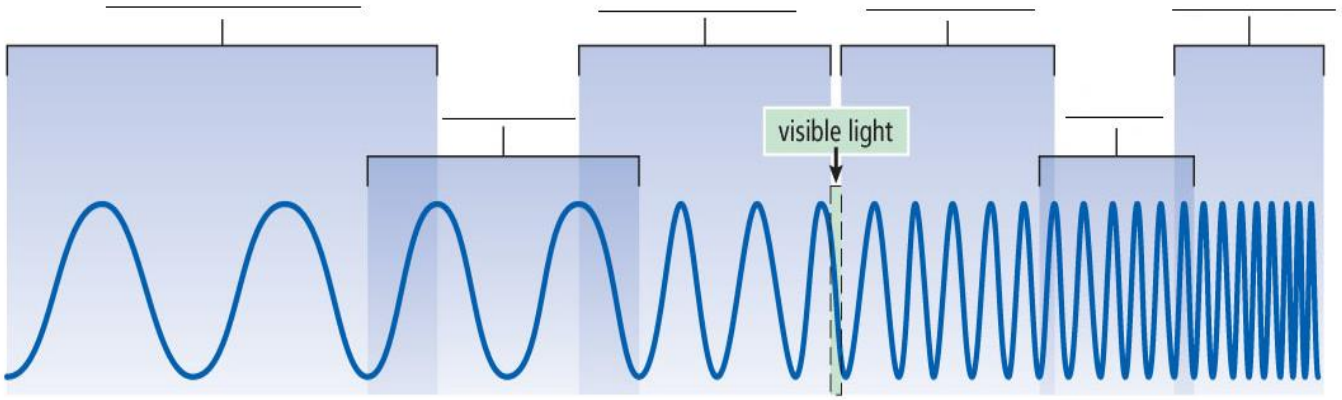
https://phet.colorado.edu/sims/html/color-vision/latest/color-vision_en.html

Primary colours of PAINT	**Primary colours of LIGHT**
	

- When the primary colours of light (_____, _____, and _____) are combined together, produce the secondary colours of light: _____, _____, and _____.

Electromagnetic Spectrum

Electromagnetic Spectrum:

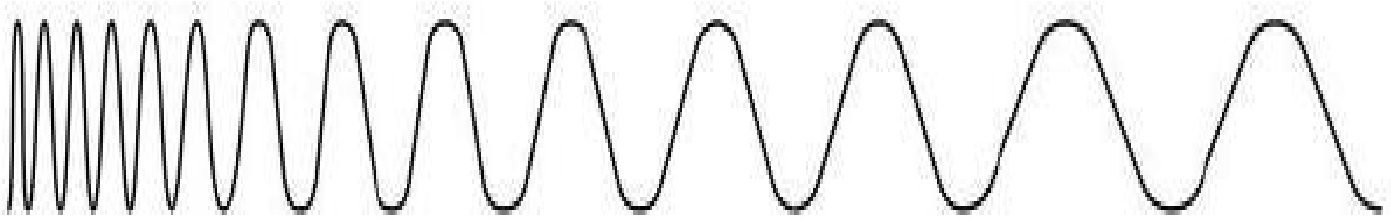


Longer or shorter?

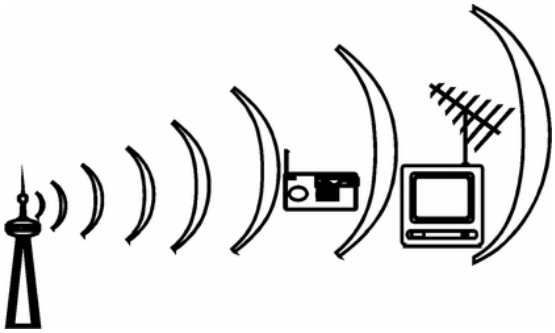
_____ wavelength _____ wavelength

Higher or lower?

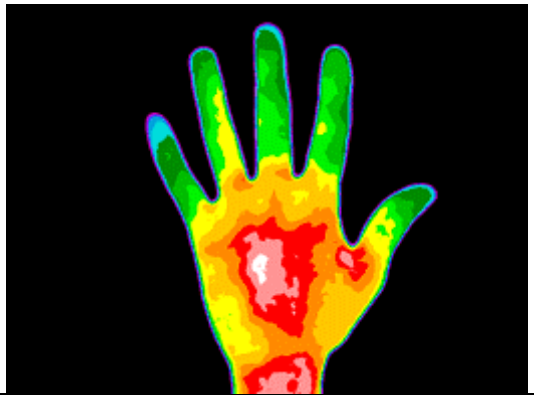
_____ frequency _____ frequency



Complete the following table with a minimum of 2 uses and 2 dangers for each electromagnetic radiation below.

Radio Waves	
Uses: Dangers:	Picture: 

Microwaves	
Uses: Dangers:	Picture: 

Infrared Waves	
Uses: Dangers:	Picture: 

Ultraviolet Rays	
Uses: Dangers:	Picture: 

X Rays	
Uses: Dangers:	Picture: 

Gamma Rays	
Uses: Dangers:	Picture: