**4.2 Properties of VISIBLE LIGHT** Name:

Date:

Block:

(Refer to BC Science 8 pp. 144 – 151)



**WAVE MODEL OF LIGHT**



* The **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is a model of light behavior that represents light travelling as a wave.



* In this model, **\_\_\_\_\_\_\_\_\_\_** is a type of wave that travels through empty space and transfers energy from one location to another, such as from the Sun to the Earth.



* + **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is electromagnetic radiation (light energy) you can see.



**REFRACTION OF LIGHT**



* **refraction:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**



* + This occurs due to a change in the wave’s \_\_\_\_\_\_\_\_\_\_\_\_\_.
    - Waves travel at different speeds in different \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.



* Light waves \_\_\_\_\_\_\_\_\_\_\_\_ when they pass from one material to another.



* + For example, when a light wave passes from \_\_\_\_\_\_\_ into \_\_\_\_\_\_\_\_\_\_\_\_.

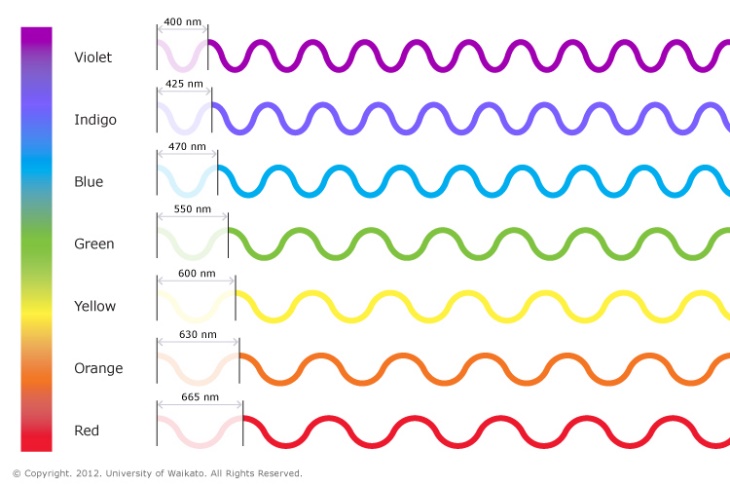


* + A light wave also refracts when it passes through a \_\_\_\_\_\_\_\_\_\_\_\_.



* + - White light, such as sunlight is made up of waves having different \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.



* + - When a light wave passes through a prism the different wavelengths are refracted by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_.



* + - * + Longer wavelengths are refracted \_\_\_\_\_\_\_\_\_than shorter wavelengths.



This causes different colours to be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_when they come out of the prism.



**Colours of the Rainbow**



* \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ also refract light.
* When white light is separated into its different colours, this band of colour is called the visible **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.



* + - * The range of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of visible light.
* The seven most visible colours of the spectrum are:

Red, Orange, Yellow, Green, Blue, Indigo, Violet

\_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_



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* The colour \_\_\_\_\_\_ has the longest wavelength and lowest frequency.



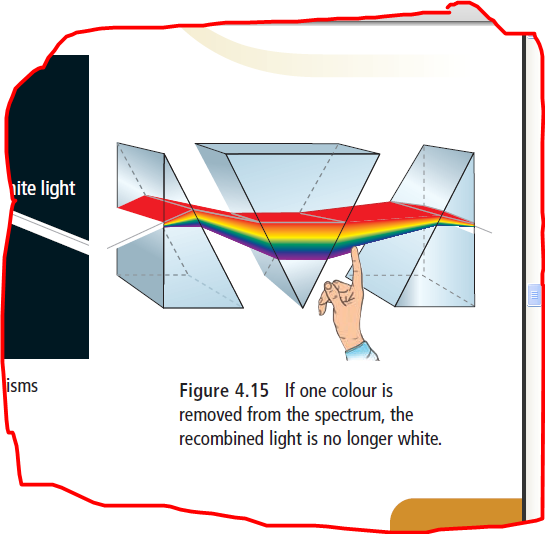
* The colour \_\_\_\_\_\_\_\_\_ has the shortest wavelength and highest frequency.



**Producing the Visible Spectrum**

* In the 17th century, Sir Isaac Newton did an experiment to prove that light contains \_\_\_\_\_\_\_\_\_\_\_.



* He used a prism to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ white light into a spectrum of colours and a reverse prism to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the colours into white light again.







* He showed that colour was a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of visible light.
  + He proposed that white light, such as sunlight, is the result of \_\_\_\_\_\_\_\_\_\_\_ together all the different colours of light.



**Colour and Reflection**



* **Reflection:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

* When white light strikes an object, some colours are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and some are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.



* + Only the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ colours can be seen.

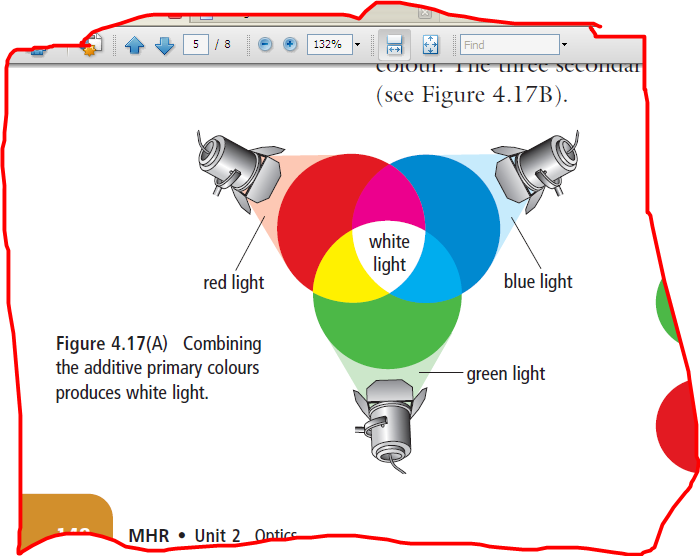


* + - For example, yellow cloth reflects \_\_\_\_\_\_\_\_\_\_\_\_ and absorbs \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.



* Only three colours of light are needed to produce all the colours of the rainbow: \_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_.



* + - They are called the three \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ because adding all three together in proper amounts will make white light.





* + - The light of two additive primary colours will produce a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_.



* + - * The three secondary colours are \_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

