**4.2 Properties of VISIBLE LIGHT** Name:

Date:

Block:

(Refer to BC Science 8 pp. 144 – 151)



**WAVE MODEL OF LIGHT**

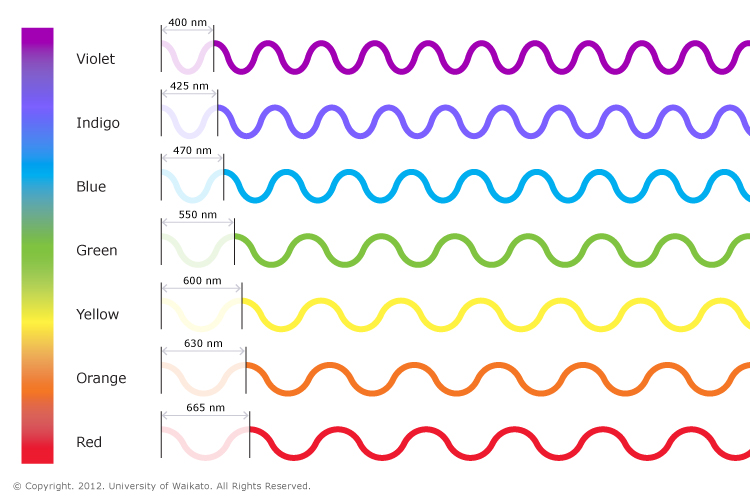
* The **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is a model of light behavior that represents light travelling as a wave.
* In this model, **\_\_\_\_\_\_\_\_\_\_** is a type of wave that travels through empty space and transfers energy from one location to another, such as from the Sun to the Earth.
  + **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is, in the simplest terms, a wave that you can see.



**REFRACTION OF LIGHT**

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

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

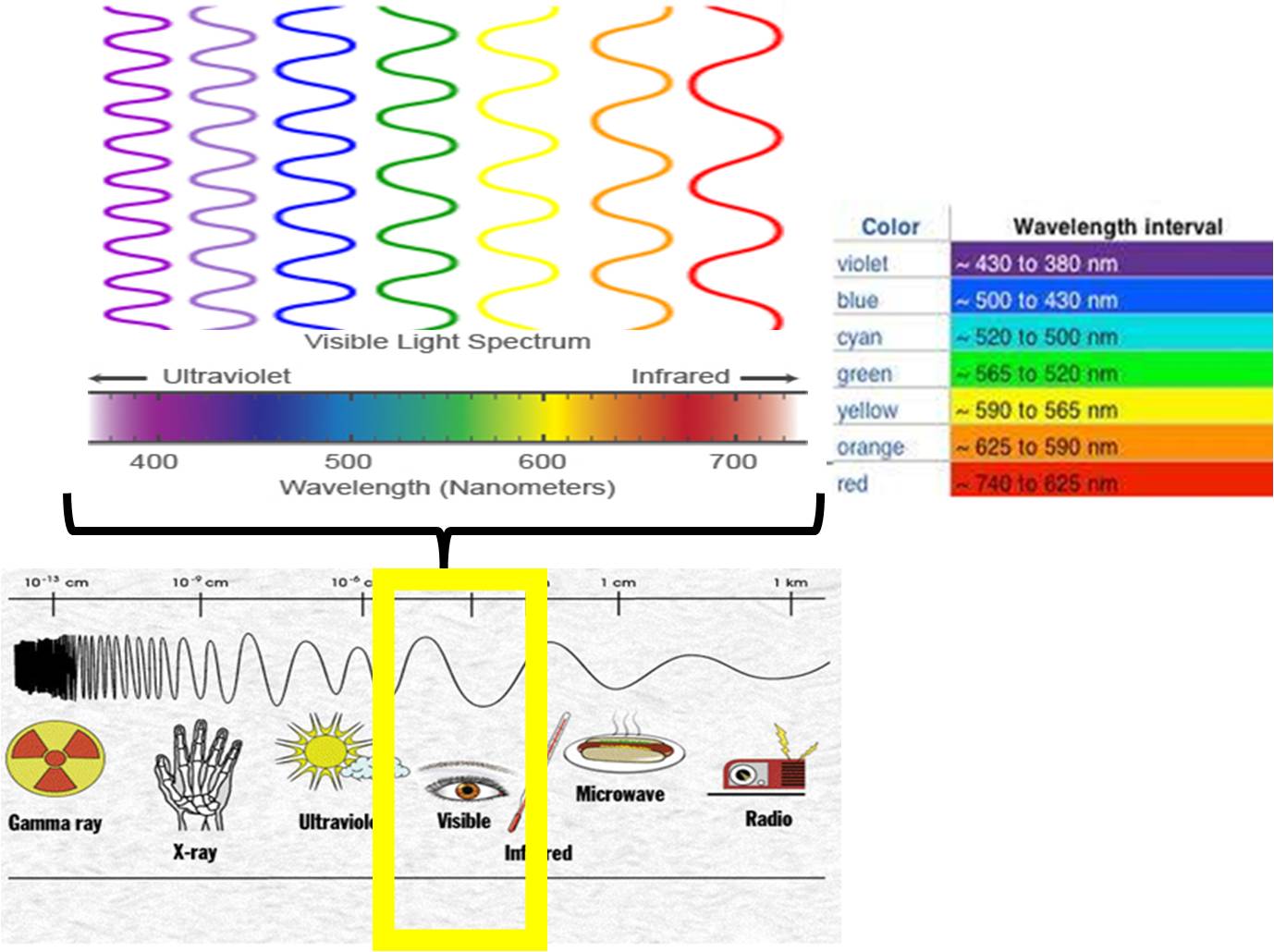
* + This occurs due to a change in the wave’s \_\_\_\_\_\_\_\_\_\_\_\_\_.
    - Waves travel at different speeds in different \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Light waves \_\_\_\_\_\_\_\_\_\_\_\_ when they pass from one material to another.
  + For example, when a light wave passes from \_\_\_\_\_\_\_ 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**

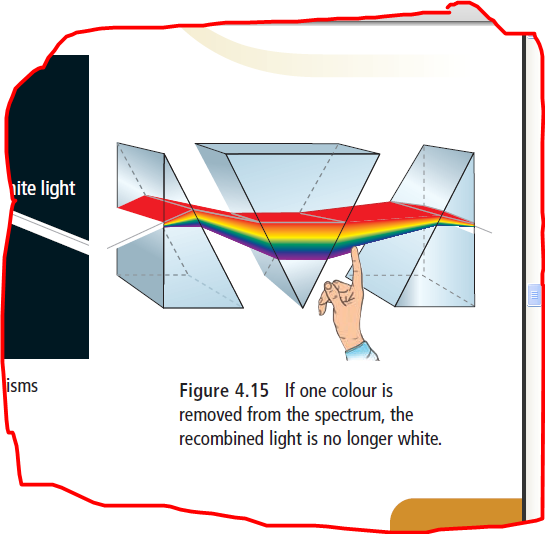
* \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ also refract light.
* When white light is separated into its different colours, this band of colour is called the visible **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
  + - * The range of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of visible light.
* The seven most visible colours of the spectrum are:

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

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

* 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.

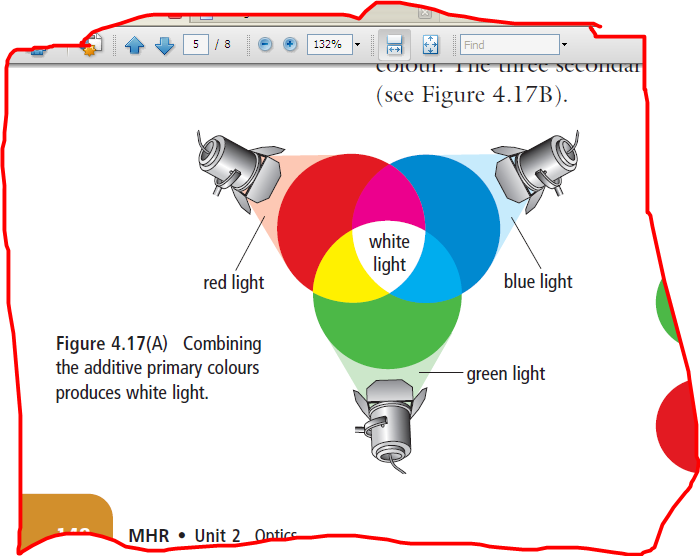


* He showed that colour was a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of visible light.
  + He proposed that white light, such as sunlight, is the result of \_\_\_\_\_\_\_\_\_\_\_ together all the different colours of light.

**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 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.