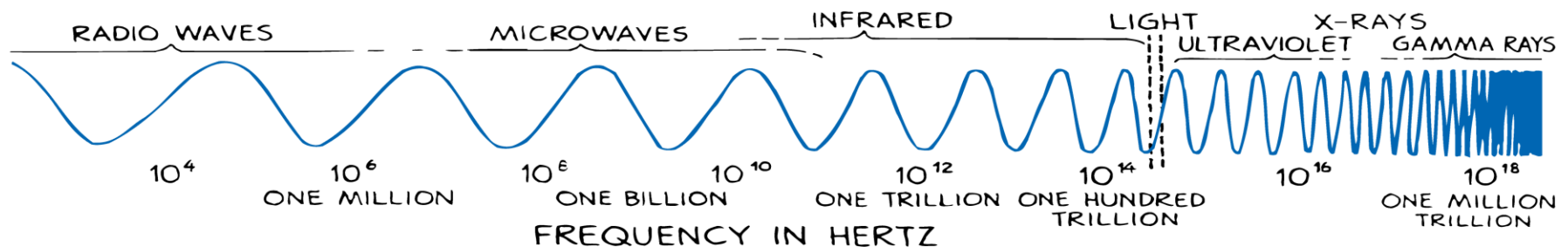


Jigsaw Ch.27 A

1. Electromagnetic waves or EM waves are waves that are created as a result of vibrations between an electric field and a magnetic field.
2. Electromagnetic radiation is caused by the disturbance of the electromagnetic field.
3. The electromagnetic spectrum consists of radio waves, microwaves, infrared, light, ultraviolet rays, X-rays, and gamma rays.
4. Radio waves have the longest wavelength.
5. Gamma Rays have the highest frequency.

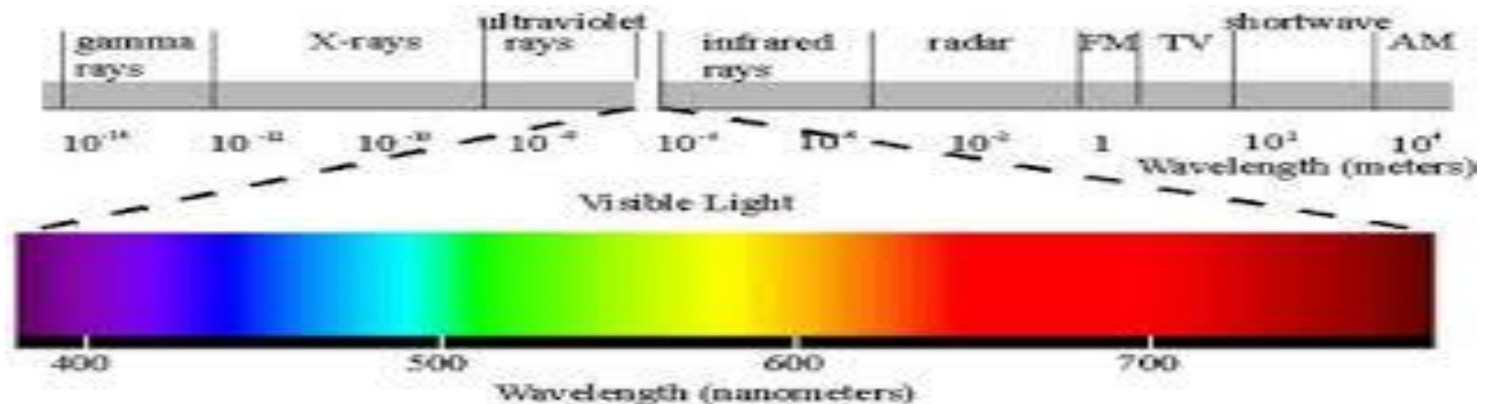


Jigsaw Ch.27 A

6. Gamma rays have the highest energy because it has the highest frequency. Energy and frequency are directly proportional.

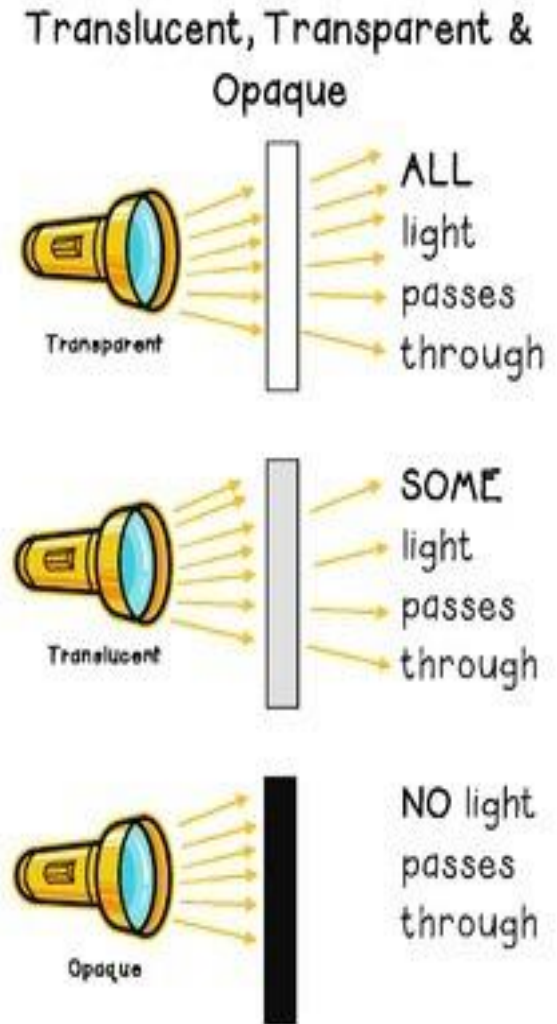
7. Red color has the longest wavelength because it has the lowest frequency. The energy is low because frequency is low.

8. Violet color has the lowest wavelength because it has the highest frequency. The energy is high because frequency is high.



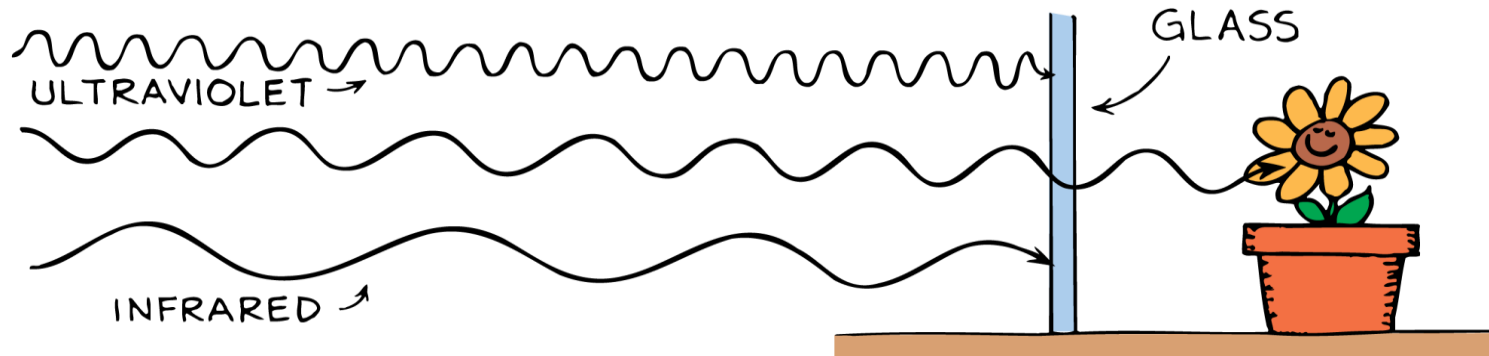
Jigsaw Ch.27 B

1. the speed of light is a constant 300,000 km/s
2. Materials that transmit light are **transparent**. Glass and water are transparent.
3. A **translucent** material lets some light pass through, objects on the other side can't be seen clearly. stained glass.
4. Materials that absorb light without reemission and thus allow no light through them are **opaque**. Wood, stone, and people are opaque.



Jigsaw Ch.27 B

5. No, for example Glass is transparent to visible light, but not to ultraviolet and infrared light. Speed of light c is the same for all EM



6. No, for example Sound is transmitted louder and faster by the metal than by the air. Solids and liquids are generally good conductors of sound. Sound cannot travel in a vacuum.

Jigsaw Ch.27 B

7. No. light waves can travel through a vacuum, and do not require a medium. This is why light from distant stars can travel through space for billions of light-years and still reach us on earth.
8. Yes Sound wave is a **progressive** wave that'll transfer energy between two points. So, there must be particles vibrating in the direction of the wave's velocity and colliding with nearby particles to **transmit** the energy. If there is nothing to compress and expand, there can be no sound