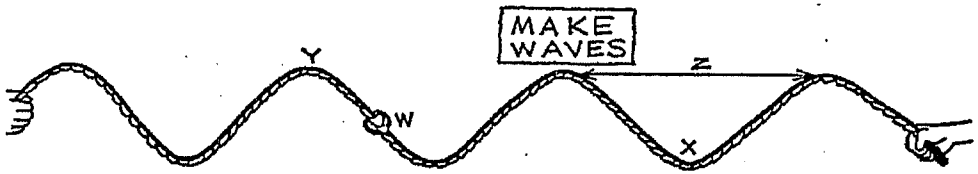
PROFILE OF A WAVE

Sound waves, water waves, radio waves, microwaves, electromagnetic waves, light waves, X-rays, gamma rays, and more! These are some (but not all) of the different kinds of waves traveling in the world. A wave is a rhythmic disturbance that carries energy from one place to another. The many different kinds of waves share many characteristics. Some of them are shown on this wave that's being made by kids shaking a rope up and down. Answer the following questions about wave characteristics.



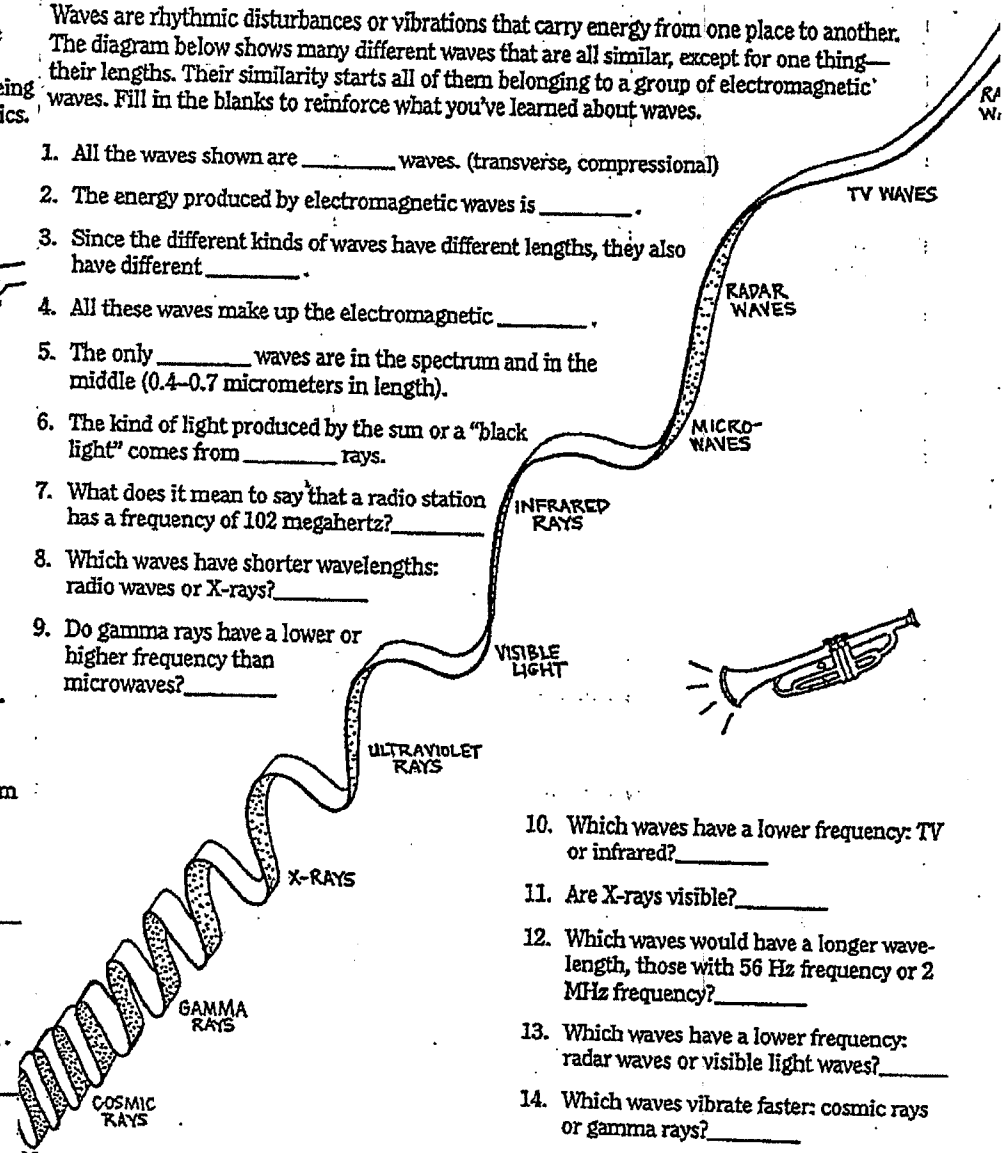
1. What is the distance called that is represented by the arrow Z?_____
2. What letter is labeling the wave's trough?_____
3. What letter is labeling a wave's crest?_____
4. The number of waves that pass the poster per second is called the _____ of the waves.
5. If the knot (W) travels 2 meters in 1 second, we say it has a _____ of 2 m/s.
6. If the wavelengths were shortened, would the frequency be higher or lower?_____
7. The greatest distance the knot (W) travels from its resting position is called the wave's _____.
8. What kind of waves are these in the rope?_____
9. A wave in which vibrations from the first disturbance set off a series of collisions followed by calm empty spaces is called a _____ wave.
10. Radiation is the transfer of energy by _____ waves.
11. If the kids were wobbling this rope up and down through pudding instead of air, the _____ would change.
12. The rapid, back and forth movements of any object are called _____.
13. The frequency of a wave is measured with the unit _____, which is _____ wave per _____.
14. If the waves in the rope have a frequency of 2 hertz, how many waves pass a point per second?_____

Name

GREAT VIBRATIONS

Waves are rhythmic disturbances or vibrations that carry energy from one place to another. The diagram below shows many different waves that are all similar, except for one thing—their lengths. Their similarity starts all of them belonging to a group of electromagnetic waves. Fill in the blanks to reinforce what you've learned about waves.

1. All the waves shown are _____ waves. (transverse, compressional)
2. The energy produced by electromagnetic waves is _____.
3. Since the different kinds of waves have different lengths, they also have different _____.
4. All these waves make up the electromagnetic _____.
5. The only _____ waves are in the spectrum and in the middle (0.4–0.7 micrometers in length).
6. The kind of light produced by the sun or a "black light" comes from _____ rays.
7. What does it mean to say that a radio station has a frequency of 102 megahertz?_____
8. Which waves have shorter wavelengths: radio waves or X-rays?_____
9. Do gamma rays have a lower or higher frequency than microwaves?_____



10. Which waves have a lower frequency: TV or infrared?_____
11. Are X-rays visible?_____
12. Which waves would have a longer wavelength, those with 56 Hz frequency or 2 MHz frequency?_____
13. Which waves have a lower frequency: radar waves or visible light waves?_____
14. Which waves vibrate faster: cosmic rays or gamma rays?_____

Name