

NAME _____ Hour _____

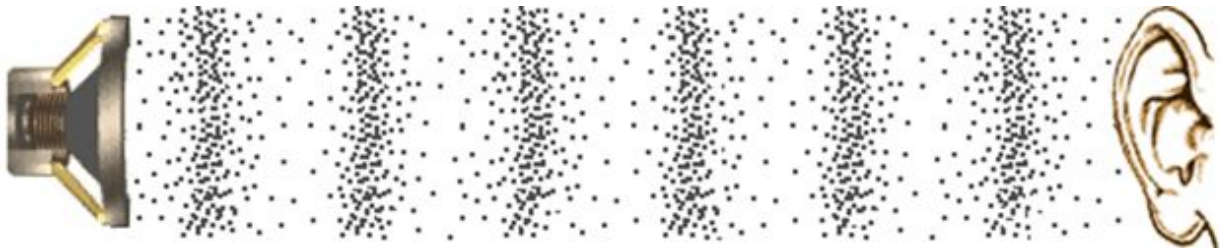
Waves, Sound & Light Energy Study Guide

Goal 1:

1. Draw a transverse wave below. Label a **crest**, **trough**, **wavelength** and **amplitude**.

2. Which type of wave is the picture below? _____

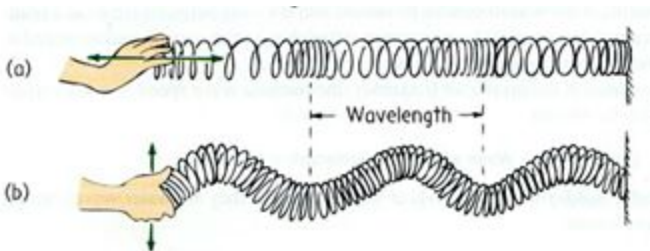
3. Label a **wavelength** in the picture below.



4. What are compressions? Label **compressions** on the picture above.

5. What are rarefactions? Label **rarefactions** on the picture above.

6. Label each picture as a longitudinal wave or a transverse wave. Then, label each picture as either a light wave or a sound wave. .



7. Which type of wave requires matter to travel? _____

8. Which type of wave can travel through empty space and matter?

Goal 2:

1. Define medium. Give an example.

2. How is sound energy transferred (3 part answer)?

3. Define frequency.

4. Define amplitude.

5. Draw a wave that shows loud and quiet sounds. Label **loud** and **quiet** on your wave.

6. Draw a wave that shows high pitch and low pitch. Label the **high** pitch and **low** pitch on your wave.

7. The longer the wavelength, the _____ the pitch.
8. The shorter the wavelength, the _____ the pitch.
9. The taller the amplitude, the _____ the sound.
10. The shorter the amplitude, the _____ the sound.
11. The longer the wavelength, the _____ the frequency.
12. The shorter the wavelength, the _____ the frequency.
13. The higher the frequency, the _____ the pitch.
14. The lower the frequency, the _____ the pitch.
15. Unit for frequency: _____ (_____)
16. Unit for loudness: _____ (_____)
17. Which does sound travel the fastest through: solid, liquid or gas? WHY?

Goal 3:

1. What are 4 sources of visible light?

2. When is an object "seen"?

3. What is luminous? Give an example.

4. What is illuminated? Give an example.

5. What are electromagnetic waves?

6. **Label** each type of radiation on the Electromagnetic Spectrum in the correct order according to wavelength on the picture below.



7. Which type of wave has the highest frequency, the highest energy and the shortest wavelength? _____

8. Which type of wave has the lowest frequency, the lowest energy and the longest wavelength?

9. Which type of wave causes sun burns? _____

10. Which types of waves are used for communication? _____ &

11. Which type of wave is given off from all vibrating molecules in all matter?

12. Which type of wave can pass through most materials besides calcium and metals?

13. Which type of wave is produced when the nucleus of an atom is changed?

14. Which is the only type of wave that we can see? _____

15. Which three types of waves are emitted from the sun?

a. _____

b. _____

c. _____

16. List the order of colors on the visible light spectrum from lowest frequency to highest frequency.

17. Which does light travel the fastest through: solid, liquid or gas? WHY?

Goal 4:

1. Explain the difference between a **regular reflection** and a **diffused reflection**.

2. Which types of surfaces have a **regular reflection**? **diffused reflection**?

3. What is **refraction**? Why does it occur?

4. Give two examples of refraction.

5. Define **transparent**. Give an example. How does light behave when light hits a transparent object?

6. Define **translucent**. Give an example. How does light behave when light hits a translucent object?

7. Define **opaque**. Give an example. How does light behave when light hits an opaque object?

8. What does it mean when light is **absorbed (absorption)**?

9. What does it mean when light is **transmitted (transmission)**?

10. What does it mean when light is **reflected**?

Goal 5:

1. Why do we see the color blue?

2. Why does a white t-shirt appear white?

3. Explain how we see an object that is black.

4. Label each part of the eye: **cornea, pupil, iris, lens, retina, optic nerve.**



5. What does each part of the eye do or what is it used for?

Optic nerve –

Retina –

Lens –

Pupil –

Iris –

Cornea –

6.. What is a photovoltaic cell? What are examples?

7. What is a photo-resistor? What are examples?