

Types Of Waves (p. 505 – 513)

I. What Is A Wave?

1. Define the term wave.

Wave – disturbance that carries energy through matter or space.

2. List two examples of waves.

1. Mechanical Waves 2. Electromagnetic Waves

3. Define the term medium.

Medium – matter in which a wave travels

4. List three types of matter that can be a medium.

1. Solid 2. Liquid 3. Gas

5. Waves that require a medium are called mechanical waves.

Circle One : True False

6. Define the term electromagnetic waves.

Electromagnetic Waves – waves consisting of changing electric + magnetic fields in space.

7. What is necessary for a wave to travel any distance?

energy (Bigger wave = More energy)

8. Why can you stand 100 meters from a speaker and not get hearing damage (but up close to the speaker will cause damage)?

Larger wave fronts (circles) spread energy out over a larger area

II. Vibrations & Waves

1. What causes most waves? vibrations

2. Describe simple harmonic motion.

Motion that is up + down or back + forth from an original position (repeated)

3. List two examples of simple harmonic motion.

1. Springs (Mass attached) 2. Pendulum

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Vacuum
- No medium

Do not require a medium

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4. Describe damped harmonic motion.

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- Motion where a vibration fades out as energy is transferred from one object to another

5. List two examples of damped harmonic motion.

1. Door piston (slowly closes)
2. Electrical Circuits

III. Transverse & Longitudinal Waves

1. Define the term transverse wave.

Transverse Wave - wave in which the motion of the particles is perpendicular to the motion of the wave.

2. List three examples of transverse waves.

1. String Instruments
2. Electromagnetic Waves
3. S-Waves

3. Differentiate between a crest and trough of a transverse wave.

Crest : Highest point on a transverse wave

Trough : Lowest point on a transverse wave

4. Define the term longitudinal wave.

Longitudinal Wave - wave that causes particles in a medium to vibrate parallel to the direction of the wave motion.

5. List three examples of longitudinal waves.

1. Springs
2. Sound-Waves
3. P-Waves

6. Differentiate between a compression and rarefaction of a longitudinal wave.

Compression : More dense region of a longitudinal wave

Rarefaction : Less dense region of a longitudinal wave.

IV. Surface Waves

1. Define the term surface wave.

Surface Wave - wave in which particles move both perpendicularly + parallel to the direction in which the wave travels

2. Water waves produce pure transverse waves.

Circle One : True False

Water will move a short distance back + forth along direction of wave.

3. Why do water waves produce circular patterns?

- Caused by the combination of up-and-down and back-and-forth motions.

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