Wave Properties Learning Package

1. Key Terms Explained

- Frequency: The number of waves that pass a point each second, measured in hertz (Hz).

- Wavelength: The distance between two identical points on a wave, measured in metres (m).

- Amplitude: The maximum height of a wave from its rest position, related to energy.

2. Reading Comprehension Passage

Waves are all around us, even though we cannot always see them. When you listen to music, the sound reaching your ears travels as waves through the air. When you look at colours, the light entering your eyes is also made of waves. All waves share three important properties: frequency, wavelength, and amplitude.

Frequency tells us how many waves pass a point every second. A high-frequency sound wave produces a high-pitched note, while a low-frequency wave produces a deeper sound. Wavelength describes the distance between repeating parts of a wave. Light with a long wavelength appears red, while light with a short wavelength appears blue or violet. Amplitude is related to the energy of the wave. A sound wave with a large amplitude is loud, while one with a small amplitude is quiet.

Although waves can look different, these three properties help scientists describe and compare them. Understanding wave properties allows us to design radios, medical scanners, musical instruments, and even communication systems used in space.

3. Vocabulary Session

Word	Meaning	Example Sentence
Frequency	Waves per second	The frequency of the alarm makes it sound high-pitched.
Wavelength	Distance between repeating parts of a wave	Red light has a longer wavelength than blue light.
Amplitude	Maximum height of a wave	Increasing the amplitude makes the speaker louder.

Energy	Ability to do work or cause change	Waves with more amplitude carry more energy.
Pitch	How high or low a sound is	A violin produces a higher pitch than a drum.

4. Close-Ended Questions

Multiple Choice

1. Frequency is measured in:
   A. metres
   B. hertz
   C. joules
   D. seconds

2. A wave with a large amplitude carries:
   A. less energy
   B. no energy
   C. more energy
   D. the same energy

3. Wavelength is the distance between:
   A. two random points
   B. crest to crest
   C. amplitude to trough
   D. rest to crest

4. What happens to pitch when frequency increases?

5. What does amplitude tell us about a wave?

5. Open-Ended Questions

6. Explain how wavelength and frequency are related in everyday examples (e.g., sound or light).

7. Describe a situation where amplitude is important and explain why.

8. Why do scientists need to understand wave properties when designing technology?

6. Application Questions

9. A sound wave has a frequency of 500 Hz. What does this mean in simple terms?

10. A student increases the amplitude of a wave on a rope. What change will they observe?

11. Light with a shorter wavelength appears blue. What does this tell you about the frequency of blue light compared to red light?

12. A radio station broadcasts at a high frequency. How does this affect the wavelength of the radio waves?

7. Answer Key

Multiple Choice

1. B

2. C

3. B

4. Pitch becomes higher.

5. Amplitude tells us the energy of the wave (loudness for sound, brightness for light).

Open-Ended (Sample Answers)

6. Higher frequency sound waves produce higher pitch; shorter wavelength light appears blue or violet.

7. In concerts, amplitude matters because larger amplitude means louder sound.

8. Wave properties help design radios, medical imaging, communication systems, and sound equipment.

Application

9. 500 waves pass a point every second.

10. The wave becomes taller; it carries more energy.

11. Blue light has a higher frequency than red light.

12. Higher frequency means shorter wavelength.