**Physical Science NCFE Guided Review 3.2**

**(Waves)**

**3.2.1 Explain the relationships among wave frequency, wave period, wave velocity, amplitude, and wavelength through calculation and investigation.**

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* Period = Frequency =
* Relationship between Period and Frequency:
* Wave Equation:
* As \_\_\_\_\_\_\_\_\_\_\_\_\_ increases, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ increases. (Direct relationship)

**3.2.2 Compare waves (mechanical, electromagnetic, and surface) using their characteristics.**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Mechanical** | **Electromagnetic** | **Surface** |
| **How are they produced?** |  |  |  |
| **Relative Speed?** |  |  |  |
| **Medium Required** |  |  |  |
| **Motion of Particles** |  |  |  |

**3.2.3 Classify waves as transverse or compressional (longitudinal).**

* Tranverse = particles move \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to the energy source
* Longitudinal/Compressional = particles move \_\_\_\_\_\_\_\_\_\_\_\_ to the energy source

**3.2.4 Illustrate the wave interactions of reflection, refraction, diffraction, and interference.**

* Reflection =
* Refraction =
* Diffraction =
* Constructive Interference =
	+ Sound gets \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, Light gets \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Destructive Interference =
	+ Sound gets \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, Light gets \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Sample Questions**

1. What is the effect on frequency of a wave when the wavelength is doubled?

1. Frequency is also doubled.
2. Frequency remains the same.
3. Frequency is reduced to one-fourth.
4. Frequency is reduced to one-half.

2. A sound wave with a frequency of 240 hertz travels through a material at a speed of 340 meters per second. Which statement is true about a sound wave with a frequency of 300 hertz traveling in the same material?

1. It would travel at the same speed.
2. It would have the same wavelength.
3. It would have the same period.
4. It would have the same frequency.

3. Which statement is true for all types of waves?

1. Wave speed is determined by the frequency.
2. Wave speed increases as the wavelength of the wave increases.
3. Wave motion transports particles of matter.
4. Wave motion transfers energy from one place to another.

4. Which type of wave can travel in a vacuum?

1. sound
2. mechanical
3. surface
4. electromagnetic

5. Which type of wave would be classified as compressional?

1. visible light
2. ultrasound
3. x-rays
4. radio waves

6. Which wave interaction best explains glare on the windshield of a car?

1. diffraction
2. interference
3. reflection
4. refraction

7. What wave interaction best explains the production of an image on a glass window as you walk by a store front?

1. diffraction
2. interference
3. reflection
4. refraction

8. The bending and change in speed of water waves as they approach a shoreline is explained by what process?

1. diffraction
2. interference
3. reflection
4. refraction