**PHYSICS 2021 - 22 March 29, 2022**

**Today’s Agenda (Day 132)**

1. HOUSEKEEPING ITEMS

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1. HOMEWORK CHECK:

 🡪 Ch 14 Vocabulary

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1. CLASS ACTIVITY

🡪BEGIN: Chapter 14 PPT Review

1. **Section 14.1 – Periodic Motion**
2. Section 14.2 – Wave Properties
3. Section 14.3 – Wave Behavior

HOMEWORK:

* READ: Chapter 14 – Vibrations and Waves
* STUDY: Chapter 14Test

<http://glencoe.mheducation.com/sites/0078807220/student_view0/self-check_quizzes.html>

Ch 14 Vocabulary

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| Periodic motion | Period | Amplitude | Simple harmonic motion | Hooke’s law | Simple pendulum |
| Resonance | Wave | Wave pulse | Transverse wave  | Periodic wave | Longitudinal wave |
| Surface wave | Trough | Crest | Wavelength | Frequency | Incident wave |
| Reflected wave | Principle of superposition | Interference | Node | Antinode | Standing wave |
| Wavefront | Ray | Normal | Law of reflection | refraction |   |

Ch 15 - Sound

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| Sound wave | Pitch | Loudness | Sound level |
| Decibel | Doppler effect  | Closed-pipe resonator | Open-pipe resonator |
| Fundamental | beat | Harmonics | Dissonance | consonance |

Ch 16 – Fundamentals of Light

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| Ray model of light | Luminous source | Opaque | Translucent | Transparent |
| Luminous flux | Illuminance | Diffraction | Primary color | Secondary color |
| Complementary color | Primary pigment | Secondary pigment | Polarization | Malus’s Law |

REMINDERS:

* **QUIZ: Chapter 14 Vocabulary – March 29**
* TEST: Chapter 14 🡪 March 31

**PHYSICS 2021 - 22 Review Questions**

**CH 14 PRACTICE PROBLEMS**

SECTION 14.1

1. What is the spring constant of a spring that stretches 12 cm when an object weighing 24N is hung from it?
2. A spring with k = 144 N/m is compressed by 16.5 cm. How much elastic potential energy does the spring have?
3. A spring has a spring constant of 56 N/m. How far will it stretch when a block weighing 18 N is hung from its end?
4. A spring has a spring constant of 256 N/m. How far must it be stretched to give it an elastic potential energy of 48 J?
5. What is the period on Earth of a pendulum with a length of 1.0 m?
6. How long must a pendulum be on the Moon, where g = 1.6 N/kg to have a period of 2.0 s?
7. On a planet with an unknown value of g, the period of a 0.75 m long pendulum is 1.8 s. What is g for this planet?
8. Two springs look alike but have different spring constants. How could you determine which one has the larger spring constant?
9. How must be the length of a pendulum be changed to double its period? How must the length be changed to halve the period?

SECTION 14.2

1. A sound wave produced by a clock chime is heard 515 m away 1.50 s later.
2. Based on these measurements, what is the speed of sound in air?
3. The sound wave has a frequency of 436 Hz. What is the period of the wave?
4. What is its wavelength?
5. If you want to increase a wavelength in a rope, should you shake it at a higher or lower frequency. Explain.
6. What is the speed of periodic wave disturbance that has a frequency of 3.50 Hz and a wavelength of 0.700 m?
7. The speed of a transverse wave in a string is 15.0 m/s. If a source produces a disturbance that has a frequency of 6.00 Hz, what is its wavelength?
8. Five wavelengths are generated every 0.100 s in a tank of water. What is the speed of the wave if the wavelength of the surface wave is 1.20 cm?
9. A periodic longitudinal wave that has a frequency of 20.0 Hz travels along a coiled spring toy. If the distance between successive compression is 0.600 m, what is the speed of the wave?
10. How does the frequency of a wave change if the period of the wave is doubled?
11. A hiker shouts toward a vertical cliff ash shown in Figure 12. The echo is heard is 2.75 s later.



1. What is the speed of sound of the hiker’s voice in air?
2. The wavelength of the sound is 0.750 m. what is its frequency?
3. What is the period of the wave?

SECTION 14.3

1. Which characteristics remain unchanged when a wave crosses a boundary into a different medium: frequency, amplitude, wavelength, velocity, and/or direction?
2. Sketch two wave impulses whose interference produces a pulse with an amplitude greater than either of the individual waves.
3. In a standing wave on a string fixed at both ends, how is the number of nodes related to the number of antinodes?
4. Sketch the result for each of the three cases shown in Figure 24, when the centers of the two approaching wave pulses lie on the dashed line so that the pulses exactly overlap.

