Name: _____ _____/ 15

Chapter 18.1 Homework
Conceptual Physics Parent Signature: _____

Each numbered question is worth one point unless otherwise noted.

Reviewing Concepts

1. Identify the following as examples of harmonic motion, linear motion, or both. Explain your answer. (2)
    a. A child moving down a playground slide one time.

    b. An ocean wave rising and falling

    c. A car moving down a street

    d. A ball bouncing up and down.

2. A system with harmonic motion is called an oscillator. Oscillators can be virtually any size. List at least one example each of a very large oscillator and a very small oscillator.

3. Describe a single cycle of harmonic motion for the following situations. (Use complete sentences.) (1.5)
    a. A spinning merry-go-round

    b. Earth orbiting the Sun

    c. A clock pendulum

4. Using a person on a swing as an example of harmonic motion, describe the terms: (2)
    a. Period

b. Frequency

c. Cycle

d. Amplitude

5. Your favorite radio station is 106.7. What are the units of this number and what do they mean in terms of harmonic motion?

6. What is the mathematical relationship between frequency and period for a harmonic motion system? (0.5)

7. Name a unit used to measure the following.
    a. Amplitude

    b. Frequency

    c. Period

    d. Mass

Solving Problems

1. The wings of a honeybee move at a frequency of 220Hz. What is the period for a complete wing-beat cycle?

2. If a pendulum's period is 4 s, what is its frequency?

3. What is the period of Earth's spinning on its axis? What is its frequency? *(Hint: how long does it take for one spin?)*

4. Jason's heartbeat is 65 beats per minute.
    a. What is the frequency of his heartbeat in hertz?

    b. What is the period for each heartbeat in seconds?

5. Create a table following the format at the bottom of page 443. Fill in the period and frequency for the second hand, minute hand, and hour hand of a clock. (2)