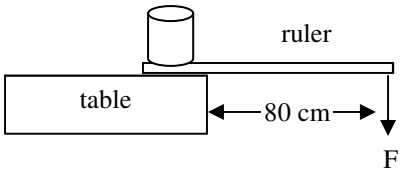
B-Day: Due Mon., Apr 5
A-Day: Due Tues., Apr 6

2009-10 Harmonic Motion 7



1. A ruler is held down by a mass at the edge of a table. The end of the ruler is then pulled down and released, making the ruler vibrates up and down.
   A. Since the end can move, it the end a node or antinode?
   B. Which harmonic is this?
   C. Mark the nodes and antinodes.
   D. How many wavelengths is it?
   E. If the end of the ruler is 80 cm from the desk, what is the wavelength of this harmonic?

From "*Ancillary Sound Topics*"

2. Slim Jim is driving his truck and honks its horn when he sees Slim Kim on the side of the road.
   A. What does Kim hear as the truck passes?
   B. What does Jim hear?
   C. What is this called?

3. Whilst on a trip to Colorado the Slim's stop at Black Canyon of the Gunnison National Park. Kim asks Jim just how deep the canyon is. Jim pulls out his trusty stopwatch, claps loudly, and record 3.24 seconds before ***the echo*** returns. How deep the canyon? *(By the way, this depth is correct. Check it out on the Internet.)*

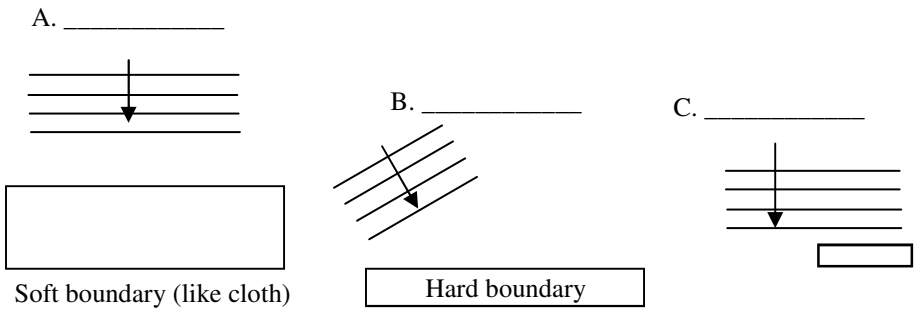
4. A 560 Hz sound and a 555 Hz sound are played together.
   A. How many beats are heard each second?
   B. If the frequencies get closer are there more beats or less beats per second?
   C. What causes the beats?

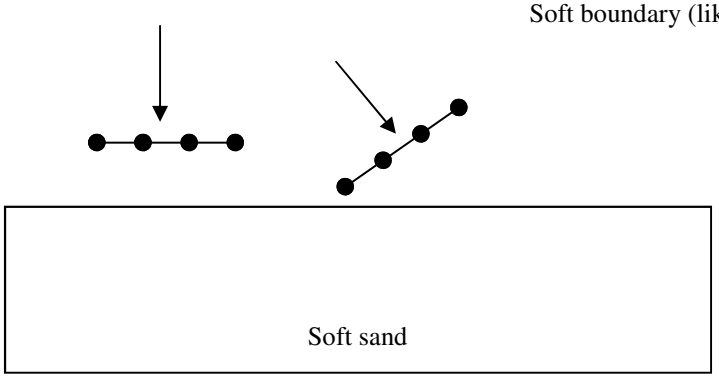
5. A clarinet and a trumpet can be playing the same notes, but they sound different because the have different t_____. This is because the actual sounds are made up of different amounts of different h_____.

From the "Wave Action" notes:

6. When a wave hits a hard boundary it:
7. When a wave bends around a corner it:
8. Light bends in eyeglasses by:
9. How is it that you can hear someone around the corner?
10. When you stop a spring or pendulum from swinging you are _____ it.

11. For the three examples at the left draw what will happen and give the name of the interaction.



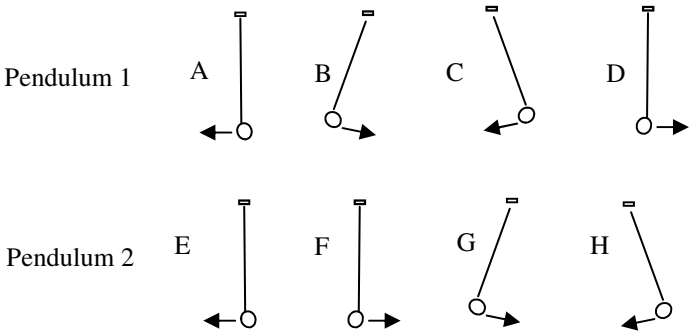


12. Four people are walking in a line (the dots). They walk from hard ground into soft sand. Draw what will happen in the two examples.

13. A. For pendulum 1—Give me the correct sequence for one complete cycle: B ___ ___ ___

B. In phase or out of phase?
____E and D? ___ A and E? ___B and H?

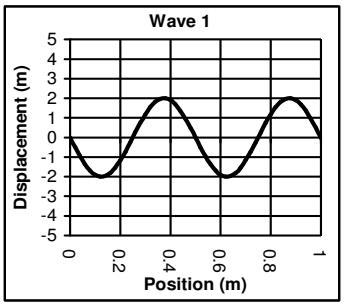
F. Which one is in-phase with E? A, B, C, or D?
G. Which one is in-phase with H? A, B, C, or D?

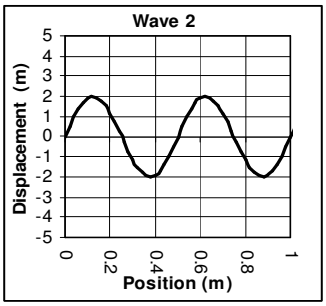


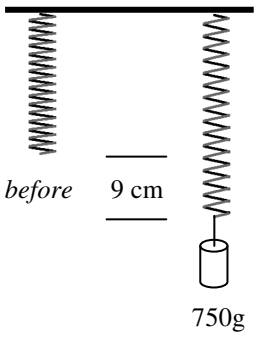
14. Two pulses are sent toward each other.
A. What will happen when they cross?

B. What is this called?

15. For the graphs at the right:
A. Are they in-phase or out-of-phase?
B. Will they constructively or destructively interfere?
C. What will be the amplitude of the combined wave?







16. A. How far did the spring stretch?
B. What type of force is pulling the spring?
C. Calculate the force stretching the spring.

D. Find the spring constant of the spring.

E. If the spring constant were bigger, would the spring stretch a greater or lesser distance?

17. Fill in the table at the right.

	Variable	Units
Period		
Spring Constant		
Frequency		
Mass		
Length		
Speed		
Time		

And do the TAKS Homework:

Day 21—Body Systems

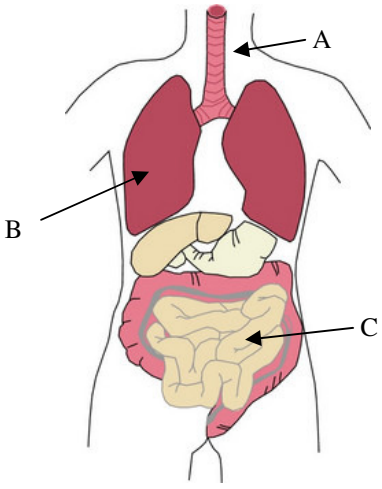
System	Function	Organs
Circulatory system	moves water, oxygen, and nutrients around the organism	heart, veins, arteries, capillaries
Digestive System	breaks down food to be absorbed by body.	mouth, teeth, throat, esophagus, stomach, small and large intestines
Nervous system	interprets and sends information throughout the organism, motor function.	brain, spinal cord, nerves (neurons)
Endocrine System	secretes hormones to regulate body functions.	testis and ovaries (and others)
Reproductive System	produces egg and sperm to propagate (continue) species.	genitals, testicles, ovaries
Integumentary System	protects from external environment;	skin (also attachments like hair and nails)
Skeletal system	supports body, place for muscle attachment, protects organs	bones, ligaments (attachments), cartilage (nose)
Respiratory System	used to exchange CO_2 and O_2 between blood and air.	nose, mouth, wind pipe (trachea), lungs
Muscular system	used for locomotion, support, and protection	muscles, tendons (for attachment)
Excretory/ Urinary system	used to remove waste products from organism	bladder (storage tank), kidneys (filter), colon
Immune System	protects from and fights infections	white blood cells, skin (as a barrier)

1. Which body system?

A. The only system that has completely different parts for males and females.
B. Surrounds the entire body.
C. Attacked by the AIDS virus.
D. Protects your brain.
E. Moves the bones.
F. Stomach and intestines.
G. Causes you to feel anxious.
H. A bird's feathers.
I. Protects your bones.
J. Helps you get well from the flu.
K. Removes unabsorbed food.
L. Is like the cell membrane for a cell.
M. Makes decisions for the body.

In addition to their primary functions, most body systems interrelate and aid other systems.

2. Which four systems does the heart transport for?



3. Which two systems have been opened when you bleed?
4. Large muscles in the extremities of the body (arms and legs) surround veins and arteries. When these muscles contract, they squeeze veins and arteries, helping which system?
5. How does the skin help the immune system?
6. How is the skin part of the nervous system?
7. Circulatory systems can be open or closed. Which do we have?
8. Amphibians allow oxygen thru their skin. Which system is this helping?
9. Some muscles are autonomous (*you don't control them*). Give two examples.
10. In the diagram at the left, identify the three organs.
    A. B. C.