11th Physics (2017 – 18)

(4thQ, #1 Mini Test)

Class	No.	Name

In calculation problems, describe equations clearly and systematically enough to show how to solve the problems.

Gravitational acceleration rate g = 9.80 m/s

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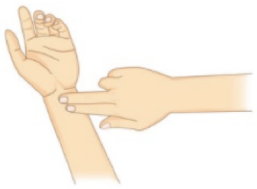
4 pt/question x 13 questions = 52 pt Max 50 pt

／[Total 50 pt]

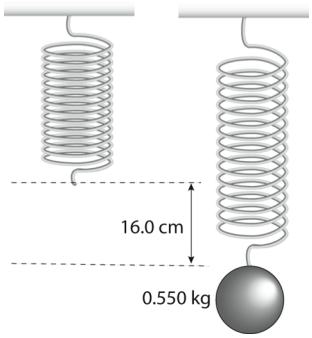
(1) You take your pulse and observe 73 heartbeats in a minute.
(1-a) What is the period of your heartbeat?
(1-b) What is the frequency of your heartbeat?



(Equations)

(1-a) Answer
(1-b) Answer

(2) When a 0.550-kg mass is attached to a vertical spring, the spring stretches by 16.0 cm. What is the period of oscillation of this spring?



(Equations)

(2) Answer

Use ***two significant figures*** in this page

(3~6) In the figure below, the solid and broken lines represent the wave at t=0 s and t=4.5 s, respectively. Find the followings:

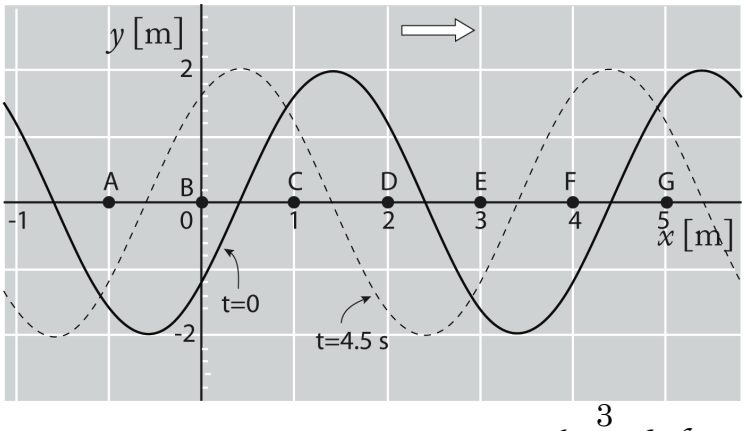
(3-a) Wavelength
(3-b) Amplitude

(4-c) Period
(4-d) Frequency

(5-e) Speed
(5-f) The time of propagation that the phase of the origin transfers to G.

(6-g) The points that are in the identical phase with the point B.
(6-h) The points that are in the opposite phase with the point B.

(Equations)



(3-a) Answer
(3-b) Answer

(4-c) Answer
(4-d) Answer

(5-e) Answer
(5-f) Answer

(6-g) Answer
(6-h) Answer

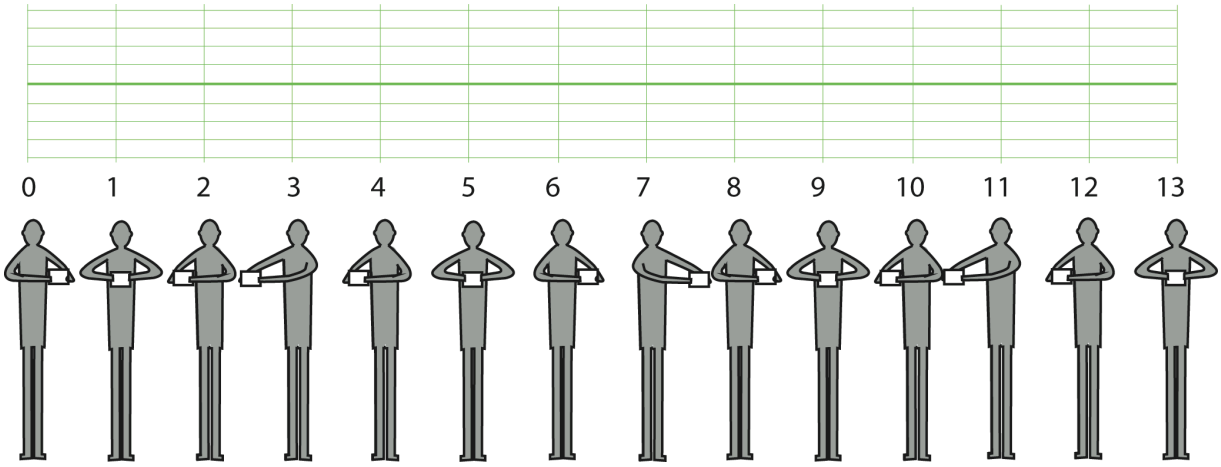
(7,8) In the figure shown below, you are observing students in a line to create a "human wave." They stand 0.80 m apart (center-to-center) and move paper by 20cm at a bang of a drum once par 0.40 s to shift to the next step.

(7-a) The left-end or #0 student moves paper to the right as you face in the figure. Which direction is the right movement for the #5 student?

(7-b) Draw a graph of this human wave as a transverse wave.

(8-c) Find the speed of the wave.

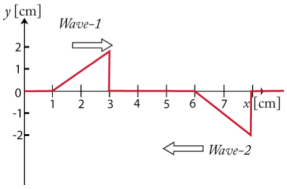
(8-d) Which direction does the "human wave" move?

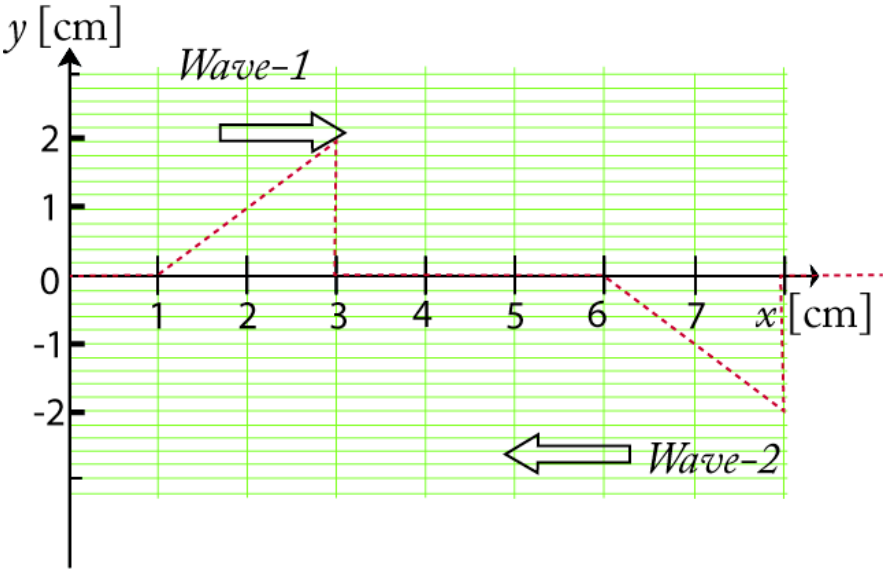


(7-a) Answer
(7-b) Answer Draw a graph

(8-c) Answer
(8-d) Answer

(9) Two pulse waves move at the speed of 1 cm/s as shown. Draw the pattern of the waves after 2 seconds.

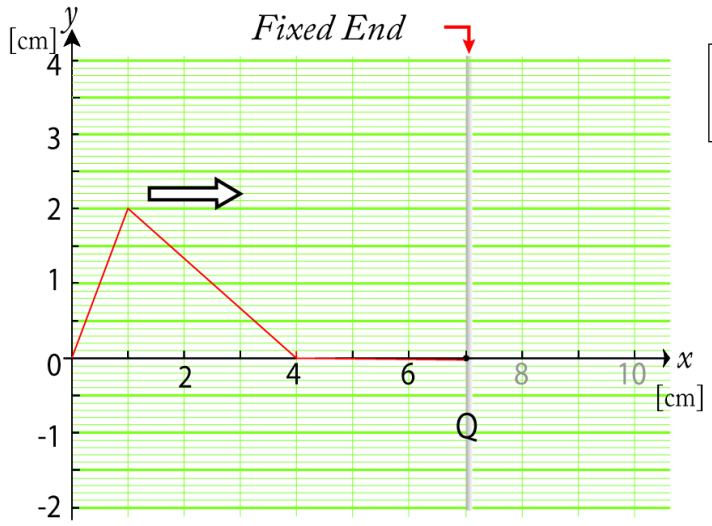




(9) Answer

Draw in the figure.

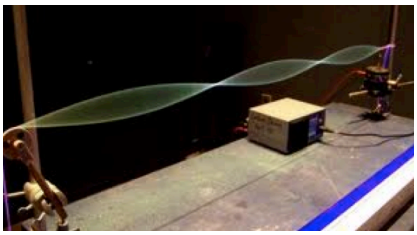
(10) A pulse approaches toward a fixed end Q with a speed of 1.0 cm/s. Draw the pattern for the wave at a time 5 seconds later.



(10) Answer

Draw in the figure at the left.

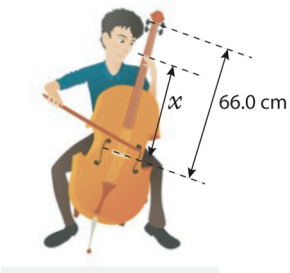
(11) There is a string 2.90 m long.
(11-a) What is the wavelength for the fifth harmonic?
(11-b) The fundamental frequency of the string is 59.0 Hz. Find the speed of waves on the string.



(Equations)

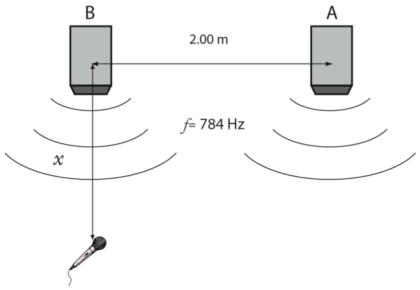
(11-a) Answer
(11-b) Answer

(12) A cell string between the bridge and upper end is 66.0 cm long, and this sound A_4 note (440 Hz) when played. Where must the cellist put a finger (what distance x from bridge) to play D_5 note (587 Hz)? For both the A_4 and D_5 notes the string vibrates in its fundamental mode.



(Equations)

(12) Answer



(13) Two identical speakers are located at A and B, 2.00 m apart and producing a sound of 784 Hz in identical phase. A small microphone is moved from B along a line perpendicular to the line connecting A and A. Take the speed of sound to be 344 m/s.
(13-a) At what distance from B, x, will there be destructive interference? Answer one possible value of x.
(13-b) Find the minimum value of x that gives destructive interference.

(Equations)

(13-a) Answer
(13-b) Answer

(The solution will be shown tonight on the Website of Physic Class.)