#1

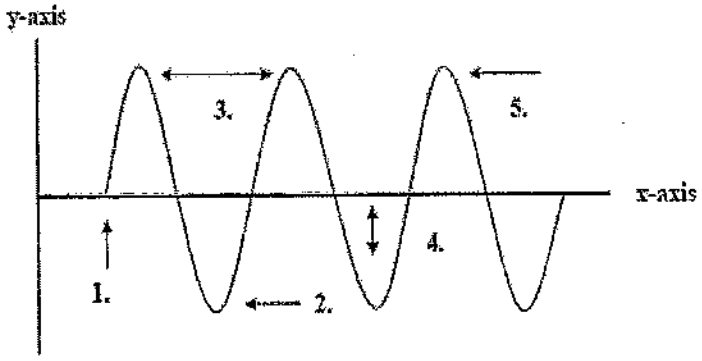
Name: _____ Date: _____ Period:_____

Anatomy of a Wave Worksheet

Part 1

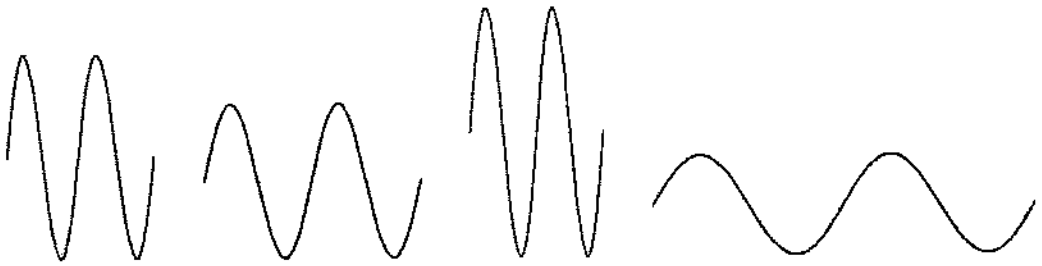
In the diagram below, identify the parts of a wave by using the provided definitions.

#____ = **crest**	The highest point of the wave above the line of origin.
#____ = **trough**	The lowest point of the wave below the line of origin.
#____ = **line of origin**	Signifies the original position of the medium.
#____ = **wavelength**	The distance between two consecutive crests.
#____ = **amplitude**	The distance from the line of origin to a crest or trough of a wave.



Part 2

List the following waves in order of increasing wavelength and increasing amplitude.



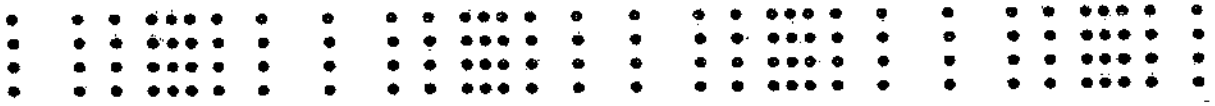
A B C D

Wavelength: Shortest ____ ____ ____ ____ Longest

Amplitude: Shortest ____ ____ ____ ____ Longest

Part 3

The wave depicted below is a **compression wave**, also known as a _____ **wave.**



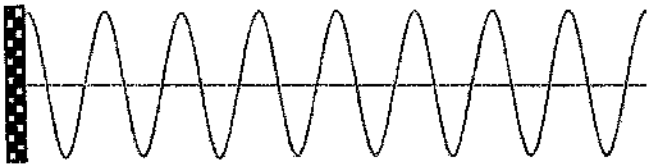
Give one example of a compression wave: _____

Name: _____ Date: _____ Period: _____

Part 4

Frequency (f) is the number of waves that pass a point in a given amount of time. The units for frequency are **Hertz (Hz)** which tell us how many waves go by per second. To find the frequency just divide the number of waves by the number of seconds: $f = \frac{\text{\# of waves}}{\text{seconds}}$

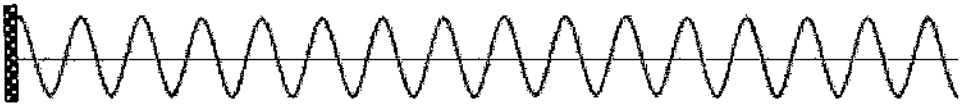
Wave 1



How many waves are there in this wave train? _____

If this wave train passes through the checkered line in **1 second**, what is this wave's frequency? $f =$

Wave 2



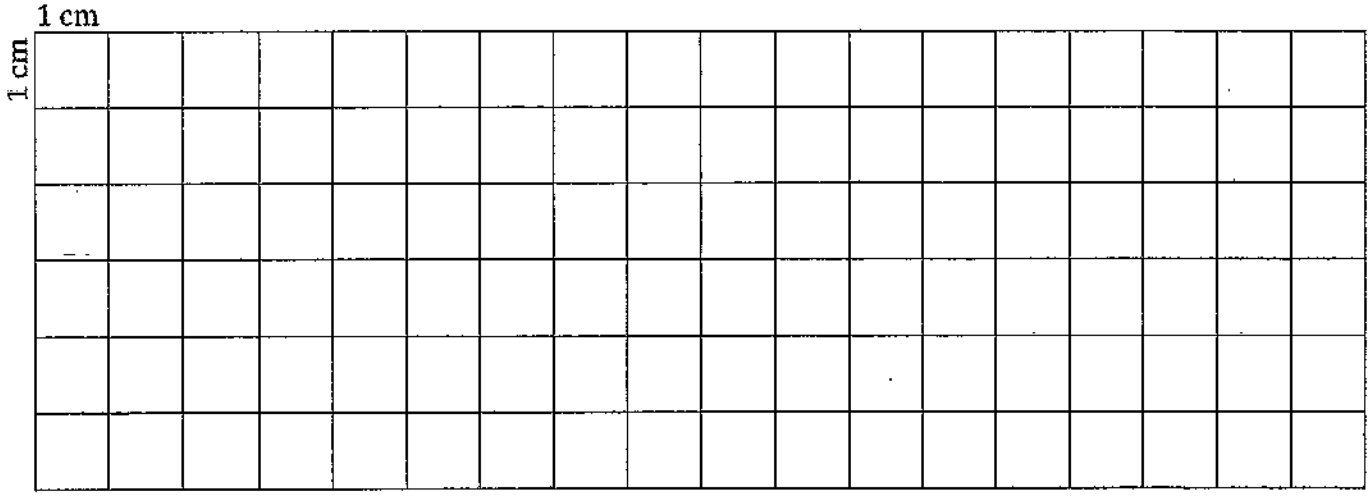
How many waves are there in this wave train? _____

If this wave train passes through the checkered line in **3 seconds**, what is this wave's frequency? $f =$

Part 5

On the **1 cm²** graph paper below, draw two different waves with the following measurements. Label the **crest**, **trough**, and **wavelength** on each of the waves.

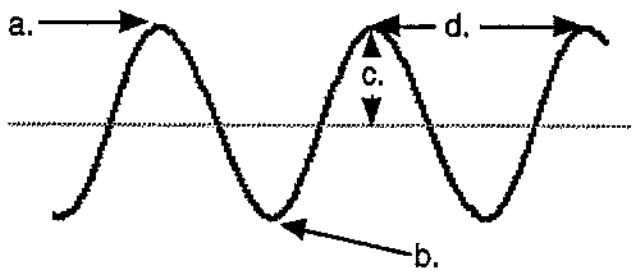
wave #	crest	trough	wavelength
1	1 cm	1 cm	2 cm
2	2 cm	2cm	4 cm



WORKSHEET - LABELING WAVES

#2

1. The highest point on a wave is the _____, while the lowest point is the _____.
2. The _____ of a wave is a measure of the amount of energy it carries.
3. The distance from one crest to the next crest is the _____.
4. The _____ is a measure of the number of waves that pass a point in a given amount of time.
5. The illustration to the right shows a wave. Label each part in the space below:



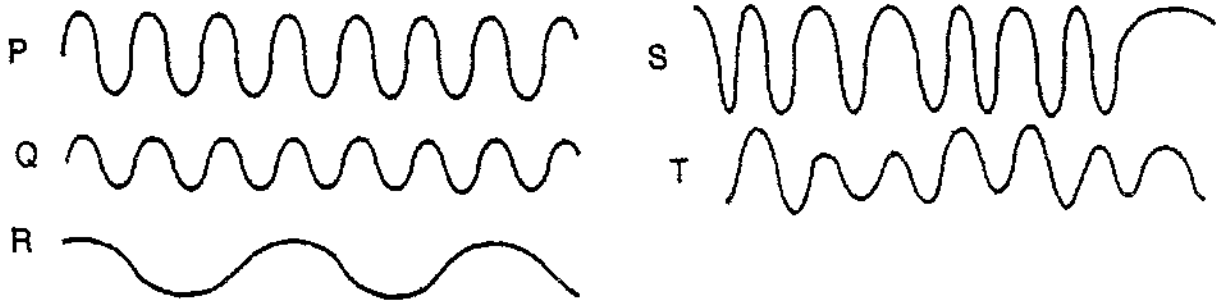
a. _____

b. _____

c. _____

d. _____

6. Use the five illustrations of waves drawn below to answer the following questions:



(a) Waves P and Q have the same _____, but wave P has twice the _____ of wave Q.

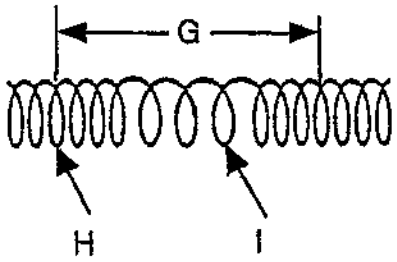
(b) Waves Q and R have the same _____, but wave R has twice the _____ of wave Q.

(c) Wave _____ shows a steady frequency but changing amplitude.

(d) Wave _____ shows steady amplitude but a changing frequency.

(e) Waves _____ and _____ have a low amplitude and a steady frequency.

7. The following questions refer to the diagram to the right:

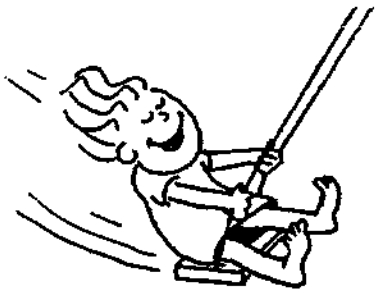


(a) Is this wave transverse or longitudinal?

(b) Letter H represents a _____ and letter I represents a _____.

(c) Letter G represents a _____.

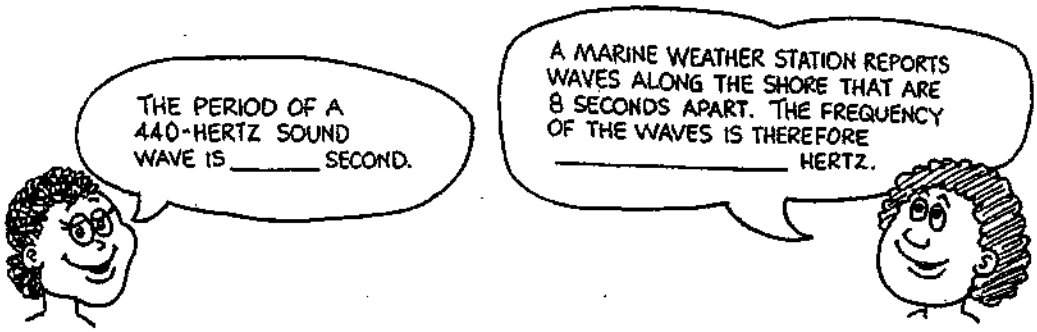
8. A kid on a playground swing makes 6 complete to-and-fro swings each 30 seconds.



(a) The frequency of the swinging is _____.

(b) The period of the swinging is _____.

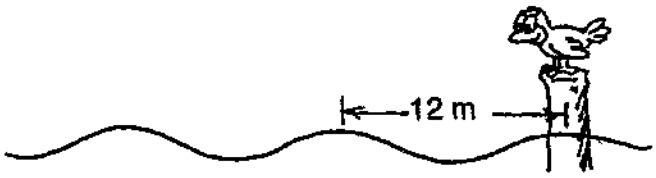
9. Complete the statements in the diagrams below:



10. A machine gun fires 10 rounds per second. The speed of the bullets is 300 m/s.

What is the distance in the air between the flying bullets? _____

11. The bird below watches the wave crests.



(a) If four crests pass the pole each second, what is the speed of the wave?

_____

12. In what type of wave is the vibration perpendicular to the direction of travel of the wave?

_____

13. What type of wave vibrates parallel to the direction of travel? _____

14. What type of wave contains compressions and rarefactions? _____

15. What type of wave is produced when you move one end of a horizontal spring up and down?

_____

16. What type of wave has a wavelength? _____

17. Obtain a ruler and determine the wavelength of the wave to the right.

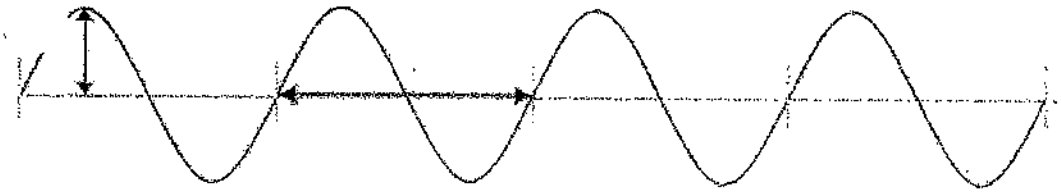
Wavelength = _____

#3

Name _____ Date _____ Hour _____ (Extra Credit)

Wave Worksheet

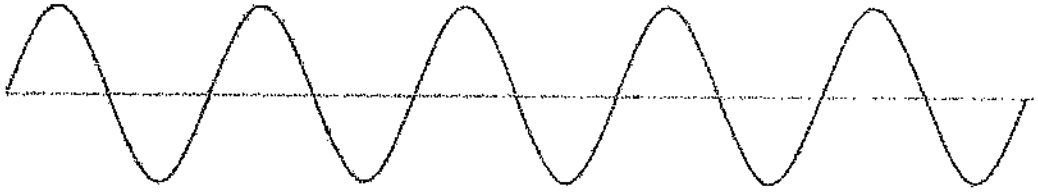
One full wave (cycle) Wave train – two or more waves



Amplitude – measures the energy of a transverse wave
a) measured from the equilibrium position to the top of a crest or the bottom of a trough (see vertical arrow)
Wavelength – length of a single wave cycle (horizontal arrow double sided arrow)
Frequency-# of waves that pass a point in a given amount of time (1 second)
Speed = wavelength x frequency

The time from the beginning to the end of the wave train in each situation is 1 second.

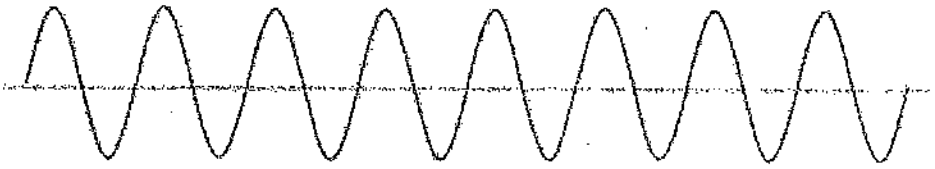
Wave 1



a) How many waves are there in this wave train? _____

b) Wavelength _____ cm c) Amplitude _____ cm d) frequency _____ Hz e) speed _____ cm/s

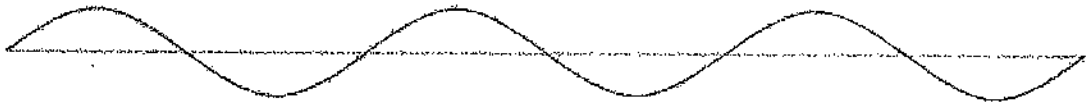
Wave 2



a) How many waves are there in this wave train? _____

b) Wavelength _____ cm c) Amplitude _____ cm d) frequency _____ Hz e.) speed _____ cm/s

Wave 3

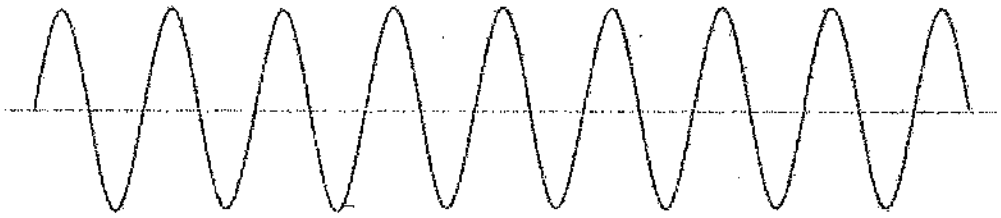


a) How many waves are there in this wave train? _____

b) Wavelength _____ cm c) Amplitude _____ cm d) frequency _____ Hz e.) speed _____ cm/s

Name _____ Date _____ Hour _____ (Extra Credit)

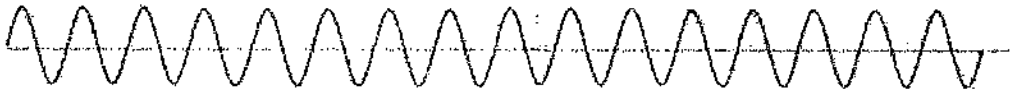
Wave 4



a) How many waves are there in this wave train? _____

b) Wavelength _____ cm c) Amplitude _____ cm d) frequency _____ Hz e.) speed _____ cm/s

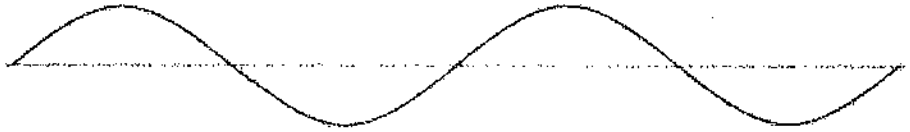
Wave 5



a) How many waves are there in this wave train? _____

b) Wavelength _____ cm c) Amplitude _____ cm d) frequency _____ Hz e.) speed _____ cm/s

Wave 6



a) How many waves are there in this wave train? _____

b) Wavelength _____ cm c) Amplitude _____ cm d) frequency _____ Hz e.) speed _____ cm/s

Wave 7

If this entire wave train is 30 meters long what is the wavelength of this wave? _____