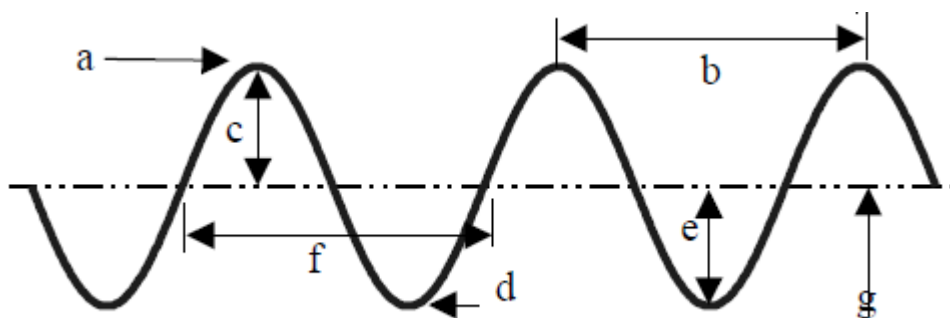Waves :

1. Outline a few applications of microwaves and gamma rays
2. Name the different waves in the EM spectrum in the decreasing order of wavelength.
3. A sound wave covers a certain distance in air in 20 seconds. How much time will it take to cover the same distance in water? The speed of sound in air and water is 346m/s and 1498m/s respectively.
4. A stone is dropped from the top of a well of depth 490m. Calculate the time taken for splash of sound to be heard at top? Given $g= 9.8ms^{-2}$ and the speed of sound in air is $340ms^{-1}$.
5. A sound wave travels at a speed of 339m/s. If its wavelength is 1.5cm, what is the frequency of the wave? Will it be audible?
6. Describe one use of optical fibres in medicine.

1. The illustration below shows a series of transverse waves. Label each part in the space provided.

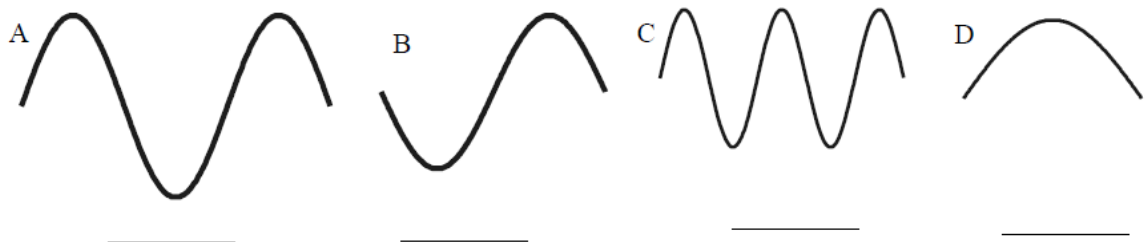

a _____   d_____

b_____   e_____

c_____   f

_____

                                    g

_____

Fill in the blanks:

2. Waves carry_____ from one place to another.

3. The highest point on a transverse wave is the _____ while the lowest part is the _____ .
4. The _____ is the height of the wave.

5. The distance from one crest to the next is the _____.

6. Below are a number of series of waves. Underneath each diagram write the numbers of waves in the series.

A $\wedge\!\!\wedge$ B $\wedge\!\wedge$ C $\wedge\!\!\wedge\!\!\wedge$ D $\frown$

_____   _____   _____   _____

7. Express in words and mathematically the relationship between

a. period and frequency

b. wavelength and frequency

c. wavelength and period

8. Consider a wave generator that produces 10 pulses per second. The speed of the waves is 300. cm/s. [Note: A pulse means a single disturbance]

a. What is the wavelength of the waves?

b. What happens to the wavelength if the frequency of pulses is increased?

9. A wave on Beaver Dam Lake passes by two docks that are 40.0 m apart
   .
a. If there is a crest at each dock and another three crests between the two docks, determine the wavelength. [Hint: represent the situation on a diagram with two docks and waves between them, to visualize the situation , and hence easily solve the problem)

b. If 10 such waves pass one dock every 16.0 seconds, determine the period and frequency of the wave.

c. What is the speed of the wave?

10. The wavelength of a sound wave in this room is 1.13 m and the frequency is 301 Hz.
    a. What is the speed of the wave in the room?
    b. If you double the frequency of the sound wave, determine its speed.
    c. What happens to the wavelength if you cut the frequency in half? How do you know?

11. Watch the video "How sound waves travel", that is uploaded in folders on Edmodo, and answer the following questions.

a) Are sound waves mechanical waves? Justify your answer.

b) Explain why sound waves are longitudinal waves.

c) Describe what happens to a sound wave when its frequency is increased.

d) Explain with a neat diagram, what compressions and rarefactions are.