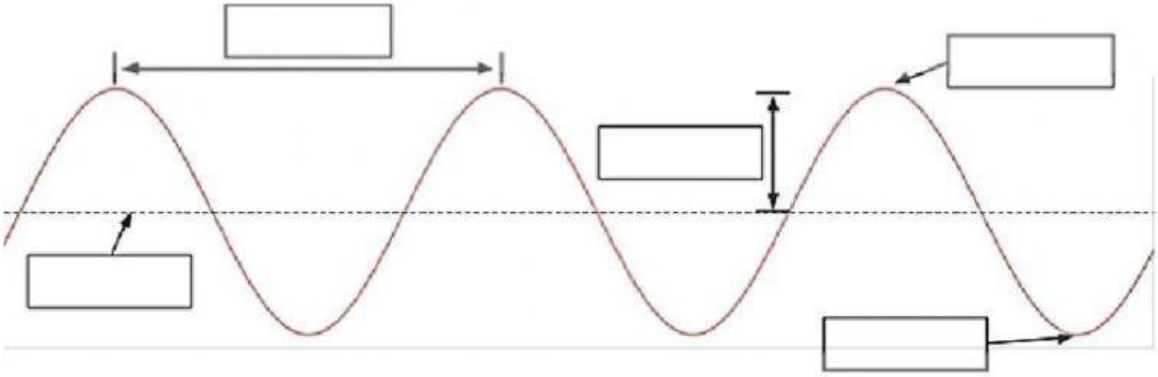
Properties of Waves

1. Complete the following statements:

   - Waves transfer _____ without transferring _____.
   - **Mechanical** waves _____ travel through empty space.
   - **Electromagnetic** waves _____ travel through empty space.
   - **Transverse** waves move _____ to the direction of the wave.
   - **Longitudinal** waves move _____ to the direction of the wave.

2. Use words in the box to complete the diagram.

Hertz	**period**	**metres**	**dip**	**seconds**
peak	**wavelength**	**trough**	**crest**	
frequency	**amplitude**	**oscillation**	**equilibrium line**	



3. Select which property of a wave is being described in each statement.

_____ The top of a wave.

_____ The bottom of a wave.

_____ The number of waves that pass in 1 second.

_____ The time it takes for one wave to pass or complete a cycle.

_____ The maximum height of a wave from the equilibrium line (rest position).

_____ The distance between two consecutive troughs.

_____ Waves that travel perpendicular to the energy movement.

_____ Waves that require a medium to travel through.

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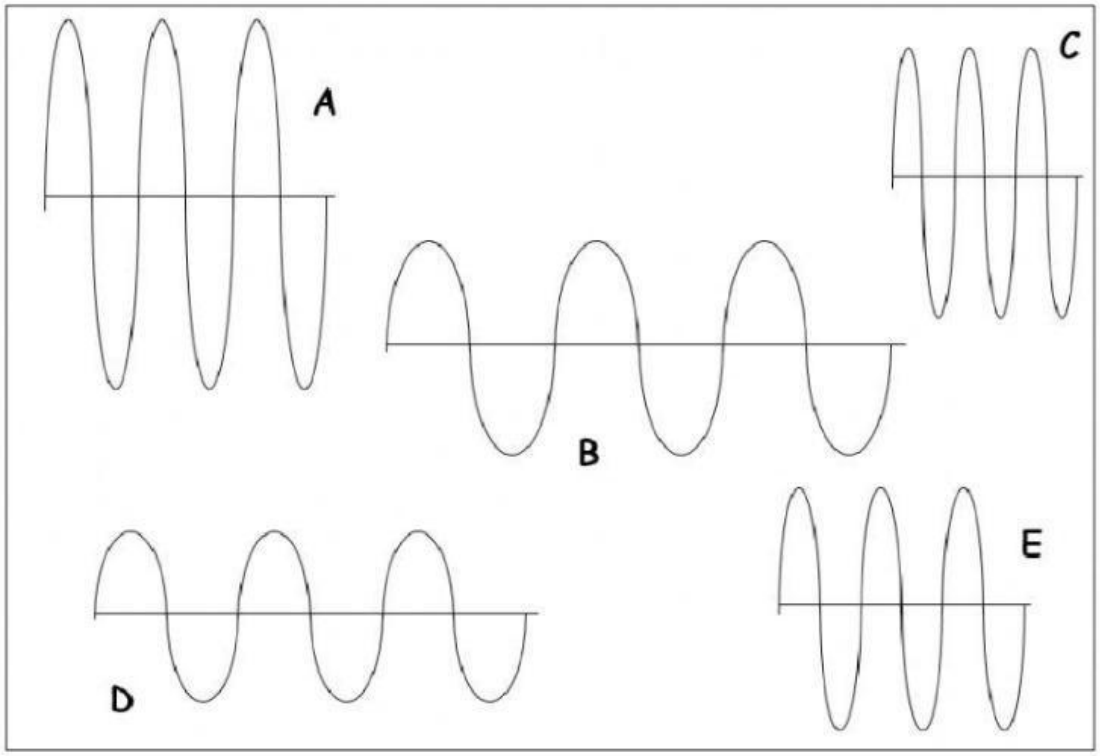
4. Use the following waves to answer the next set of questions. You may need to use a ruler to help!



a) Which wave has the highest crest?

b) Which wave has the lowest crest?

c) Which wave has the highest trough?

d) Which wave has the lowest trough?

e) Which wave has the shortest wavelength?

f) Which wave has the longest wavelength?

g) Which wave has the highest frequency?

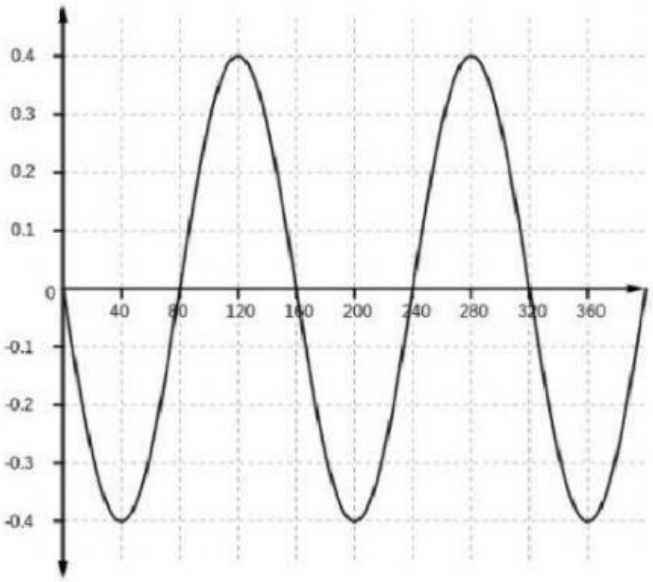
h) Which wave has the lowest frequency?

5. For the wave pictured on the right. Determine the magnitude of the:

a) Wavelength:

b) Amplitude:

c) Frequency:



6. If the wavelength of a wave decreased in size, the frequency would ...

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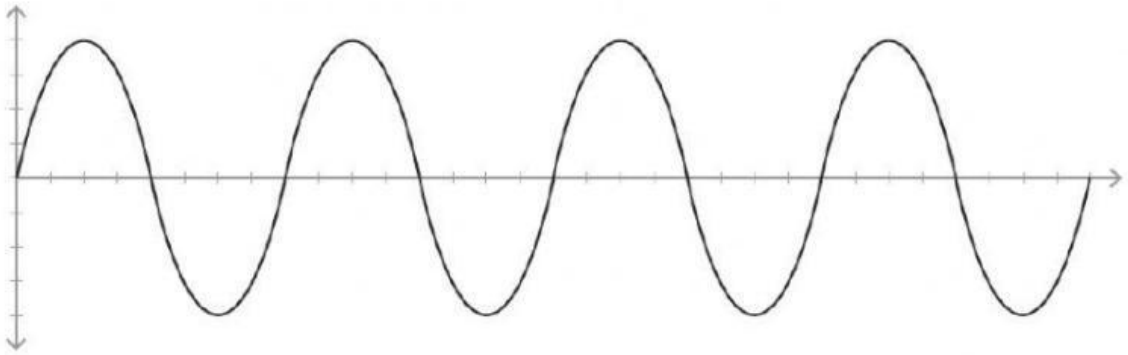
7. Use the diagram below to answer the following questions.
Assume that the scale on both axes is going up by 2.



a) What is the magnitude of the amplitude of this wave?

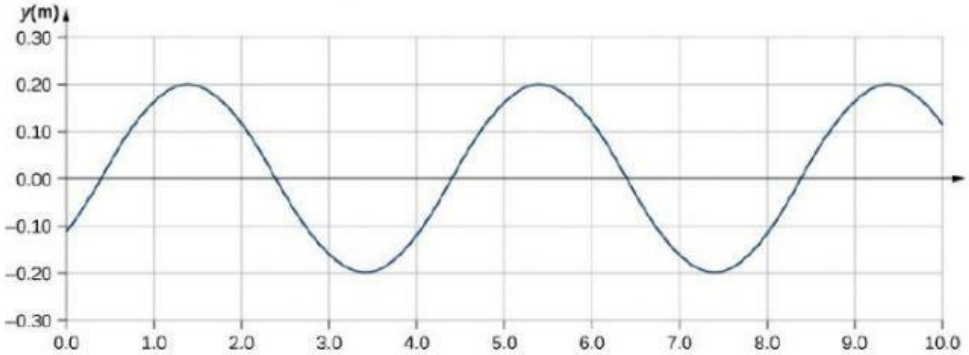
b) What is the magnitude of one wavelength of this wave?

c) How many complete wave cycles are shown in the diagram?

d) Would a wave with a wavelength of 8 have a higher or lower frequency?

e) Would a wave with an amplitude of 4 have a higher or lower trough?

8. Use the diagram below to answer the following questions.



a) What is the magnitude of the amplitude of this wave?

b) What is the magnitude of one wavelength of this wave?

c) How many complete wave cycles are shown in the diagram?

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