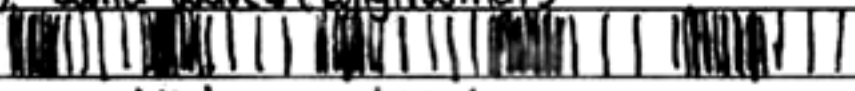
A large anchor is being lifted into a boat with metal sides. As the anchor leaves the water it hits the side of the boat, making loud sounds and making waves on the surface of the water.

1. Describe the motions of the sound waves and the water waves.
2. Draw a diagram for each of the waves you described in part (a). Be sure to label each diagram.
3. Describe how the wavelength is measured for the water waves.

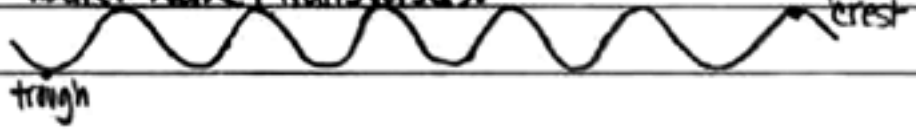
Scoring Guide - Score Point 4

a. The sound waves travel in longitudinal waves. These create compressions - areas of high pressure and rarefactions - areas of lo pressure. Water waves travel in transverse waves, creating high points, called crests, and low points, called troughs.

b. Sound Waves (Longitudinal):



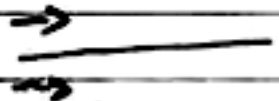
Water Wave (Transverse):



c. Wavelength is the distance between two identical points on a wave such as between two crests or two troughs. To find the wavelength of a water wave, the distance between two consecutive troughs would need to be measured. The distance between two consecutive crests would also give the wavelength.

Scoring Guide - Score Point 3

a. The sound waves are longitudinal, moving in a parallel direction. The water waves are transuersal, moving up and down.

b. 

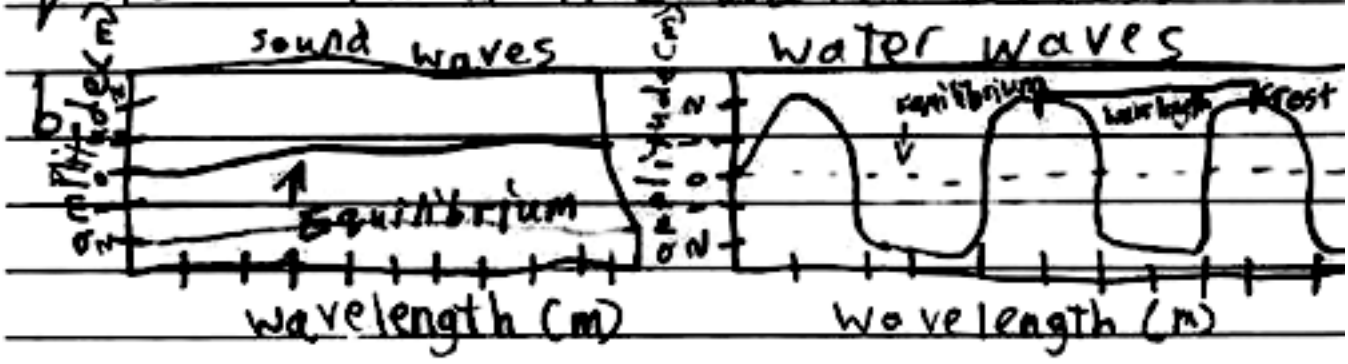
sound waves

water waves

c. To find the wavelength, you will need to find the velocity in which the waves move. You also need to know the frequency, which can be found by usi the period, T, and the equation $f = \frac{1}{T}$. When you have the velocity and frequency, you use the equation $v = f\lambda$. Solve for λ, which will be the wavelength.

Scoring Guide - Score Point 2

a. The sound waves will move muc
quicker than the water waves.



c. The wavelength for water waves is measured from crest to crest or the highest point of amplitude.

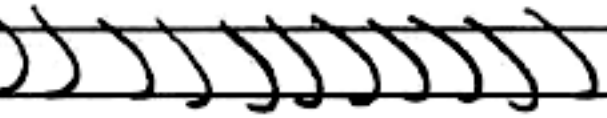
Scoring Guide - Score Point 1

a) The sound waves would trav
further and they would be low
pitched. The water waves would
travel faster but they wouldn't
reach such a distance as the sound

water waves

b) 

sound waves



c) The wavelength for the water
waves is measured by the height an
distance of it.

Scoring Guide - Score Point 0

(a) sound travels faster in water and the movement of the anc creates waves.

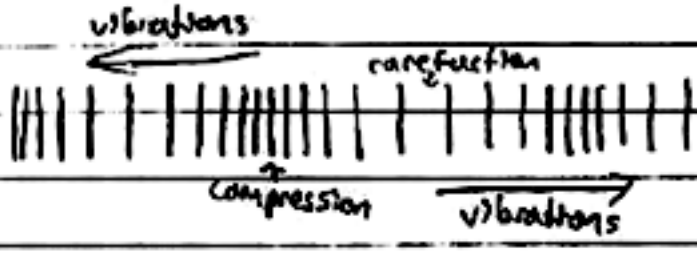
(b)

(c) by each wave. that goes up. is measured

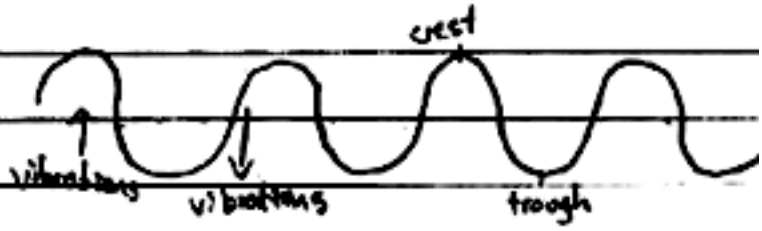
Scoring Guide - Score Point 4

A) The sound waves would be longitudinal waves, whe vibration moves parallel along the wave, while the wate wave would be a transverse wave and the vibrati moves perpendicular to the wave.

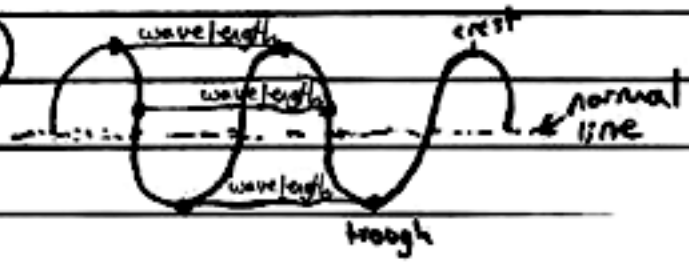
B) Longitudinal wave: (in a spring)



Transverse wave: (in a rope)



C)



from one spot on a wave to the corresponding spot on the next wave is a wavelength

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