**SPH 3U1 Sound Assignment Period 4**

1. What is the threshold of hearing?  Value please.
2. What is a Mach Number? Definition and formula.
3. Name the three smallest bones in the human body (Proper names)
4. The range of frequency humans can hear?
5. What sound unit is named after Alexander Graham Bell (it is really obvious)
6. List four factors that affect the production of standing waves on strings.
7. What do all waves need in order to travel? (why can’t sound travel in space).
8. Draw a transverse wave label crest, trough, amplitude and wavelength and indicate two particles in phase with each other.
9. Find the intensity of a 76 dB sound?  What happens to the sound intensity if you were to move 4 x the distance away? What would the new decibel level be?
10. Sagar drops a stone into a mine shaft 300 m deep.  Being a good student Sagar knows it is 25 oC out.  How much time will pass from the moment the stone is dropped and the moment when Sagar hears the splash?  List any assumptions you make.
11. A train sounds its 512 Hz horn as it passes a level crossing.  What frequency does Kayla hear the train whistle make as it is departing on a 20 oC day? The train is travelling at 15 m/s.
12. Aly yells at a distance wall. If the wall is 50 m away and the temperature is 24o how long before the echo returns to Aly?
13. Sadie is playing a guitar string with a frequency of 450 Hz. If Sadie tightens the string from 100 N to 300 N and shortens the string from 1.2 m to 0.68 m find the new frequency.
14. Josie is tuning a piano. If she plays a 512 Hz tuning fork and hears 20 beats in 4 seconds as she also plays the key what are the possible frequencies of the out of tune piano key?

