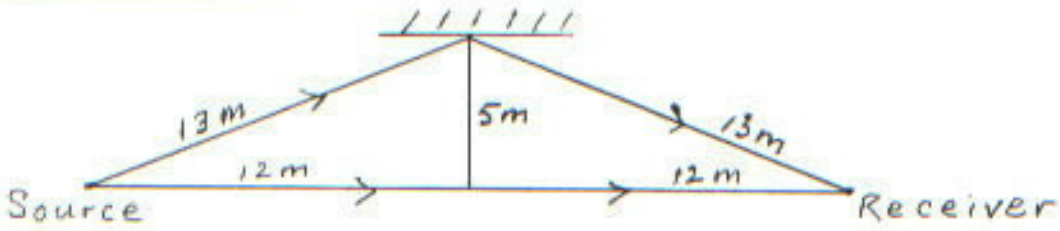

A source is transmitting a sound wave of frequency 115 Hz with a power of 10^{-4} watts. A receiver detects both the direct sound wave and the sound totally reflected from a small section of wall, as shown. See the table of constants for the velocity of sound

(a) What are the intensity and sound level due to the reflected wave, only?

(b) What is the phase difference between the direct and reflected wave?

(c) If the reflecting wall is removed, does the sound intensity increase, decrease, or stay the same? Explain.

First Letter of Last Name: ☐

Name: _____ Student Number: _____

2. A hollow metal sphere of inner radius $10cm$ and outer radius $10.1cm$ is given a charge of $+40\mu C$.
a) Find the electric field at distance of $5cm$ from the centre of the sphere.
b) Find the electric field at distance of $30cm$ from the centre of the sphere.

c) If a point charge of $-10\mu C$ is placed at the centre of the hollow sphere repeat parts a) and b).

First Letter of Last Name: ☐

Name: _____ Student Number: _____

3. Given three charges $q_1 = +2\mu C$ at $x = 0m$ and $y = 0m$, $q_2 = +3\mu C$ at $x = 3m$ and $y = 0m$, and $q_3 = -1\mu C$ at $x = 3m$ and $y = 2m$.
a) Find the force on charge 1.
b) How much work is done moving the q_1 from $x = 0m$ and $y = 0m$ to $x = 0m$ and $y = 2m$?