Homework Assignment

Seismic Surveying
(Problems taken from *Computational Engineering Geology*, by E. Derringh, 1998)

Due Monday April 13, 2009

1. When one face of a slab is struck with a hammer, a detector at the opposite face 0.85 m away receives waves 230 µs and 425 µs later. Find the speeds of (a) the S waves, (b) the P waves in this rock.

2. Calculate the difference in travel times between the reflected and direct waves for horizontal distances of x – 0h, 2h, 5h and 10h where h is the depth of the interval. Express the answers in terms of the x=0 reflected travel time.

3. Explorers are conducting a seismic reflection survey in a region in which a horizontal interface between two rock types is known to exist at some depth h. A geophone 186 m from the shot point receives P waves 62.0 ms and 87.7 ms after detonation. Find the depth to the interface.

4. A seismic survey yields the results shown below. Travel times are in ms and distances in meters. Find the depth to the horizontal interface.
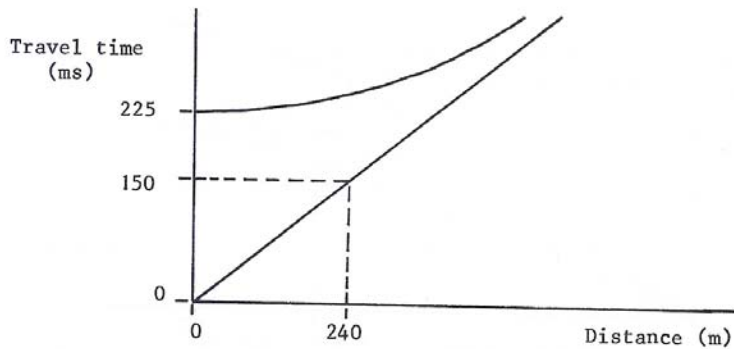
5. A seismic refraction survey results in data fitting the lines shown on the graph below. Find the depth to the horizontal interface.