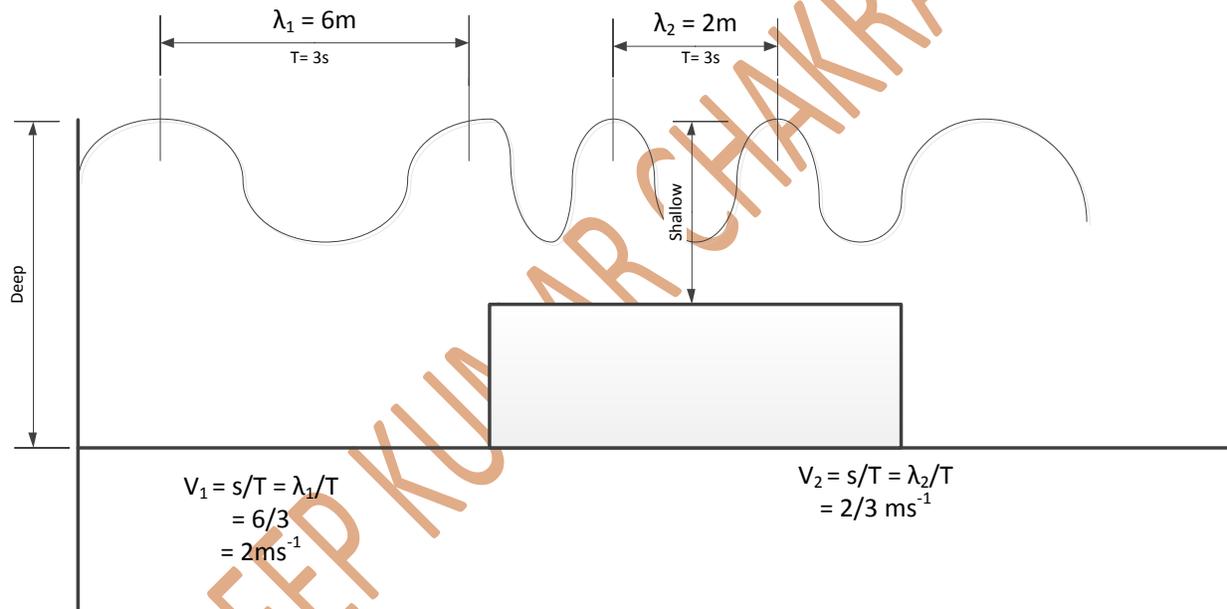


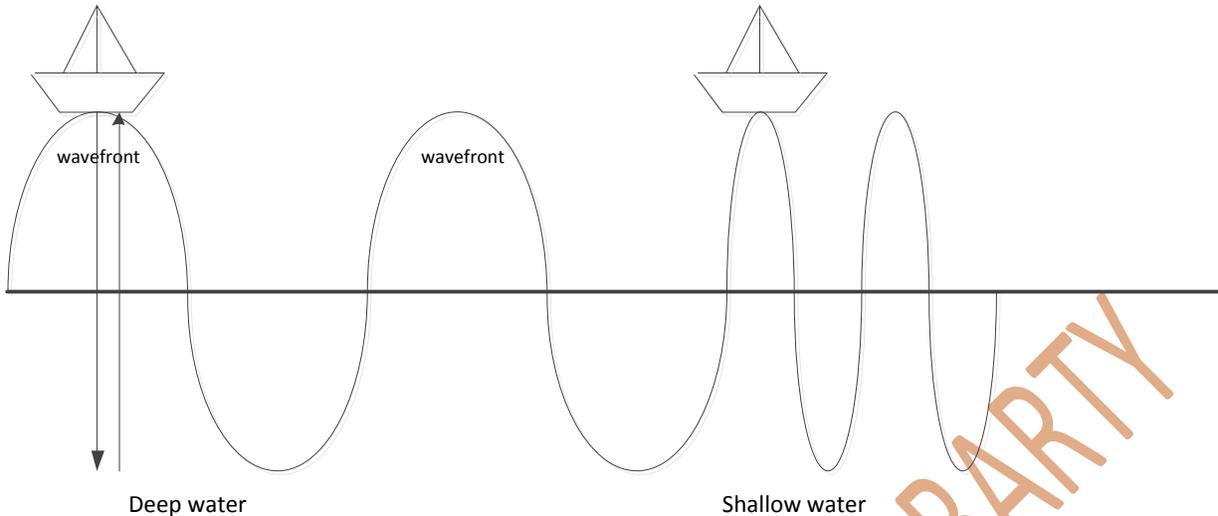
Water waves slows down as it approaches shallow water

The general rule for waves is that it slows down on entering a denser medium. In contrary, water waves slows down even if the density of the water remains the same throughout its propagation

Water waves have shortened wavelength as it approaches shallow water. The Period of the wave T , can't change with depth for a steady-state waves. If waves frequency changed as it got closer to shore, that means the waves were piling up somewhere in the middle of the sea, waiting for the slower waves to ripple off on the coast.

Since waves piling does not occur, therefore, the frequency remains the same as water waves approaches shallow water.





A boat in deep water will go up and down and back to the crest of the wave in 3 seconds. The same boat in shallow water will also sway up and down and back to the crest of the wave also in 3 seconds.

In deep water, as the boat moves up and down and back to the top in 3 seconds, the initial wave front would have traversed a distance of 6 m.

In shallow water, as the boat moves up and down and back to the top in 3 seconds, the initial wavefront would have move horizontally a distance of 2 meters. The speed of the wave in the shallow water is lower than the speed of the wave in deep water.

Do not confuse the wave motion on water to that of a displacement-time graph. The wave motion on water surface is a displacement-distance graph. The amplitude of water wave in shallow water should be bigger as the amount of water carried to the shallow area in the same time would be larger.

Therefore. The amplitude of the water wave will eventually built-up as it moves toward shore. The distance between wavefront would however be smaller. Since waves are spreading its energy is a longer coast shore (eg a bay) as it approaches the coast, the energy of these waves are spread a longer distance. The amplitude of the waves approaching the shores will also be smaller in this case as the same amount of energy is spread a wider distance.