Assignment example

Science, Physics

Physics assignment Question Set the wave to oscillate (although you can also start out with pulse) and play around with the different sliders. For this question experiment with having different ends: Fixed, Loose or No End. What do you notice that is different? What natural wave phenomena can each of these be modeling?

When the amplitude, the frequency and the damping are set at 50 by default, a gradually decaying wave is generated. The wave is shaped in such a way that the amplitude of the waves close to the origin of the wave is greater than the end of the wave. When the end is fixed and the damping is reduced to zero, the wave oscillates with gradually increasing amplitude above the natural frequency of the generating medium.

When set on the loose end, with the initial default conditions kept constant, the wave gradually decays in an exponential manner and when the damping is offset the wave oscillates with almost equal amplitude. However setting no end on, with zero damping a wave with crests of equal amplitude is generated and a smooth wave flow is observed. Additionally, when the damping is set at zero and at loose end, the amplitude of the wave increases gradually and the wave interferes destructively and starts over and over again. A similar condition is experienced when it is set at the fixed end with zero amplitude, in which case, the reflected part of the wave interferes destructively constantly. The natural phenomena like tides in oceans, earthquakes and waves on a string are examples

Question 2

Figure out how to make a standing wave and make several standing waves. Post a picture and your instructions.

The following diagrams illustrate a standing wave that was formed at amplitude, frequency and damping at 42, 38 and 9 respectively.

Figure 4 shows the 4th stage of the stand wave

The term standing wave is used to denote the resonant mode of the vibrating string or the simulation used in this experiment. The resonance in this simulation is created by constructive interference of two waves which travel in opposite directions in the same medium creating a simple harmonic oscillator. Diagrams 1 through 4 in the inserted pictures above show how the wave transits from one stage to another and eventually returns to the initial position showing a simple harmonic motion