Lab: Waves on a slinky.. *(this is wave interference we can see!)*

What are waves?

What are the three, main types of waves?

What happens when waves pass through each other?

What is resonance?

Record the distance (d) between the End Nodes here.. (feet)

For each of the following 'modes' of vibration,

Draw the Standing wave Form below.

1st Mode of Vibration

Time for 10 complete cycles _____
Time for 1 cycle _____ Frequency _____(1/sec)

Relationship between (d) and (ʎ)

Wavelength of 1 complete wave _____
Use this space to calculate the velocity of the waves. (box your answer)

2nd Mode of Vibration

Time for 10 complete cycles _____
Time for 1 cycle _____ Frequency _____(1/sec)

Relationship between (d) and (ʎ)

Wavelength of 1 complete wave _____
Use this space to calculate the velocity of the waves. (box your answer)

3rd Mode of Vibration

Time for 10 complete cycles _____

Time for 1 cycle _____ Frequency _____(1/sec)

Relationship between (d) and (ʎ)

Wavelength of 1 complete wave _____

Use this space to calculate the velocity of the waves. (box your answer)

(Continued on back side)

Looking at the pattern in formulas for the relationship between wavelength and the 'mode' of oscillation, determine the 'general formula for wavelength for an infinite series of standing waves.. (i.e., what would the 5^{th} mode of oscillation look like? What would the wavelength be? What would the 9^{th} mode of oscillation look like? What would the wavelength be as a function of d)

Looking at the pattern in frequencies for each mode of oscillation, what would the general formula be for additional modes of vibration be? (note: the first frequency with the longest wavelength is called 'the fundamental frequency).

Looking at the speeds you calculated for each wave form, what can you conclude about the general 'rule' for wave speed (in a slinky as an example).