

Investigation 15A: Waves

Essential question: What is a wave and what are the properties of waves?

Transverse and longitudinal waves

1. Hold one end of a Slinky® spring (or other long spring) and have your partner hold the other end. Stretch the spring a little bit so that it is not slack.
2. Create *transverse* waves by moving your hand side-to-side.
3. Create *longitudinal* waves by moving your hand sharply towards your partner.
4. Repeat the above steps, but this time using a wave motion rope or other heavy string.

Questions

- a. What are the differences between these two types of waves? Describe the characteristics of each in words.
- b. Can you make both types of waves on both pieces of equipment? Why or why not?
- c. Can you create waves of different velocities on both pieces of equipment? If so, how?
- d. Estimate the wavelength of the wave in the diagram below and graph its oscillations. Is this a transverse or a longitudinal wave?

