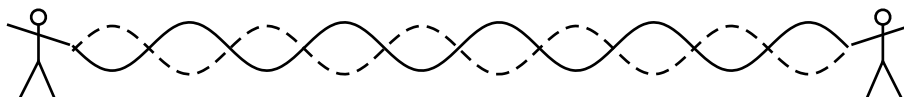


## Standing Wave Problems

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1. Two students are 10 meters apart and shaking a slinky between them. They create a standing wave with a frequency of 3 Hz, as shown in the picture above.
  - a. How many nodes are in the standing wave? (Don't include the ends.)
  
  - b. What is the wavelength of the wave?
  
  - c. How fast is the wave traveling?
  
  - d. If they wanted to have fewer nodes in the slinky, what are three things they could do?
  
  - e. If they wanted to have more nodes in the slinky, what are three things they could do?
  
2. There is a standing wave in a string that is 1 meter long. There are exactly 3 nodes in the string. The waves travel with a speed of 45 m/s.
  - a. Draw a picture of the string.
  
  - b. What is the wavelength of the wave?
  
  - c. What is the frequency of the wave?
  
3. There is a standing wave between two people. The wave has a speed of 340 m/s, a frequency of 800 Hz and there are 5 nodes between the two people.
  - a. What is the wavelength of the wave?
  
  - b. How many waves are between the two people?
  
  - c. How far apart are the two people?

Answers:      1. a) 9    b) 2 m    c) 6 m/s    d) Increase tension, decrease frequency, stand closer  
                   2. a) 2    b) 1/2 m    c) 90 Hz                    3. a) 0.425 m    b) 3    c) 1.275 m