Lesson 3 Teacher Reference Slinky Spring Station Preparation

Gather the following supplies to build 7 slinky spring stations:

- 21 plastic coil springs (1.4" x 4")
- 91 polystyrene balls (30 cm diameter)
- 1 hot glue gun
- 7 glue sticks
- 1 pen or pencil
- 1 roll of painters tape
- 14 cardboard packing boxes (2" x 3" x 4")
 - These are repurposed supplies from two prior units: OpenSciEd Unit P.3: What can we do to make driving safer for everyone? (Vehicle Collisions Unit) and OpenSciEd Unit P.4: Meteors, Orbits, and Gravity (Meteors Unit)
- 7 ring stand rods (3')
 - An alternate supply is either a 4' curtain rod or a wire hanger. The directions for using the latter are outlined at the end of this reference.

The steps below are for building a single slinky spring station. Repeat these directions 7 times to make 7 stations. A supplemental teacher video outlining these directions can be viewed at: https://youtu.be/fFl-pX-MflE

Gather 3 plastic coil springs.

Pull 1 loop away from the end of 1 coil spring. Hot glue the end of the coil to the ring below it to form a continuous circle. Then run a bead of glue along this loop.

Within 20 seconds, press the end of a second coil spring against that bead of glue on the circular loop of the first coil spring.











Test the springs, pulling them apart to ensure that they are securely connected to each other.

Repeat the previous 2 steps, for the other end of the second (middle) coil spring and 1 end of the

This is what the system will look like after you do this. This piece will be referred to as the "3-part slinky spring" in the steps below.

Use your fingertips to permanently deform the end of 1 coil on the 3-part slinky spring 90 degrees from the rest of the coils. Hot glue the end of this deformed coil to the ring below it to form a continuous circle.

Use the end of a pencil or pen to poke a hole through 1 side of each cardboard box 1" above the base of the box.

Slide the end of the slinky spring system that you deformed over a ring stand rod.

Push each end of the ring stand rod into the hole you made on each box.

The end of the 3-part slinky spring should now slide relatively easily along the ring stand rod.

















Secure the boxes to the table or ground that this student station will be located using painters tape. Cut a 3' piece of painters tape and place it 60" away from the ring stand rod, parallel to it. Place 5-6 small pieces of tape (~10" apart) in a line perpendicular to the 3' piece of tape and the ring stand rod. Temporarily tape the unsecured end of the 3-part slinky spring to the middle point of the 3' piece of painters tape.

Stretch out the middle parts of the 3-part slinky spring, so the location where 2 coil springs that make it up is 20" from the ring stand rod, and the location where the next 2 coil springs that make it up is 40" inches from the ring stand rod. This will ensure that each of the 3 coil springs is equally stretched out.

Slide 13 polystyrene balls in between the coils, spaced 5" apart, starting with the first ball at the end of the coil. This should ensure that the last ball is at the other end of the 3-part slinky spring. Run a small bead of glue (about 1") near the equator of each ball, parallel to the nearest coil touching it there. This should be a sufficient amount of glue to secure the ball to this spot of the spring.

After all the balls are secured, pull off any pieces of excess glue that are sticking out of the springs.

Test making a wave pulse at this station by holding the ball on the end of the 3-part slinky spring and moving it back and forth quickly along the 3" tape.

The directions below outline how to prepare a wire coat hanger to use in place of a ring stand rod, if you don't have rods available.

Break the coat hanger at 2 spots near where the hook forms. You can do this with your fingertips by bending the wire back and forth about a dozen times at each of those locations; or, you can use a wire cutter.

Straighten out the wire at each of the spots where there was a curve. This can also be done with your fingertips. The straightened wire can now be used in place of a ring stand rod.







