Tuning Fork & Water

Hit the tuning fork on the stopper so it begins to vibrate. Immediately place the fork in the water cup and observe what happens. Do this several times so you can watch closely. Be sure to see what happens to the water between the prongs of the fork when you place it in.

***2 Cars**

Experiment with a variety of collisions:

- One car at rest, one car moving with spring piston
- One car at rest one car moving with Velcro so cars stick together
- Both cars moving towards one another
- Various collisions with differing masses (use the blocks provided)

Explain what you saw. Try to come up with a claim that can explain every scenario.

Balloon & Penny

Shake the balloon with two hands in a circular fashion so the penny begins to roll on its edge on the inside of the balloon. Once the penny is circulating stop.

Explain why the penny does what it does. What would you expect the penny to do if the balloon popped?

Bicycle Wheel

Have someone hold the wheel horizontally and get it spinning. Flip the wheel and pass it off. What do you feel? Explain why this might be. Do this a second time with one person in the spinning chair, be sure they lift their feet as they turn the wheel!

Tuning Fork & Water
Hit the tuning fork on the bottom of your shoe so it begins to vibrate. Hold it over the tube with water and slowly lift the inner tube.

***Meter Stick & Weights**
Find two ways to balance the larger mass. You may only move the small mass and the pivot point.

Explain what the relationship might be in balancing the meter stick for any case.

Bouncy Balls
Drop each ball from approximately the same height. Note how high up it bounces compared to its original location. Next, place one ball on top of another and drop them together. What happens? Why?

Beakers and Oil
Examine the set up carefully. What do you notice about the small beaker that is submerged in oil? Why do you think this is?

Compasses
Examine how a compass interacts with a magnet. (North is marked with masking tape)
Determine what type of magnetic pole is at Antarctica, North or South.
Next, turn on the power supply so only 1.5Amps runs through the coil. Move the compass around. Try sticking the magnet inside the coil.

***Wave Generator**

Be sure the frequency is set to zero and turn up the amplitude. Next, slowly turn up the frequency until you see maximum amplitude. This first one should look like a jump rope (a single arc). Slowly turn up the generator until you see two arcs. Go ahead and do this up to 4 arcs.

Why do you think this phenomena occurs?

What is the relationship between the frequency values at which this phenomena occurs?

Extension: Can you find a way to adjust the apparatus so this phenomena occurs at different frequencies?

2 Washers (or coins) and a Ruler

Place the ruler on the edge of the table, pivot the ruler so one edge is slightly off the table. Place a washer (coin) on top of the ruler. Place the other washer on the table edge in front of the other end of the ruler. Flick the ruler so it hits the washer on the table and the other coin drops. Listen carefully. Do they hit the ground at the same time?

Musical Bottles

There are several bottles at this station. If you blew over the top, which one would produce the highest sound? What about the lowest?

Now try this, instead of blowing over the top, tap the glass where the water is. Which bottle produced the highest pitched sound?

Explain your observations. Why do you think the bottle behaved as it did when you tapped it? Why is this the same or different to when you blow over it?

Tug of War

Have a gentle tug of war using two spring scales with your partner. Try pulling in different ways and note the value on the spring scale. When are the readings different? When are they the same?

Circuits
Two different types of circuits are wired. Put the batteries in and record your observations. Unscrew one light bulb on each circuit. Note what happens. Why does this occur?

Sounds

Pick up the hanger by the string and bang it against the table. Pay attention to the sound. Next, wrap the string around each of your index fingers, plug your ears with your fingers tightly, and bang the hanger against the table again. What do you hear now?

Soup Can Races
There are two cans. A full can of broth (14oz) and a can of refried beans (16 oz) race the cans and observe which can is the fastest.

Hand Generator
The generator has the following parts. Inside there is a magnet which is inside of a coil of wire. When you turn the crank, it spins the magnet inside of the wire coil. Try cranking the generator at a very slow speed and slowly increase your rate (please not too fast or you will burn out the light!)