Bouncing Balls

Take a partner, a rubber ball, and a measuring tape to a space next to a wall. Tape the measuring tape vertically against the wall with the zero at the floor. From about one meter off the ground, let a ball bounce close to the measuring tape and measure where the ball bounces on the first bounce. Repeat this process, but measure where the ball bounces on the second bounce. Repeat for the first five bounces.

Record your data in a chart like the one below:

Bounce	Height (m)
0	1
1	
2	
3	
4	
5	

Pendulum Length

Take a partner, a pendulum of mass ~20 grams, and a stopwatch to an open space. Release the pendulum from an angle of 30 degrees from vertical and measure the time it takes for the pendulum to swing back and forth ten times. Divide that time by ten and record the time (period) in the table. Repeat this for each of the five lengths.

Record your data in a chart like the one below:

Pendulum Length	Time for 10 back and forth swings (s)	Period (s)
20 cm		
40 cm		
60 cm		
80 cm		
100 cm		

Pendulum Mass

Take a partner, a 50 cm long pendulum with different masses, and a stopwatch to an open space. Release the pendulum from an angle of 30 degrees from vertical and measure the time it takes for the pendulum to swing back and forth ten times. Divide that time by ten and record in the table. Do this three times and find an average period for one back and forth swing. Repeat this for each of the five masses.

Record your data in a chart like the one below:

Pendulum Weight / Mass	**Time for 10 back and forth swings (s)**	**Period (s)**
1/8 oz = 3.5 g		
¼ oz = 7.1 g		
3/8 oz = 10.6 g		
½ oz = 14.2 g		
5/8 oz = 17.7 g		
¾ oz = 21.3 g		
7/8 oz = 24.8 g		
1 oz = 28.4 g		

Mirror Images

Take a partner, two mirrors, the “R”, and protractor to a desk. Take the two mirrors placing them next to each other and change the angle between their reflective faces until you see the number of images indicated in the chart below. Record the angle in the chart.

Record your data in a chart like the one below:

Number of Images	**Angle Between Reflective Surfaces**
1	
2	
3	
4	
5	
6	
7	
8	

Hooke's Law

Take a partner, a spring, several different masses, and a measuring device to a table. First, place no mass on the end of the spring and hold it up so that the bottom of the spring is at the 0 cm mark. Then, hang one mass on the end of the spring. Measure the stretch of the spring. Then, hang two masses on the end and measure. Continue in this manner until you have all six masses on the end of the spring.

Record your data in a chart like the one below:

Mass on Spring (~20 g each)	Stretch (cm)
0	0
20	
40	
60	
80	
100	