

Slowing the Cylinder Worksheet

In the tables below, record the length of time each setup took to rebound from compression of **2mL** to full extension.

Spring #1

Water

Trial	Time
1	
2	
3	
Average	

Oil

Trial	Time(Sec)
1	
2	
3	
Average	

Soda

Trial	Time(Sec)
1	
2	
3	
Average	

Orifice

Trial	Time(Sec)
1	
2	
3	
Average	

Spring #2

Water

Trial	Time(Sec)
1	
2	
3	
Average	

Oil

Trial	Time(Sec)
1	
2	
3	
Average	

Soda

Trial	Time(Sec)
1	
2	
3	
Average	

Orifice

Trial	Time(Sec)
1	
2	
3	
Average	

Reflection

1. Did the spring stiffness have an effect on the time it took the plunger to reach full extension? Explain your answer using data.
2. Did the size of the orifice have an effect on the time it took the plunger to reach full extension? Explain your answer using data.
3. Did the liquid used in the syringe have an effect on the time it took the plunger to reach full extension? Explain your answer using data.
4. From the perspective of an engineer designing a shock absorber, which is best: for the plunger to rebound quickly or slowly? Why?
5. Of the three variables, springs, orifice size, and liquid variations, which combination would engineers most likely use (based on your data!) to improve shock absorption? Why?