



**High School Science Virtual Learning**

**College Chemistry**

**At Home Labs**

**May 8th, 2020**



## High School College Chemistry

### Lesson: May 8th, 2020

#### **Objective/Learning Target:**

**The Learner will have the opportunity to reinforce concepts learned in previous lessons with simple labs they can perform themselves with things commonly found at home.**



## Bellringer

1. Describe the relationship between Pressure and Temperature of a gas?
2. Describe the relationship between Temperature and volume of a gas?



## Bellringer Answers

1. Pressure and Temperature are directly proportional. As Temperature goes up, Pressure goes up and vice versa. This is known as Gay-Lussac's Law (Amontons's Law)
2. Temperature and Volume are also directly proportional. As Temperature goes down Volume goes down. This is known as Charles's Law.



## Lab

Materials needed:

Tongs

Empty soda can (rinse out completely)

Approx.  $\frac{1}{3}$  cup of water

Bowl of ice water

Stove

Towel to clean up



## Lab

MAKE SURE YOU HAVE YOUR PARENTS PERMISSION BEFORE BEGINNING.

Warning the water in the can is HOT and can be a Scalding Hazard. Make sure any younger children STAY BACK!

Watch the video and follow the instructions by the Space Gal.  
[The Science Behind the Can Crushing Experiment-The Space Gal \(5:08\)](#)

Be sure to checkout the next slide for a much bigger example of this experiment



Lab

[Mythbusters 14x02 Tanker Crush Part 09.mp4 \(4:31\)](#)



## Questions

1. How can the effects of the crushing can be related to tires in the winter?
2. How can these effects be related to NASCAR Tires?
3. What industries would need to consider the effects of Pressure, Temperature and Volume?
4. What might happen if you leave an unopened pack of soda in your trunk?





## Answers

1. In winter you need to add air to your tires because the lower temperature causes them to contract (go flat)
2. In NASCAR the friction of the speed cars going near 200 mph causes the pressures to go up, decreasing the area of the tires in contact with the track. This is why they often start a run with the air pressure extremely low. It also changes the handling and how fast they can drive throughout a run.
3. Possible industries, Transportation, Chemical production, Food industry (especially if they use pressure cookers that can explode)



## Answers

4. In summer the temperature can get too high and there is a possibility of the cans rupturing and making a huge mess in your car.