CHEMISTRY MATTERS
gpb.org/chemistry-matters

Main Ideas, Key Points, Questions:

After watching the video segment, write down key points, main ideas and big questions.

Objective(s):

- *To use the Ideal Gas Law to calculate relationships between pressure, volume, temperature and number of moles of gas.*
- *To plan and carry out an engineering design challenge using the Ideal Gas Law.*

Notes:

During the video segment, use words, phrases or drawings to take notes.

Summary:

After watching the video segment, write at least three sentences explaining what you learned.
You can ask yourself: "If I was going to explain this to someone else, what would I say?"

After watching the video and performing any associated labs and/or experiments, you should be able to answer the following:

1. Based on the actual plastic bag that you are using to make a model air bag, use the Ideal Gas Law to calculate how many moles of gas would be fill the bag.

2. Since the mole ratio for acetic acid and sodium bicarbonate are 1:1 in this reaction, you will need the same number of moles of each reactant to make the products. Use the molar mass of sodium bicarbonate to calculate how many grams of sodium bicarbonate you will need.

3. Use the molar mass of acetic acid to calculate how many grams of acetic acid you will need.

Remember that 100 grams of vinegar contains only 5 grams of acetic acid and 95 grams of water.
Also, remember that the density of vinegar is almost the same as the density of water, so 10 grams of vinegar equals 10 milliliters of vinegar.

4. Explain how you will add sodium bicarbonate powder to the vinegar in the plastic airbag.

5. Explain how you will measure the time it takes to inflate the airbag.