

# Density of a Gas

## Summary

Students will measure the density of a gas using a seltzer tablet to release carbon dioxide.

## Main Core Tie

SEEd - Grade 8

[Strand 8.1: MATTER AND ENERGY INTERACT IN THE PHYSICAL WORLD Standard 8.1.2](#)

## Time Frame

1 class periods of 70 minutes each

## Group Size

Small Groups

## Materials

- 2 identical bags (plastic)
- ring stand
- clamp
- medium sized test tube
- glass tubing
- plastic tubing
- 100 mL graduated cylinder
- bucket
- goggles
- Alka Seltzer or generic (much cheaper) stomach aid tablets
- [Worksheet](#)

## Instructional Procedures

"Hook" students by asking them how the density of gas could be measured. If they have had some experience with calculating density they may be able to generate responses concerning volume and mass. Most responses will center around filling a bag with a gas (blowing into it) massing it, and then finding its volume.

Demonstrate this procedure and generate an answer. The volume of the bag can be quickly measured by placing the blown up bag in a large beaker.

Redo this experiment with an empty bag. Because of the very small density of gases, you may discover it makes no difference whether the bag has air or not, most middle school balances cannot easily detect the difference between masses this small.

Explain to students that another way exists to measure the density of a gas and that is explained in the lab they will be doing.

Read the procedures and demonstrate the set up of the lab. The most difficult part is getting the graduated cylinder full of water and upside down in the bucket.

Allow students to work, handing out half a seltzer tablets per group. Do not give them to students at first, it is too easy for them to drop them in the water before they are ready.

As students finish, ask them to post their results on the board or an overhead. The density of carbon dioxide is about .002. If your students can come within a decimal place of this figure, they have done well.

Discuss sources of error, there are lots of them. Allow students to finish with the analysis

questions.

### Bibliography

Lesson Design by Jordan School District Teachers and Staff.

### Authors

[Utah LessonPlans](#)