

# Percent Composition: A quick and dirty experiment

Chad Husting | Mon, 10/30/2017 - 13:49



## What are we doing to help kids achieve?

Some of my classes are working on a unit that involves percent composition, empirical and molecular formulas and hydrates. Those topics have similarities and can be tied together. As we start percent composition it is nice to do a quick demonstration to get the students attention. Food seems to be a great way to get any teenager's attention (See Percent Composition of an Oreo Cookie (<https://www.chemedx.org/blog/percent-composition-oreo-cookie>)). Solving for the amount of sugar in a piece of chewing gum is also a simple method to demonstrate percent composition.

First, I ask if any students want to chew sugary gum in class (a line quickly forms). Students take the mass of the gum ("pre-chewed" gum) and start chewing. We discuss the ingredients in the gum. The gum contains mainly gum base and sugar. I introduce the idea of percent composition as they chew the gum. Students learn that they are "extracting" sugar from the gum. The extraction is "finished" when the flavor is gone (about 10 minutes). The mass of the "chewed" gum is much less than the "pre-chewed" gum. The difference is the amount of sugar. A nice feature is that the label usually contains the amount of sugar for every piece of gum (theoretical amount). The amount of sugar (experimental) divided by the whole amount, the "pre-chewed" mass, times 100 is the percent of sugar in the gum. Students are usually surprised at how much sugar is in a piece of gum and how close their results are to the mass of sugar on the label. We then have a general discussion about cavities and percent error.

It is not uncommon for students to get within about 10% error from the actual value on the label. This is a nice, easy, quick demonstration to introduce a concept that we typically do each year. Do you have a method that works for you? How about posting a comment below.....

Other related ChemEd X posts:

Material Science, Percent Comp and Copper (<https://www.chemedx.org/blog/material-science-percent-comp-and-copper>)

Hydrate Labs, Microscale Chemistry and Cage Fighting.... (<https://www.chemedx.org/blog/hydrate-labs-microscale-chemistry-and-cage-fighting>)

Hydrates Take 2 (<https://www.chemedx.org/blog/hydrates-take-2>)

## Related:

[percent composition \(/category/tags/percent-composition\)](#)

[high school chemistry \(/category/audience/high-school-chemistry\)](#)

[hands-on learning \(/category/pedagogy/hands-learning\)](#)

[Chemistry \(/category/domain/chemistry\)](#)

[inorganic chemistry \(/category/chemistry-domain/inorganic-chemistry\)](#)

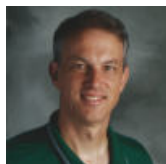
Share this

Like

Tweet

G+

Share 6



Chad Husting Sycamore High School, Cincinnati Ohio

Chad Husting's blog (/blogs/chad-husting)

Log in (/user/login?destination=node/3891%23comment-form) or register (/user/register?destination=node/3891%23comment-form) to post comments

Join the conversation.

## Comments 4

### Love this! (/comment/1058#comment-1058)

Tom Kuntzleman | Tue, 10/31/2017 - 16:58



Great idea, Chad.

Log in (/user/login?destination=node/3891%23comment-form) or register (/user/register?destination=node/3891%23comment-form) to post comments

### I've used this as a (/comment/1060#comment-1060)

Eric Sullenberger | Wed, 11/01/2017 - 11:39

I've used this as a discrepant event with younger grades to challenge them with thinking about where the missing mass went. A lot of students predict that the mass to go up with the addition of saliva and are surprised to see it go down. It takes this a while to get to identifying the sugar because they usually focus on the loss of flavor first. Also, an addition tidbit, the wrapper makes great weigh paper, especially after chewing.

Log in (/user/login?destination=node/3891%23comment-form) or register (/user/register?destination=node/3891%23comment-form) to post comments

### Nice... (/comment/1063#comment-1063)

Chad Husting | Thu, 11/02/2017 - 10:25



Love that idea...you have really hit on a popular misconception..I'm going to try it.

Log in (/user/login?destination=node/3891%23comment-form) or register (/user/register?destination=node/3891%23comment-form) to post comments

## Student Report (/comment/1061#comment-1061)

Deanna Cullen | Wed, 11/01/2017 - 13:34



I have used the bubble gum lab many times with lots of success! Some years, I have asked students to bring in their own gum, but I often purchase it for them. As Eric mentioned, I always point out that they should find the mass of the wrapper, use it when measuring the mass of the gum and save it while they are chewing. Other than that, I don't give students very much direction. I am attaching a handout that I have used.

 bubble\_gum\_informal\_lab\_report.docx

([https://www.chemedx.org/sites/www.chemedx.org/files/bubble\\_gum\\_informal\\_lab\\_report.docx](https://www.chemedx.org/sites/www.chemedx.org/files/bubble_gum_informal_lab_report.docx))

Log in (/user/login?destination=node/3891%23comment-form) or register (/user/register?destination=node/3891%23comment-form) to post comments

## Chad Husting's Blogs



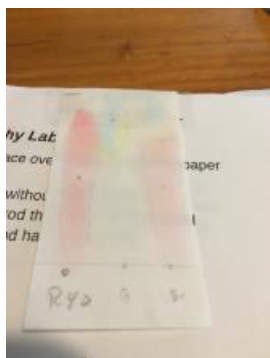
(/blog/percent-composition-quick-and-dirty-experiment)

Percent Composition: A quick and dirty experiment (/blog/percent-composition-quick-and-dirty-experiment)



(/blog/classroom-culture-positive-reinforcement)

Classroom Culture - Positive Reinforcement (/blog/classroom-culture-positive-reinforcement)



(/blog/separation-and-choices)

Separation and Choices (/blog/separation-and-choices)



(/blog/density-and-measuring)

Density and Measuring (/blog/density-and-measuring)



(/blog/measuring-activity)

Measuring Activity (/blog/measuring-activity)

1 of 13 [next > \(/blog/percent-composition-quick-and-dirty-experiment?page=1\)](#)

## Blogs



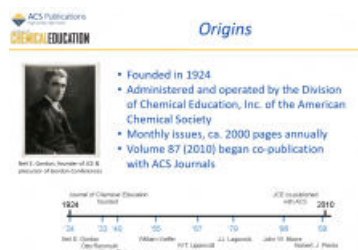
(/blog/percent-composition-quick-and-dirty-experiment)

Percent Composition: A quick and dirty experiment (/blog/percent-composition-quick-and-dirty-experiment)



(/blog/classroom-culture-positive-reinforcement)

Classroom Culture - Positive Reinforcement (</blog/classroom-culture-positive-reinforcement>)



(/blog/using-journal-chemical-education)

Using the Journal of Chemical Education ([/blog/using-journal-chemical-education](http://blog/using-journal-chemical-education))



(/blog/making-lab-diagrams-easier-visualize)

Making Lab Diagrams Easier to Visualize (</blog/making-lab-diagrams-easier-visualize>)



[\(/blog/chemistry-tutorial-resources\)](/blog/chemistry-tutorial-resources)Chemistry Tutorial Resources (</blog/chemistry-tutorial-resources>)

1	2 ( <a href="/blog/percent-composition-quick-and-dirty-experiment?page=1">/blog/percent-composition-quick-and-dirty-experiment?page=1</a> )
3 ( <a href="/blog/percent-composition-quick-and-dirty-experiment?page=2">/blog/percent-composition-quick-and-dirty-experiment?page=2</a> )	4 ( <a href="/blog/percent-composition-quick-and-dirty-experiment?page=3">/blog/percent-composition-quick-and-dirty-experiment?page=3</a> )
5 ( <a href="/blog/percent-composition-quick-and-dirty-experiment?page=4">/blog/percent-composition-quick-and-dirty-experiment?page=4</a> )	6 ( <a href="/blog/percent-composition-quick-and-dirty-experiment?page=5">/blog/percent-composition-quick-and-dirty-experiment?page=5</a> )
7 ( <a href="/blog/percent-composition-quick-and-dirty-experiment?page=6">/blog/percent-composition-quick-and-dirty-experiment?page=6</a> )	8 ( <a href="/blog/percent-composition-quick-and-dirty-experiment?page=7">/blog/percent-composition-quick-and-dirty-experiment?page=7</a> )
9 ( <a href="/blog/percent-composition-quick-and-dirty-experiment?page=8">/blog/percent-composition-quick-and-dirty-experiment?page=8</a> )	...
next › ( <a href="/blog/percent-composition-quick-and-dirty-experiment?page=1">/blog/percent-composition-quick-and-dirty-experiment?page=1</a> )	
last » ( <a href="/blog/percent-composition-quick-and-dirty-experiment?page=93">/blog/percent-composition-quick-and-dirty-experiment?page=93</a> )	

## ChemEd X and You

[Subscribe \(/store/products/subscriptions/subscribe-online-today\)](/store/products/subscriptions/subscribe-online-today)[Contribute \(/page/contribute\)](/page/contribute)

### Content

[Activities \(/page/activity\)](/page/activity)[Articles \(/page/article\)](/page/article)[Blogs \(/page/blog\)](/page/blog)[News \(/aggregator\)](/aggregator)[Picks \(/page/pick\)](/page/pick)[Tweets \(/tweets\)](/tweets)[Video \(/video\)](/video)

### Members

[Account \(/user?current=node/3891\)](/user?current=node/3891)[Ambassadors \(/page/chemed-x-ambassador-program\)](/page/chemed-x-ambassador-program)[Contributions \(/user?current=node/3891\)](/user?current=node/3891)[FAQ \(/page/chemed-x-website-faq\)](/page/chemed-x-website-faq)

## Subscribers

[ChemEd X Video \(/video\)](#)

[Chemistry Comes Alive! \(/jce-product/chemistry-comes-alive\)](#)

[ChemPages Laboratory \(/jce-product/chempages-laboratory\)](#)

[ChemPages Netorials \(/jce-product/netorials\)](#)

[General Chemistry Multimedia Problems \(/jce-product/general-chemistry-multimedia-problems\)](#)

[Lake Study \(/jce-product/lake-study\)](#)

[TA Handbook \(/jce-product/ta-handbook\)](#)

[More \(/jce-products\)](#)

## About

[About ChemEd X \(/page/about-chemical-education-xchange\)](#)

[Journal of Chemical Education \(/affiliate/journal-chemical-education\)](#)

[Division of Chemical Education \(/affiliate/division-chemical-education-inc\)](#)

[American Chemical Society \(/affiliate/american-chemical-society\)](#)

[National Science Foundation \(/affiliate/national-science-foundation\)](#)

[Contact Us \(/contact\)](#) [Privacy \(/page/privacy\)](#) [Terms of Use \(/page/terms-use\)](#)

Use of ChemEd X web site constitutes acceptance of our [Terms of Use \(/page/terms-use\)](#).

Copyright © 2017 Division of Chemical Education, Inc. of the American Chemical Society. All rights reserved.