



LOUISIANA  
sugarcane

## A CLOSER LOOK AT

# SUGAR

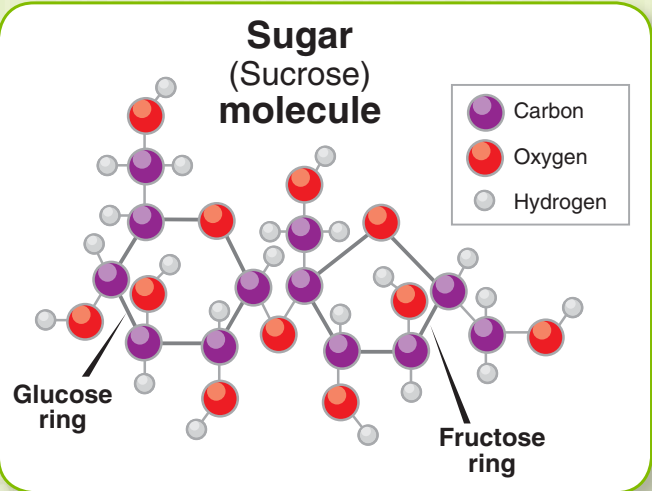


Is that some sort of a secret code? There's really no mystery. It's simply the scientific code for a sugar **molecule**. This chemical compound is the most **abundant**, pure, **organic** substance in the world.

Sugar/sucrose is a naturally occurring crystalline **carbohydrate**. Carbohydrates are the foundation of our food chain. They are the chief form in which plants store energy. The energy we get from eating carrots, broccoli, apples, bananas, or potatoes comes from the carbohydrates the plant has stored in its roots, seeds, leaves, stems, or fruit. When sugar is **refined** it is simply extracted from the plant and remains in its natural form. The sugar in a carrot, apple or banana is the exact same sugar that is in your sugar bowl.



sugar crystals under a microscope

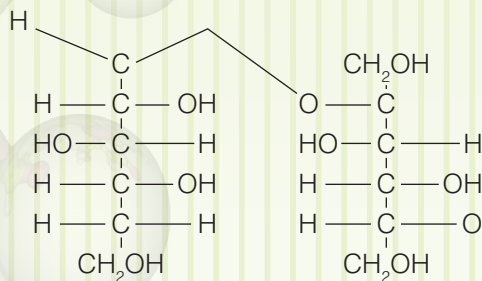


Sucrose, or sugar, is made from a combination of carbon, hydrogen and oxygen **atoms**. While you can't see a carbohydrate, you *can* see a sugar crystal. A sugar **crystal** is made from thousands of sugar molecules bonded together. It's what you see when you look at a grain of sugar.

### Glossary

- **molecule** - *n.* the smallest particle into which a substance can be divided and still remain the same substance
- **abundant** - *adj.* in great amounts; plentiful
- **organic** - *adj.* of or coming from living things
- **carbohydrate** - *n.* a substance, such as sugar, made up of carbon, hydrogen and oxygen. Carbohydrates are made by green plants.
- **refined** - *adj.* free of impurities; purified
- **atom** - *n.* the smallest unit of a chemical element
- **crystal** - *n.* a solid substance with sides and angles that naturally form a regular pattern

### Sugar Molecule Scientific Formula:



## Making Sugar Crystals

### Materials you'll need:

- 1 piece of cotton string
- 1 pencil or stick
- 1 paper clip
- 1 glass jar
- sauce pan
- measuring cup
- 1 cup water
- 2 cups sugar
- additional sugar (amount will vary)

Tie a short piece of cotton string to the middle of a pencil or stick. Attach the paper clip to the loose end of the string for a weight. Next, moisten the string slightly and roll it in a bit of sugar. Lay the pencil across the top of the jar with the string hanging down inside.

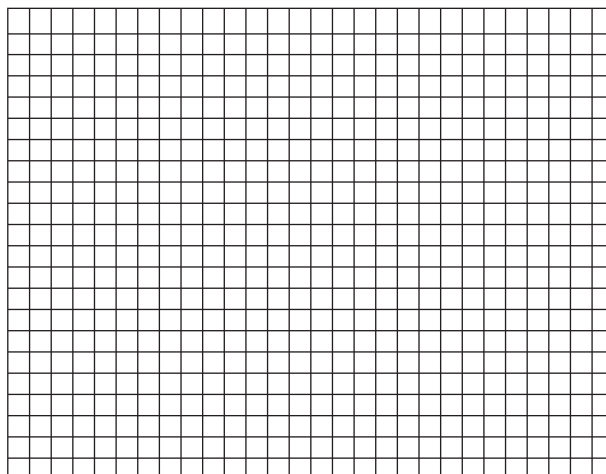
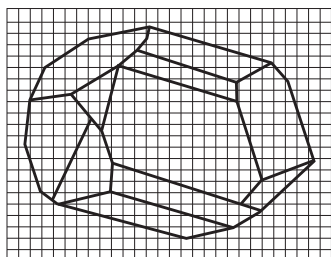
In a sauce pan, heat the water and dissolve 2 cups of sugar in it. Let it cool. Heat the sugar-water solution a second time and dissolve as much of the additional sugar as you can.



Pour the solution into the prepared jar and leave it undisturbed for a couple of days. You should start seeing crystals grow as the water evaporates.

## Scale Drawing

Use the scale to draw an enlarged diagram of a sugar crystal. This would look great on a poster!



## Molecule Model

To make a sugar molecule come to life, construct a 3-dimensional model — what a cool science project!

Use the picture to the right as your guide.

Hint: Remember — use one color for each element: carbon, hydrogen and oxygen.

### Materials you'll need:

- Styrofoam balls - 3 colors
- 45 toothpicks

