

Assignment 3: Water Molecule

Student learning outcomes:

1. Students will create a basic scientific illustration.
2. Students will apply SVG gradients to objects fills and strokes.
3. Students will be exposed to the trigonometry necessary to locate the objects on the image. They may not understand all the math or be able to reproduce it, but they will be exposed to the terms sine, cosine, tangent, angles, adjacent and opposite sides, hypotenuse; and they will learn how to perform basic trigonometric calculations on a calculator.

Real world applications:

1. Scientific illustration is another huge field. Artists who can create accurate scientific drawings can illustrate books, magazines, and science web sites.
2. Although the trend in 2014–2017 has been to use "flat" graphics, recently there has been a reaction away from these simple graphics towards more realistic drawings again. Being able to add a 3D effect to a drawing can aid in reader understanding and is a skill sought by employers.

Assignment requirements:

- The drawing will consist of these few simple shapes:
 - Two hydrogen atoms, colored gray and shaded in 3D.
 - One oxygen atom, colored red and shaded in 3D.
 - Two atomic bonds between the atoms, represented by thick lines.
 - A caption that just says Water.
- The drawing will use these SVG elements and attributes:
 - circle
 - line or polyline
 - radialGradient
 - linearGradient
 - fill, stroke
 - stop, stop-color, offset
 - id, url
- The student will draw the molecule such that the angle formed by the atomic bonds is 105° .
- The red oxygen atom, the caption, and the molecule as a whole will all be perfectly centered on the page.
- The student's name will appear in a comment in the file.
- The file name will be water.svg.

