The Math History Report is to be a website about a mathematician. The site should live in a folder titled "history" in your 142 folder. The site should contain

an overview page,

at least two pages devoted to mathematical, scientific, or philosophical contributions, and

a reference page.

Each page except the reference page should include at least one image. The site should be styled uniformly using a single external css file. The pages should include a

main div wrapping all of the content,

a title div,

a main navigation div,

a content div, and

a secondary navigation div.

**Index Content**

"He calculated just as men breathe, as eagles sustain themselves in the air.” - François Arago, discussing Leonhard Euler

eulerColor.jpeg

Leonhard Euler was born in Basel, Switzerland in 1707. He was educated in Basel and studied philosophy in preparation to become a minister like his father. However, throughout his early life he came in contact with mathematics and was found to be very skilled. He was a Christian for his whole life, but he didn’t have the enthusiasm for theology that he did for math. He and his mathematics mentor of sorts, Johann Bernoulli, persuaded his father to let him study math.

During his math education and for the rest of his career, Euler produced a steady stream of discoveries and papers. He published 886 papers and won the Paris Academy Prize 12 times. After finishing his education, Euler spent most of his career in St. Petersburg and Berlin. He was married twice and had 13 children, but only five of them lived to adulthood. His concentration and memory were incredible and allowed him to make so many contributions to mathematics and mechanics. His ability to calculate extremely complex problems in his head meant that he was not negatively affected when he went blind later in his life. In fact, most of his published work dates from after his loss of eye-sight. Euler died in 1783 in St. Petersburg, but the St. Petersburg Academy had enough of a backlog of his papers that they continued to publish his work for more than 30 years after his death.

**Mathematics Content**

The full impact of Euler’s massive influence on mathematics cannot be summed up quickly or simply, however, here are some of his most well-known contributions.

Euler was the first to study the number “e”, which equals approximately 2.718. Euler proved that “e” was irrational, meaning that it goes on forever without repeating, similarly to “pi”. The value of “e” is found in numerous mathematical formulas including those that describe nonlinear increases or decreases, and the statistical “bell curve”. “e” is usually defined by this equation:

eFormula.png

Euler either created, popularized, or standardized much of the notation that mathematicians use today. These efforts in standardization helped to encourage collaboration and internationalize mathematics.

eulerNotation.png

Euler also calculated the values of the Riemann zeta function at even positive integers, the first of which provides a solution to the Basel problem.

riemann.png

**Mechanics Content**

“According to Euler's rotation theorem, any rotation may be described using three angles” (Wolfram MathWorld). These three angles are called Euler’s angles. They are used to describe the orientation of an object in relationship to three fixed axes (usually referred to as the x, y, and z axes). This concept is used in virtual 3D, as well as in reality.

eulerAngles.png

Euler’s equations for fluid dynamics are used to describe how the velocity, pressure, and density of a moving fluid are related. When Euler published these equations they were among the first partial-differentiation equations to be written down.

eulerEquations.png

**References Content**

"Euler Equations." Ed. Nancy Hall. Web. 24 Jan. 2016. <https://www.grc.nasa.gov/www/k-12/airplane/eulereqs.html>.

Hoffman, Mike. "Leonhard Euler." United States Naval Academy. Web. 24 Jan. 2016. <http://www.usna.edu/Users/math/meh/euler.html>.

Mastin, Luke. "18th Century Mathematics - Euler." *The Story of Mathematics.* 2010. Web. 24 Jan. 2016. <http://www.storyofmathematics.com/18th\_euler.html>.

"The Constant E." *NDT Resource Center*. Web. 24 Jan. 2016. <https://www.nde-ed.org/EducationResources/Math/Math-e.php>.

O'Connor, John J., and Edmund F. Robertson. "Leonhard Euler." *MacTutor History of Mathematics Archive*. School of Mathematics and Statistics, 1998. Web. 24 Jan. 2016. <http://www-history.mcs.st-and.ac.uk/Biographies/Euler.html>.

Weisstein, Eric. "Euler Angles." *MathWorld.* Wolfram. Web. 25 Jan. 2016. http://mathworld.wolfram.com/EulerAngles.html.

Weisstein, Eric. "Euler, Leonhard (1707-1783)." *Eric Weisstein's World of Scientific Biography.* Wolfram Research, 1996. Web. 23 Jan. 2016. http://scienceworld.wolfram.com/biography/Euler.html.