Research Guide for Project 4

In this project, you will research the development of a concept from its early history to today, such as earliest known uses, real-life applications, and high school teaching and learning. The purpose of this assignment is the diverse geometric perspectives of the concept development of a major course topic.

1. If you haven't already selected a topic for project 4 in the ASULearn choice feature ?, you'll need to do that before you begin this guide. The Earliest Known Uses of Some of the Words of Mathematics (Miller, J, 2008) can provide history on the development as well as the first published appearance of terms. Check your topic in the alphabetical listings on
   `https://mathshistory.st-andrews.ac.uk/Miller/mathword/`

2. Websites such as the MacTutor History of Mathematics archive (O'Connor and Robertson, 2005) provide an extensive collection of articles on particular people and topics and you can perform a site search there. Check
   `https://mathshistory.st-andrews.ac.uk/Search/`

3. Dr. Thomley and I co-edited the *Encyclopedia of Mathematics and Society* Ipswich, MA: Salem Press, 2012, which is available online through the library as well as in print in the library Many of the project topics are related to articles in the work. Take a look at
   `https://wncln.wncln.org/record=b4255440~S1`
   and look for items related to your topic.

4. Look at Common Core State Standards Initiative and write down items related to your topic:
   `http://www.corestandards.org/Math/Content/HSG/`
   Edit/find or find in page or similar can help you find the connections

5. Look at Math 1, 2, and 3 and write down items related to your topic:
   North Carolina Standard Course of Study Math 1
   `https://files.nc.gov/dpi/documents/curriculum/mathematics/scos/current/math-1.pdf`

   North Carolina Standard Course of Study Math 2
   `https://files.nc.gov/dpi/documents/curriculum/mathematics/scos/current/math-2.pdf`

   North Carolina Standard Course of Study Math 3
   `https://files.nc.gov/dpi/documents/curriculum/mathematics/scos/current/math-3.pdf`

6. Find a mathematician or civilization/culture that has an important contribution that relates to your topic and write down

   (a) the name of the mathematician and/or the civilization/culture

   (b) how they contributed

   (c) when they contributed (a year or range of years)

   (d) the source reference.

7. Find a geometric image related to the topic and write down the source reference [note that Google images (a database) is not a source reference-but you can write down the original webpage the image came from].

8. Look for earliest geometric perspectives.

9. Look for real-life applications and modern significance.

10. Look for geometric breakthroughs/important events.

11. Continue researching to find more mathematical items for #6–#10 and keep track of your sources. Some topic searches may yield many unrelated pages or be too general–like the history of area (which means a variety of notions in real-life) so modifying a search to look for more specific information— for example, searching for the area of a specific geometric object might be helpful. Similarly, the history of similarity might be too general a search. A modified search such as the history of "similar triangles" can be more productive and it leads to a mathematics history journal article "Proportionality in Similar Triangles: A Cross-Cultural Comparison" by Jerry Lodder, comparing Greek and Chinese contributions. I can help you with scholarly searches in my office hours.

    Put on your geometry goggles and follow the geometry: choose the most geometric people and items you can locate to include in your project—not the full history! See the project criteria and rubric for the full requirements. I'm happy to help!