Compare and Contrast Essays

The ability to read critically, questioning what you are reading, and looking for solid arguments supported by good evidence when possible are crucial for any well educated person. The use of compare and contrast essays are a good way to give students guidance in developing these skills and practice with them.

Objectives: Students will …

- ... learn to read for information and comprehension.
- ... learn to read critically questioning the opinions presented within articles and looking for arguments/opinions that are well formed and supported.
- … become familiar with some issues in the history of mathematics.
- ... appreciate that the history of mathematics and history in general is not static and without debate.

Assignments:

- Read “Seeing Ourselves in the Past" by S. Piggot
- For each set of essays answer the following:
  - Briefly summerize each authors main points/arguments.
  - In what ways do they agree?
  - In what ways do the disagree?
  - Is either author guilty of "seeing themselves in the past?"
  - Whose arguement do you find more compelling or better supported and why?

Possible Readings:

- Ishango Bone:
  - "The Ishango Bone as Evidence of Early Interest in Number," by J. De Heinzelin.
  - "The Ishango Bone as Early Lunar Phase Count," by A. Marshack.
- Megalithic Yard:
  - "The Megalithic Unit of Length," by A. Thom.
  - "The Social Implications of the Megalithic Yard," by E. MacKie.
  - "Neolithic Mathematical Science," by B. L. van der Waerden.
  - "Critique of the Interpretation of Neolithic Evidence," by W. Knorr.
- Plimpton 322:
  - "Sherlock Holmes in Babylon," by R.C. Buck.
  - "Words and Pictures: New Light on Plimpton 322," by E. Robson.
- On Indian Mathematics:
  - “Indian Mathematics,” by G.R. Kaye.
  - “Notes on Indian Mathematics. A Criticism of George Rusby Kaye's Interpretation,” by S. Gâṅguli
- On Chinese Mathematics:
  - *Fleeting Footsteps* by Lam Lay Yong and Ang Tian Se.
  - “Liu Hui and the First Golden Age of Chinese Mathematics,” by Philip D. Straffin Jr.

- On Gauss
  - “The Myth of Gauss' Experiment on the Euclidean Nature of Physical Space.” by Arthur I. Miller.
  - “Comments on Miller's "The Myth of Gauss' Experiment on the Euclidean Nature of Physical Space".*”* by George Goe, B. L. van der Waerden, and Arthur I. Miller.
- Cauchy vs. Bolzano:
  - “Did Cauchy plagiarize Bolzano?,” by H. Freudenthal.
  - “Bolzano, Cauchy and the “new analysis” of the early nineteenth century,” by I. Grattan-Guinness.
  - “Cauchy and Bolzano: Tradition and transformation in the history of mathematics,” by J. V. Grabiner.
- On Mathematical Induction:
  - "The Origin of Mathematical Induction," by W.H. Bussey.
  - "Origin of the Name "Mathematical Induction"," by F. Cajori.
  - "Discussions: On Proofs by Mathematical Induction," by E.T. Bell.
  - “Discussions: On Proofs by Mathematical Induction,” by R.S. Hoar.
  - “Discussions: Mathematical Induction,” by G.E. Raynor.

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