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Tip Sheet

Connecting Math and Social Studies

SUMMARY

Presenting math through a social studies approach encourages students to ask questions and to think creatively, often leading to interesting discussions and connections. This tip sheet suggests many topics that relate both mathematics and social studies to the world around us.

AUDIENCE

All educators in grades K-12.

WHY CONNECT MATHEMATICS & SOCIAL STUDIES?

Mathematics is more interesting and relevant to students when it connects to real world topics, including social studies. Common Core State Standards require teachers to incorporate collaboration, problem solving, and critical thinking into their lessons. Relating social studies with the mathematical standards helps students stretch their imaginations and make more connections that support the retention of facts and encourage a desire for lifelong learning.

SUGGESTED TOPICS THAT LINK SOCIAL STUDIES WITH MATHEMATICS

***Current Events*:** When students are engaged in current events, real life scenarios brought into the classroom make opportunities for important mathematics associations.

- Data gathered from **environmental disasters** (like oil spills in the Gulf Coast and in Alaska) and in **weather trends** involve mathematics to analyze and make predictions
- Cost analysis of **financial markets** includes mathematics to study and forecast monetary fluctuations that could affect the worldwide pricing of goods and commodities.
- **Campaigns and political issues** create rich resources for exploring statistics, probability, graphing, and for predicting outcomes

Cultures: Investigate cultural designs and traditions within the scope of mathematics:

- **Native American Indian**: math patterns in Ojibwe Dream Catchers; in woven Navajo blankets, and in the rotational symmetries of Hopi baskets.
- **African:** mathematical patterns in batik designs, in jewelry, and logical thinking strategies in the game of Mancala
- **Chinese:** calculations on the abacus and geometric symmetry in tan-grams
- **Middle Eastern:** tessellations and patterns in mosaic tile motifs and buildings
- **Roman, Greek, and Egyptian:** the use of the Golden Ratio in construction and art

The History of Mathematics: the history of mathematics itself breathes life into the origins of reckoning, of numbers and numerals, of forms of notation, and more. Simultaneous discoveries have often occurred in the history of mathematics leading one to conclude that mathematics is a universal language with a global awareness of humanity's accumulated knowledge.

- **Number Systems:** compare and contrast the origins of number systems from a wide variety of cultures and investigate different base systems and calculating techniques.
- **Monetary Systems:** explore the variety of uses for, values of, and types of money from different civilizations
- **Geometry:** investigate societal changes due to navigation, the measurement of distances; to development of projections, scale modeling and proportion
- **Algebra:** relate the invention of the variable to real-life applications
- **Calculus:** discover how calculus plays invaluable roles in all sorts of fields, including social studies, where some quantity changes, such as population growth, in the design of buildings, and in the spread of diseases.
- **Famous Mathematicians:** analyze the lives and discoveries of mathematicians from antiquity to the present

HOW TO GENERATE CURIOSITY & INTEREST CONNECTING SOCIAL STUDIES & MATH

- **Provide appropriate resources** that help spark student interest in social studies and mathematics; include objects, books, computer software, web sites, guest speakers
- **Ask leading questions:** prior to students making roller coasters, ask what they think is involved in building a roller coaster and how math is used.
- **Give students class time** to complete some of the requirements; such as brainstorming, writing an outline, drafting a report or experimenting on a project build, editing, and revising the project, and recording conclusions.
- **Let students choose** a social studies subject to investigate and report back to the class on (e.g., analyze the forms and uses of bridges from different societies. Then build sample scale models of bridge(s), test their strengths and weaknesses, and report on the mathematics involved in their constructions)

RELATED RESOURCES

RAFT hands-on activities that can easily connect social studies with mathematics:

Mathematical Dream Catchers –
http://www.raft.net/ideas/Mathematical Dream Catchers.pdf
Advanced Mathematical Dream Catchers –
http://www.raft.net/ideas/Advanced Mathematical Dream Catchers.pdf
Pascal's Triangle – http://www.raft.net/ideas/What is Pascal's Triangle.pdf
Leonardo's Arched Bridge – http://www.raft.net/ideas/Leonardos Arched Bridge.pdf
Freaky Fractals – http://www.raft.net/ideas/Freaky Fractals.pdf
Tessellating Lizard – http://www.raft.net/ideas/Tessellating Lizard.pdf
Calculating Bones – http://www.raft.net/ideas/Calculating Bones.pdf
Register Tape Chinese History –
http://www.raft.net/ideas/Register Tape Chinese History.pdf
U.S. Civil War Timeline – http://www.raft.net/ideas/US Civil War Timeline.pdf
Produce Stand – http://www.raft.net/ideas/Produce Stand.pdf
Money You Will Save – http://www.raft.net/ideas/Money You Will Save.pdf
Time of Your Life – http://www.raft.net/ideas/Time of Your Life.pdf