

**The Abacus: A Different Type of Calculator**  
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**Purpose:**

This lesson will give students the opportunity to learn about the Chinese abacus and then create an abacus and learn the basics of use in Math class.

**Target Grade Levels:** 6<sup>th</sup>-8<sup>th</sup> grades.

**Instructional Note:**

This lesson will be taught as part of a unit on Ancient China. Although, it will be implemented in the 7<sup>th</sup> grade, this lesson is appropriate for all Middle School grades. With some modification, this lesson could be taught in the younger elementary grades.

**Essential Questions:**

1. What is an abacus?
2. What is the history of the abacus?
3. What other countries use an abacus?
4. How is the abacus used in today's world?
5. What types of mathematical problems can be solved using an abacus?

**Rationale:**

- Help students understand the history of the abacus and its importance in the Chinese culture.
- Assist students in the use of the abacus to solve math problems as an alternative to the calculator.

**Ohio Academic Content Standards:**  
**Social Studies**

**People and Societies**

- Grade 6-8 Benchmark C: Explain how contact between different cultures impacts the diffusion of belief systems, art, science, technology, language, and forms of government.
- Grade 6-8 Benchmark A: Compare cultural practices, products, and perspectives of past civilizations in order to understand commonality and diversity of cultures.
- Grade 7, Grade-Level Indicator 1: Analyze the relationships among cultural practices, products, and perspectives of early civilizations.

## History

- Grade 6-8 Benchmark B: Describe the political and social characteristics of early civilizations and their enduring impact on later civilizations.
- Grade 7, Grade- Level Indicator 2: Describe the enduring impact of early civilizations in India, China, Egypt, Greece, and Rome after 1000B.C.
  - a. The development of concept of government and citizenship;
  - b. Scientific and cultural advancements;
  - c. The spread of religions;
  - d. Slavery and systems of labor.

## Mathematics

- Measurement Standards: Grade 6-8 Benchmark C: Students estimate and measure to a required degree of accuracy and precision by selecting and using appropriate units, tools, and technologies.

## Materials:

Smart Board

Abacus

Art supplies to make the abacus

Information sheet

Note-Taking Chart

Resource Materials

## Activities:

**Please note that this lesson plan was designed to fit into two 75 minute classes as my school uses block scheduling. A modification may be necessary to fit different class time schedules.**

## **Day One: Social Studies Class**

1. Distribute either pictures of an abacus or an abacus to a cluster group of tables. You may divide the class into groups of four or five students. Students spend a few minutes brainstorming as to what the item is and what it could be used for. Post all group answers on the smart board. Tell students what the item is and which group came closest to figuring it out.
2. Distribute copies of the note-taking chart to students. Give a brief history of the abacus using prepared smart board power point presentation. The information will include which countries used and still use the abacus, when was it used, why was it used, and how was it modified over the years.
3. Discuss with students the purpose of the abacus and how different countries still use it today to calculate mathematical problems, especially China.
4. Distribute copies of handout on proper use of the abacus and explain the basics of using it.
5. Allow groups of students time to work together to practice learning to use the abacus.
6. Explain that in Math class, students will have the opportunity to solve mathematical problems using the abacus instead of a calculator.

7. Give each student the needed supplies and instructions to create a personal abacus. I found a wonderful and easy abacus online called The Original Popsicle Stick Abacus by Edward Barinque. I intend to use this craft for the students.
8. Students begin making their personal abacus. The craft will be completed and used during Math class.

### **Day Two:**

**This activity will take place during Math class.**

1. Students complete their personal abacus and set it aside to finish drying.
2. While abacus dries, teachers review with students the proper use of the abacus and how to calculate simple math problems.
3. Students then practice with their own abacus solving simple problems.
4. Conclude lesson by discussing the importance of the abacus and why it is still an important tool for solving Math problems.
5. Encourage students to take the abacus home and demonstrate its use to their parents.

### **Post Assessment:**

There will be questions about the history and use of the abacus as part of the unit test on China.

### **Activity Extension:**

As an extra activity, students will be given an opportunity to read and write Chinese number to ten. This activity will be done if time permits. Students will receive a handout on Chinese numbers and instructions on how to make the characters.

### **Resources:**

Menninger, Karl. Number Words and Number Symbols: A Cultural History of Numbers. New York: Dover Publications, 1969.

Pullan, J.M. The History of the Abacus. New York: FA Praeger, 1969.

Kaigisho, Nihon Shoko, and the Japanese Chamber of Commerce and Industry. Soroban, The Japanese Abacus: It's Use and Practice. Rutland: C.E. Tuttle, 1967.

Children's Britannica volume 1; 1998.

Collier's Encyclopedia volume 1; 1992.

<http://www.eeryerson.ca>

<http://www.ideafinder.com/history/inventions/abacus>

[www.west-meet-east.com](http://www.west-meet-east.com)

[www.nurtureminds.com](http://www.nurtureminds.com)

[www.geocities.com/learner\\_center/abacus.html](http://www.geocities.com/learner_center/abacus.html)

(This is the site where I found the instructions to make the Popsicle Stick Abacus).

[www.pbsteachers.org](http://www.pbsteachers.org)

[www.google.com/images](http://www.google.com/images)

# **The Original**

## **Popsicle Stick Abacus**

**by Edward Barinque**

When I first began teaching, I became fascinated with the abacus as a manipulative tool for teaching calculations and place value. Because abacuses or abaci were either not readily available or too expensive to purchase for 30 students, I created a prototype for an abacus which is simple to make and inexpensive. I've had students as young as 2nd grade make and learn to use their own abacus.

This page contains the instructions needed to make your own popsicle stick abacus. It's a lot of fun and can be very educational

### **Procedures:**

1. Cut each skewer into 4" rods.
2. Place the tips of the rods onto one popsicle stick, centered and equidistant from each other. Trace the tips with a pencil.
3. Remove the rods and draw lines of glue over the pencil marks. Carefully place the rod tips onto the glue. *(A popsicle stick placed under the rods helps to prop up the rods so the tips maintain contact with the first popsicle stick while the glue is drying.)*
4. After the rod tips dry, thread two pony beads onto each rod. These will be your "Heaven" beads.
5. Place the second popsicle stick (for the center bar) under the rods about 3/4" down from the first popsicle stick. Mark the rod placement by tracing with a pencil. Draw lines of glue onto the pencil marks and glue the rods onto this stick. Be careful not to let the beads stick to the glue.
6. Thread five pony beads onto each rod for the "Earth" beads. Place a third popsicle stick under the rod tips and glue the tips to the stick. *(One time I had my class use beads representing our school colors. The "Heaven" beads were one color and the "Earth" beads were another color. They loved it.)*
7. Line up and glue a popsicle stick over each of the three sticks you glued the rods to earlier.
8. Another layer of three popsicle sticks will raise the abacus to prevent the beads from rubbing on the table surface. You're now looking at the back of the abacus. Flip the abacus over and enjoy

## Abacus Information Chart

History:

Countries Using the Abacus:

Current Uses:

