



Time Before Clocks: Water Clocks

Background: Although sundials were very useful for telling time during a bright sunny day, people needed a way to measure time on a cloudy day. A clock using water as a measurement of time was invented in Egypt around 1350 B.C.E. The Ancient Greeks referred to this type of clock as a clepsydra (pronounced KLEP-suh-druh), or water thief. The clock was made of two containers of water, one higher than the other. Water traveled from the higher container to the lower container through a tube connecting the containers. The containers had marks showing the water level, and the marks told the time. Water clocks were used in Greek and Roman legal courts as a way to limit the time of a lawyer's speech. In China and the Middle East, people created very elaborate water clocks. The most well known was the Sung Su Water Clock, built around 1090 B.C.E. In this activity participants create their own water clock.



Materials:

Pushpins
Styrofoam cup
Masking tape
Clear jar
Pen or pencil
Stopwatch
Water clock (2)
Water clock sample

Instructions for Activity:

1. Use the pushpin to make a hole in the bottom of a Styrofoam cup. Push the tip of the pin through the bottom of the cup from the inside out.
2. Put a piece of masking tape straight up the side of a clear jar.
3. Start at the bottom of the jar and make lines on the tape 1 cm apart.
4. Fasten the Styrofoam cup to the mouth of the jar, either by inserting it into the jar if the mouth is big enough or taping the cup to the jar with the masking tape.
5. Fill the cup with water.
6. As the water starts to drip, use the stopwatch to record how long it takes the water to reach the first line on the jar. Continue to record the time for each line until the water empties from the cup.
7. Decorate the water clock by using markers to create hieroglyphics much like the Ancient Egyptians did on their water clocks.
8. Use the enclosed water clock to show a modern version of how water can still help tell time (operational instructions enclosed in kit.)

Questions:

1. How does the time for the water to reach the first line compare with the time to reach the second, third, fourth, and other lines?
2. Are the times different?
3. What factors might account for this difference?