

Age: 6+

T is for... Time

Water clocks were used thousands of years ago to measure **time** by water flowing out of a container through a tiny hole. Water clocks were one of the first clocks ever used by the Greeks. During that time, they were created out of stone vessels with sloping sides where water dripped at an almost constant rate from a small hole.



Experiment: Create a water clock

Materials needed:

- Styrofoam or plastic cup
- Pop bottle cap or milk jug cap
- 1 small bell
- 1 small bead
- 1/2 cup of water
- 1 glass jar
- String or yarn
- Toothpick for poking a hole
- Popsicle Stick

Instructions:

- With the toothpick poke a hole through the middle of the plastic lid and the bottom of the Styrofoam cup
- Next, with the string/yarn measure the distance from the top to the bottom of the cup. Take off about 2in and cut the yarn
- Pull the string through the hole in the plastic lid and tie a small bead at the end to prevent the string from slipping through the hole
- Next, tie the bell to the opposite end of the string
- Grab the Styrofoam cup (with the plastic lid, bell, and bead) and place it in the glass jar

- Place a popsicle stick on top of the Styrofoam cup and balance the bell on the popsicle stick. The plastic lid should hang down in the Styrofoam cup
- Add ½ of water to the cup (hold the popsicle stick with the bell in place)
 - The plastic cap should float and the bell should remain on the popsicle stick
- You should notice the water dripping out of the bottom of the cup into the glass jar. As the water drains out of the cup, the bell will be pulled into the cup. The sound of the bell is the “alarm”

Additional experiments with the DIY water clock:

- Time how long it takes for the water to flow out of the cup and the “alarm” to go off
- Add holes and see if that makes a difference in the time; if you have an additional Styrofoam cup you can make different sized holes
- Add oil or syrup instead of water and see if it takes a shorter/longer amount of time for the “alarm” to go off

Career Exploration:

- **Chemical Engineer:** Chemical engineers apply the principles of chemistry, biology, physics, and math to solve problems that involve the production or use of chemicals, fuel, drugs, food, and many other products. They design processes and equipment for large-scale manufacturing, plan and test production methods and byproducts treatment, and direct facility operations.
- **Mechanical Engineer:** An engineer designs and builds complex products, machines, and system. A mechanical engineer works with how things are made and how machines operate. They also design and builds complex products, machines, and systems. Mechanical engineers also help with the invention of many machines, including the early inventions of simple machines like the wheel and axle.
- **Design Engineer:** Is a type of engineer that is focused on the design process of an engineering product and/or discipline. Design engineers usually work on products and systems that involve adapting and using complex scientific and mathematical techniques

To learn more about this activity, please visit:

<https://www.steampoweredfamily.com/activities/water-clock-stem-activity/>

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https://academickids.com/encyclopedia/index.php/Water_clock