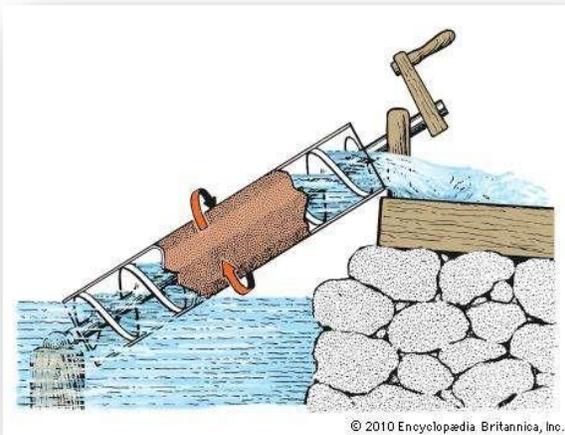
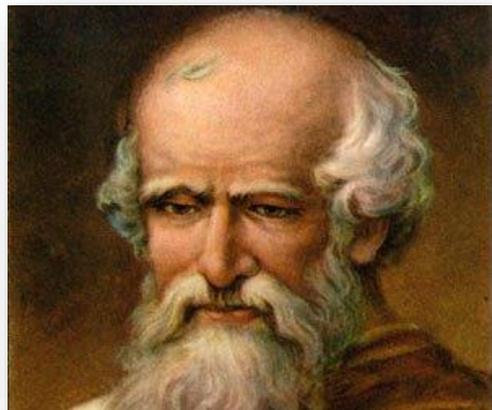


Archimedes Screw

Archimedes was a Sicilian mathematician and inventor—possibly one of the most well-known from Ancient Greece.

His most famous works were related to the properties of water, such as Archimedes' Principal and Archimedes' screw. His **simple machine** in the form of a screw made it possible for water to be transported against gravity from a lower point to a higher point and was able to be operated by only one person, unlike other inventions of the past.



The basis of the machine was a cylinder in the center surrounded by a coil that lifts the water and transports it upward with each rotation of the crank at the top of the pump. Archimedes design is still utilized in wastewater treatment plants as an effective way to pump water against the **force of gravity**.

Vocabulary

1. **Simple Machine** -- Make work easier by requiring less effort to move an object. The six types of **simple machines** include: inclined plane, wheel and axle, lever, pulley, wedge, screw.
2. **Force**—Push or pull on an object
3. **Gravity**—Force that pulls two objects together

Environmental Lessons continued

Make Your Own Archimedes Screw

Materials

- 1 to 2 feet of pvc pipe
- 3 feet clear tubing at least 1/2" in diameter
- Duct tape
- 2 bowls
- Books or small box for height
- Water
- Food coloring of your choice

Procedure

1. Leaving about 1/2" of pipe sticking out, secure one end of the plastic tubing to the end of a piece of PVC pipe using duct tape.
2. Wrap the tubing around the pipe about 2 to 3 times. You may need to secure the tubing in the center of the pipe
3. Secure the tubing on the other end of the pipe, leaving another 1/2" on the other end using duct tape.
4. Fill one bowl 1/2 to 3/4 full with water.
5. Add a few drops of food coloring to the water until desired color is reached.
6. Place one bowl on top of a book at the desired height and a second bowl next to it flat on the table. One bowl should sit slightly higher than the other.
7. Place one end of your Archimedes screw into the lowest bowl and gently rotate your device so as to "scoop" up the colored water with one end of the tubing.
8. After a few rotations, the screw should transport water up the pvc pipe and out the other end of the tubing, into the empty bowl.

Questions/Extension

1. How did your model work?
2. If you were to repeat the activity, would you make any adjustments to sizing or materials?
3. Would any other materials work just as well to accomplish the goal?