Archimedes
C. 287 – 212 B.C.

“Give me a place to stand, and a long enough lever, and I will move the earth.”

Quick Facts

- **Education:**
  - Probably studied in Alexandria, Egypt, under the followers of Euclid.
- **Family:**
  - His father was an astronomer named Phidias
  - Probably related to Hieron II, the king of Syracuse.
  - It is not known whether he was married or had any children.
- **Fields of Science Initiated:**
  - Hydrostatics, static mechanics, pycnometry (the measurement of the volume or density of an object).
  - Is called the "father of integral calculus" and also the "father of mathematical physics".

Quick Facts

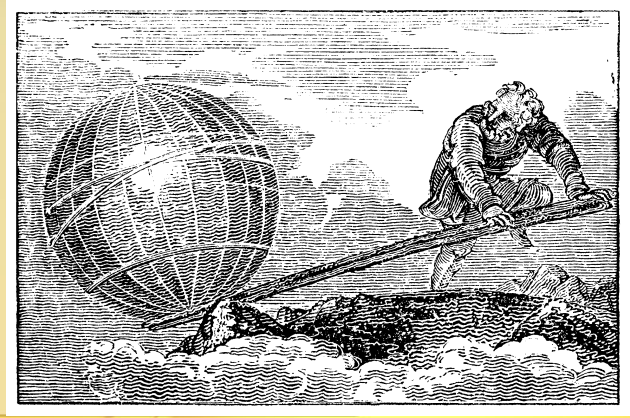
- **Major Writings:**
  - On plane equilibriums, Quadrature of the parabola, On the sphere and cylinder, On spirals, On conoids and spheroids, On floating bodies, Measurement of a circle, The Sandreckoner, On the method of mechanical problems.
- **Place in History:**
  - Generally regarded as the greatest mathematician and scientist of antiquity
  - One of the three greatest mathematicians of all time (together with Isaac Newton (English 1643-1727) and Carl Friedrich Gauss (German 1777-1855)).

The Mathematician

- Wrote many mathematical treatises
- First to deduce that the volume of a sphere
- Archimedes' approximation for the value for π was more accurate than any previous estimate – the value lying between 223/71 and 220/70. The average of these two numbers is less than 0.0003 different from the modern approximation for π.
- Examined the expression of very large numbers, using a special notation to estimate the number of grains of sand in the Universe.

The Mathematician

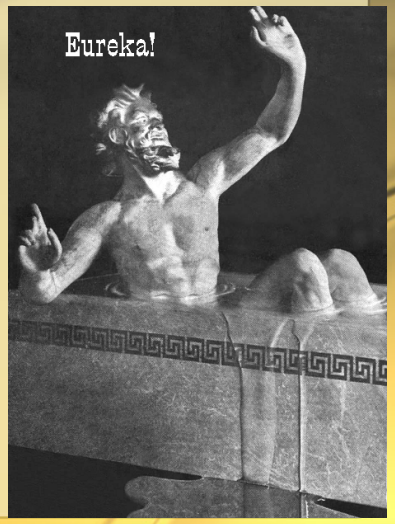
- Evolved methods to solve cubic equations and to determine square roots by approximation.
- His formulae for the determination of the surface areas and volumes of curved surfaces and solids anticipated the development of integral calculus, which did not come for another 2,000 years.



The Archimedes Principle

- An object immersed in a liquid is buoyed or thrust upwards by a force equal to the weight of the fluid it displaces.

- Volume of the displaced liquid is the same as the volume of the immersed object.



Archimedes Screw

- A device used to pump water out of ships, and also to irrigate fields.

Archimedes Claw

- A huge war machine designed to skink ships by grasping the prow and tipping them over.