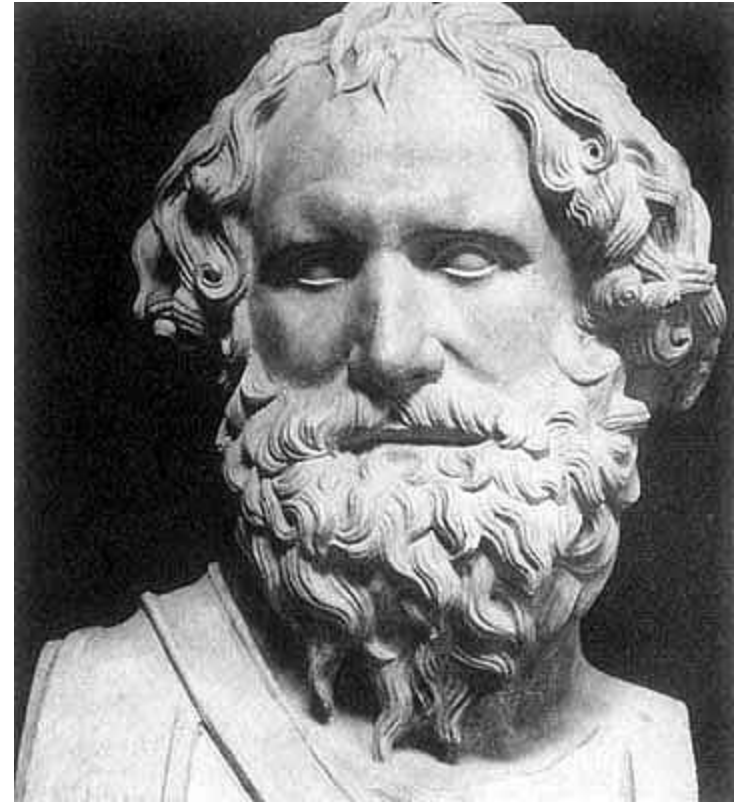


# Archimedes Principle

# Archimedes

- Greek scientist, lived 287 BC – 212 BC in Syracuse.
- Studied mathematics, physics, astronomy, and engineering.
- Made many discoveries in geometry and invented a number of things, including the Archimedes screw.



# Archimedes

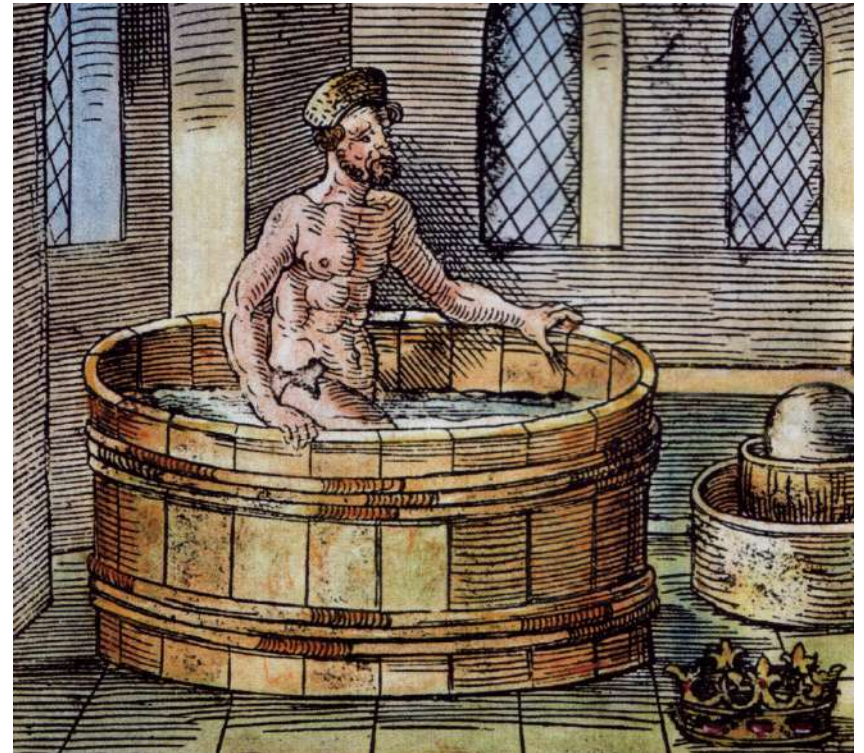
- Archimedes was maybe the greatest mathematician of antiquity.
- Accurately calculated value of Pi.
- Volumes and areas of spheres and cylinders, math of pulleys and levers.
- He built war machines to defend Syracuse from the invading romans.
- He was killed by a roman soldier when Syracuse was captured.



# Archimedes Principle

He was tasked with figuring out if the crown of the king was made out of pure gold or not without destroying it.

According to legend, he came up with a solution sitting in his bath tub...

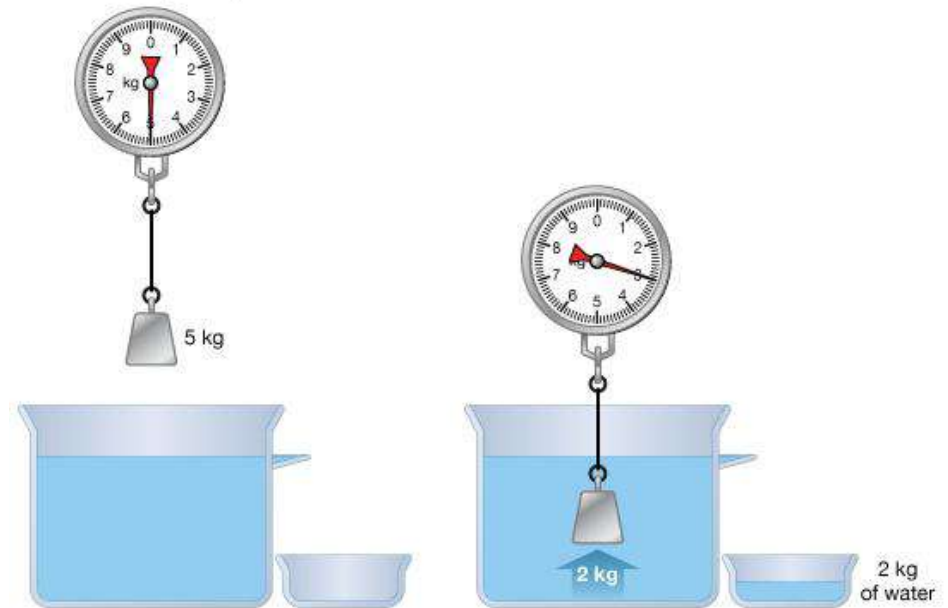




# Archimedes Principle

- The amount of displaced water is equal in volume to the submerged object. Makes sense right?
- The weight of the displaced water is equal to the buoyant force on the object. Let's do a demonstration!
- Density = mass/volume, so we can calculate the density of the SUBMERGED object.
- Pure gold has a different density when something else has been mixed into it...

Archimedes' principle



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# Floating Objects

- When an object floats the buoyant force is equal to the weight of the object.
- Ships are designed on purpose so they can displace enough water to stay afloat.
- We can use this to calculate the weight of a ship by weighing the water it displaces!

