

The Story of Archimedes

- **Name:** Archimedes
- **Date of Birth:** around 287 BCE
- **Origin:** Greek
- **Occupation:** Mathematician, Physicist, Engineer, Inventor and Astronomer

Archimedes's story started when King Hiero II ruled the Kingdom of Syracuse. After gaining power, the King wanted to pay tribute to the Gods. He asked a goldsmith to craft a golden crown that he would place in a temple. He carefully weighed and gave a precise amount of gold to the goldsmith.

The goldsmith did an excellent job. He created a beautiful crown of golden leaves, and returned it to the King in time. The King was very happy. He weighed the crown and realized that the weight was not equal to the gold he had provided.

Later on however the King suspected that the goldsmith had not used all the gold he gave him, but had mixed a little silver while making the crown. The King however could not prove it.

King Hiero called upon his friend "Archimedes" to solve the problem. Archimedes was a genius. He began to think of a solution. He knew that gold and silver have different densities. This means that if you take lumps of similar sized gold and silver, the lump of gold would be almost the double of silver in weight. "Silver is lighter than gold".

While he was still pondering on the matter, Archimedes went to a public bath to relax. When he stepped in the tub of water, he saw that some water spilled out of the tub. Then the more his body sank in the tub, more water ran out. He realized that the amount of water spilled must be exactly the same volume as his body.

All of a sudden Archimedes had a bright idea. As if a light bulb had flashed in his mind, he had a solution to the King's problem. He was so excited and happy, that it is said he started running home without wearing his clothes, shouting Eureka! Eureka! (Eureka is a Greek word meaning "I found it").

Archimedes then made two masses, equal in weight to the crown. One was of gold and the other of silver. Then he filled one large vessel with water up to the brim. First he dropped the mass of silver in the water. Water equal in volume to the mass flowed out. He needed to find the quantity of water lost. So he took out the mass of silver, then taking a pint measure filled the container to the brim, as before. The amount needed to fill the container was equal to the amount lost.

Then he dropped the mass of gold and measured the quantity of water lost. He realized that the amount of water lost with gold was less than the amount of water lost with silver. Then he filled the vessel again, dropped the crown in it, and measured the quantity of water lost. Archimedes found that more water was lost with the crown than with the mass of gold of same weight. Thus it was concluded that the crown was not made of pure gold, but some silver had been mixed in it. The goldsmith was punished for cheating the King.

Reference:

History of Science Museum text- Planetarium Science Center, Bibliotheca Alexandria