**Rene Descartes**

lived between 1596 and 1690, his birthplace was France – Brittany

was a French philosopher, mathematician and naturalist

formulated the law of reflection and refraction

introduced a Cartesian coordinate system in geometry

determined the refractive index of glass and water

**Did you know that ...**

the physical toy "Cartesian Diver" is named after Descartes

he was an active fencer and wrote a scientific treatise on fencing

designed and constructed his own microscope

**Experiments**

**Cartesian diver -** PET bottle, water, straw, paper clips, balloon, rubber bands

If you press the bottle, the water is pushed inside the straw that forms the octopus's body. This increases the average density of the octopus and the octopus descends to the bottom. If we release the bottle, the pressure will decrease, the water will flow out of the straw and the octopus will have air inside, so it will have a lower density and it will ascend.

**Hidden picture -** 2 cups, 2 pictures, water pearls, glass of water

Water pearls are made up of more than 99 % of water. When water pearls are submerged in water, they have the same refractive index as water. The light passes through them without changing direction and the image below the cup is visible. In a situation where there is air around the water pearls, the water pearls have a different refractive index (1.33) than air (1), so the light on the water-air interface breaks, and we don't see the picture.