



# EARLY THEORIES OF MATTER

From Ancient Greece

to

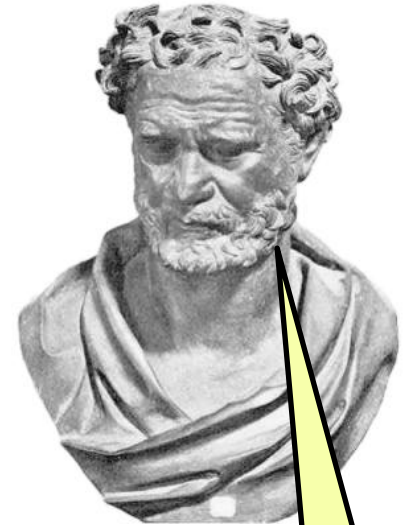
the 1800's

Earth

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# DEMOCRITUS

- **Democritus was a Greek Philosopher (~460 BC)**
- He proposed that all matter is composed of particles
- The nature of Democritus' particles
  - He called the particles atoms (Greek for "uncuttable")
  - He said the particles are invisible
  - He said the particles cannot be broken down into smaller parts and cannot be destroyed
  - He envisioned atoms of different substances as having different geometric shapes
- His idea did not gain acceptance
  - He couldn't explain what held the particles together
  - He couldn't explain how they caused a substance's properties

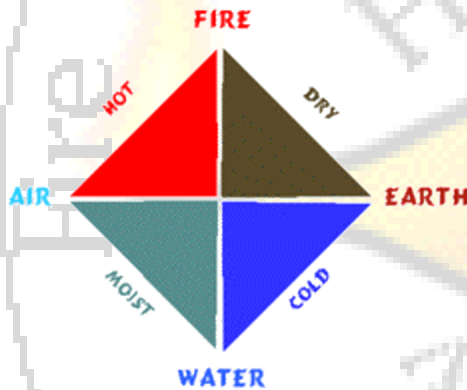


**Don't know!**

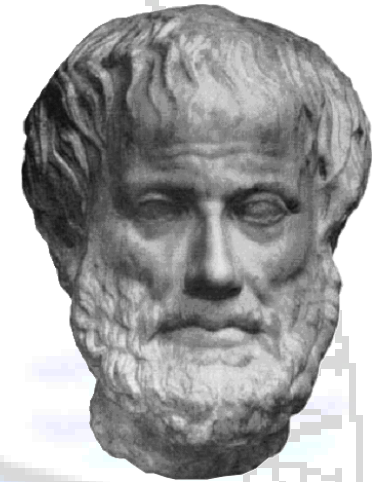
# ARISTOTLE

- **Aristotle** proposed that there are four elements:

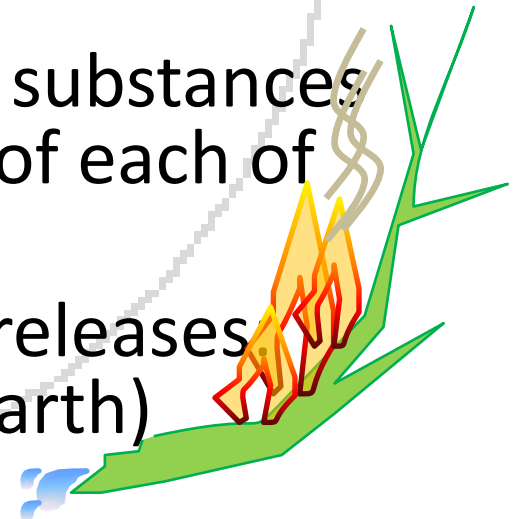
## ELEMENTS AND ESSENTIAL QUALITIES



- [1] earth;
- [2] air;
- [3] fire; and
- [4] water



- His idea gained acceptance because substances appeared to have different degrees of each of these building blocks.
- For example: a burning, green stick releases smoke (air); sap (water); and ash (earth)



# THE DEMISE OF THE EARLY THEORIES

- Early theories of matter are no longer accepted because of:
- the behavior of gases (Brownian motion of dust in a sunbeam)
- Priestly's discovery of oxygen
- Lavoisier's experiment

