

Theory	Explanation	Likelihood
Capture Theory	the moon was formed somewhere else in the solar system and got close to Earth and was captured by Earth's grav. field	unlikely as improbable that moon approached at Earth with correct velocity to not collide doesn't explain lack of volatile substances or similar chemical composition to that of Earth
Co-accretion Theory	Moon and Earth condensed from same nebula and Moon formed in orbit around Earth	unlikely as doesn't explain much smaller iron core in Moon or lack of volatile material on Moon
Fission Theory	Earth spun so rapidly that part spun off and formed the Moon	explains faint scar explains similar chemical composition doesn't explain lack of volatile materials or differing orientation of axes
★ Giant Impact Hypothesis	energy of impact raised part of Earth's temp to 10000°C and material on near side stayed hot for longer, thinner crust core of Moon smaller as more material ejected also explains presence of iron explains lack of volatile materials; extreme temps	explains Earth's axial tilt explains similar chemical composition

Exploring the Moon

A giant body the size of Mars (called Theia) impacted Earth 4.45 bn years ago

This causes 4 things:

- some Theia material left on Earth
- some Theia material vaporised
- Earth knocked into 23.5° axial tilt
- hot debris ejected into orbit
- Vaporised debris solidified in orbit around Earth
- Eventually, it forms the moon

Other Moon Missions:

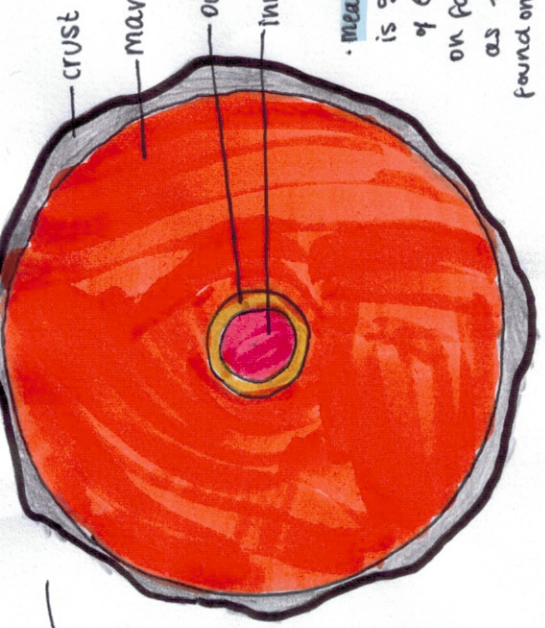
- collection of lunar soil and rock for analysis
- monitor Earth-moon distance
- passive seismometers
- lunar dust collectors
- solar wind composition experiments

a spacecraft travelling to the moon must reach

Earth's escape velocity,

this can only be met with the use of rockets

before Tsa, appearance of far side unknown



- mean thickness of lunar crust is 50-60km thick (about 3x of Earth's crust) and thickness on far side can be as large as 160km (this is why maria found on near side - thinner crust)
- radius of moon's core is less than 25% of moon's radius (on Earth, core is more than 50% of radius)

moon's core isn't centred but offset by 2km towards near side

near side

- lots of maria
- more seas and darker grey
- fewer highlands

far side

- lack of maria
- almost all highlands
- very few seas
- many craters
- overall lighter grey

Gathering info about far side:

- unmanned Soviet's Luna 3 photographed it (although grainy) with dual-lens camera and processed on board showed lack of maria
- Apollo missions of landing men on the moon

total: 12