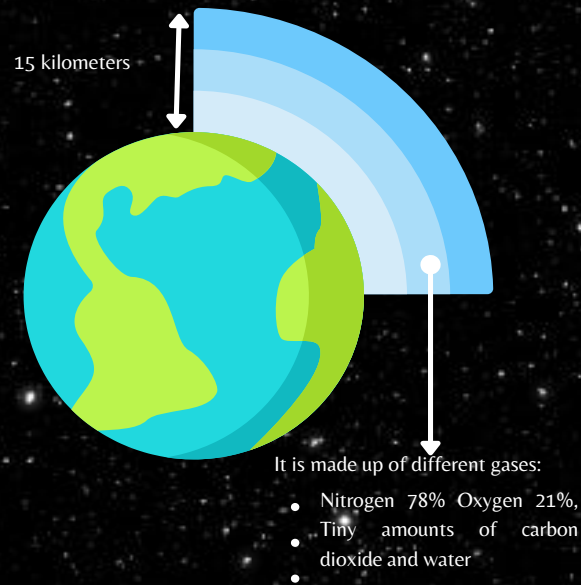


THE ATMOSPHERE ON THE MOON

Atmosphere on Earth

The atmosphere is a layer of gases that surround the Earth. It helps to keep the earth warm enough to live on and it protects the earth by blocking some of the sun's powerful rays. It contains the gas oxygen which we need to breathe, and for all life on Earth.



Atmosphere on the Moon

There are no gases surrounding the moon. There is no atmosphere on the moon.

When there is no gas, this a vacuum. Most of space is a vacuum.



No air to breathe

No wind

No atmosphere (Vacuum)

Problems

People are likely to die in less than two minutes

1. Saliva on tongue bubbles (boils)
2. Lose consciousness within 10 seconds.
3. Lose control of their bladders and bowel
4. Muscles tighten stopping blood flow to heart and brain, breathing stops, then death.
5. Bacteria start to digest you from the inside but very slowly as its so cold!

Possible solutions

Gas filled shelter



Gas filled Suit



Shielding against: UV light (and other radiation) Must be: Flexible puncture-resistant Hot and Cold

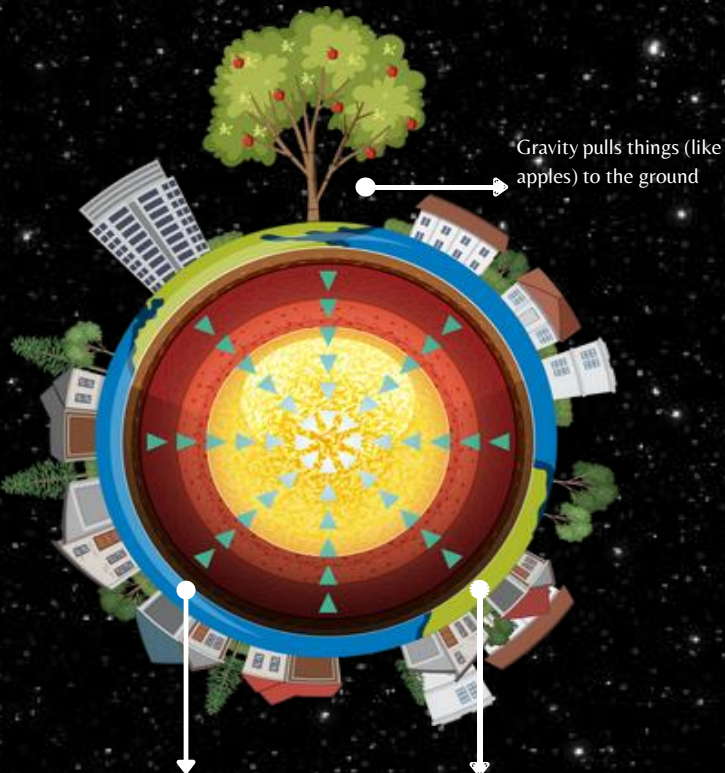
Hide underground from sun's harmful rays



GRAVITY ON THE MOON

Gravity on Earth

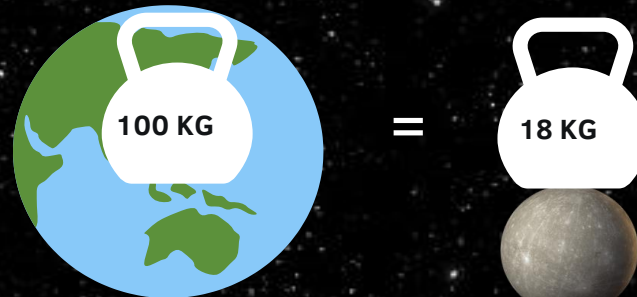
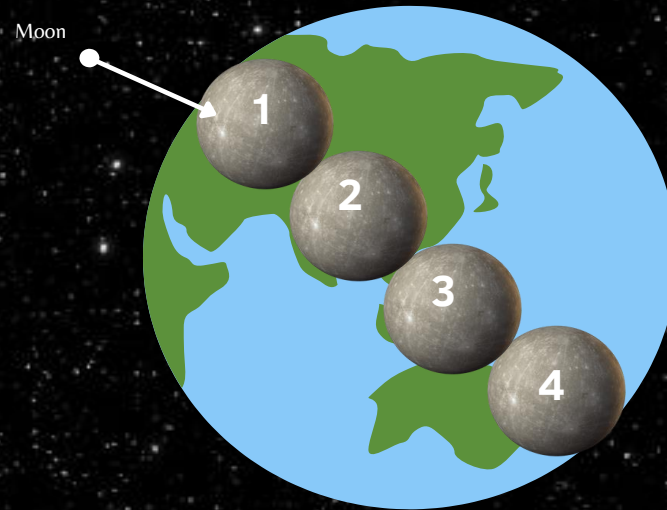
•What Is Gravity? Gravity is the force that a planet draws objects toward its center (NASA).



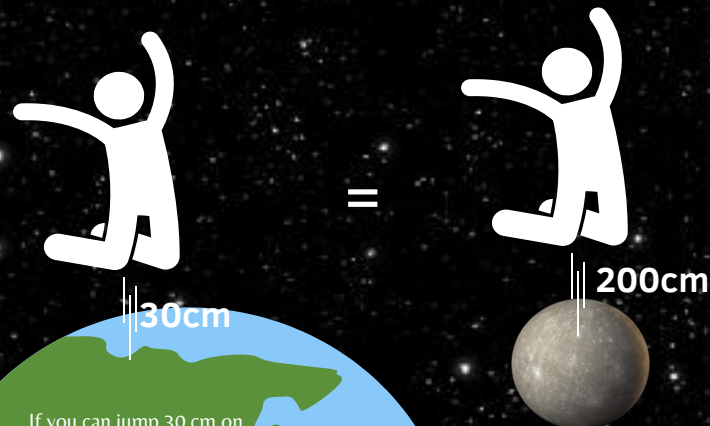
On Earth, with our gravity, a person might weigh 100kg but with no gravity they would weigh 0kg!

Gravity on the Moon

The moon is about a quarter the size of Earth in width. Or Earth is about four times wider than the Moon.



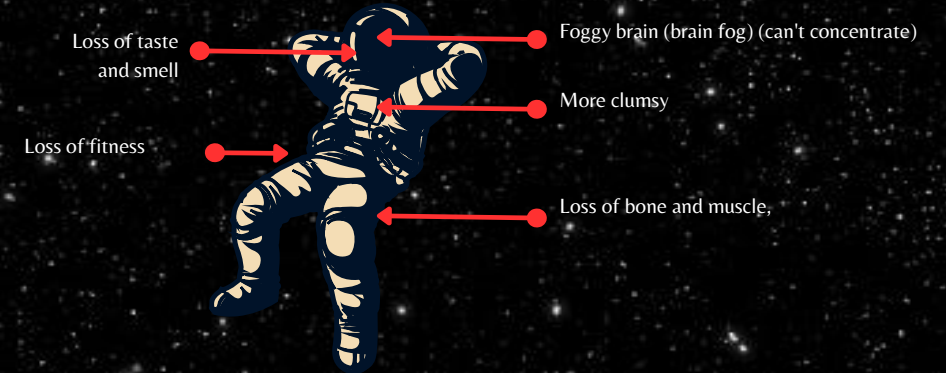
100 kg on Earth weighs 17 kg on the Moon



If you can jump 30 cm on Earth, you could jump up 2 meters on the Moon

you can throw a ball 6 times further, hit a golf ball 6 times further

PROBLEMS with low Gravity on the Moon

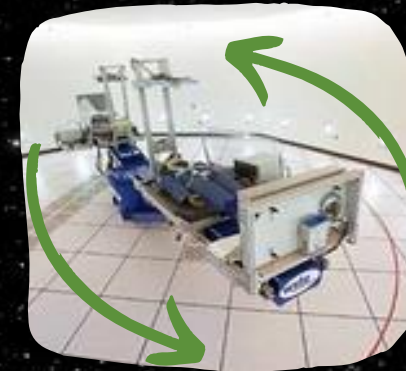


Solutions

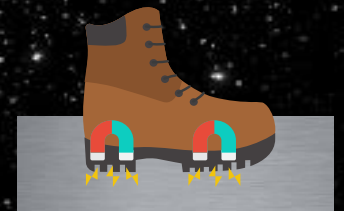
Need to make the body feel like it is working against gravity, so we need to make the exercise harder to or make the body feel like it is in gravity. This might be done by:



Exercise against elastic cords
Keeps you in place and is harder to exercise



Centrifuge
It quickly spins people around. The body feels like it is in gravity, blood rushes to the feet.



Strong magnets It would be harder to walk around in these, the same as being on earth

RADIATION ON THE MOON

Radiation

Radiation can be in waves light, ultraviolet, x-rays, and gamma radiation (γ), or as particles radiation, such as alpha radiation (α). It is given off by the sun and certain radioactive chemicals. Different radiation types are easier to stop than others, and radiation can be harmful to human in high amounts. Like UV light from the sun on our skin. Earth's atmosphere and magnetic field stops a lot of radiation reaching the Earth's surface.

Radiation on the Moon

The Moon has very high levels of Radiation about 200 times more than Earth.

Effects of radiation on Moon

Skin

-Radiation burn - Skin redness, itching and blistering - Hair loss

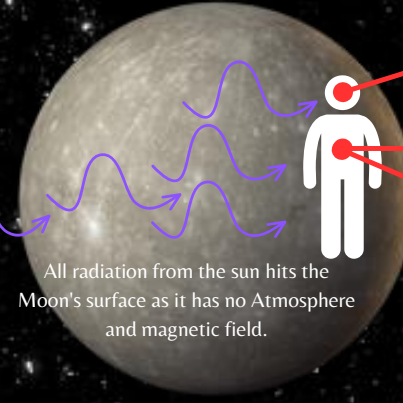
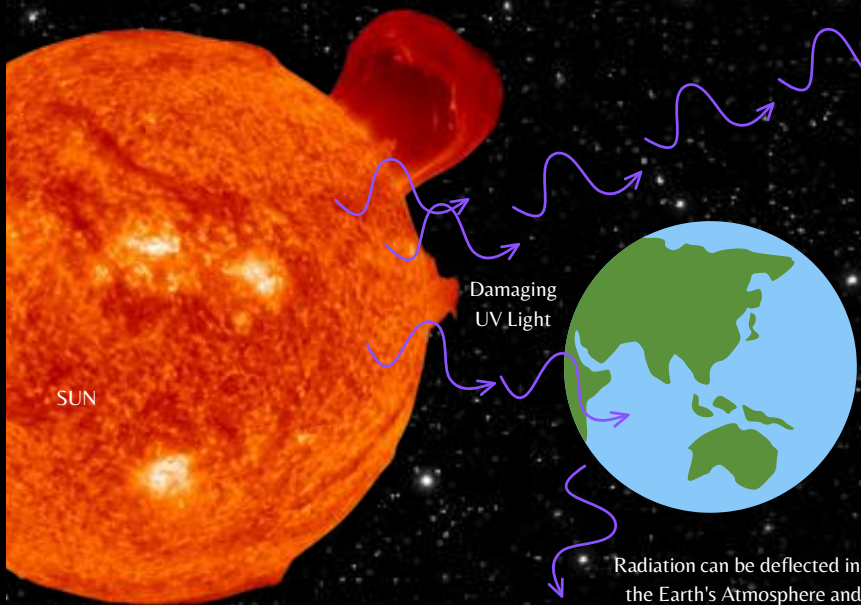
Body

-Tired - Infections - High fever

Stomach

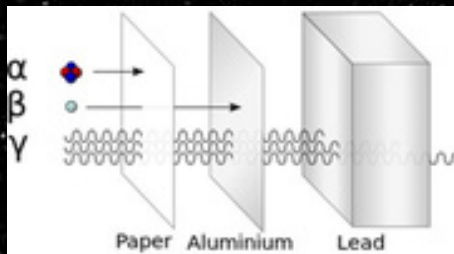
-Diarrhea - Vomiting - Dizziness

Cancers + Death



Stopping Radiation

Types of radiation



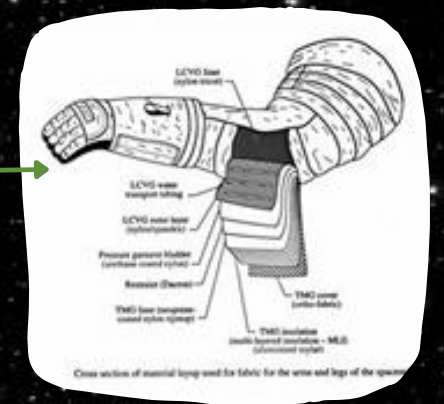
Some radiation can be stopped by paper, other can pass through. Some types of radiation is stopped by thick metal. And others can only be stopped by thick lead.

Solutions

Don't spend too long in Outside in high radiation

Shelter stops the radiation

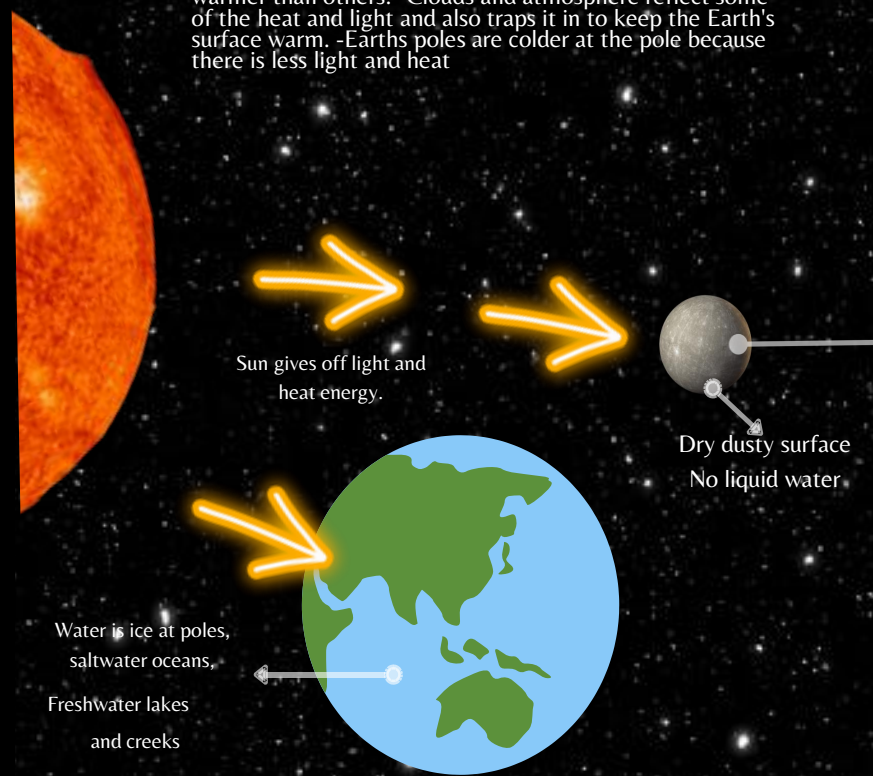
Metal lined space suit



TEMPERATURE AND WATER ON THE MOON

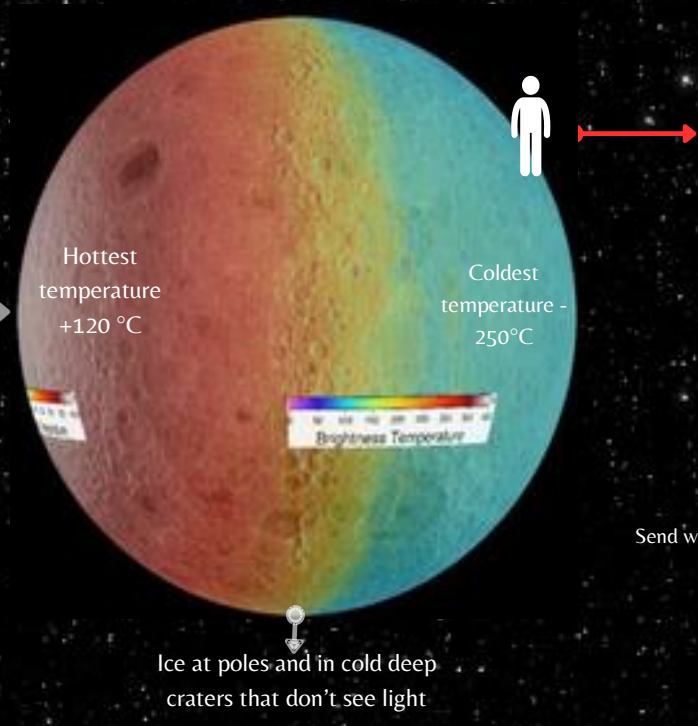
Temperature and Water on Earth

-Light and heat from the sun warms the Earth, but some places are warmer than others, and some seasons are warmer than others. -Clouds and atmosphere reflect some of the heat and light and also traps it in to keep the Earth's surface warm. -Earth's poles are colder at the pole because there is less light and heat

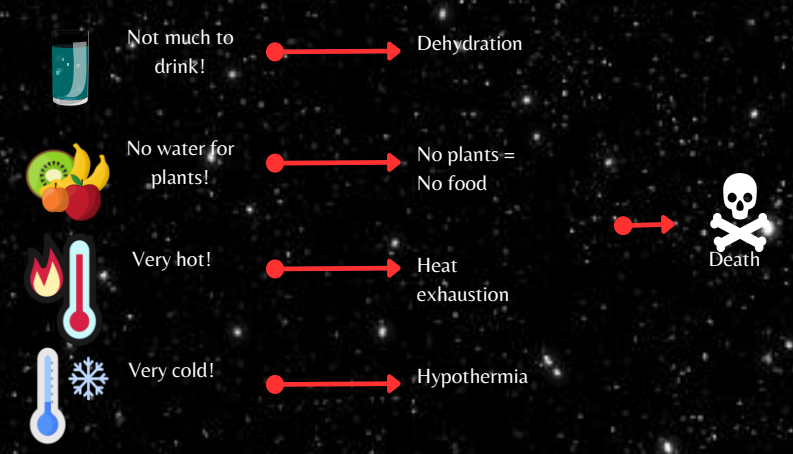


Temperature and Water on the Moon

The moon has no atmosphere so the temperature can get very hot. The "dark" side of the moon that the sun cannot reach gets very cold. There is ice but no liquid water.



Living with the temperature and water on Moon



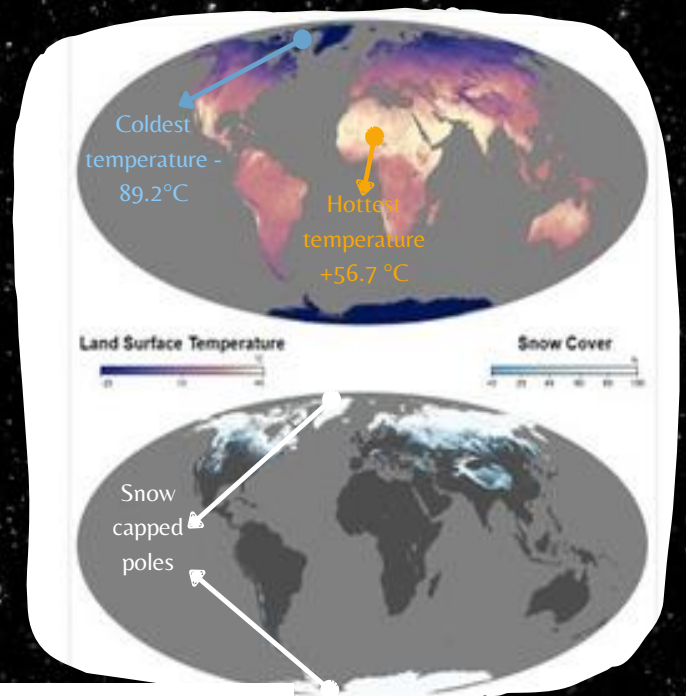
Water Solutions

Send water from Earth or collect from meteors

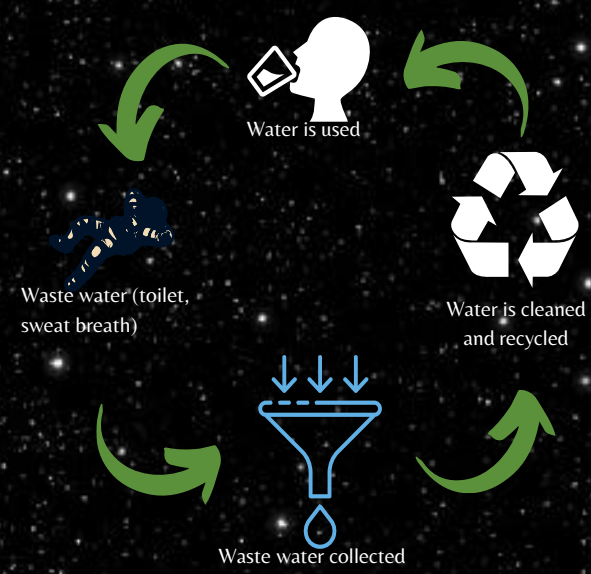


Temperature Solutions

Heated and cooled moonbase



Recycle water that was brought from earth



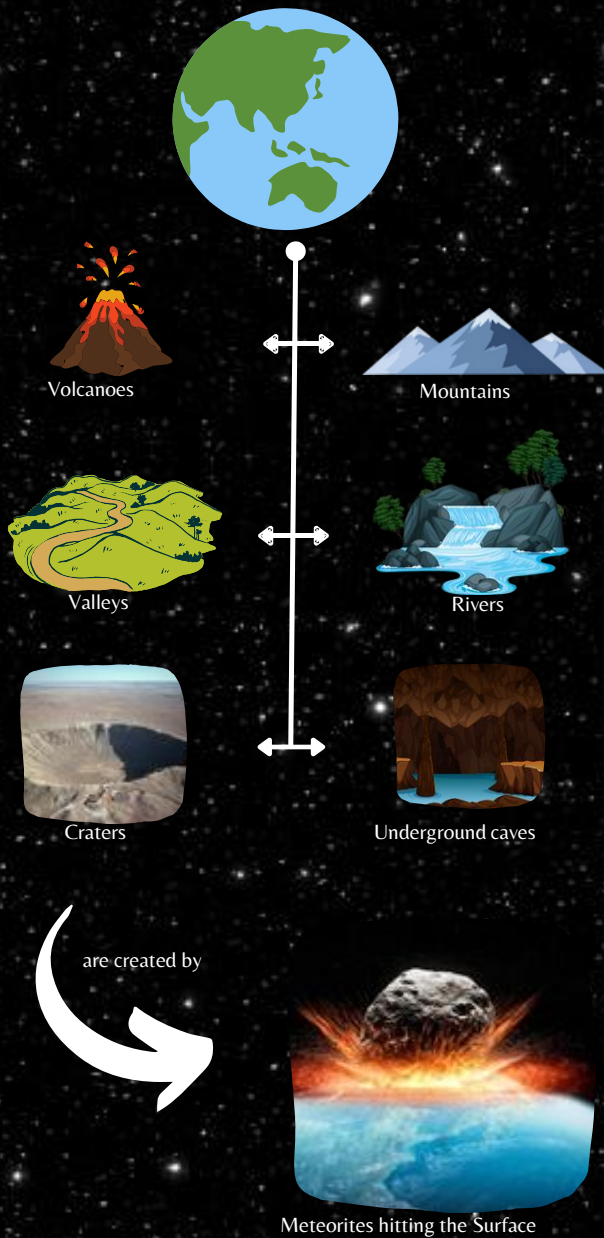
Underground moonbases - easy to keep cool



THE SURFACE OF THE MOON

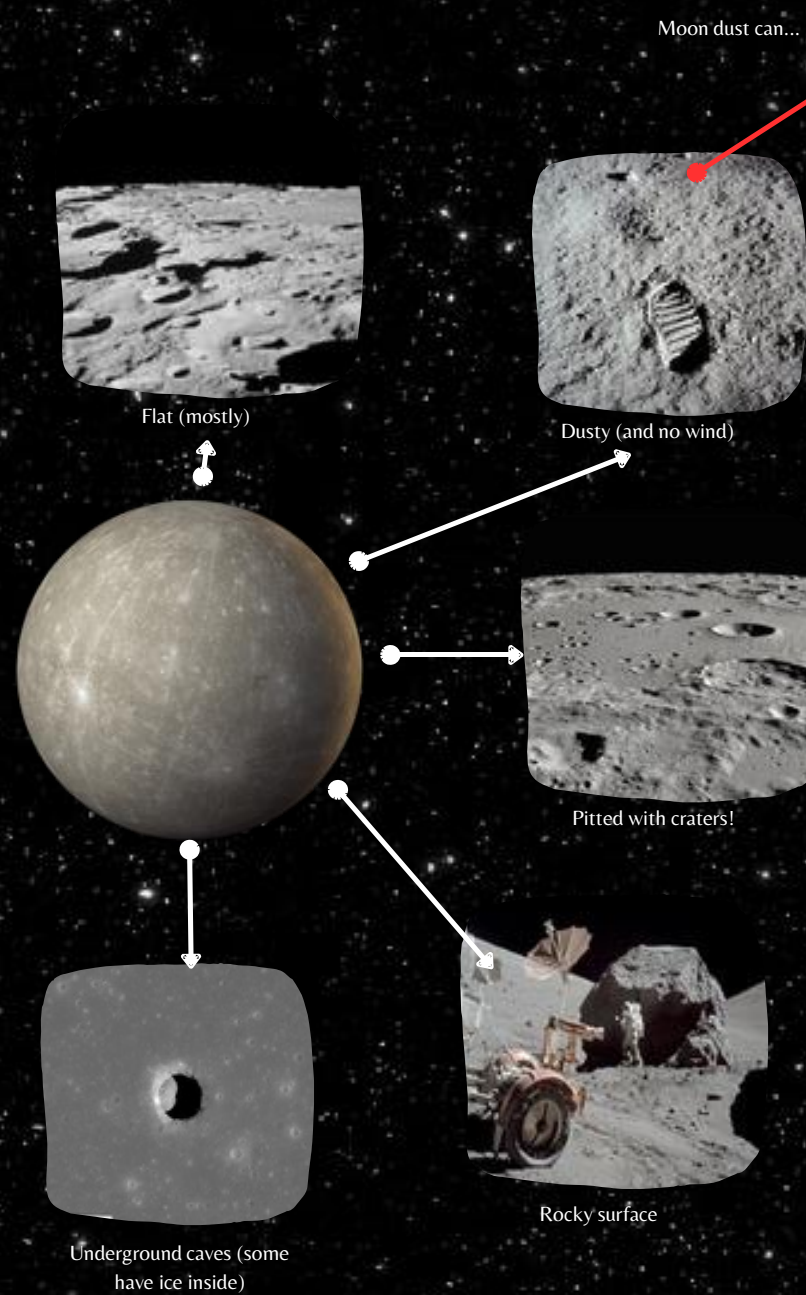
The surface on Earth

The Earth is not a smooth sphere, it has many different features and landscapes

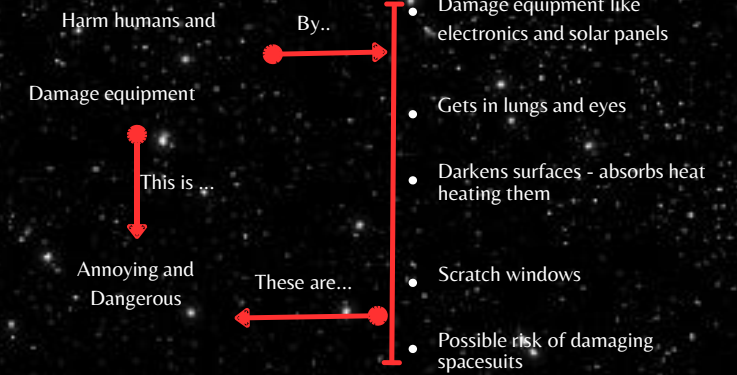


The Surface on the Moon

Incredibly hot and cold, a rough, rocky and dusty. Covered in craters from collisions with meteorites.



Living with the temperature and water on Moon



Solutions

- 1. "Astronautical hygiene" can reduce dust. E.G: 1. Removing the spacesuit in a three-stage airlock
- 2. "Vacuuming" the suit with a magnet
- 3. Ventilation with a high-efficiency particulate filter to remove dust from the spacecraft's atmosphere.
- "Double Shell Spacesuit"
- Dust shields

IDEAS:

THE CHOSEN SOLUTION

PROTOTYPE:

IS YOUR DESIGN SUCCESSFUL?

THINK ABOUT THE USER...



What would
the user think
about it?



Would users enjoy
and love it?



Would it work?
Would people
Enjoy doing it?

DOES IT HELP HUMAN SURVIVE AGAINST:

- LESS GRAVITY
- TEMPERATURE
- WATER SUPPLY
- RADIATION
- NO AIR
- METEORITE STRIKES
- MOON DUST

DOES IT HELP HUMAN NEEDS:

- FOOD
- WATER
- A HEALTHY BODY
- MENTAL HEALTHY
- PEOPLE AND PLAY