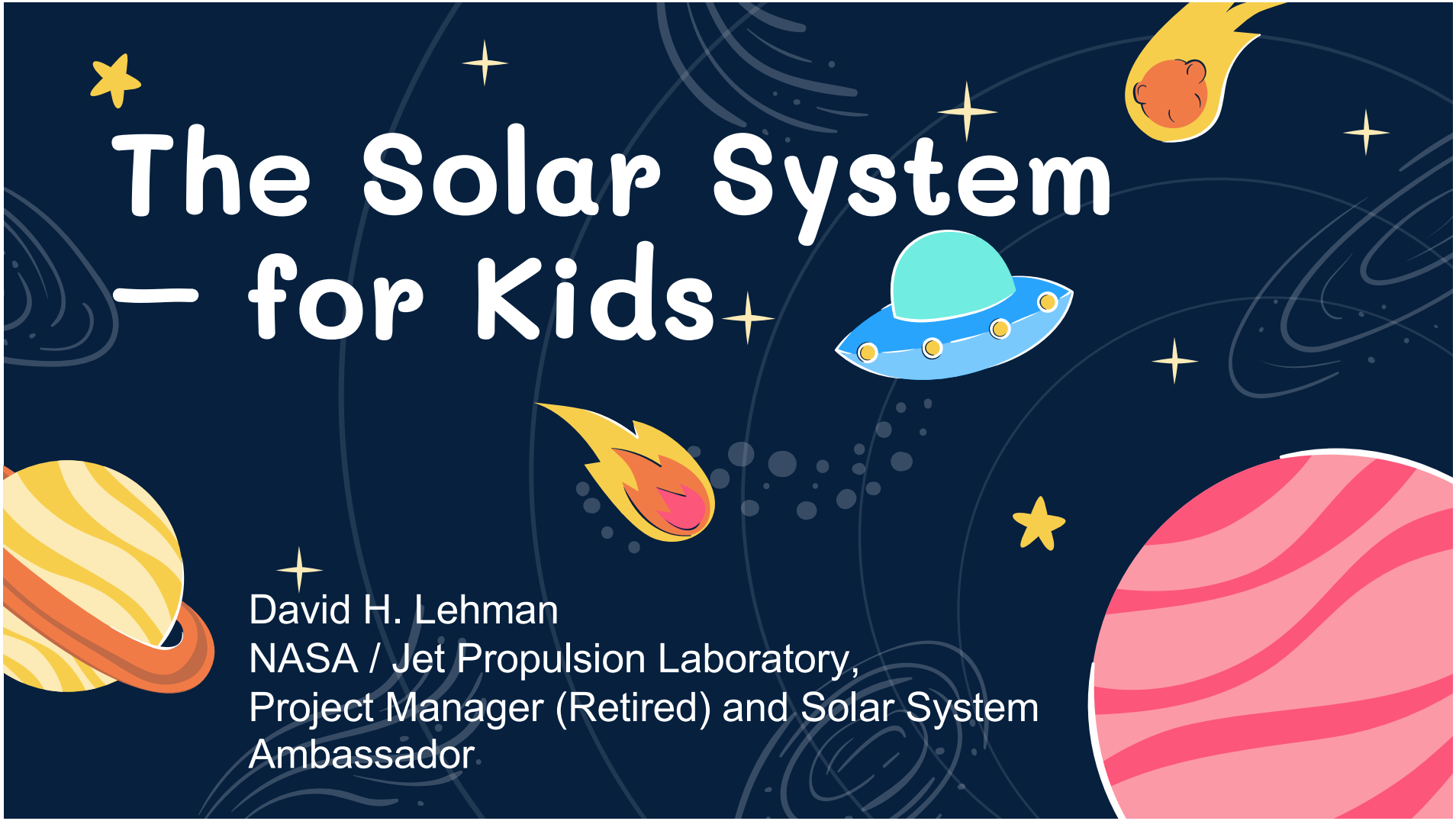
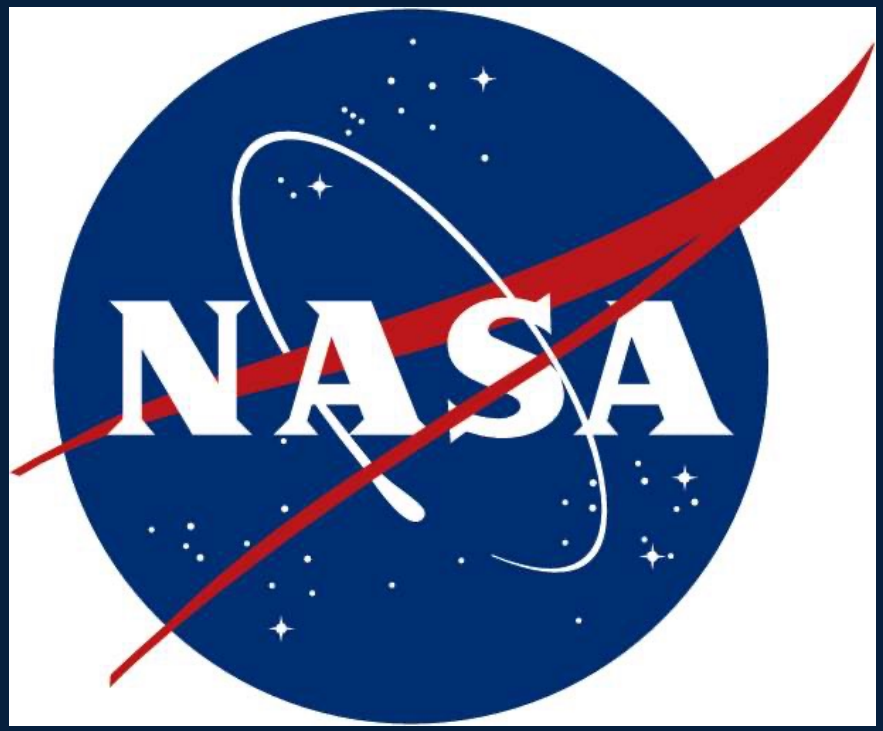

The Solar System
— for Kids
David H. Lehman
NASA / Jet Propulsion Laboratory,
Project Manager (Retired) and Solar System
Ambassador

Why am I wearing an astronaut suit today?

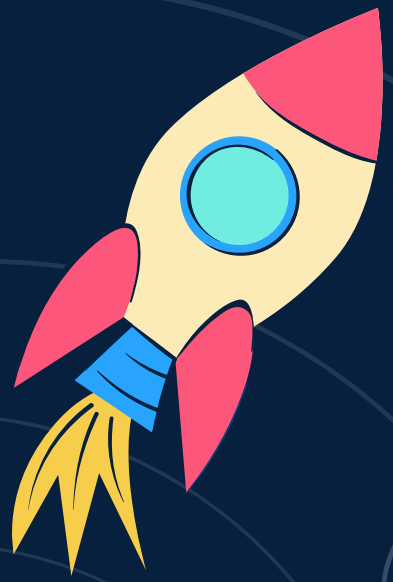
A. Because I am an astronaut
B. Because this is the required uniform for people from JPL
C. Because today is Halloween
D. Because I want to be funny looking today



What is NASA?

01

3, 2, 1... Take off to the Solar System!



Definition

The Solar System is a set made up of the Sun and the eight planets that revolve around it. Of the eight planets, one is where we live: Earth

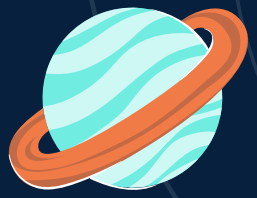
Exploring our Solar System:

When was it formed?

The truth is that it is so long ago that it is very difficult to know for sure, but it is believed that it was 4.5 BILLION YEARS AGO! Shocking, isn't it?

Where is it?

There are millions of galaxies in the universe. One of them is the one we know as the Milky Way. The Milky Way, formed by stars, dust and gas, has a spiral shape. It could be said that its appearance is something like a whirlpool with several arms



The band of the Milky Way galaxy can be seen at night in areas with dark skies. Here it is seen with several Atacama Large Millimeter/submillimeter Arra (ALMA) antenna on the Chajnantor Plateau, in the Atacama Desert, Chile..
(Credit: ESO/B. Tafreshi)


02
The Sun and the planets

This is the brightest star: the Sun

The Sun is the main protagonist of this system, which is why it is called the Solar System. It is located in the center and everything revolves around it. The Sun is an immense star that emits light and heat. It is the closest star to the Earth and on which all life on Earth depends

Our home: planet Earth

Our home, planet Earth, is a rocky, terrestrial planet. It has a solid, active surface, with mountains, valleys, canyons, plains and much more. Earth is special because it is an ocean planet, with water covering 70% of its surface. Our atmosphere is largely composed of nitrogen. It is made up of three layers: crust, mantle and core. Its natural satellite is the Moon

More Rocky planets: Mercury, Venus and Mars

Mercury	It is the closest to the Sun and also the smallest. It is a planet without satellites in its orbit. Its surface, covered with rock and craters, resembles that of the Moon	
Venus	It is the one that most resembles the Earth. It is covered with very thick clouds that reflect sunlight, so that at night it looks bright and we can distinguish it with the naked eye	
Mars	Mars is often called the 'Red Planet', logically because of its reddish appearance. It has the largest volcano of the eight planets in the solar system. One of the great scientific discoveries of recent years has been the finding of subway water on Mars. It has two satellites called Phobos and Deimos	

Giant planets: Jupiter, Saturn, Uranus, and Neptune

Jupiter	It is a gigantic planet: its size is 1,300 times larger than the Earth. It has many natural satellites, the most important of which are Io, Europa, Ganymede and Callisto	
Saturn	Saturn is a yellowish planet and, next to Jupiter, the largest planet. The most special thing about Saturn is its famous rings composed of rocks and water ice. Some of its natural satellites are Hyperion and Iapetus	

Giant planets: Jupiter, Saturn, Uranus, and Neptune

Uranus	Uranus is characterized by being a very cold planet because it is far from the Sun. Its axis of rotation is very tilted, and it looks bluish in color because of the gases that form its surface. Uranus also has a ring system and a few natural satellites including Titania, Oberon and Miranda	
Neptune	It is the farthest from the Sun and this makes it the coldest planet in the Solar System. Also, because of the gas in its atmosphere, it appears blue. It has a system of four rings formed by dust particles	

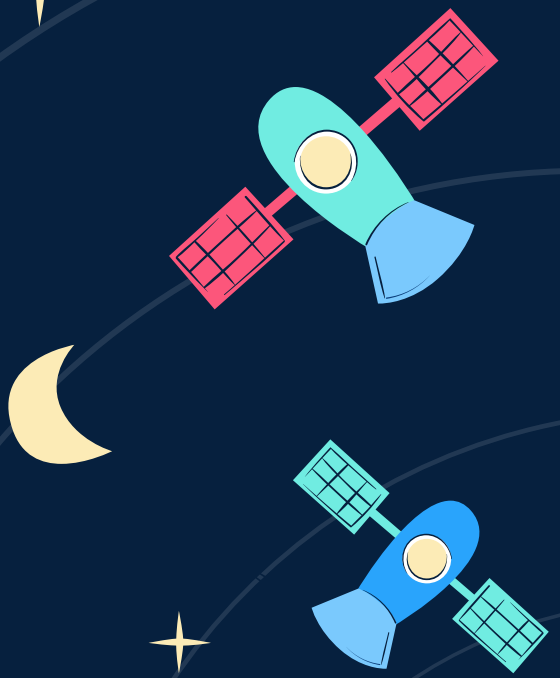

03
Traveling through the Solar System


How do rockets work?

Experiment of the Boat by Tsiolkovsky

First stop: satellites

A satellite is a body that revolves around another, usually larger, body. In the Solar System, some planets have satellites, although around the Earth there is only one natural satellite: the Moon. Artificial satellites are those made and launched into space by humans to collect all kinds of data about the Universe.



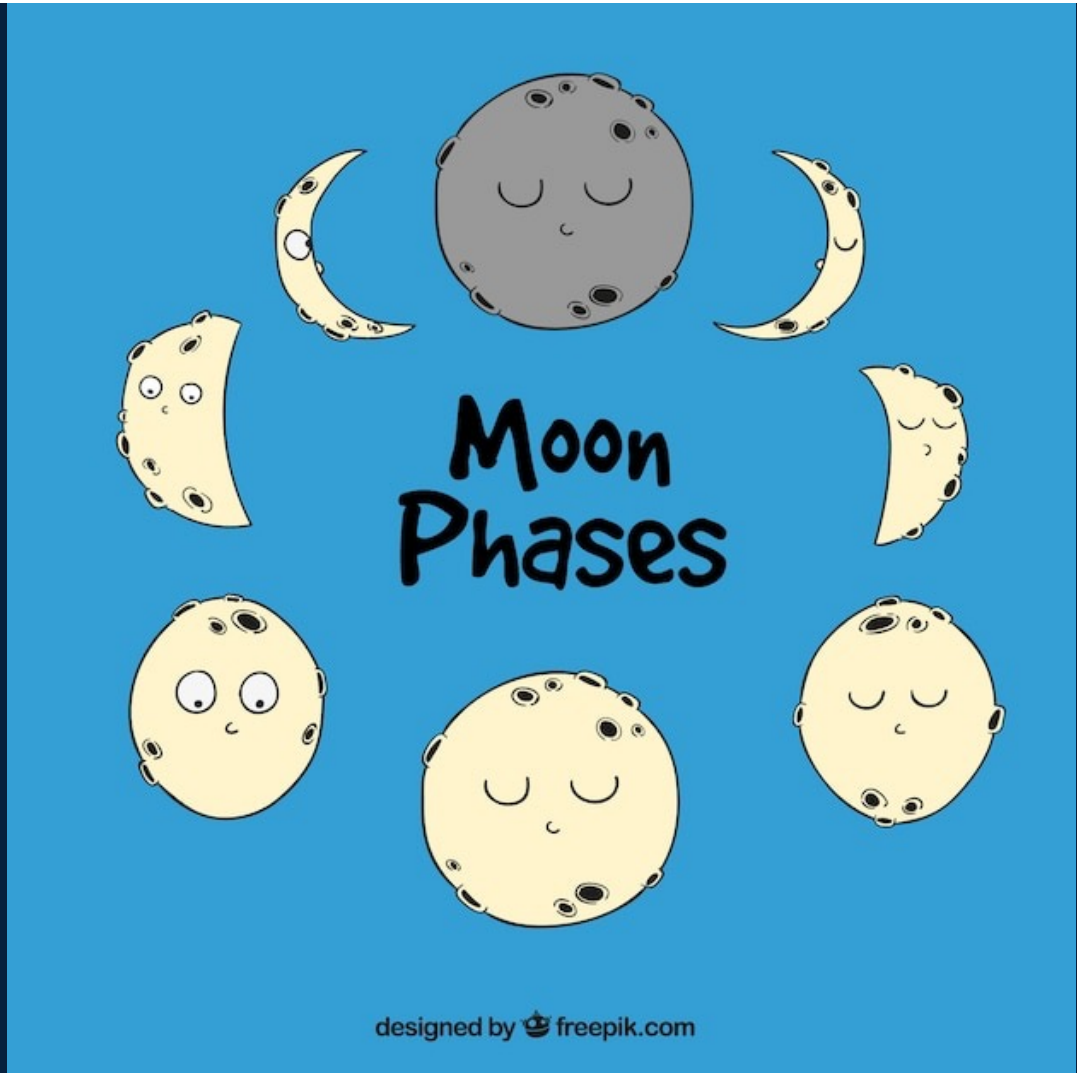
The Moon

The Moon is a rocky celestial body without rings. It does not give off light, but reflects the light it receives from the Sun. The Moon takes different positions, so it does not always present the same illumination. In its path, the Moon goes through eight main phases,.

How much time elapses from a Full Moon to the next Full Moon?

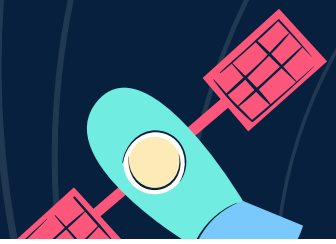
Is the far side of the Moon always dark?

Why does the Moon impact coastal tides?



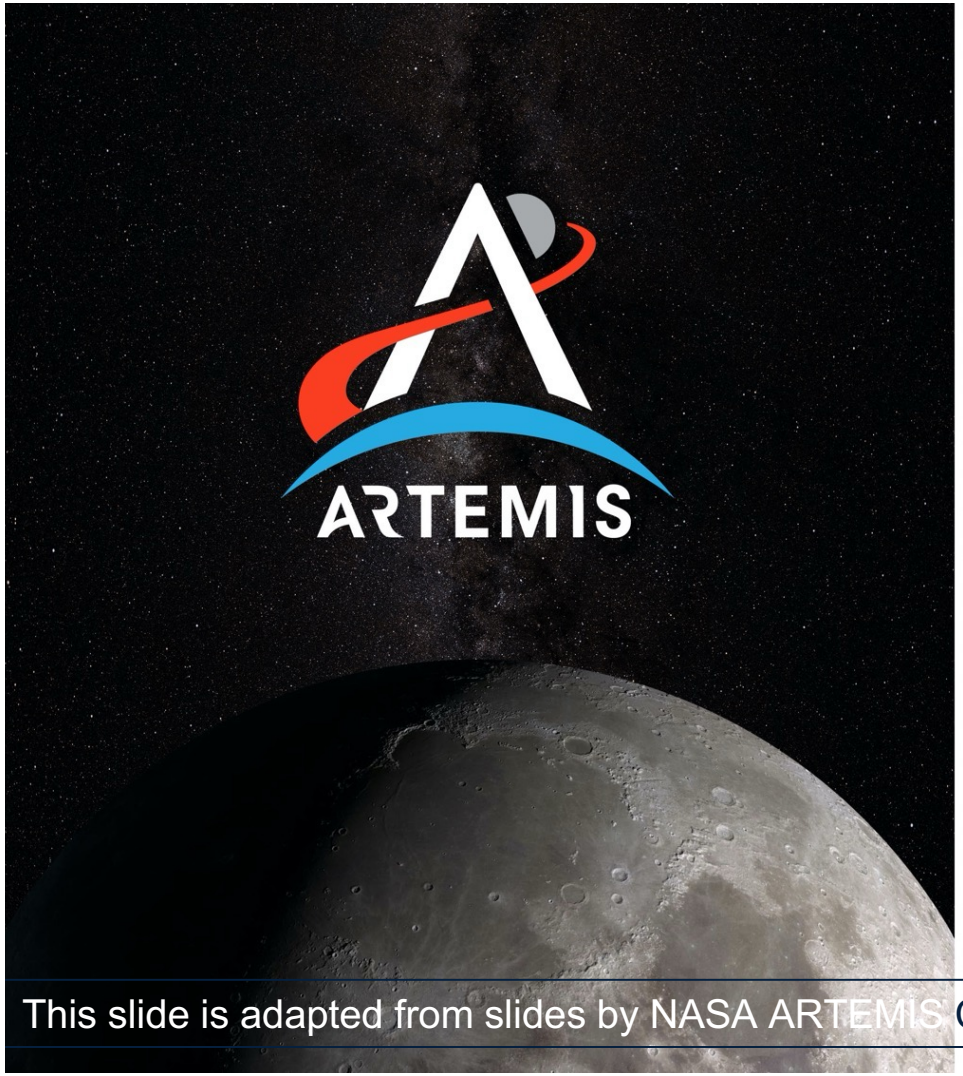
Second stop: asteroids

An asteroid is a small rocky object that orbits the Sun and some planets. Asteroids are smaller than a planet, but larger than objects the size of a chunk of rock



Third stop: meteorites

Meteorites are the remains of celestial bodies that impact the Earth. These fragments reach the surface because they do not disintegrate completely as they pass through the atmosphere



ARTEMIS

Twin sister of Apollo and goddess of the Moon in Greek mythology. With ARTEMIS missions, NASA will:

- Collaborate with international and commercial partners to establish the first long-term presence on the Moon, and
- Use what we learn on and around the Moon to take the next giant leap: sending the first astronauts to Mars.

This slide is adapted from slides by NASA ARTEMIS Chief Nujoud Merancy, dated Oct. 21, 2021.


DO YOU HAVE WHAT IT TAKES TO #BeAnAstronaut?
NASA
U.S. citizen
Master's degree in STEM field
Two years related, professional experience
Pass NASA astronaut physical
NASA
ARTEMIS

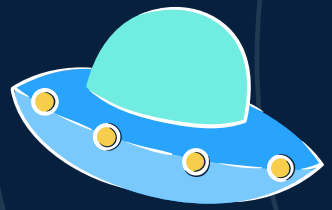
Can Astronauts Dance?


Thank You.

Thanks!

Do you have any questions?

Email: david.h.lehman@icloud.com
Phone: 1 626-794-0330

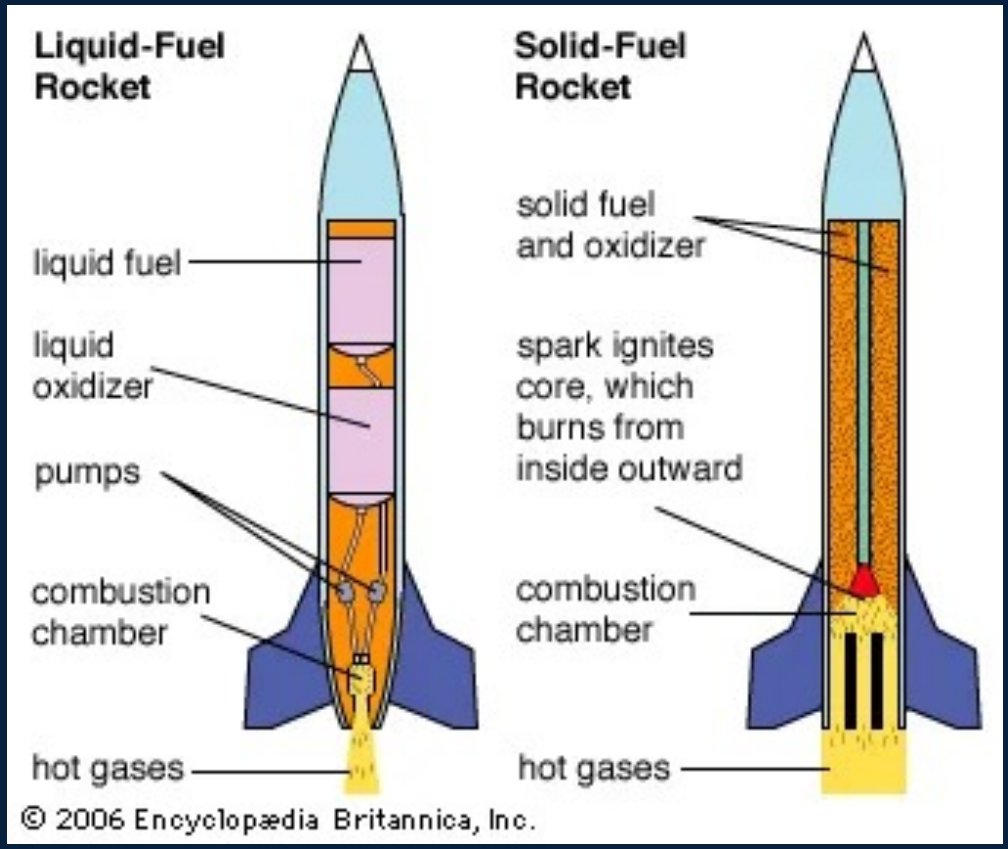


Back Up Charts

* How do Rockets Work?
* Some Trivia

How do rockets work?

- The action is the force produced by the expulsion of gas, smoke, and flames from the nozzle end of a rocket engine.
- The reaction force propels the rocket in the opposite direction.
- When a rocket lifts off, the combustion products from the burning propellants accelerate rapidly out of the engine.




04
Some
trivia

1	Light takes 8 minutes and 17 seconds to travel from the Sun to the Earth's surface
2	The average distance between the Sun and the Earth is about 150,000,000 km
3	Twelve people have walked on the surface of the Moon, beginning with Neil Armstrong and ending with Gene Cernan. All lunar landings took place between July 1969 and December 1972 as part of the Apollo program
4	Astronauts aboard the International Space Station circle the Earth every 90 minutes, and experience a sunrise and sunset 16 times in each 24-hour period
5	The size of the Earth is 81 times larger than that of the Moon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