

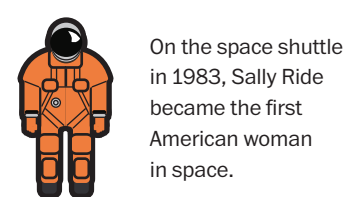
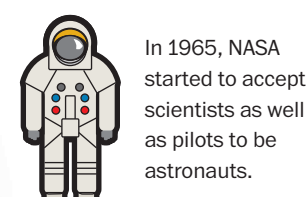
THE JOURNEY TO SPACE

How we got there ...

In 1961, the United States launched its first astronaut into space using a Redstone rocket originally designed for the U.S. Army. Over time, the rockets used to launch humans into space got bigger and more powerful.

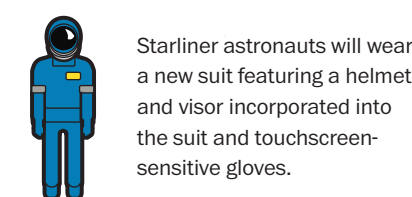
Who are the astronauts?

It's not easy to become an astronaut. NASA typically wants candidates to have a college degree in a STEM field, three years of professional experience or 1,000 hours of commanding an aircraft. Candidates also must be healthy enough to pass NASA's astronaut physical. Since 1961, only 338 astronaut have ever been selected by NASA.



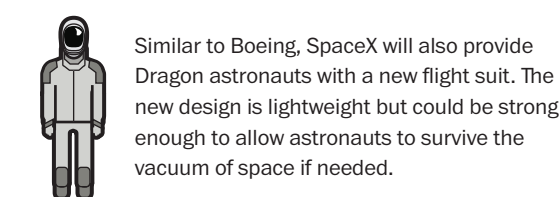
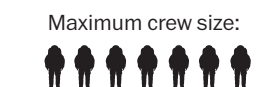
Starliner capsule

Boeing's CST-100 Starliner is slightly bigger than the Apollo command module and was designed to be compatible with many different rockets.



Dragon capsule

SpaceX's Dragon spacecraft can be configured in a number of ways: to deliver cargo, carry a crew or as an in-space self-contained science lab.

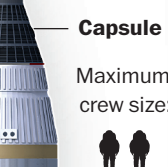
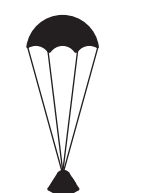


NASA

NASA — the National Aeronautics and Space Administration — was created by the U.S. government as a response to the Soviet Union's successful launch of Sputnik into space. Since then, it has been NASA's mission to lead the way for the nation in space exploration.

What are space capsules?

For most of its human spaceflight program, NASA has sent people to space in **capsules**, launched on top of rockets. After their mission, the capsules would parachute back to Earth, usually landing in the ocean.

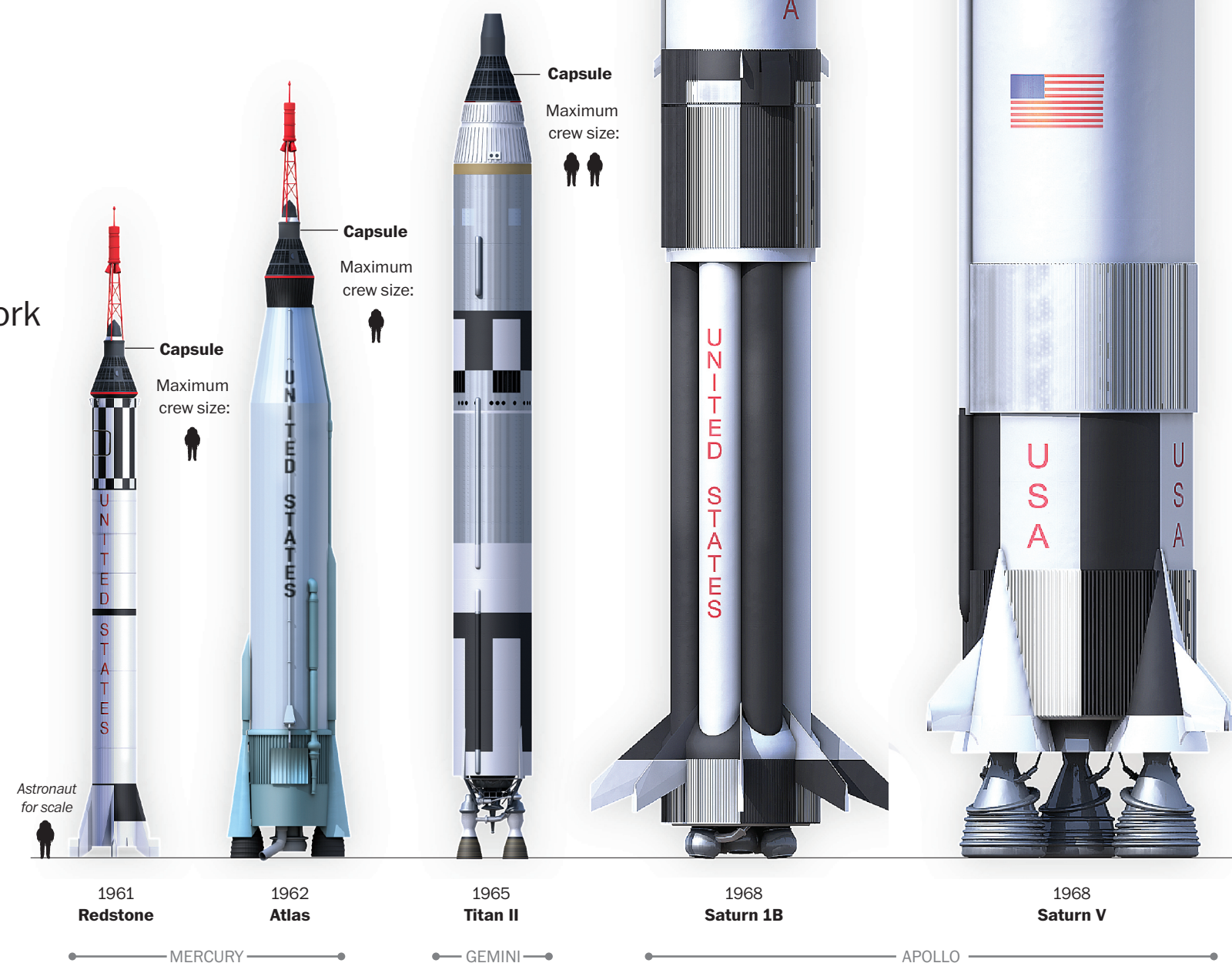


How rockets work

If you could look inside a rocket, you would see that most of the space is taken up by two large tanks.

One tank is for fuel, and the other is for an oxidizer.

When mixed together and ignited, they create a thrust of hot gases that pushes the rocket upward.



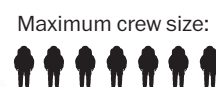
Command module
Service module
Maximum crew size: 3

The Apollo missions used multiple vehicles to successfully land on the moon. The service module provided propulsion. The lunar module landed on the moon's surface, and the command module capsule returned the astronauts back to Earth.

Lunar module

Command module
Service module
Maximum crew size: 3

Space shuttle orbiter
The space shuttle was the first reusable spacecraft — designed to launch like a rocket into orbit — and then glide and land back on Earth like an airplane.



External fuel tank

The space shuttle used its bay like a pickup truck bed, delivering equipment and structures to space.

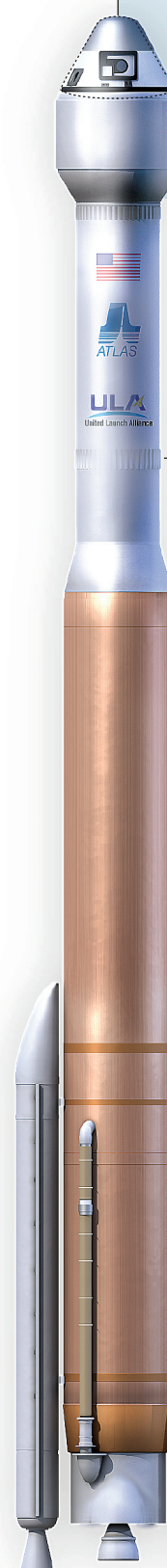


Booster rocket

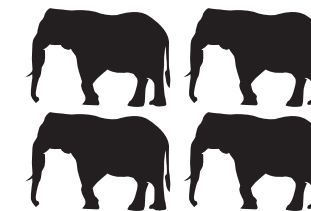
1981 STS

Boeing

The Boeing company has been around for more than 100 years. One of its earliest products was selling seaplanes to the U.S. Navy. Since the 1960s, Boeing has developed many space vehicles for NASA, and in 2014 it won one of two contracts to develop crew transportation systems to replace the space shuttle as a way to get Americans into orbit.



The Atlas V rocket is operated by the United Launch Alliance, a joint venture of Boeing and Lockheed Martin. It is very reliable and has had about **80 launches** with no complete failures to date.

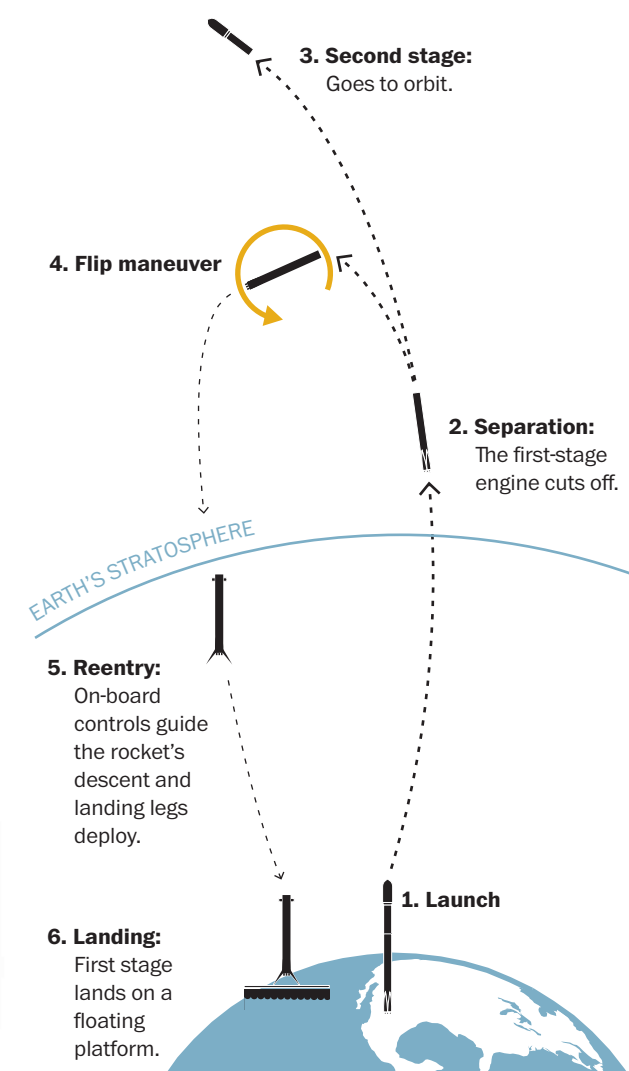


It is also powerful. It can launch more than **45,000 pounds** into low Earth orbit — that is close to the average combined weight of four adult African elephants.

2019 Atlas V

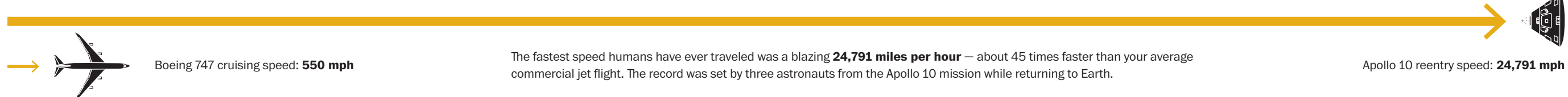
SpaceX

SpaceX is a new company with Silicon Valley DNA. It was the first commercial business to create and launch a liquid-fuel rocket into orbit. Since then, the company has continued to innovate. One of its greatest successes is the development of a rocket with a first stage that can enter the stratosphere, land upright and be reused — which has the potential to significantly lower the cost of spaceflight.



2019 Falcon 9

The fastest humans ever



How far we have gone

