



Space X: To the Moon and Mars

Discuss



- What do you know about the moon and Mars?
- Do you think humans should live on more than one planet? Why or why not?

Vocabulary

Starship

International Space Station

Elon Musk

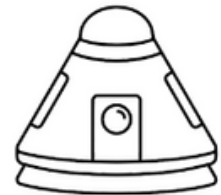
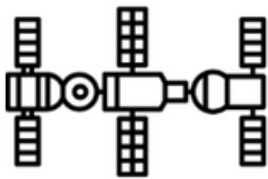
NASA

Space Colony

United Nations

Cargo Capsule

Booster



Comprehension



Space Exploration Technologies, or SpaceX for short, is an American company that builds spacecraft and provides space transportation services for people and things. Elon Musk, one of the world's richest people, founded the company in 2002. Its goal is to make the price of going to outer space cheap and easy enough that humans will colonise the moon and Mars faster. SpaceX has developed several families of spacecraft, rocket engines, and cargo capsules. The company is already taking astronauts to the International Space Station, and joined with NASA in 2024 to take humans back to the moon.

Before the creation of companies like SpaceX, going to outer space was very expensive. The United States space program spent, on average, 3 billion Hong Kong Dollars per launch. The high cost of putting a shuttle into orbit caused the exploration of space to move very slow. Some governments did not see the value of learning more about outer space and moved money away from space-programs. Scientists were becoming more aware of the dangers humans faced by living on just one planet—or as they called it, being a single-planet civilisation.

One of these dangers is a mass extinction event, like the one that killed the dinosaurs. These scientists believed humans must become an interplanetary civilisation to make sure we survive long-term, meaning we must exist on more than one planet to truly be safe. Elon Musk has said that he created Space X to help humanity survive this type of extinction event by colonising the moon and Mars.

In September 2016, Musk unveiled the Interplanetary Transport System, now renamed Starship, for crewed interplanetary spaceflight. He hopes to use Starship to transport humans to the moon in 2024 and Mars in 2030, eventually sending 1 million people to Mars by 2050 by launching 3 Starship rockets every day. Starship is planned to be fully reusable and will be the largest rocket ever.

Questions

Directions: Answer the question below in complete sentences.

1) When was Space X created, and who created it?

2) Why was it created?

3) Before SpaceX, how much did the United States space agency spend on sending people and things into space?

4) What was the problem with sending things into space at such a high cost?

5) Why does Elon Musk want to spread humanity to the moon and Mars?

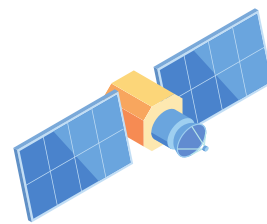
Essay Questions:

1. Living on the moon or Mars will be difficult at first. If you had the chance, would you go? Why or why not?

2. Do you agree that humans should be on more than one planet? Why or why not?

Prepositions of Time: Definitions

Prepositions of Time - at, in, on



We use:

- **at** for a PRECISE TIME
- **in** for MONTHS, YEARS, CENTURIES and LONG PERIODS
- **on** for DAYS and DATES

at PRECISE TIME	in MONTHS, YEARS CENTURIES and LONGER	on DAYS and DATES
at 3 o'clock	in May	on Sunday
at 10.30am	in summer	on Tuesdays
at noon	in the summer	on 6 March
at dinner time	in 1990	on 25 Dec. 2010
at bedtime	in the 1990s	on Christmas Day
at sunrise	in the next century	on Independence Day
at sunset	in the Ice Age	on my birthday
at the moment	in the past/future	on New Year's Eve

Practice

1. Sputnik 1 was the first artificial Earth satellite. It was launched (at, in, on) 7:28 PM (at, in, on) 4 October 1957.
2. Humans first went to space in (at, in, on) 12 April 1961.
3. (At, In, On) that day in 1961, Russian cosmonaut Yuri Gagarin became the first human in space,
4. Earthrise is a photograph of Earth taken from the moon by astronaut William Anders (at, in, on) 24 December 1968.
5. Apollo 11 was a mission to put a man on the moon. It launched (at, in, on) 16 July (at, in, on) 13:32 UTC.
6. (At, In, On) the summer of 1969 (at, in, on) July 12th, Neil Armstrong became the first human to step on the moon.

Space X Timeline

2002: June Elon Musk forms SpaceX.

2003: March SpaceX successfully fires the Falcon rocket primary engine.

2006: August SpaceX wins \$1.6 billion contract to bring supplies to the International Space Station.

2008: September 28 SpaceX launches Falcon 1 to orbit.

2010: December 8 SpaceX launches Dragon into orbit around Earth, becoming the first commercial company to place a spacecraft in low-Earth orbit.

2011: April SpaceX unveils plans to build the Falcon Heavy rocket.

2012: May 7 Launches Falcon 9 carrying the Dragon capsule on a test flight to the International Space Station.

June 6 Starship begins development.

2014: August 4 SpaceX begins construction on its own spaceport.

August 5 SpaceX launches Falcon 9 to deliver a Hong Kong communications satellite.

2019: August 27 SpaceX test flies Starhopper, the first prototype for its Mars-colonising Starship. Starhopper reaches a hover altitude and then flies sideways to touch down at a separate nearby landing pad.

2020 May 30 Crew Dragon launches transporting astronauts Doug, Hurley, and Bob toward the International Space Station. This mission marks the beginning of a SpaceX human spaceflight era.

2022 SpaceX will transport the XL-1 lunar lander to the south pole of the moon with NASA payloads on board, including scientific experimentation instruments, as well as cargo from commercial passengers.

2024 SpaceX returns to the moon delivering payloads for NASA's Artemis Program.

2026 Elon Musk is 'highly confident' SpaceX will land humans on Mars by this year.

2050 Space X hopes to have created the first self-sustaining city on Mars

Practice I

Space X Timeline



Directions: Fill in the gaps using the prepositions at, in, or on, as well as some keywords from the timeline from the previous page.

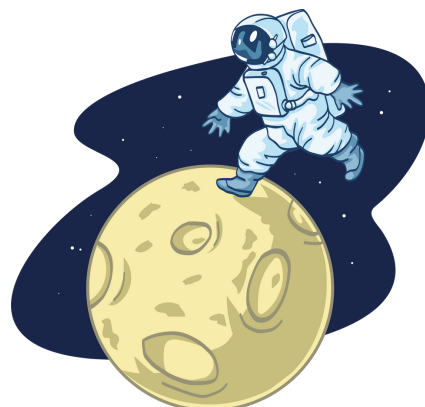
1. Elon Musk founded SpaceX ____ June 2022.
2. ____ March 2003, SpaceX successfully fires its ____ rocket.
3. SpaceX won a contract ____ August 2006 to bring supplies to the ____.
4. ____ September 28th, 2008, launches Falcon 1 into orbit.
5. ____ December 8th, 2010, SpaceX launches ____ into orbit around Earth, becoming the first commercial company to place a spacecraft ____ low-Earth orbit.
6. ____ 2011, SpaceX unveils its plans to build the ____ Heavy Rocket.
7. ____ May 7th, SpaceX launches the Falcon Heavy Rocket carrying the Dragon capsule on a test flight to the International Space Station."
8. ____ June 6th, 2012, Starship begins development.
9. SpaceX began construction on its own spaceport ____ August 4th, 2014.
10. SpaceX used its ____ to deliver a Hong Kong communications satellite into orbit ____ August 5th, 2014.
11. ____ 2019, SpaceX test flies ____.
12. ____ May 30th, 2020, Crew Dragon launches, transporting astronauts ____, ____, and ____ to the space station.
13. ____ 2022, SpaceX will transport a lunar lander which will land ____ the south pole of the moon.
14. SpaceX will return to the moon ____ 2024, delivering payloads for NASA's Artemis Program.
15. ____ 2026, Elon Musk hopes to land humans ____ Mars.
16. ____ 2050, SpaceX hopes to have created the first self-sustaining city ____ Mars.

Practice II

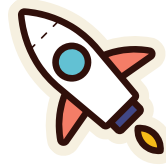
Space X Timeline

Directions: Circle "at," "in," or "on."

1. (At, In, On) March 2, 2019, SpaceX sent two astronauts to the International Space Station.
2. (At, In, On) 7:27 p.m., astronauts launched aboard a SpaceX Falcon Heavy rocket.
3. Less than a day later, the crew arrived (at, in, on) at 7:16 a.m.
4. SpaceX is a private space flight company created (at, in, on) the summer of 2002.
5. The company will help NASA send astronauts to the moon's south pole (at, in, on) 2024.
6. Humans first landed on the moon (at, in, on) 1969.
7. SpaceX's owner, Elon Musk, wants to send the first people to live on Mars (at, in, on) 2026.
8. (At, In, On) the year 2030, Musk wants to send 1 million people to live on Mars.
9. "This is not about everyone moving to Mars; this is about becoming multi-planetary," he said (at, in, on) September 27
10. "The future of humanity is ... one of two directions: Either we're going to become a multi-planet ... civilisation, or we're going to be stuck on one planet until some ... extinction event," said Musk (at, in, on) November



Practice I



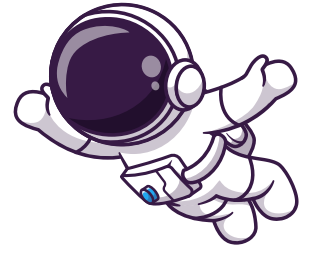
Starship

Starship is in two parts, called stages. The first stage is the **booster**, nicknamed "**Super Heavy**". The **Super Heavy** will power the rocket high into the atmosphere, disconnect, and release the crewed Starship. The booster will then return safely to Earth. Once free of the booster, Starship will fire its engines, enter orbit around Earth, and refuel before heading to the moon or mars

Use the prepositions of time "at, in, on" to fill in the gaps.

- 1) Starship is the rocket created by SpaceX to take humans to land _____ the moon and Mars.
- 2) The Starship project began _____ 2016 as a private spaceflight project.
- 3) _____ June, 2019, SpaceX said they may launch commercial payloads using Starship as early as 2021.
- 4) _____ 2012, as part of a description of the company's overall Mars system architecture, Starship was known as the "Mars Colonial Transporter" (MCT.)
- 5) _____ mid-September 2016, Musk noted that the Mars Colonial Transporter name would not continue, as the system would be able to "go well beyond Mars", and that a new name would be needed.
- 6) _____ the first two years of development, from December 2018 _____ December 2020, SpaceX built and tested 11 prototypes.

Practice I



A Day in the Life of ISS Astronauts

Directions: Circle "at," "in," or "on."

(**At, In, On**) May 30, SpaceX delivered astronauts Doug Hurley and Bob Behnken to the International Space Station (ISS) for a 30-day mission. The idea of a "day" aboard the ISS is very different from a day on Earth. The ISS is orbiting the Earth so fast that every 24 hours (1 Earth Day), the astronauts will see 15 sunrises and 14 sunsets. Every one day on the space station is 15 days on Earth. So astronauts work and sleep to fixed schedules.

(**At, In, On**) the morning mission control turns the lights on at 6 am. This is the sign for the crew to get up. Breakfast is (**At, In, On**) 7 am. According to NASA, astronauts may choose from Cornflakes, Rice Krispies, granola, or grits with butter. (**At, In, On**) special occasion astronauts may have fresh fruit or fresh scrambles eggs.

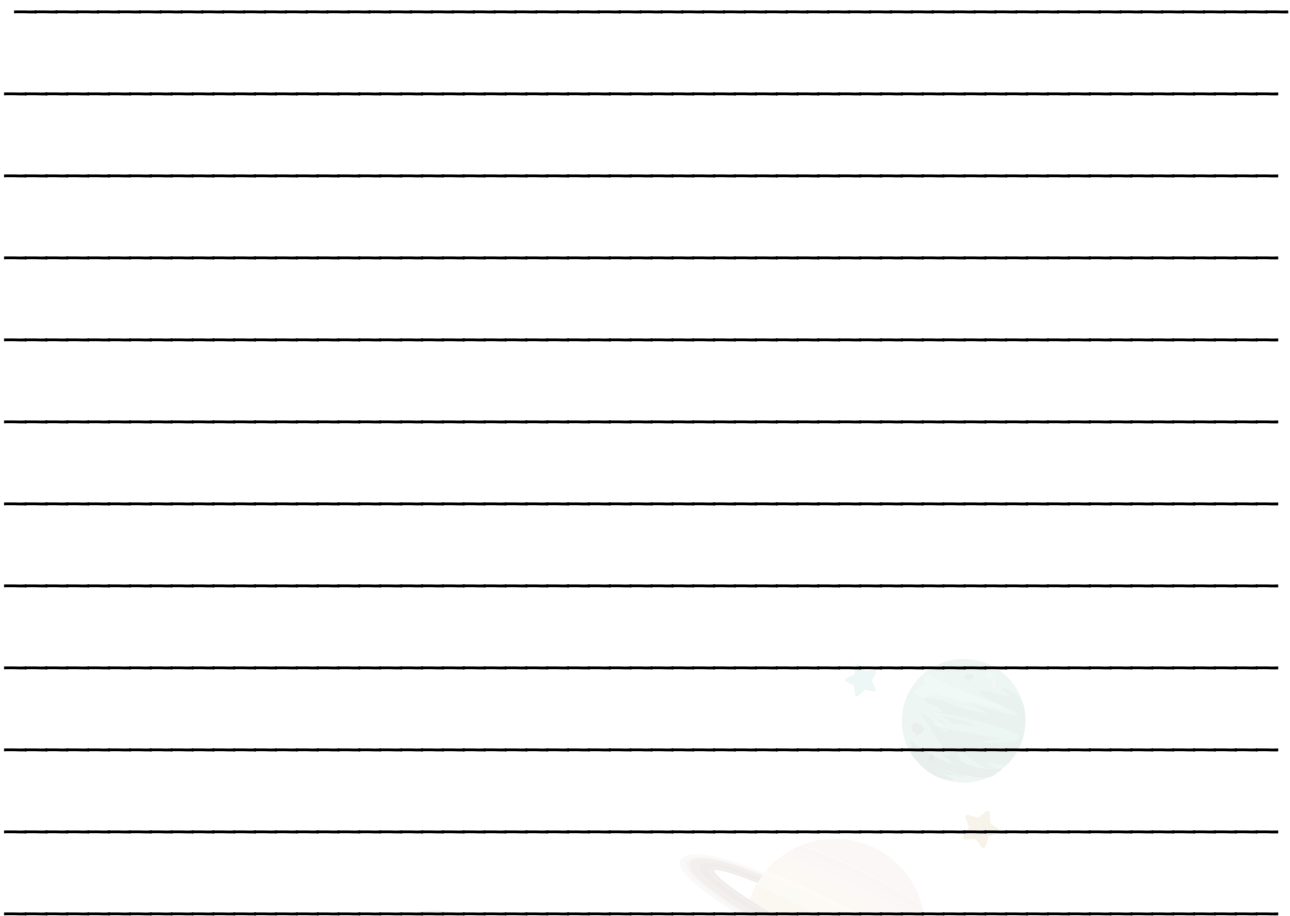
In the ISS, astronauts will still divide the week into weekdays and weekends. (**At, In, On**) the weekdays they will do most of their work and (**at, in, on**) the weekends they will try to take some time to relax. During the week, each astronaut must do their work. Sometimes, they may work in pairs or small groups. (**At, In, On**) most weekdays, they don't have time to eat meals together as a crew. However, (**at, in, on**) Sunday, (**at, in, on**) dinner time, they will often come together to float around the table and enjoy a shared meal.

(**At, In, On**) the evening, they may choose to have a workout in the exercise room. They may also go to the observation room to look (**at, in, on**) the sunrise or sunset on Earth. (**At, In, On**) this time, some may choose to write emails to send home to their ones or answer letters from school kids. (**At, In, On**) bedtime, the astronauts brush their teeth and zip up in their sleeping bags so they won't float away at night. (**At, In, On**) the morning, they will wake up and do it all over again.

Homework Task

Space Timeline

Directions: Using the prepositions "at," "in," or "on" write your own timeline for a human settlement on the moon or Mars. Draw a picture of your base below.

The image features a series of horizontal black lines on a white background, resembling a notebook page. In the bottom right corner, there are faint, stylized illustrations of celestial bodies: a green planet with a ring, a yellow planet, and a small yellow star.