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# The Journey Begins



**Topic:** First part of a journey to Mars

**Objective:** Students will participate in a simulated trip in 2025 aboard a supersonic transporter carrying them from Earth to a space station orbiting Earth at an altitude of 146 miles.

## Materials:

- nine copies of the script for simulated flight to the space station
- display of materials produced by teams in the Mission Assignments activity
- **Optional:** slides or video of Earth seen from Space Shuttle

## Suggestions for the Simulation:

This simulation will “transport” the students to the *Freedom* Space Station which is in orbit around the Earth in this future time period. Realism can be added to this simulation through the use of pictures taken by astronauts while orbiting the Earth. If slides or videos are used, they can be viewed on a screen made to look like a giant porthole through which all passengers can see the views. Uniforms may be easily made by the students, using disposable overalls.

There are eight speaking parts in the simulation: captain, first officer, two flight attendants, two passengers, air traffic controller (tower), and a space station porter. These roles may be played by either male or female students. Consider placing students in non-traditional roles, such as females for captain and first officer and males as flight attendants.

## Preparation:

- Highlight each script for one of the eight roles. Keep the extra script to give cues as needed.
- Distribute scripts to students who will play the eight roles. The remainder of the class will be passengers on board this flight.
- Set up the classroom for the simulation. Assign specific locations for the tower, transporter, and space station. Include areas for the flight deck and passengers inside the transporter and one cabin within the space station.
- Create props for the simulation, such as flight control panels and special seats for the captain and first officer. Let students help with this task to make the interior of the transporter.
- Make a porthole area to show views of Earth by using slides or a video.
- Make uniforms for the flight crew, including insignias of their company. (**Suggestion:** Obtain from a paint store disposable overalls which can be decorated for each crew member.)

## Procedure:

- Let the cast read over their script to become familiar with it.
- Conduct the simulation with the cast of players reading their scripts.

## Discussion:

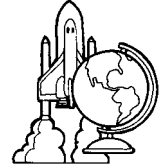
Let students discuss additions they can make to the script, such as more passenger conversations or problems with a near collision with another space transporter.

## Follow Up:

Let students perform the simulation as a skit for other classes.

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# The Journey Begins *(cont.)*



## Flight to the International Space Station *Freedom* Simulation Script

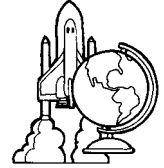
- Flight Attendant: Welcome aboard Flight 300, destination the *Freedom* Space Station, in orbit 220 miles above the Earth. As we prepare for liftoff aboard *Convair 500* from the Edwards launch site in California, please listen to the following instructions. Today's journey will be approximately three hours, and we promise you a view you won't forget. Your personal belongings must be stowed in the overhead bins to avoid their floating around during our trip. Fasten your seat belts securely to hold you in place throughout the flight. Our liftoff speed will be 356 miles per hour, and you will feel about six times heavier than you are now. Do not be concerned; this is normal, and the pressure will be less as we climb in altitude. As soon as we reach the speed of 17,400 mph, we will be in orbit and will cut off the main engines. At this point, everyone will be weightless, since we will be beyond the pull of Earth's gravity.
- Captain: Ladies and gentlemen, this is the captain speaking. We are in the final stages of launch for Flight 300. Your flight attendant has given you general instructions. Just as a precaution, all crew and passengers will wear oxygen masks during launch in case there is a drop in cabin pressure. Please place the oxygen mask over your face at this time and secure it with the strap. Be sure your seat belt is fastened tight and be ready for an exciting liftoff. Sit back, relax, and enjoy the fantastic view of Earth from your portholes.
- First Officer: Tower, this is C300 requesting clearance to taxi to runway 15.  
Tower: C300, you are cleared to taxi to runway 15.  
Captain: Let's run through the pre-takeoff final items checklist.  
First Officer: Pre-takeoff checklist is complete.  
Captain: Okay, we're ready to go. Notify the flight attendants, and let's call for departure.  
First Officer: Roger. Flight attendants, please take your seats and prepare for departure. Tower, C300 is ready for departure on runway 15.  
Tower: Roger, C300, you are cleared for takeoff on runway 15. Fly runway heading and climb and maintain flight level 450.  
Captain: Set takeoff power.  
First Officer: Takeoff power set. . . . 180 mps, rotate.  
Captain: Positive rate of climb, landing gear up please.  
First Officer: Gear up and locked  
Tower: C300, have a great flight and contact departure control now.  
Captain: Roger, over to departure, have a good day.  
First Officer: Speed 356 mph; the 6 scramjet primary boosters up to full power; clearing 15,000 foot runway. We are airborne!  
Captain: Feeling 6 g's, rotating 44°, nose-up altitude.  
First Officer: Air speed, 518 mph.  
Passenger 1: I feel like an elephant is sitting on my chest! Sure hope this doesn't last very long.  
Captain: Primary booster engines cut off. Climbing at rate of 66 feet per second.  
First Officer: Passing 15,000 feet altitude; course change to 118° level heading; angle of attack increasing.  
Captain: Speed Mach 2; feeling 2 g's. Firing primary boost to reach Mach 4; 2.8 g's, hands feel like lead.  
Passenger 2: I feel as if I am on a rapid weight-loss program. It seems I am lighter but still must weigh more than usual.  
First Officer: Passing 65,000 feet; speed of Mach 6; Mach 8.

# The Journey Begins (cont.)



## Flight to the International Space Station *Freedom* Simulation Script (cont.)

- Passenger 1: Look at those flecks of light flashing by the portholes! Are we burning up?  
Passenger 2: No, we aren't burning up. The orange glow is from the heat building up due to the friction of air rubbing against our transporter. Don't worry, this is my third trip to the space station.
- First Officer: Speed Mach 12.  
Captain: Fire MJ-25 rockets.  
First Officer: Roger, firing MJ-25's.  
Passenger 1: WOW! What a kick! I've changed my mind. Maybe I wasn't meant to be a space traveler after all. To think that I paid \$150,000 for this flight!
- Passenger 2: I think it is really exciting. How often do you get to go this fast or this high?  
Passenger 1: Oh no! Now the whole ship is shaking! I feel like I'm still in California experiencing a 10-point earthquake! There are more flashing lights and even pieces of the ship falling away! I definitely want my money refunded!
- Passenger 2: The vibration will be over soon; it's normal and this ship is built to take it. The lights are still caused from the heat of friction. The particles flaking off are ice which has formed in the extreme cold at this altitude.
- Passenger 1: Look at the deep cobalt blue sky; the atmosphere is very thin up here. I sure hope we don't spring a leak. These oxygen masks wouldn't help us then; our bodies would explode without the air pressure in this cabin. This was a bad idea. I should have taken the job in Hawaii. Volcanoes and hurricanes would be better than this!
- Passenger 2: You're beginning to hyperventilate. Just close your eyes, calm down, and hang on. You really are very safe. I've made this same trip before.
- Captain: Mach 18; executing roll maneuver; altitude 50 miles; acceleration 14,200 mph; feeling 2.4 g's.  
First Officer: Roll maneuver complete, approaching 17,400 mph; altitude 85 miles and still rising.  
Captain: Main engine cutoff; we are in orbit!
- Flight Attendant: Ladies and gentlemen, it is now 45 minutes since we left Earth, and the captain has shut off the main engines. We will drift up to an altitude of 220 miles to connect with *Freedom*. You will notice we are flying upside-down with the Earth below us. There is a heat shield on the underside of the transporter to keep us cool since there is no atmosphere to protect us from the sun up here. We will dock with the space station in about two hours.
- Flight Attendant: The captain has turned off the oxygen mask and seat belt signs. You may remove the mask and are free to float around the cabin. We do caution you to keep your tether line hooked to your belt, however, to avoid bumping into objects and fellow passengers. Do not open the overhead bins. There are lavatories located fore and aft. Please allow time to read the instructions. We are weightless, so toilets must work differently than on Earth. No smoking is permitted anywhere.
- Passenger 1: I feel like I just stepped off the high dive but the water is nearly 200 miles below me! I think I am going to be sick!  
Passenger 2: Sometimes being weightless makes you feel sick. Just keep your seat belt fastened, close your eyes, and sit as still as possible. The feeling usually passes within 30 minutes or less. Here's a relief bag just in case you need it. If you think you need help, I'll turn on the call light for you.
- Passenger 1: Thanks, I think I'll try sitting still for a while. Thanks for your encouragement.



# The Journey Begins (cont.)

## Flight to the International Space Station *Freedom* Simulation Script (cont.)

- Flight Attendant: The flight attendants will be floating through the cabin, offering beverage service. The containers are especially designed to operate in this weightless environment. It is important not to let any drop of the liquid escape into the cabin or it will float around and may land on fellow passengers or electrical equipment.
- Passenger 1: Hey! This isn't so bad after all. I'm beginning to feel better, and the view of Earth is unbelievable! I've only seen it in movies, and that doesn't compare with what I see through this porthole. Look at that hurricane over the ocean!
- Passenger 2: You can see the space station now; watch it get bigger as we get closer to it.
- Captain: Freedom, this is C300 now 30 miles out, firing microrockets for final approach. Requesting docking instructions.
- Freedom: C300, this is *Freedom* control tower; you have clearance to dock at port 45. Please call out your distances upon approach.
- Flight Attendant: Ladies and gentlemen, the captain is preparing for final approach to the *Freedom* Space Station. You must return to your seat, place the oxygen mask over your face, and fasten your seat belt at this time.
- Captain: Freedom, this is C300 on final approach, closing at 20 miles . . .10 miles . . .5 miles . . .1 mile . . .500 feet . . . 200 feet . . .100 feet . . .Contact!
- First Officer: Connecting with air lock of Freedom now.
- Passenger 1: What was that bump?
- Passenger 2: It happens when we connect with the air-lock; don't worry, we have arrived safely.
- Flight Attendant: Ladies and gentlemen, the captain has just linked our transporter to the air lock. Welcome to *Freedom* Space Station. It is very important that you remain seated with your seat belt fastened. The flight attendants will come to usher you individually to the air lock so you can enter the space station. When the flight attendant calls your name, please release your seat belt, open the overhead bin to collect your carry-on luggage and float forward in the cabin to the air-lock chamber. Remember that since there is no gravity here, your luggage will also be floating and weightless. Take your time since this is a new experience for most of you and takes some getting used to. It is like swimming, but you won't get wet. Flight attendants will be available to assist you during this transfer. When you reach the interior of the space station, a porter will be there to take you to your cabin. The remainder of your luggage will be brought to you within the hour.
- Porter: (speaking to Passenger 1) Welcome to *Freedom* Space Station, sir. Please float this way; you are in cabin 13.
- Passenger 1: It is great to leave that transporter! I thought I would never make it! It is fun to float rather than walk, but I keep bumping into things.
- Porter: You'll become accustomed to the feeling of weightlessness soon. Please make yourself comfortable. I'll bring your luggage to you shortly.
- twenty minutes later—
- Passenger 1: (hearing a knock on cabin door) That must be my luggage.
- Porter: I am very sorry, but your luggage was put aboard a lunar transporter by mistake. When it reaches the moon, it will be transferred to a shuttle and brought here.
- Passenger 1: How long will that take?
- Porter: It takes about six days, sir. Here are coupons for you to use at the space station store for personal items you may need until then.
- Passenger 1: I knew I should have gone to Hawaii!