

Astronaut Training Activities

name: _____

As an astronaut going into space, you need to train your mind and body to work in conditions that are quite different than on Earth. In space there is no up or down, and you can spin around while you work. You are dealing with micro-gravity which affects how you hold things, and large bulky suits that prevent you from getting a real feel of things. As a result of the unusual working conditions in space and consequences of a mistake, astronauts have to train for years on certain tasks before they can even join a mission.

The following activities will hopefully give you a feeling for some of the unusual situations that astronauts work in. Of course we don't have the millions of dollars to set up a proper student astronaut training program, so the following activities will do.

Activity 1: Upside Down Drawing

Purpose: To demonstrate how it feels when you are doing a normal activity (drawing) in an unusual position (upside down).

Materials: - blank piece of paper - pencil - tape
- hard surface (ie. large hard cover book like an atlas)

Procedures: 1) Lightly tape the blank paper to the hard surface.
2) Lay on your back facing up to the ceiling.
3) While on your back, hold the paper & surface up with one hand.
4) With your writing hand, draw a house, two trees and a mountain on the paper above your head. Please try to draw a large picture that takes up most of the space on the paper.

Conclusion: Answer the following questions,

1) Was it difficult drawing upside down? Why or why not? Please explain.

2) Would astronauts in space have the same experience as you on the floor? Please explain.

Activity 2: Reflective Drawing

Purpose: To demonstrate how it feels when you have a different perspective with a normal activity like drawing.

Materials:

- activity 1 drawing (house, trees, and mountain)
- pen or thin marker
- bathroom mirror and counter

Procedures:

- 1) Take your drawing from activity 1 and place it on your bathroom counter. Make sure you can see the drawing in the reflection in the mirror.
- 2) Only looking at the reflection of the drawing (do NOT look down at it), use the pen or marker to trace over the lines in the picture. Please make sure you go over as many lines as possible in the picture. Please don't look directly at the picture when tracing!
- 3) Compare your original picture with the traced lines.

Conclusion: Answer the following questions,

1) What was difficult about tracing a reflected image in a mirror.

2) What is a strategy that you used to help you complete this activity?

3) This activity helps train you to complete a task without looking directly at your hands, or by using a different perspective. How do you think astronauts would need (and use) this training on a space mission? Please explain.

Activity 3: Getting Dizzy

Purpose: Your body is often in motion in space and rarely gets settled. Your stomach can easily get upset (especially when you first arrive in space) and you can get motion sickness. Astronauts have to train their bodies to deal with different orientations and to deal with being dizzy.

This activity demonstrates how simple tasks can become very difficult when you are disoriented and dizzy.

Materials:

- 5 or 6 dice, or plastic cups (something that you can stack up)
- someone to help you spin around quickly
- kitchen counter top

Procedures:

- 1) Use all the dice or cups, and make a tower by stacking up the pieces. Note how difficult or easy the task was. Dismantle the tower and place the pieces back on the countertop.
- 2) Have someone spin you around twice, and repeat step #1.
- 3) Have someone spin you around five times, repeat step #1.
- 4) Have someone spin you around ten times, repeat step #1.

Bonus Step: Try spinning around 20 times!!

Conclusion: Answer the following questions,

1) Did you get progressively better or worse each time you made a stack/tower? Please explain.

2) What is a strategy that you used to help you complete this activity?

Activity 4: Create an Astronaut Menu

Purpose: Astronauts get hungry like the rest of us. The problem is that they don't have the same food choices that we have here on Earth. Astronaut food has to have the following features/conditions:

- be light and compact (it costs money to send extra weight into space)
- easily prepared with hot water or a microwave (there are no cook tops, electric ovens, or barbeques in space 😊)
- require few extra ingredients (they don't have time for fancy meals)
- doesn't make a mess (crumbs and spills are a pain to clean up)
- be nutrition (bodies go through a lot of wear and tear in space)
- easily disposed of with little garbage (no cans or glass jars allowed)
- have variety (we all get tired of eating the same thing repeatedly)

As an astronaut in training, NASA and the CSA has given you permission to create a menu for two days. Your menu must have all of the features described above. Having a two day menu also gives you some variety so you are not stuck eating the same thing every day for many weeks in a row.

	Day 1	Day 2
Breakfast		
Lunch		
Dinner		
Snacks (Remember, no crumbs!)		
Sweets/Dessert (Remember there are no dentists in space)		
Drinks (not water) (You already have tap water to drink)		