

Asian Try Zero-G 2027 Proposal Form (Sample) (Attachment-4)

ID (for office use only)

1. Applicant Information

Experiment Title		
Personal information/ (Team Leader)	Name	Hanako Tsukuba
	Nationality	Japan
	Age	14
	Gender (M/F/X)	F
	School	Southern Ibaraki Junior High School
	Major (if applicable)	N/A
	E-mail	xxxxxxxxx@xxxxxx

Member List (if you apply with a group)

Personal information	Name	Jiro Ibaraki
	Nationality	Japan
	Age	14
	Gender (M/F/X)	M
	School	Southern Ibaraki Junior High School
	Major (if applicable)	N/A
	E-mail	xxxxxxxxx@xxxxxx
Personal information	Name	Sakura Ibaraki
	Nationality	Japan
	Age	12
	Gender (M/F/X)	F
	School	Southern Ibaraki Junior High School
	Major (if applicable)	N/A
	E-mail	xxxxxxxxx@xxxxxx
Personal information	Name	-
	Nationality	-
	Age	-
	Gender (M/F/X)	-
	School	-
	Major (if applicable)	-
	E-mail	-

If you have more members, please add the list on the next page.

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2. Photo of the applicant (optional)

If you would like to have a commemorative photo taken on “Kibo,” please attach an individual or group photo here.

*Photos taken on “Kibo” may be made public on the JAXA website and other platforms.

Please note that photography may not be permitted due to the astronauts’ schedules or other operational considerations. We appreciate your understanding.



- ☐ I agree to the Terms and Conditions indicated in the Asian Try Zero-G 2025 Entry Guideline
- ☐ I am not from the EU and do not live in the EU.
- ☐ I reside or am from the EU and agree to GDPR in Entry Guideline (check if applicable)

*Check is needed to send proposal, if applicable.

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3. Experiment Title

4. Abstract (200 words)

Please describe the background, objectives, experimental methods, expected results, and discussion.

The purpose of this experiment is to analyze the difference in capillary action between the microgravity condition on the ISS and the normal gravity condition on the ground. Since water in a tube has surface tension with surface adhesion force and cohesion force, we can see in daily life that the water surface is concave down. It's called capillary action. And gravity is said to be one of the variables that can affect capillary action. Therefore, in this experiment, we will fill a small plastic syringe-like tube with water, observe the water surface in a microgravity condition, and compare it with the experiment on the ground to investigate how the gravity affects the capillary phenomenon. As a result of this experiment, we expect the water surface to be parallel or convex rather than concave in a microgravity environment because the effect of gravity is less pronounced.

5. Hypothesis and Theory

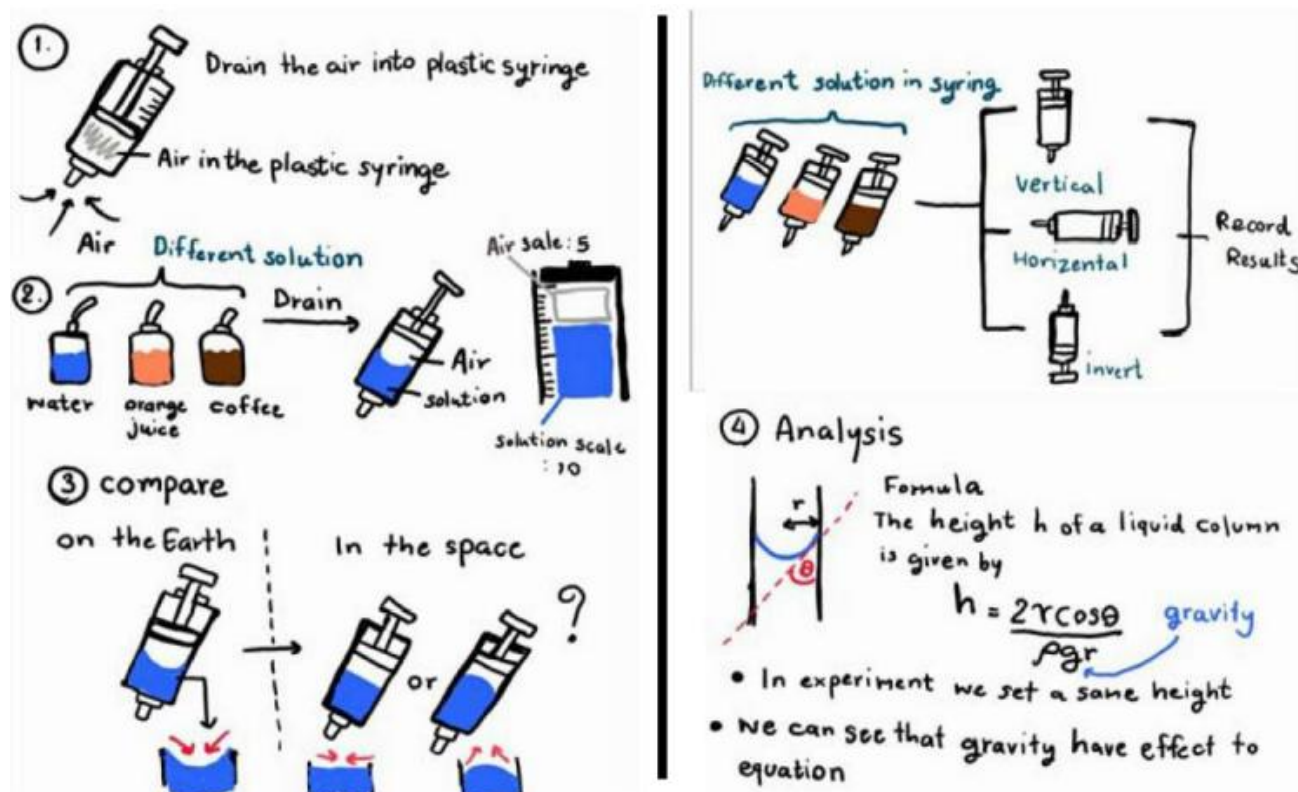
● Hypothesis

Surface tension is the force which makes fluid surface acquired the least area possible. Its direction is parallel with fluid surface and perpendicular with the edge of surface is act by force in any direction. In molecules at the surface is act by force in only under direction. So, that made fluid have surface force act into center. We can see it normally in daily life when we drain water into tube. Then, water surface is concave down because water in tube have surface tension with surface adhesion force and cohesion force. It's call capillary action. And gravity is also one of variable that can affect to capillary action. So, I think that if we drain water into a small tube such as plastic syringe and then observe it in zero gravity condition how difference of surface by compare with a syringe in normal gravity condition.

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● Schematic Model

Please clearly specify the axis labels, captions, and other details.



● Mathematical and Theoretical Hypothesis / Rationale (If applicable)

If symbols, variables, or other mathematical notations are used, please clearly define them.

The height of liquid column is given by

$$h = 2\gamma \cos\theta / \rho g$$

we can apply this equation to find θ

γ is the liquid-air surface tension (energy/area)

θ is the contact angle

ρ is the density of liquid (mass/volume)

g is acceleration due to gravity (length/time²)

r is radius of tube (length)

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6. Tools and Items

Tools and Items from Attachment-2

(Write to identify what is in Attachment-2 and amount/number pcs)

No.	Item Name	Quantity
1	Aluminum Wood block 1pcs	1
11	Tippe Top 2pcs	1
20	Wire Top (Type A)	1

7. Verification Methods and Procedures

- Overview of the Verification Methods

Compare and analysis syringe in zero gravity condition and compare contact angle(θ) from equation with contact angle from experiment.

- Show step by step procedures and expected time.

Add lines here as needed.

No	Procedure	Time* (minutes)
1	Drain air into three syringes to 5 ml scale	1
2	Drain water or other liquids into syringes to 10 ml scale	3
3	Observe them and take photos and videos	5
4	Measure contact angle and compare with syringe in normal condition (activity on ground)	
5		

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6		
7		
8		
9		
10		
Total		

* The time required for operations on orbit is about **twice as long** as the time required for the same operations on the ground.

NOTE (If applicable):

(A video explanation is best if there are.)

Show the URL storing a video for sharing	
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8. References

If you have referred to any established theories, principles, formulas, or published materials, please provide the relevant references.