

# : Reaching for the Stars

## Experiment Design Form

Name: \_\_\_\_\_

Experiment  
Number:

(assigned by CCAT)

School: \_\_\_\_\_

Grade(s): \_\_\_\_\_

# of students participating: \_\_\_\_\_

Used as in-class program?

Used as after-school enrichment program

**Experiment Title:**

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**How would you characterize this experiment?**

Directed Inquiry:

Teacher directs the activity. Students learn process skills and follow step-by-step instructions.

Guided Inquiry:

Teacher guides the activity. Students take more ownership of the inquiry process.

Student Inquiry:

Teacher facilitates full inquiry. Students take the lead in conducting the experiment.

**Type of experiment:  
(check all that apply)**

**For example:**

Fly and compare:

Will seeds that remain on Earth germinate at the same rate as seed flown in space?

Space Environment:

How can you measure the amount and types of radiation in space?

Protective Packaging:

How can you package delicate glassware to protect it from the forces of liftoff and landing?

Materials Science:

Will the bonding properties of glues change during flight?

Launch/Flight Parameters:

Devise ways to measure the forces encountered during launch and flight.

**Central Question.** Please describe the central question that the experiment addresses, and the experimental reasoning used to design the experiment.

Variables are often part of an experimental design. A variable is a quantity that can assume any value or something that is subject to change. There are three types of variables to think about when dealing with an experimental design: the independent variable, the dependent variable, and the control. An independent variable is the variable whose value is chosen by the experimenter in determining its effect on the observed changes (the dependent variable). The dependent variable is a physical quality that changes over time due to influence or exposure. Controls are quantities that remain constant during the experiment. If you need more information to understand these variables please refer to this website, <http://www.cool-science-projects.com/independent-and-dependent-variables.html>.

*If these variables are identifiable in your experiment, please include them below.*

**Independent Variable:** \_\_\_\_\_

**Dependent Variable:** \_\_\_\_\_

**Control:** \_\_\_\_\_

**Preliminary list of materials including approximate weights or volumes (if possible)**

**A Note About the TSATs:**

Remember, the dimensions of the TSAT (a wedge shaped slice of pie) are 12.2 cm on a straight side, 3.5 cm high, and the volume is 216 cm<sup>3</sup>. A dimensional drawing can be seen on the LaunchQuest™ document titled, “Experiment Framework”. A problem common to previous experiment packages is that of adequate packing. We suggest that all experiment materials be placed in some sort of separate container (such as a Ziploc bag with a pinhole vent) before the experiment is placed in the TSAT container. Cotton balls and crumpled paper are not the best packing materials to minimize shock or movement within the TSAT. Cut and formed pieces of Styrofoam insulation, wooden brackets or forms, even expandable polyurethane insulation would be preferable. If in doubt, please email us with any questions or concerns.

**Remember!!** Certain liquids are not allowed and any liquid must be placed in a container approved by CCAT. Please feel free to contact us for suggestions.

**Power Required**

Source: \_\_\_\_\_

Activated how: \_\_\_\_\_

**Anticipated method for analyzing data post-flight:**

**Anticipated Reporting Format:**

- PowerPoint
- Video
- Written