Science
Space Hazard
RSG & Adventures 1-7
Our Ideas Poster

Prep & Setup Guide

Poster Components

All poster components can be printed on **8.5 x 11” paper**

There are PDFs for:

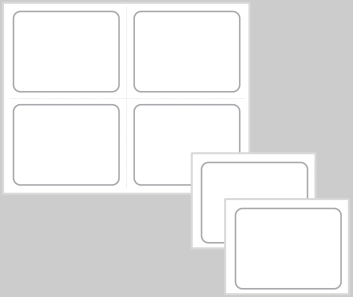
- **Poster Pages** to build the poster (pages numbered in lower right corner with corresponding adventure(s))
- **Poster Pages** with examples are for educator reference only and not intended to print.
- **Blank Pages** for more space or to build your own poster
- **Blank ¼ page cards** for learners to add additional terms, drawings, ideas
- **Term cards**:
  - Icon-only
  - Term + icon

Poster Pages

Term Cards

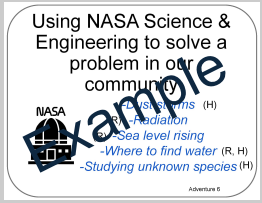
Term + icon

Blank ¼ page cards



Intended for learner responses

Poster Pages With Examples



For reference only, Do not print.

Blank Pages

Setup

To set up the poster space, you will need a wall or whiteboard area of about **80” Length x 60” Height**

Please see the following pages for setup examples. You may choose alternative layouts to fit your learning environment.

Other Materials:

- Scissors
- Masking Tape
- Tape
- Markers

icons: Flaticon.com

Poster Setup (with Example)

Our Ideas about Space Hazards
Science

Poster Setup (with Example)

Our Ideas about Space Hazards Science

How does space trash damage spacecraft and can we design ways to protect against it?

-Put dents in the spacecraft
-Space trash may harm the spacecraft
-Damage the spacecraft

-Yes! We can design ways to protect the spacecraft!

RSG

When spacetrash hits a spacecraft its energy can break the spacecraft.

We can observe this energy when the tray moves, vibrates, and makes noise.

RSG

-Space trash that is larger or moving faster does more damage.

RSG

Scientist

-Test things out
-Make observations & measurements

?

-Ask questions
-Gather evidence to answer questions.

RSG

Criteria

Requirements for evaluating a design

RSG-Level Up!

Constraints

Limitations on a design

RSG-Level Up!

Tradeoff

A compromise engineers make to balance competing design requirements.

RSG-Level Up!

Engineer

-Design things to solve problems
-Build things

RSG

How can we design ways to protect the spacecraft against space trash?

-Stack lays of materials
-We can fold materials like index cards to be more absorbent.
-When the materials absorb energy they protect the spacecraft.

RSG

Technology

-The solution to the problem.
-Material to protect a spacecraft
-Spacecrafts built safely to bring astronauts home.
-writing utensils
-bikes

RSG

How can we mitigate hazards on a particular NASA mission?

Adventure 1, 6, 7

Why is it important to make hazards safer?

-Create safe environment for astronauts
-To keep everyone safe
-So nobody gets hurt
-To live "BLE Best life ever!"
-Survival
-Communities can continue to live

Adventure 1

Add learner's index cards here

Adventure 1

How do people stay safe from everyday hazards?

Adventure 2

What is a hazard?

Adventure 2

-Dangerous
-Something that will harm me

Scary Yiyáh

Adventure 2

Mitigate

-to make a danger (hazard) less severe or painful

Adventure 2

What hazards exist where we live and how do we mitigate them?

Adventure 3

Hazards:	*Mitigations for hazards:*
-flooding	*-sand bags*
-bears attacking chicken coops	*-electric fences*
-wet floor in the cafeteria	*-safety cones to let students know the floor is wet.*
-cracked sidewalk	*-fix sidewalk*

Adventure 3

What natural hazards do people on Earth face and how do they mitigate them?

-Flooding
-Earthquakes
-Lightning strikes
-Tsunamis!

(hard to mitigate)
**very difficult to rebuild*

Adventure 4

Natural Hazards on Earth

- Tornados — Chill bil haayo!
- Snow storms
- Climate change
- Volcanoes بركان

Adventure 4

How do NASA missions mitigate hazards in space?

Adventure 5

Space Hazards

-Dust storms
-Meteor impact
-Low gravity
-No food/water/air
-Radiation
-micro-impact
-hard to mitigate
-Very difficult!

Adventure 4

Going to the Moon

(H) *-Too hot/cold*
(R) *-scratchy soil*
(R) *-meteor impact*
-low gravity
-micro impact

Adventure 6

Rocket Launch from Earth

(H) *-Bad weather*
(R) *-Explosion*
-Aircraft traffic (R, H)
-Engineers not ready! (R, H)
-Flight path not clear (R, H)

Adventure 6

Robots studying an Asteroid

-Space radiation (R)
-Scratchy soil (R)
-meteor impact (R)
-Where to get energy? (R)
-Low gravity (R)
-Micro impact (R)

Adventure 6

Traveling to Mars

-Takes a long time to travel (R)
-Space radiation (R)
-Food/water/air (R)
-meteor impact (R)
-Where to get energy? (R)
-Low gravity (R)
-Micro impact (R)

Adventure 6

Using NASA Science & Engineering to solve a problem in our community

-Dust storms (H)
-Radiation (R)
-Sea level rising (R)
-Where to find water (R, H)
-Studying unknown species (H)

Adventure 6

-Find ways to mitigate hazards at home, school, or in a neighborhood.
-Learn about NASA missions
-Learn how to create or control robots.

Adventure 7

Poster Setup (Empty Example)

Our Ideas about Space Hazards Science

How does space trash damage spacecraft and can we design ways to protect against it?

Scientist

Criteria

Requirements for evaluating a design

Constraints

Limitations on a design

Tradeoff

A compromise engineers make to balance competing design requirements.

Engineer

How can we design ways to protect the spacecraft against spacetrash?

Technology

How can we mitigate hazards on a particular NASA mission?

Why is it important to make hazards safer?

Add learner's index cards here

How do people stay safe from everyday hazards?

What is a hazard?

Mitigate

What hazards exist where we live and how do we mitigate them?

What natural hazards do people on Earth face and how do they mitigate them?

Natural Hazards on Earth

How do NASA missions mitigate hazards in space?

Space Hazards

Going to the Moon

Rocket Launch from Earth

Robots studying an Asteroid

Traveling to Mars

Using NASA Science & Engineering to solve a problem in our community

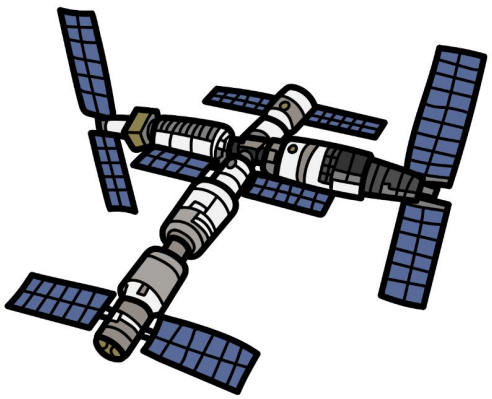
Space Hazards

Science

RSG &

Adventures 1-9

Our Ideas Poster



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RSG

RSG

RSG

Scientist

RSG

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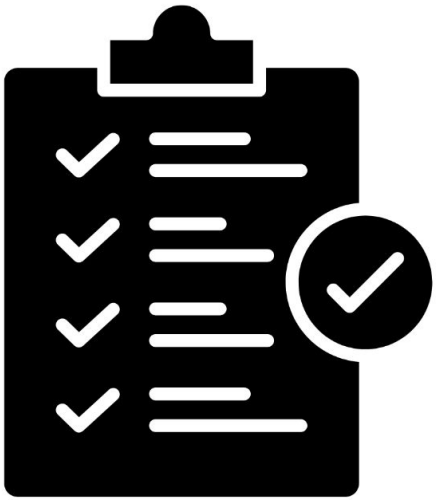

Constraints

Limitations on a design

Tradeoff

A compromise engineers make to balance competing design requirements.

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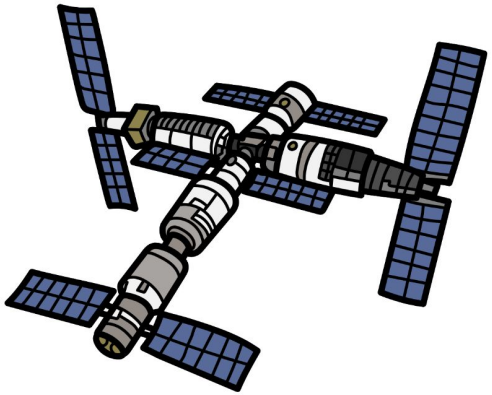

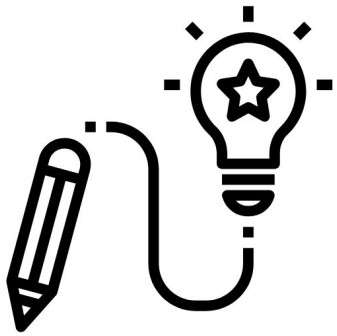

RSG

Engineer

Technology

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Adventure 1, 6, 7

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Natural Hazards on Earth

Adventure 4

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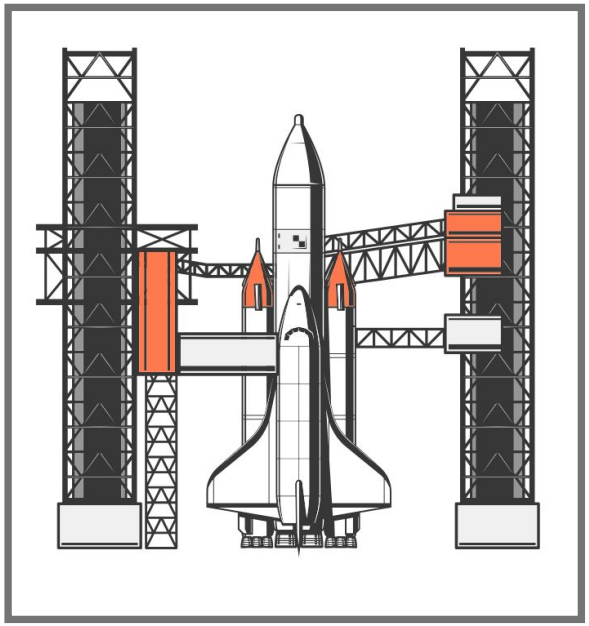
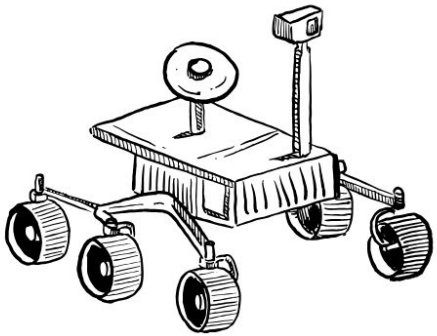
Space Hazards

Rocket Launch from Earth



Going to the Moon

Robots studying an Asteroid



Traveling to Mars

Using NASA Science & Engineering to solve a problem in our community