Engineering Space Hazard RSG & Adventures 1-9 Our Ideas Poster

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Prep & Setup Guide

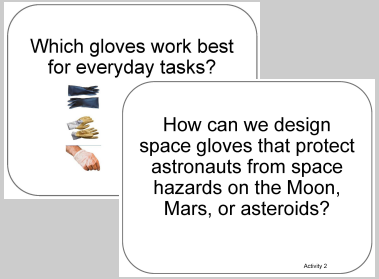
Poster Components

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

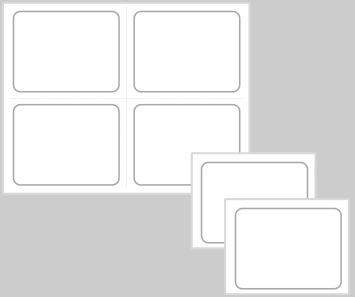
Poster Pages



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 (by number)

Our Ideas about Space Hazards Engineering

Poster Setup (with Example)

Our Ideas about Space Hazards Engineering

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

-Put dents in the spacecraft
-Spacetrash 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

-Spacetrash 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 spacetrash?

-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 design space gloves that protect astronauts from space hazards on the Moon, Mars, or asteroids?

Activity 2

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

Activity 1

Add learner's index cards here

Activity 1

Hazard

-Danger
-Not Safe
-Something that will harm me.
-Yeeyá

Activity 2

Which gloves work best for everyday tasks?

Activity 2

Materials

-the thing that makes up stuff.
-natural materials
-man-made materials

Activity 2

Testing Results

Material	Cold Test	Impact Test	Dust Test
None			
Cheesecloth			
cotton balls			
craft foam			
felt			
foil			
sponges			
straws			
transparency			

"not good," good," or "great"

Activity 3, 4, & 5

Which materials are good at protecting against cold?

Activity 3

Temperature

A measure of how hot or cold something is.

Activity 3

Which materials are good at protecting against damage from heavy moving objects?

Activity 4

Impact

damage from heavy moving objects

Activity 3

Which materials are good at protecting against dust? Why?

Activity 5

Activity 6

How can we make our space gloves stronger, easier to use, or more protective?

Activity 7

What design recommendations do we have for space gloves?

Activity 8

How can we share our space glove designs with others?

Activity 9

Poster Setup (Empty Example)

Our Ideas about Space Hazards Engineering

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

RSG

RSG

RSG

Scientist

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

RSG

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

RSG

Technology

RSG

How can we design space gloves that protect astronauts from space hazards on the Moon, Mars, or asteroids?

Activity 2

Why is it important to make hazards safer?

Activity 1

Add learner's index cards here

Activity 1

Hazard

Activity 2

Which gloves work best for everyday tasks?

Activity 2

Materials

Activity 2

Testing Results

Material	Cold Test	Impact Test	Dust Test
None Cheesecloth cotton balls craft foam felt foil sponges straws transparency			

"not good," good," or "great"

Activity 3, 4, & 5

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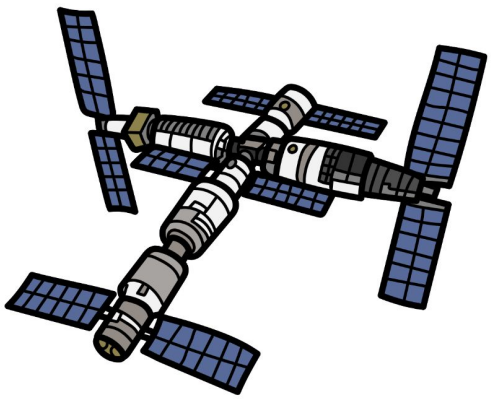
Space Hazards

Engineering

RSG &

Adventures 1-9

Our Ideas Poster



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

RSG

RSG

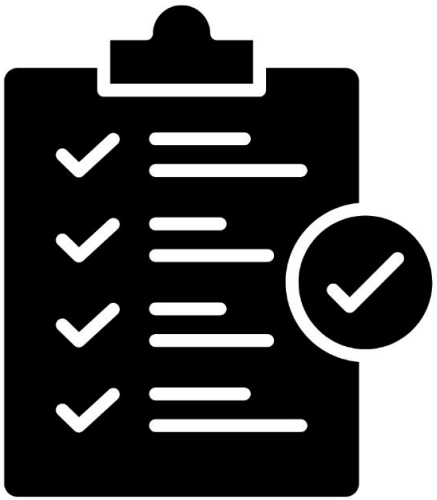
RSG

Scientist

RSG

Criteria

Requirements for evaluating a design



Constraints

Limitations on a design

Tradeoff

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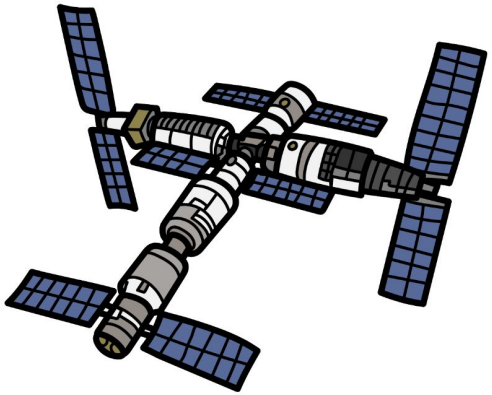

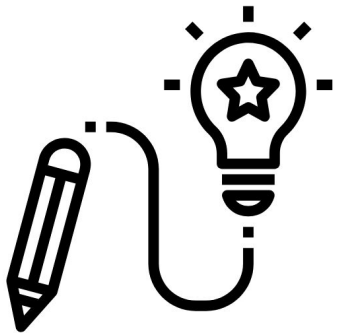

RSG

Engineer

Technology

Why is it important to make hazards safer?

Add learner's index cards here

Hazard

How can we design space gloves that protect astronauts from space hazards on the Moon, Mars, or asteroids?

Which gloves work best for everyday tasks?

Materials

Testing Results

Material	Cold Test	Impact Test	Dust Test
None Cheesecloth cotton balls craft foam felt foil sponges straws transparency			

“not good,” good,” or “great”

Adventures 3, 4, & 5

Which materials are good at protecting against cold?

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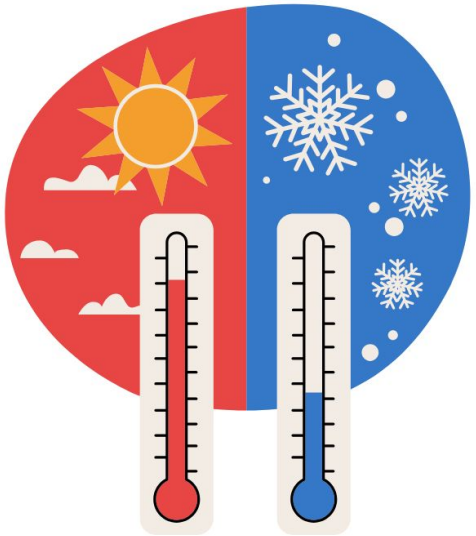
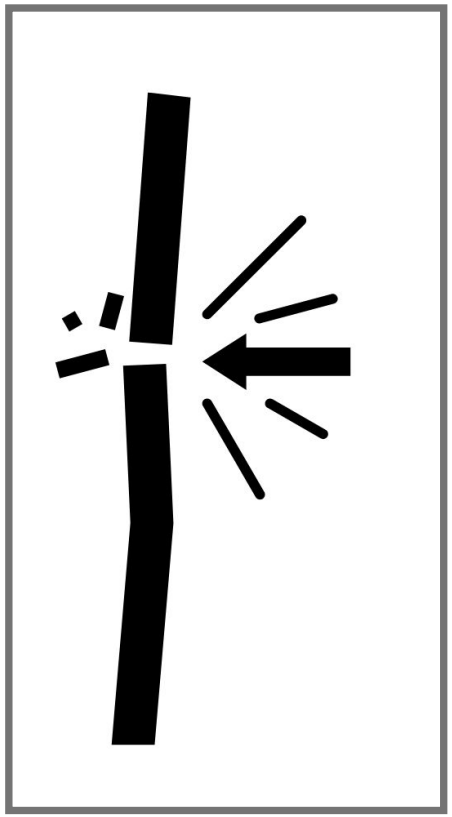


Which materials are good at protecting against damage from heavy moving objects?

Impact



damage from heavy moving objects

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What design recommendations do we have for space gloves?

How can we share our space glove designs with others?