

# Design your own Spacesuit, Rocket and Alien

## Personalized Space Suit

The last unit is based on the students understanding their universe and in order to do that, they need to consider their local environment, their global environment and the why's and how's that allow the proliferation of life to exist on our planet and will design a ship that can extend that life into the vacuum of space.

### Prep:

Students will need blank and lined paper. They will need art supplies for illustrations, large format paper and an understanding of the unique scientific conditions present within our planet's environment and how they can replicate those conditions in a safe and healthy way for the human being.

### Objective:

Students will learn about the human body's basic needs and how they can be kept alive in the vacuum of space. They will learn about the effects of weightlessness on the human body and how important gravity is in relation to human health. Students will learn about G-force, Earth's atmosphere and compare it to other planets within our solar system. They will learn about the different needs of the human body for survival and how to replicate them in other environments. Students will learn about the vacuum of space and how it will affect the human body. Students will learn about air resistance and how it can be dangerous at high speeds as well as the dangers of space junk, radiation and micro meteorites in space. They will illustrate this understanding with medium(s) of their choice. Students will understand the five main parts of a space suit: Helmet, Life Support, Torso and Limbs, Gloves, Outer Layer.

### Practice:

1. Students will be divided into discussion groups with the goal of figuring out the different dangers that exist in the vacuum of space. A master class list will be compiled for class reference.
2. Students will use computer and book based research methods to answer questions about each of the planets, their composition and atmospheres which will help them to choose a planet and then design a space suit to fit the environment
3. Students will learn about different spacesuit designs that have preceded them. A PPT will be created and used to explain the main parts of the rockets used by humans.
4. Students will create a draft design for the spacesuit and have it approved by the teacher. It must have all main areas included in it to be approved. It must take into consideration human safety, mobility, life support, and protection.
5. Students will watch different space walks via Youtube.
6. Students will create a final spacesuit design that will allow them to survive for in hostile environments. They will draw and color their spacesuit and have detailed explanations written for the different parts of it

### Grade Level Expectations

1. Grade 4 – Students will be expected to design a spacesuit, (and explain the different areas therein), that can survive in a both hostile weightless and gravity affected environment.

- Grade 5 – Students will be expected to design a spacesuit, (and explain the different areas therein), that can survive in a both hostile weightless and gravity affected environment.

**Timeline and Due Date**

- Project will be due at the conclusion of the Our World, Our Universe unit.

**Rubric**

<b>Emerging</b>	<b>Developing</b>	<b>Proficient</b>	<b>Extending</b>
<p>Inconsistent attendance with many unexcused absences.</p> <p>Student has many unfinished assignments and doesn't attempt to catch up on work missed.</p> <p>Student doesn't self-advocate, gives up when finding challenge with assignments rather than seeking help.</p> <p>Student's work is consistently unfinished, and/or late.</p> <p>Student rarely engages with, focuses on and perseveres through obstacles on their project work or the intricacies therein.</p>	<p>Attends consistently with reminders. Absences are often excused.</p> <p>With teacher help, student informs teacher about work that they need to catch up on.</p> <p>With assistance, student's work ethic and attitude are consistent.</p> <p>With assistance, student's work fulfills the expectations of the assignment and is on time.</p> <p>With guidance, student perseveres with, focuses on and engages with their project work during most classes.</p>	<p>Good attendance. Rarely away and any absences are mostly excused.</p> <p>Student takes responsibility for catching up on missed work and acquires it from peers or the website.</p> <p>Student's work ethic and attitude is not dependent on assignment success level.</p> <p>Student's meets the expectations of the assignment and is on time.</p> <p>Student perseveres with, focuses on and engages on project work consistently at every stage of its development.</p>	<p>Excellent attendance. Student always attends class and away, the absences are always excused.</p> <p>Student is always conscientious of deadlines and always hands their work in complete and on time.</p> <p>Student's work ethic and attitude set an example for other students.</p> <p>Student's work goes beyond the expectations of the assignment and is on time or finished early.</p> <p>Student is a leader during class time and understands the subject matter so assistance is consistently offered to other students on their project work.</p>



## Solar System Research

The Sun:

Atmosphere: \_\_\_\_\_

Temperature: \_\_\_\_\_

Environment: \_\_\_\_\_

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Mercury:

Atmosphere and number of Moons: \_\_\_\_\_

Temperature: \_\_\_\_\_

Environment: \_\_\_\_\_

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Venus:

Atmosphere and number of Moons: \_\_\_\_\_

Temperature: \_\_\_\_\_

Environment: \_\_\_\_\_

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Earth:

Atmosphere and number of Moons: \_\_\_\_\_

Temperature: \_\_\_\_\_

Environment: \_\_\_\_\_

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Mars:

Atmosphere and number of Moons: \_\_\_\_\_

Temperature: \_\_\_\_\_

Environment: \_\_\_\_\_

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Jupiter:

Atmosphere and number of Moons: \_\_\_\_\_

Temperature: \_\_\_\_\_

Environment: \_\_\_\_\_

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Saturn:

Atmosphere and number of Moons: \_\_\_\_\_

Temperature: \_\_\_\_\_

Environment: \_\_\_\_\_

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Uranus:

Atmosphere and number of Moons: \_\_\_\_\_

Temperature: \_\_\_\_\_

Environment: \_\_\_\_\_

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Neptune:

Atmosphere and number of Moons: \_\_\_\_\_

Temperature: \_\_\_\_\_

Environment: \_\_\_\_\_

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Pluto:

Atmosphere and number of Moons: \_\_\_\_\_

Temperature: \_\_\_\_\_

Environment: \_\_\_\_\_

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Part of the Space Suit: \_\_\_\_\_

What it does: \_\_\_\_\_

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Part of the Space Suit: \_\_\_\_\_

What it does: \_\_\_\_\_

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Part of the Space Suit: \_\_\_\_\_

What it does: \_\_\_\_\_

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Part of the Space Suit: \_\_\_\_\_

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Part of the Space Suit: \_\_\_\_\_

What it does: \_\_\_\_\_

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Part of the Space Suit: \_\_\_\_\_

What it does: \_\_\_\_\_

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Part of the Space Suit: \_\_\_\_\_

What it does: \_\_\_\_\_

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Part of the Space Suit: \_\_\_\_\_

What it does: \_\_\_\_\_

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## **Personalized Space Ship/Rocket Design**

The last unit is based on the students understanding their universe and in order to do that, they need to consider their local environment, their global environment and the why's and how's that allow the proliferation of life to exist on our planet and will design a ship that can extend that life into the vacuum of space.

### **Prep:**

Students will need blank and lined paper. They will need art supplies for illustrations, large format paper and an understanding of the unique scientific conditions present within our planet's environment.

### **Objective:**

Students will learn about Earth's atmosphere and compare it to other planets within our solar system. They will learn about the different needs of the human body for survival and how to replicate them in other environments. Students will learn about the vacuum of space. They will learn about gravity and the force needed to break free of Earth and into space. Students will learn about air resistance and how it can be dangerous at high speeds. They will illustrate this understanding with medium(s) of their choice.

### **Practice:**

1. Students will be divided into discussion groups with the goal of figuring out what human beings need to survive on planet Earth. They will be tasked with coming up with a group list of requirements for human life to survive. The class will be re-assembled and a master list will be compiled for future reference.
2. Students will learn about different rocket ship designs that have preceded them. A PPT will be created and used to explain the main parts of the rockets used by humans.
3. Students will create a draft design for the rocket and have it approved by the teacher. It must have all main areas included in it to be approved. It must take into consideration aero-dynamics, life support, thrust, food production and scientific research.
4. Students will watch different space launches via Youtube.
5. Students will create a final rocket design that will allow them to survive for pre-designated amounts of time. They will draw and color their rocket and have detailed explanations written for the different parts.

### **Grade Level Expectations**

1. Grade 4 – Students will be expected to design a rocket, (and explain the different areas therein), that can travel to any planet in the solar system.
2. Grade 5 – Students will be expected to design a rocket, (and explain the different areas therein), that can travel to any planet in the solar system.

### **Timeline and Due Date**

1. Project will be due at the conclusion of the Our World, Our Universe unit.



## Rubric

Emerging	Developing	Proficient	Extending
<p>Inconsistent attendance with many unexcused absences.</p> <p>Student has many unfinished assignments and doesn't attempt to catch up on work missed.</p> <p>Student doesn't self-advocate, gives up when finding challenge with assignments rather than seeking help.</p> <p>Student's work is consistently unfinished, and/or late.</p> <p>Student rarely engages with, focuses on and perseveres through obstacles on their project work or the intricacies therein.</p>	<p>Attends consistently with reminders. Absences are often excused.</p> <p>With teacher help, student informs teacher about work that they need to catch up on.</p> <p>With assistance, student's work ethic and attitude are consistent.</p> <p>With assistance, student's work fulfills the expectations of the assignment and is on time.</p> <p>With guidance, student perseveres with, focuses on and engages with their project work during most classes.</p>	<p>Good attendance. Rarely away and any absences are mostly excused.</p> <p>Student takes responsibility for catching up on missed work and acquires it from peers or the website.</p> <p>Student's work ethic and attitude is not dependent on assignment success level.</p> <p>Student's meets the expectations of the assignment and is on time.</p> <p>Student perseveres with, focuses on and engages on project work consistently at every stage of its development.</p>	<p>Excellent attendance. Student always attends class and away, the absences are always excused.</p> <p>Student is always conscientious of deadlines and always hands their work in complete and on time.</p> <p>Student's work ethic and attitude set an example for other students.</p> <p>Student's work goes beyond the expectations of the assignment and is on time or finished early.</p> <p>Student is a leader during class time and understands the subject matter so assistance is consistently offered to other students on their project work.</p>



Part of the Rocket: \_\_\_\_\_

What it does: \_\_\_\_\_

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Part of the Rocket: \_\_\_\_\_

What it does: \_\_\_\_\_

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Part of the Rocket: \_\_\_\_\_

What it does: \_\_\_\_\_

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Part of the Rocket: \_\_\_\_\_

What it does: \_\_\_\_\_

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Part of the Rocket: \_\_\_\_\_

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Part of the Rocket: \_\_\_\_\_

What it does: \_\_\_\_\_

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Part of the Rocket: \_\_\_\_\_

What it does: \_\_\_\_\_

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Part of the Rocket: \_\_\_\_\_

What it does: \_\_\_\_\_

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## **Alien Design**

The last unit is based on the students understanding their universe and in order to do that, they need to consider their local environment, their global environment, their universal environment(s) and the why's and how's that allow the proliferation of life to exist on our planet and will design an Alien that has biological modifications that allow it to exist on a planet other than Earth.

### **Prep:**

Students will need blank and lined paper. They will need art supplies for illustrations, large format paper and an understanding of the unique scientific conditions present within our planet's environment.

### **Objective:**

Students will learn about Earth's atmosphere and compare it to other planets within our solar system. They will learn about the different needs of the human body for survival and how to replicate them in other environments in order to create similar systems for their Alien. Students will learn about the vacuum of space. They will learn about gravity and the force needed to break free of Earth and into space. Students will learn about air resistance and how it can be dangerous at high speeds. They will illustrate this understanding with medium(s) of their choice.

### **Practice:**

6. Students will be divided into discussion groups with the goal of figuring out what human beings need to survive on planet Earth and therefor what Aliens would need in order to survive on other planets. They will be tasked with coming up with a group list of requirements for alien life to survive elsewhere in our solar system. The class will be re-assembled and a master list for each planet besides Earth will be compiled for future reference.
7. Students will learn about different Alien designs that have preceded them via science fiction. A PPT will be created and used to explain the main adaptations used by aliens to survive in their different environments.
8. Students will create a draft design for the Alien and have it approved by the teacher. It must have all main areas included in it to be approved. It must take into planet environment, temperature, sustenance and reproduction.
9. Students will create a final alien design that will be able to live on another planet. They will draw and color their Alien and have detailed explanations written for the different parts.

### **Grade Level Expectations**

3. Grade 4 – Students will be expected to design a Alien, (and explain the different adaptations therein), that can travel to any planet in the solar system.
4. Grade 5 – Students will be expected to design a Alien, (and explain the different adaptations therein), that can travel to any planet in the solar system

### **Timeline and Due Date**

2. Project will be due at the conclusion of the Our World, Our Universe unit.

**Rubric**

<b>Emerging</b>	<b>Developing</b>	<b>Proficient</b>	<b>Extending</b>
<p>Inconsistent attendance with many unexcused absences.</p> <p>Student has many unfinished assignments and doesn't attempt to catch up on work missed.</p> <p>Student doesn't self-advocate, gives up when finding challenge with assignments rather than seeking help.</p> <p>Student's work is consistently unfinished, and/or late.</p> <p>Student rarely engages with, focuses on and perseveres through obstacles on their project work or the intricacies therein.</p>	<p>Attends consistently with reminders. Absences are often excused.</p> <p>With teacher help, student informs teacher about work that they need to catch up on.</p> <p>With assistance, student's work ethic and attitude are consistent.</p> <p>With assistance, student's work fulfills the expectations of the assignment and is on time.</p> <p>With guidance, student perseveres with, focuses on and engages with their project work during most classes.</p>	<p>Good attendance. Rarely away and any absences are mostly excused.</p> <p>Student takes responsibility for catching up on missed work and acquires it from peers or the website.</p> <p>Student's work ethic and attitude is not dependent on assignment success level.</p> <p>Student's meets the expectations of the assignment and is on time.</p> <p>Student perseveres with, focuses on and engages on project work consistently at every stage of its development.</p>	<p>Excellent attendance. Student always attends class and away, the absences are always excused.</p> <p>Student is always conscientious of deadlines and always hands their work in complete and on time.</p> <p>Student's work ethic and attitude set an example for other students.</p> <p>Student's work goes beyond the expectations of the assignment and is on time or finished early.</p> <p>Student is a leader during class time and understands the subject matter so assistance is consistently offered to other students on their project work.</p>



Alien Adaptation: \_\_\_\_\_

What it does: \_\_\_\_\_

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Alien Adaptation: \_\_\_\_\_

What it does: \_\_\_\_\_

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Alien Adaptation: \_\_\_\_\_

What it does: \_\_\_\_\_

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Alien Adaptation: \_\_\_\_\_

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Alien Adaptation: \_\_\_\_\_

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Alien Adaptation: \_\_\_\_\_

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Alien Adaptation: \_\_\_\_\_

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Alien Adaptation: \_\_\_\_\_

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