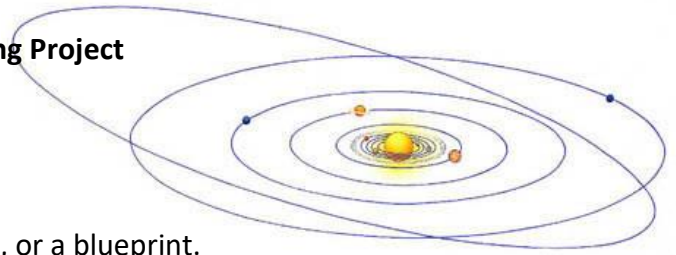


Name: \_\_\_\_\_

Period: \_\_\_\_\_ Date: \_\_\_\_\_

## Solar System Engineering Project

### Astronomy



### Phase One: Blueprinting

The first step to any great design project is a game plan, or a blueprint.

#### Here's what we've got to work with:

- A star just like the Sun
  - Refer back to your notes on stars and the Sun for the specifics.

#### Here's what we need to do:

1. Examine the star and its capabilities.
  - a. Complete the "Sun Exploration" sheet and hold onto it.  
(This will help you to review those specifics.)
2. Determine a minimum of 5 planets.
  - a. Complete the "Planetary Design" sheet for each one.  
\*Remember to follow the principles of these characteristics and how they fit together!  

Ex: A high density wouldn't make sense for a full gas planet or a planet with no volcanoes or internal convection to have a really strong magnetic field.
3. Blueprint the appearance of each planet designed.
  - a. Blueprint (on graph paper – to scale) the appearance of each planet with its size characteristics and coloration following the "Blueprint Design" sheet

#### Timeline:

1. Examine the star – \_\_\_\_\_
2. Determine the 5 planets (minimum) – \_\_\_\_\_
3. Blueprint of each planet – \_\_\_\_\_

**DUE DATE:** \_\_\_\_\_

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

Period: \_\_\_\_\_ Date: \_\_\_\_\_

## **Phase Two: Construction**

Let the building begin!

**Before you (and your partner – if you have one) start construction, here's what needs to be ready to go!**

- Star information (plus a new name and a justification for it)
- 5 planetary designs with check marks (sketches included!)
- A blueprint for your construction plan
- Materials to get started

### **Here are the stipulations:**

- all 5 planets must be able to manually (or automatically if you wish) orbit the star  
INDIVIDUALLY!
  - *Planets do not all orbit at the same speed or at the same point, so they need to individually orbit the star.*
- all 5 planets must be able to manually rotate on its selected axis
- it must be a 3 dimensional model
- it must be colorful and neatly prepared
- it must be structurally sound and accurate to size proportions (relatively speaking)
  - Ex: your star cannot be your smallest object and if you have a planet set at 12 AU away, it can't be next to your star
  - Be careful with proportions here!
- it must be labeled with all names

### **TIMELINE:**

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**DUE DATE:** \_\_\_\_\_

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

Period: \_\_\_\_\_ Date: \_\_\_\_\_

### **Phase Three: Presentation Slideshow**

Let's show these off!

Before you and your partner start the presentation, your model must be FULLY COMPLETE!

#### **Here are the stipulations:**

- Google Slides – Assignment is already on Google Classroom!
  - Set up for title: Last name, Last name (Period) SSEP
    - Ex: Witucki, Wein (1) SSEP
- 5 slide minimum – 1 for each planet
- Each slide needs to contain:
  - Mass comparison to a planet in our solar system
    - Ex: *Aquafer* has a mass that is similar to Mars. It is smaller than Earth, but larger than Mercury.
  - Volume comparison
  - Density comparison
  - Temperature comparison
  - Gravity comparison
  - Composition comparison
  - Atmosphere comparison
  - Satellite comparison
  - Possibility of life? Explain why or why not.
  - Detailed description of what it would be like on that planet.
    - How would astronomers try to study it?
    - Could they land on it? Why or why not?
  - Possibility of life? Explain why or why not.

#### **Presentation:**

Presenting your solar system and slideshow is OPTIONAL (due to time constraints). **BONUS POINTS** can be earned by those who wish to present their completed project to the class. The project and all phases must be completed and checked prior to class presentation.

#### **TIMELINE:**

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**DUE DATE:** \_\_\_\_\_

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

Period: \_\_\_\_\_ Date: \_\_\_\_\_

**Participation:**

**Requirements:**

- You may work as an individual or in groups of no more than three.
  - Groups will be selected on the first day of the project and are not to change, so be sure to think about this thoroughly.
- EACH member of the group must be actively participating on the project each day.
- Progress must be made daily and a record of progress must be submitted at the end.
  - See the “Progress Record” sheet.
- All materials must be present for all classes until the project is complete.

**Deductions:**

- 1 point will be deducted for each time an individual or group member is off task, packed up early, or on a cell phone rather than working on the project.
- 5 points will be deducted for each day an individual or group is unprepared and missing necessary materials in class. Be sure to plan accordingly!

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

Period: \_\_\_\_\_ Date: \_\_\_\_\_

## **RUBRIC BREAKDOWN**

### **Phase One: Blueprints**

\_\_\_\_\_/35 – Phase One

- \_\_\_\_/10 – Sun Exploration (1 for each partner)
- \_\_\_\_/25 – Planet Design (5 for each)

### **Phase Two: Model**

\_\_\_\_\_/65 – Phase Two

- \_\_\_\_/10 – Structurally Sound and Neatly Assembled
  - Legibility
  - Colorful
  - Completely Assembled
  - Sturdy
  - Easily Mobile
- \_\_\_\_/15 – Accuracy of Model with All Labels
  - Each Planet:
    - Labeled
    - Fits Design Plan
    - Correct Size and Distribution
- \_\_\_\_/20 – Functional Orbit for All Planets
  - 4 Points for Each Planet
- \_\_\_\_/20 – Functional Rotation for All Planets
  - 4 Points for Each Planet

### **Phase Three: Presentation**

\_\_\_\_\_/25 – Phase Three

- Completed Slide Show
  - 5 points - All Information Included for Each
  - Shared Correctly

### **Participation**

\_\_\_\_\_/25 – Participation

- Full Daily Participation
- Project Was Present Each Day
- Accomplishments Were Made Each Day
- Record of Progress Must Be Made Each Day and Submitted On Due Date

Comments:

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**TOTAL: \_\_\_\_\_ / 150**

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

Period: \_\_\_\_\_ Date: \_\_\_\_\_

**Solar System Engineering Project**  
Astronomy

**Progress Record:**

Date: \_\_\_\_\_ Day of Project: \_\_\_\_\_

Member(s) Present: \_\_\_\_\_

Phase of Project Being Completed: \_\_\_\_\_

Progress and Accomplishments:

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Date: \_\_\_\_\_ Day of Project: \_\_\_\_\_

Member(s) Present: \_\_\_\_\_

Phase of Project Being Completed: \_\_\_\_\_

Progress and Accomplishments:

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