



## Lesson 13 - Outpost Communications Exercise (optional)

### Background

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For this optional lesson, students will receive letters from other Mission Specialists at various outposts in our solar system. Students will have completed their Planetary Trading Cards and their Planetary Posters and will have some knowledge about the planets and their major characteristics.

The writers of the letters do not identify their locations, so students will have to use the clues in the letters to determine from which planet the letters are being written.

This lesson's work reviews the planets' characteristics, reinforces reading skills, and helps the students practice problem-solving techniques to determine the planet in question.

### Teacher Notes and Hints

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- Students can work cooperatively in their Moon, Mars and Beyond teams or you can have them work individually.
- Each team or student can have copies of the letters or the students can be instructed to “trade” letters at appropriate intervals.
- You may want to use the highlighted portions of the student letters as a check for understanding or for assessment.

### Skills and Objectives

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Students will be able to:

- Use context clues within the letters to determine from which planet the letter is being written
- Use prior knowledge to interpret clues contained within written material
- Practice problem-solving skills to help them figure out the locations
- Find information in their Planetary Trading Cards to help them find the location of the writer of the letters

## Activity Overview

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This lesson reviews planet characteristics and features and allows the student to recall prior knowledge about the planets. It also reinforces reading for information skills; students must read the communications and deduce the writer's location based on clues given in the text.

## Key Concepts

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1. Reading for information combined with prior knowledge about a topic can be used to solve a problem.
2. Using context clues can help solve problems.

## Materials

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- Completed Planetary Trading Cards
- Completed Planetary Posters
- Student Worksheets - Outpost Communications Exercise
- Highlighters
- Pencils/Pens

## Procedure

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### Prior to Class

Decide how you will have the students work this lesson. You may want them to work cooperatively in teams or you may want to have them work individually to read the letters and figure out the location of the writer.

### In Class

Distribute the student lesson instructions and Base Camp letters.

Distribute highlighters and Planetary Trading Cards as appropriate. Planetary Posters may already be on display in the classroom.

Review the procedure on the student worksheet with the students.

Remind the students to complete all parts of the worksheets.

Allow time for discussion and review of the lesson; discuss the clues that lead them to determining the location of the writer and Base Camp.



# Teacher Answer Sheet

## Record the Location of the Base Camps:

### Base Camp Alpha - Mercury

Possible clues in text of letter:

- 2<sup>nd</sup> smallest planet
- .4 AU from the Sun
- Closest to Sun
- Size: 4880 km
- Surface is covered with craters

### Base Camp Bravo - Venus

Possible clues in text of letter:

- Hottest planet
- Greenhouse effect
- Sulfuric acid in clouds
- CO<sup>2</sup> in air
- Year is shorter than day
- No moons

### Base Camp Charlie - Mars

Possible clues in text of letter:

- Rocky
- Evidence that water once flowed (channels, rivers, lakes)
- Polar ice caps
- Distance from Sun
- Orbit Time: 686 days
- Largest volcano in the solar system

### Base Camp Daniel - Jupiter

Possible clues in text of letter:

- 11 times bigger than Earth
- Giant ball of gas
- 4 large moons
- Dozens of other moons (63)
- Has the largest moon in solar system
- 12 Earth years to rotate around the Sun

### Base Camp Elephant - Saturn

Possible clues in text of letter:

- Rings
- Outer planet
- Gaseous
- Gravity
- Titan is the second largest moon

### Base Camp Freedom - Uranus

Possible clues in text of letter:

- Gaseous
- Blue color from methane gas
- Sideways rotation
- Each season lasts over 20 years
- Many moons
- Size: 51,118 km

### Base Camp Gorilla - Neptune

Possible clues in text of letter:

- Most windy planet
- Outer planet
- Blue color
- 13 moons
- Crosses orbit with another planet
- Will be the furthest out in 2226

### Base Camp Hurricane - Pluto

Possible clues in text of letter:

- Small
- Orbit time: 248 Earth years
- 3 moons
- Cold
- Distance away from sun: over 5900 million km
- Crosses orbit with another planet