

# Teacher Resource: Exploration of Planet X

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## Grade and Unit:

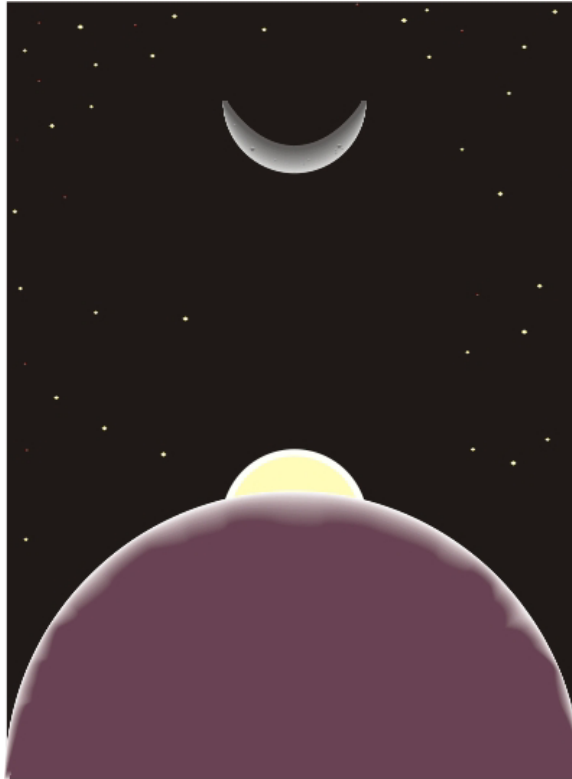
The following activity is part of the Grade 6 Earth and Space Systems strand of science. This activity is a cumulative assessment that allows students to pull together all the information they have learned about the solar system and space exploration. At the same time, students are to use the skills they learned from the Diversity of Life unit, as they are to describe the various characteristics of an alien life form, the method(s) of communication used between themselves and the life form, and the implications such a discovery would have on humans. Students are to be as creative as possible and to use their imagination. An assignment of this sort can be represented and interpreted by students in a variety of ways; for instance, some students in my class built models of their space shuttle, the solar system, Planet X, and the life form, while others created top secret reports, private journals of each “day” of their journey, and Bristol board presentations of their discoveries.

## Teaching Notes:

The student worksheet is in the form of a top secret memo sent to student space explorers from the Captain of the mission (the classroom teacher). Teachers are able to fill in their surname on the blank line following “Captain” at the top and bottom of the page. Students enjoyed the format of the assignment sheet and this helped them feel like it was a special project created just for them.

Teachers should give students the case study and rubric at the same time; this way, students will understand what is expected of them and how their reports will be marked. If students have not had any exposure to a rubric, it is best to explain what a rubric is, review each category of the rubric, and to discuss the differences between the various achievement levels. When students become accustomed to rubrics, they can also play a role in developing rubrics for their assignments.

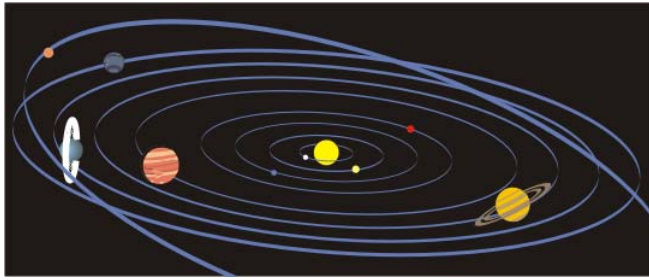
Students should be reminded (and encouraged) to be as creative as possible with their responses. An activity of this type allows students to use their imagination to determine how they want their project to look. Teachers may use the final project for a variety of assessments, including visual arts (diagrams and models) and oral and visual communication (if students present their project to the class).



## Student Learning Expectations:

- Use appropriate vocabulary, including correct science and technology terminology
- Describe the physical characteristics of components of the solar system – the sun, planets, natural satellites, comets, asteroids, and meteoroids (e.g., relative size, surface temperature)
- Formulate questions about and identify needs and problems related to objects and events in the environment, and explore possible answers and solutions
- Communicate the procedures and results of investigations for specific purposes and to specific audiences, using media works, written notes and descriptions, charts, graphs, drawings, and oral presentations
- Describe how humans have improved the tools and techniques used in space exploration
- Explain how astronauts meet their basic needs in space
- Identify the technological tools and devices needed for space exploration

# Exploration of Planet X



**From:** Captain \_\_\_\_\_

**To:** Space Exploration Officers

**Subject:** Details for Top Secret Space Mission

**Date:** Tues, Jan 10 2006 14:30:17 -0600

Attention Space Exploration Officer:

The following information is top secret and for your eyes only.

As you all know, NASA has been sending space probes out to determine if there is indeed one or more planets beyond Pluto. Results from these space probes have confirmed the existence of at least one new planet, which will initially be called "Planet X". It is not yet known what this planet is like, except initial reports seem to indicate that intelligent life exists on it. What form this life takes, we do not yet know, nor do we know if it poses any danger to planet Earth.

Your mission, if you choose to accept it (and you will, you really have no choice), is to be the sole operator of a human-controlled shuttle that will fly through our solar system and beyond Pluto to explore this new planet. Our engineering team has recently made a breakthrough that will allow your shuttle to travel through certain worm holes in our solar system, allowing you to cover the long distance between

Once you have gained enough information about this planet and its inhabitants, you must provide us with enough information so that we know exactly what we are dealing with.

During your mission, you are to keep the following records in your log book:

- 1) A detailed account of your journey from Earth, through our solar system, and to Planet X. Describe your journey, any problems you have, any discoveries you make along the way, and any other things of interest that you see.
- 2) Draw a detailed diagram of our solar system showing the path that your space shuttle will take to get to Planet X.
- 3) Draw a detailed diagram of your space shuttle, describing at least 10 essential components (parts) that will help you survive your journey.
- 4) Describe the following points when you arrive:
  - a. What does the planet look like from far away and what does it look like up close?
  - b. What was your landing on Planet X like? Was it easy or hard? What did you feel?
  - c. What is the terrain (land) like? Does it resemble any other planet or is it totally different?
  - d. What forms of life (e.g. plant, animal, human, other) are around you? Describe the life forms in detail and provide a drawing of each. Be sure to explain how the various life forms are able to survive on this planet. Remember, that Planet X is extremely far away from the sun, so it is extremely cold...how do the life forms there survive such a harsh environment?
- 5) You are to attempt to make contact with these life forms. Was it (or were they) easy to find or did you have to search? Describe your initial meeting with the life form. What does it look like? Please provide a diagram of the life form(s) you saw.
- 6) How did you communicate with the life form? What did you find out?
- 7) Finally, what are your recommendations? Do you think this life form will harm planet Earth? Or is this life form beneficial to us? Please explain your ideas so that we know how to proceed.

Your report will be due upon your return to Earth. Take care and best of luck in your endeavors.

Sincerely,

Captain \_\_\_\_\_

| Category                                                       | Level 1                                                                           | Level 2                                                | Level 3                                                            | Level 4                                                                    |
|----------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------------------|----------------------------------------------------------------------------|
| <b>Account of journey from Earth to Planet X</b>               | Very few details of journey described with little creativity (or section missing) | Some details of journey described with some creativity | Many details of journey described with creative elements           | Very detailed account of journey described with many creative elements     |
| <b>Diagram of path from Earth to Planet X</b>                  | Few details and poorly drawn diagram (or no drawing at all)                       | Some details and some creativity in drawing            | Detailed and creative drawing                                      | Extensive details and very creative drawing                                |
| <b>Diagram of space shuttle with 10 important components</b>   | Drawing of shuttle, but 10 components not described (or no drawing at all)        | Drawing of shuttle with some components labeled        | Detailed drawing of shuttle with some explanation of 10 components | Very detailed and creative drawing with detailed explanation of components |
| <b>Description of Planet X and landing</b>                     | Very few details of planet and landing                                            | Some details of planet and landing provided            | Detailed description of planet and landing                         | Many creative details of planet and landing                                |
| <b>Description, diagram, and communication with life forms</b> | Very few details                                                                  | Some details                                           | Detailed description                                               | Creative and detailed description                                          |
| <b>Recommendations</b>                                         | Few recommendations made, little scientific relevance                             | Some recommendations made, some scientific relevance   | Recommendations made with scientific relevance                     | Many scientifically relevant recommendations made                          |
| <b>Creativity and effort</b>                                   | Project shows little effort and creativity                                        | Project shows some effort and creativity               | Project is creative and shows effort                               | Project is beyond expectations and much effort was invested                |

Name: \_\_\_\_\_ Overall Grade: \_\_\_\_\_

