



# Strange New Planet

*Strange New Planet allows participants to engage in a simulation of the process and sequence used in planetary exploration to progressively gain new information about unknown objects. Through asking questions and seeking new information, this activity demonstrates how planetary features are discovered and investigated by the use of remote sensing techniques – from telescopes to robotic missions. With the New Horizons Mission, our exploration is at the “Mission 1” phase – the observations during the fly-by will answer some questions and raise others.*

## Materials

Planets can be made from a combination of materials — modeling clay, Playdoh®, Styrofoam® balls, plastic balls, or rounded fruit (pumpkins, oranges, etc.) Add visual variations — small stickers, sequins, candy, marbles, cotton balls, toothpicks, or anything small and interesting. Add smell using — scent stickers, spices such as cloves, vinegar, perfume, or other scents. Add a small moon and/or cotton for atmosphere. Use black or dark cloth to drape over planets. Viewer tubes for each team of 3-4: Made of rolled paper or cardboard tubes with one blue cellophane square 5 by 5 inches attached at one end with a rubber band.

## Set-Up

**A) Making a Planet:** Make three planets (three allows for multisensory observations). Decorate the planets with beads, stickers, scents, etc., to make the object interesting to observe. Some of these materials should be placed discreetly so that they are not obvious upon brief or distant inspection. Some suggestions for features are: Create clouds by using cotton and glue, carve channels, attach a grape using a toothpick (to make moons or orbiting satellites), affix small stickers or embed other objects into the planet, apply scent sparingly to a small area. To one planet, attach something that depicts life or is alive, e.g., butterfly stickers or cloves.

**B) Position the Planets:** Place planets on a stool or pedestal and cover with cloth — participants should be about 8 to 10 meters (~30 feet) away from planets, with a clear viewing path. Participants can construct viewers out of loose-leaf paper by rolling the shorter side into a tube (can also use a paper towel roll.) These viewers should be used whenever observing the planet.

## Procedure

1) **Objective:** Brief participants on their task — to explore a strange new planet. At each step, they will formulate new questions to answer: they will remotely explore the new planets, report the data they gathered, and then form questions they can help answer with the next exploration step. The missions gather progressively detailed information.

2) **Pre-Launch Reconnaissance:** This step simulates Earth-bound observations. Arrange participants in teams of 3 or 4 at one end or side of the room — this is Mis-

sion Control. Each participant has a role: observer, recorder, and scientist(s). To simulate Earth's atmosphere, a blue cellophane sheet is placed at end by a rubber band. This represents Earth's atmosphere and a deterrent to clear observations from Earth. Remove the cloth covering the planets. The observer ONLY looks at the planet(s) using their viewers for 1 minute, while others turn their backs. Replace the cloth. At this point, all the observations will be visual and will include color, shape, texture, and position. (Ask participants to identify what the blue cellophane represents.) Allow time for discussion and to start forming questions for the next mission.

3) **Mission 1 — The Fly-by:** The observer (ONLY) from each team will have a turn at walking quickly past one side of the planet (the other side remains draped under cloth). A distance of 5 feet from the planet needs to be maintained. The observers reconvene with their teams at the sides of the room (Mission Control). Replace cloth over planet once all the fly-bys have taken place. Teams discuss what data they gathered, what they learned that's new, and what they will look for on the next orbit mission.

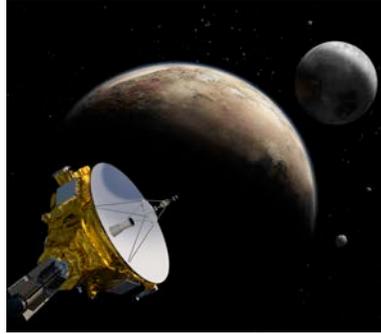
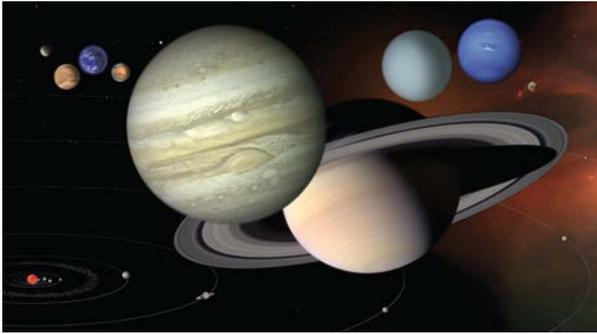
6) **Mission 2 — The Orbiter:** Each observer takes two orbits (circle) of the planet at a distance of 2 feet. They observe distinguishing features and report their data back at Mission Control. Teams discuss their landing expedition to the planet's surface. Plans should include the landing spot and features to be examined.

7) **Mission 3 — The Lander:** Each observer approaches their landing site and marks it with a push-pin (or masking tape if planet will pop using a pin.) Team members take turns observing the landing site with the viewers. Field of view is kept constant by team members aligning their viewers with the push-pin located inside and at the top of their viewers. Within the field of view, students enact the mission plan. After 5 minutes, the team returns to Mission Control to discuss and record their findings.

8) **Mission 4 — Sample Return:** After all teams have shared their data from the landing sites, allow the group as a whole to discuss possible sites where a sample could be taken and returned to Earth laboratories. Either allow each team to take one very small sample (tiny pinch) or have the group decide on one tiny sample from each planet. Sample return missions are very expensive and must be carefully informed by all the previous mission data. Examine and discuss the samples.

# We're Out There

## The Solar System and Beyond

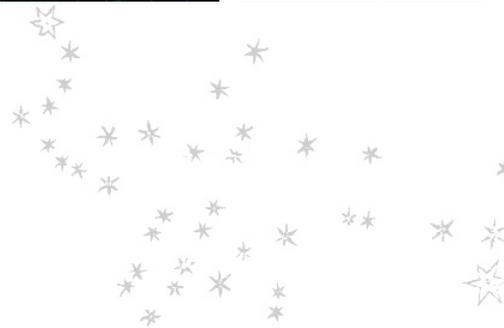


**NASA explores** the solar system and beyond, through a series of exploration steps designed to answer humanity's most compelling questions about worlds beyond Earth. From Earth-based telescopes, to Earth-orbiting observatories, to "fly-by" missions (such as New Horizons to Pluto) to orbiters, landers, and sample return missions, scientists explore deeper and deeper

questions as more of the solar system is revealed to us. The United States has been the first nation to reach every planet from Mercury to Neptune with a space probe. In 2015, the dwarf planet Pluto is being explored up close for the first time in history! Participate as the first generation to see this distance icy world – be part of the discovery with NASA!



*Please Note: This flyer can be used as the telescope for the Strange New Planets Activity printed on the reverse side.*



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

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