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## VOYAGE OF DISCOVERY

As a team, decide who will take each of the following roles. Read through this page and discuss what must be done.

- Leader-keeps the group on task.
- Material Specialist-collects items on the Materials List.
- Recorder-writes down group answers.
- Reporter-speaks for the team.


## Materials List

Metric ruler
Balloon
Miniature marshmallows
Poppy seeds
Mustard seeds
Kix cereal and Crunchberries
Popcorn kernels
Dried peas
1-cent gum balls
Black Pepper
Glue

## Part 1: Exploring the Planet Sizes

Directions. Blow the balloon to 15 centimeters in diameter. This balloon is a model Sun that is approximately one ten-billionth $(10,000,000,000)$ the size of the real Sun. The questions below show planets that use the balloon as the scale model for the Sun.

1. Predict which circle below you think represents the model Earth, if the balloon is the model Sun.

2. Which planet is the biggest? (Circle One)

Earth Jupiter Mars Mercury Neptune Saturn Uranus Venus
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3. Which circle below do you think represents the biggest planet?

4. Look at the Model Planet Cards. What are the three smallest planets?
5. What are the four largest planets? Hint: These are called the gas giants.
6. Using the items on the Materials List, match them to the size of the planets on the cards, and glue them to the right card.
7. Find your model Sun and model Earth. How far do you think the model Earth should be from the model Sun? State your answer in meters.
8. Walk the distances between the planets with your class and complete the chart below with your teacher's help.

| Walking from: | Paces (or meters) <br> between models: | Total distance from <br> model Sun to each Planet |
| :---: | :---: | :---: |
| Sun to Mercury |  |  |
| Mercury to Venus |  |  |
| Venus to Earth |  |  |
| Earth to Mars |  |  |
| Mars to Jupiter |  |  |
| Jupiter to Saturn |  |  |
| Saturn to Uranus |  |  |
| Uranus to Neptune |  |  |
| Neptune to Pluto |  |  |

Student Name
Date $\qquad$

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WARNING: The planets never actually all line up to one side of the Sun. They orbit the Sun on different paths at different speeds. So interplanetary distances are actually greater than what we are walking. Also some planets orbit in different planes.
9. What were you surprised to learn about the size of the planets?
10. What were you surprised to learn about the distances between the planets?
11. Draw and label a picture of your model Solar System that shows the distances of the planets on a sheet of paper. (You will need more than one.) Use a millimeter as your "ruler" instead of a "pace." Add the following to your picture:

- A scale of $1 \mathrm{~mm}=1$ model meter $=10$ billion real meters
- A note saying, "The sizes of the planets are NOT drawn to scale.
- A note saying, "Remember: The planets never actually line up on one side of the Sun."

Student Name $\qquad$ Date $\qquad$

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Model Planet Cards
MERCURY


PLUTO

