



Name: \_\_\_\_\_ Date: \_\_\_\_\_ Group: \_\_\_\_\_

# NEXT STEP INQUIRY

## Access Prior Knowledge

1. What two factors keep planets in orbit?

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2. Describe why the planets in our solar system orbit the Sun rather than another celestial object.

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3. What factors determine the amount of gravitational pull between two objects?

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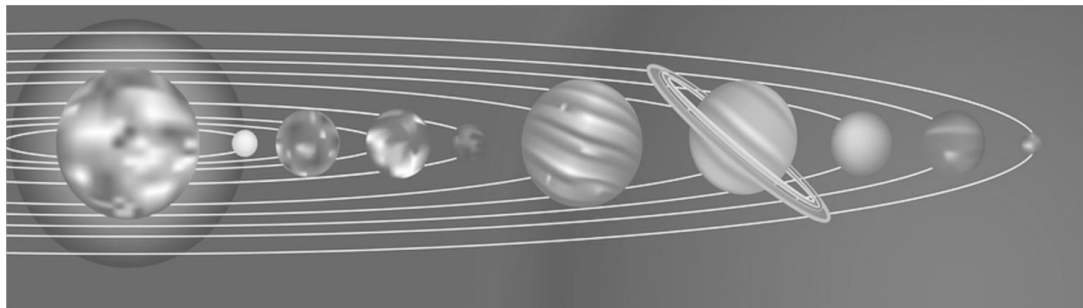
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## Background

Scientists have long debated the origin of our universe and solar system. When scientists develop a theory, it has to be able to explain all observations, not just part of what they see. As far back as the 1600s, scientists have tried to explain how our solar system came into its current state.

In the 1600s, a man named Descartes thought the material in the universe rotated like a whirlpool, which accounted for the spinning Sun and maybe the planets as well. Soon after Descartes, another scientist named Kant proposed that the rotation of raw materials would bulge in the middle, while the rest would flatten around the edge, forming a disk shape. In the 1700s, it was suggested that the planets formed when the Sun was part of a catastrophic collision that pushed parts of the Sun out to create the planets.

You will research gravity as the force that governs the motion of our solar system in this activity.



# NEXT STEP INQUIRY

## Begin the Activity

1. My Question of Inquiry:

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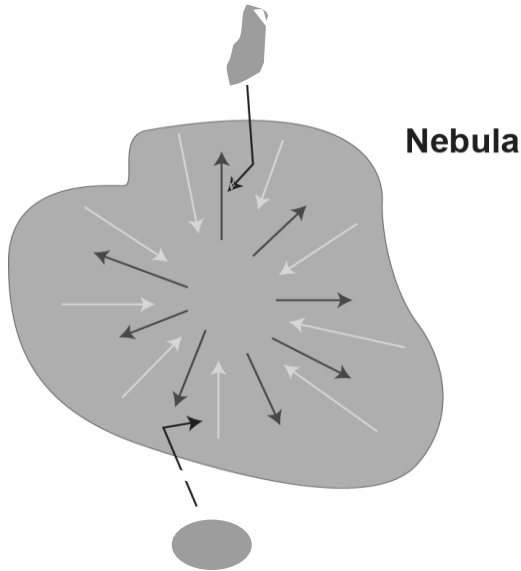
2. Read the cards provided by your teacher. Use research materials to determine the order of events described on the cards. After the group reaches agreement about the order of events, copy the information from each card into the appropriate box in the chart titled Solar System Events.

| Sequence of Events | Event |
|--------------------|-------|
| 1                  |       |
| 2                  |       |
| 3                  |       |
| 4                  |       |
| 5                  |       |
| 6                  |       |
| 7                  |       |

# NEXT STEP INQUIRY

## Continue the Activity

3. Explain how each graphic represents a contribution to the formation of our solar system.



Explanation:

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Explanation:

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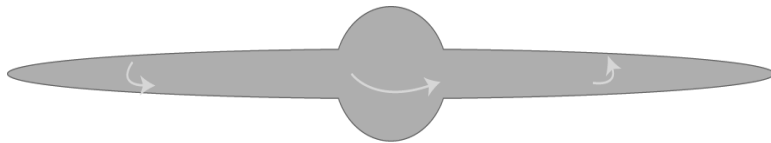
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Explanation:

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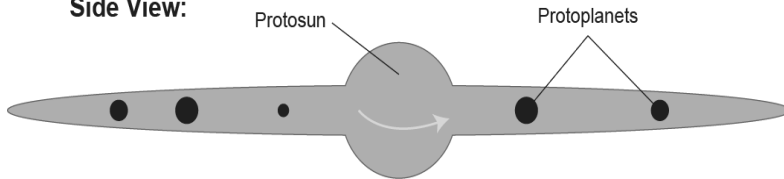
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**Side View:**



Explanation:

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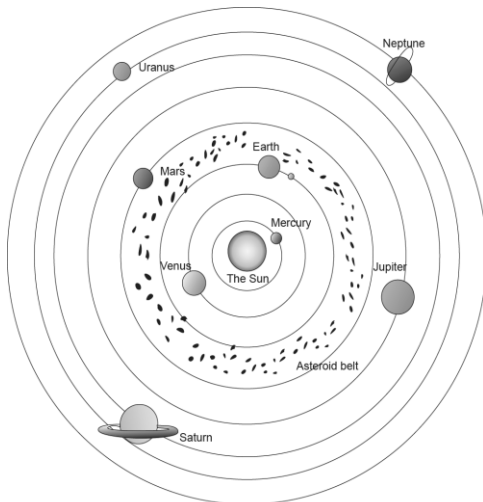
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**Our Solar System**

# NEXT STEP INQUIRY

## Activity Analysis

The theory that was described and shown graphically is the Nebula Theory. If the Nebula Theory is to be accepted as an explanation for the origin of our solar system, it must address all components we observe in our solar system. In the chart below, determine if the solar system component is a Pro, meaning it supports the Nebula Theory, or a Con, meaning it does not support the Nebula Theory. Put a check mark in the column you think best describes each component and explain your choice. The first one has been completed as an example.

| Solar System Component  | Pro | Con | Explanation   |
|---|-----|-----|---|
| All planets orbit the Sun, which is in the center of the Solar System.                              | ✓   |     | This is explained by the theory because the planets formed from the spinning disk that created the Sun in the center of our solar system. |
| Terrestrial planets are closer to the Sun and gaseous, icy planets are farther from the Sun.        |     |     |   |
| Moons of the planets in the Solar System  |     |     |   |
| The Sun is the largest object in our solar system and undergoes nuclear reactions to produce light. |     |     |   |
| Comets, Meteors, and Asteroids  |     |     |   |
| Gravity is the force that governs the motion of our solar system.                                   |     |     |   |

# NEXT STEP INQUIRY

## Reflections and Conclusions

1. How can I summarize the current understanding of how our solar system formed?

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2. What force(s) governed the shape of our solar system? *Explain.*

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3. What caused nuclear reactions to begin in the Sun?

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4. Why did the icy, gas giants form far from the center of our Solar System?

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5. Summarize another origin theory that you found during your research that is supported by current observations of our solar system. Does this theory support our understanding that gravity is the force that governs motion in our solar system?

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6. Did you find another origin theory that you think better supports current observations of our solar system? *Explain why or why not.*

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