

San Bernardino Courity Superintendent of Schools Transforming lives through education



Grades: 6-8

Nova, "The Planets: Jupiter"

Jupiter's massive gravitational force made it a wrecking ball when it barreled through the early solar system. But it also shaped life on Earth, delivering comets laden with water - and perhaps even the fateful asteroid that wiped out the dinosaurs.

After watching this episode, choose from the following questions and/or tasks to extend your learning

Question Box 1

- Why is Jupiter the largest planet in our solar system?
- Jupiter's serene appearance disguises the various storms inside. What produces these storms in the absence of an inner core?
- Explain the beginning of Jupiter's core formation.
- Why is Jupiter known as the stage setter of our solar system?
- What body holds a vast amount of information about our solar system's dynamic and dramatic evolution?
- Why was CERES development cut short in the evolutionary path to becoming a planet?
- How does IO Moon have explosive volcanoes and lava lakes?
- Explain Tidal Heating?
- How do probes sample wind speeds, atmosphere content, magnetic fields and distance from the core?

Question Box 2

- How does Jupiter affect the formation of the earth?
- How did Jupiter get over 79 moons?
- Explain Exo-Planets in terms of light years and life expectancy.
- Explain Ion Propulsion used in the Delta II containing Dawn probe.
- Based on our evolutionary process why does Earth have water if none of the
- other rocky planets have water... only the outer planets?
- Did Jupiter make way for human formation on Earth?

<u>Box 3 (Tasks)</u>

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Exploring Space Science Mathematics

Box 4 (Enrichment)

- Make a model of Pioneer flight through the Asteroid Belt into Jupiter.
- Make a PowerPoint or video explaining the formation of the two super giant planets and the interlocking of orbits producing this special configuration known as a Mean Motion Resonance.
- Produce a storyboard or graphic novel timeline on the formation of our solar system.
- Make a model of the Asteroid Impact Theory that drove the dinosaurs to extinction.
- Make a model of Pioneer flight through the Asteroid Belt into Jupiter.
- Make a PowerPoint or video explaining the formation of the two super giant planets and the interlocking of orbits producing this special configuration known as a Mean Motion Resonance.
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- Make a model of the Asteroid Impact Theory that drove the dinosaurs to extinction.

Box 5 (Extend/Real-Life)

- Compare the historical and economic cost between the Pioneer and Juno exploration of Jupiter.
- The cost of traveling to and from space is huge. Elon Musk saw this problem as an opportunity to create his company, SpaceX. As you watch these episodes of our solar system, ask yourself the following questions:
 - What's keeping mankind from doing more in space?
 - What opportunities does our solar system present?
 - What kind of careers/businesses might be needed in our future to take advantage of those opportunities?
- Collect answers to those questions after each episode. Let the information you gain from each episode spark your imagination and creativity. On Friday, you will put to use the ideas you've collected.
- Learn more about Elon Musk's Space X: https://www.spacex.com/elon-musk