Tuesday, January 22, 2019

Your Learning Goal: Students will be able to explain the general formation of planets by engaging in a game.

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A Planet is Born- 27L + R

Catalyst (27L): Sequence the 6 images in their correct order of planetary formation. Why did you put them in that order? Explain.

Homework:

Complete the LEAF paragraph

Agenda:

1. Catalyst
2. Planets to scale
3. Solar system sketch
4. LEAF

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Catalyst:

Sequence the 6 images in their correct order of planetary formation. Why did you put them in that order? Explain.

27L

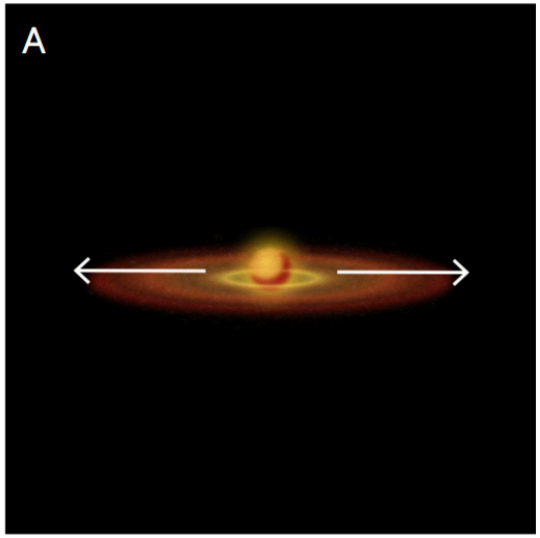
1/22/19

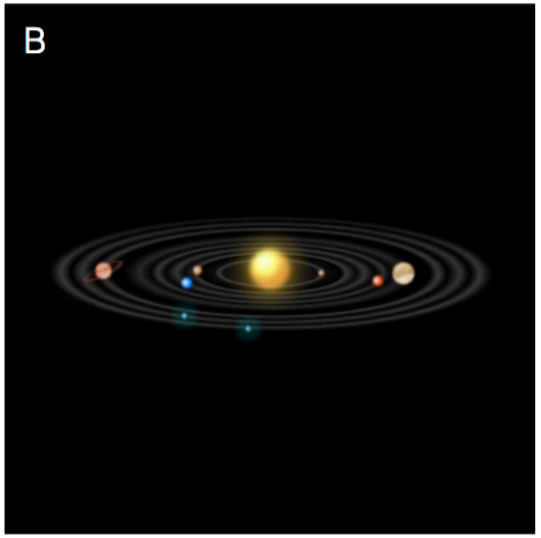
A Planet is Born

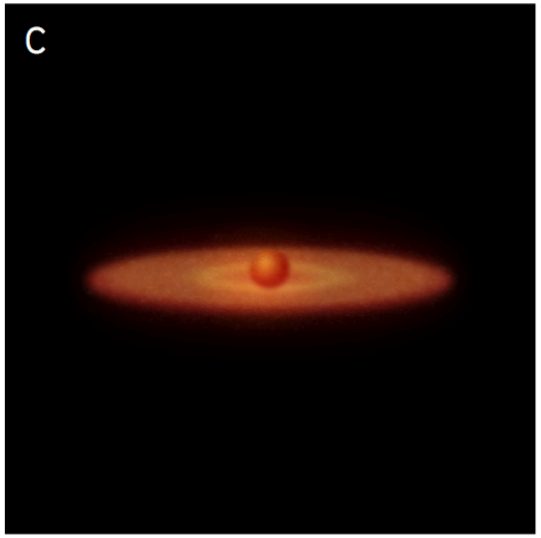
27R

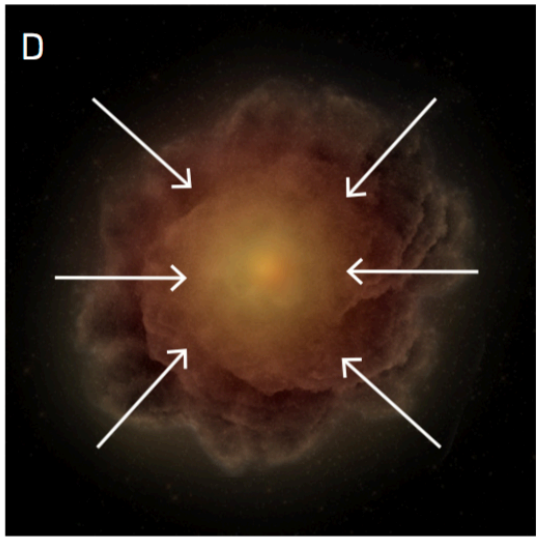
Catalyst 27L

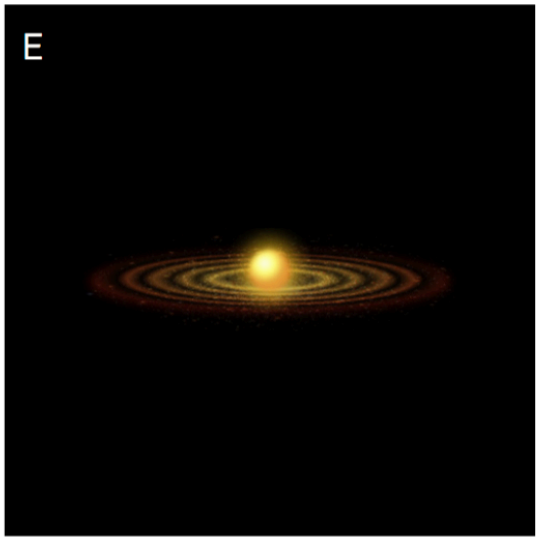
Sequence the 6 images in their correct order of planetary formation. Why did you put them in that order? Explain.

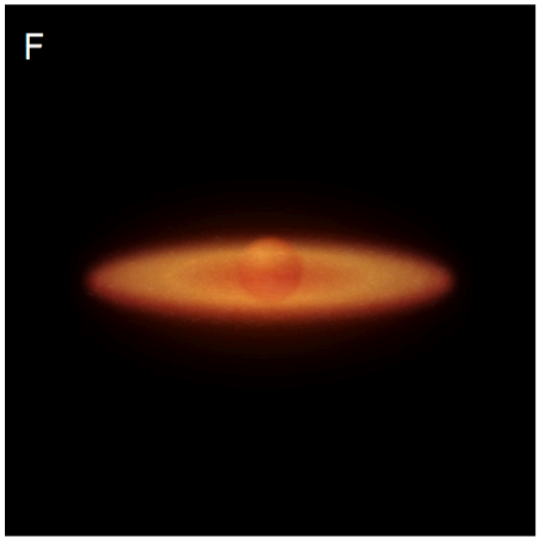


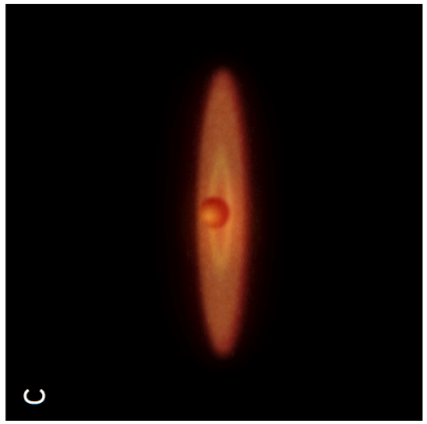


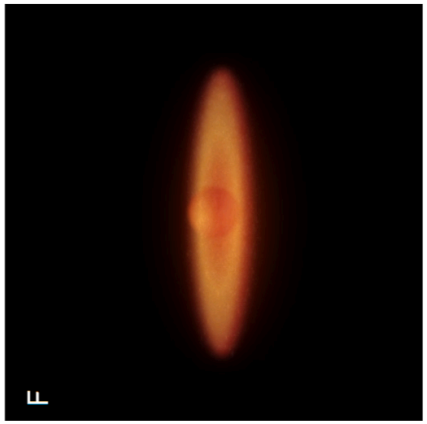


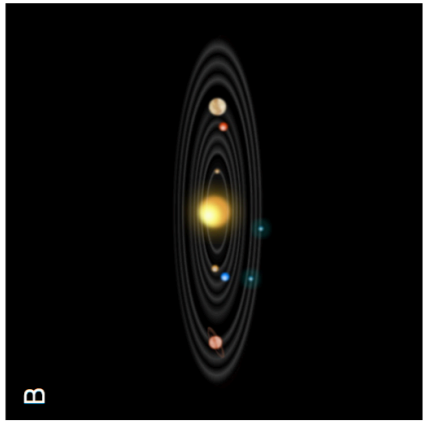


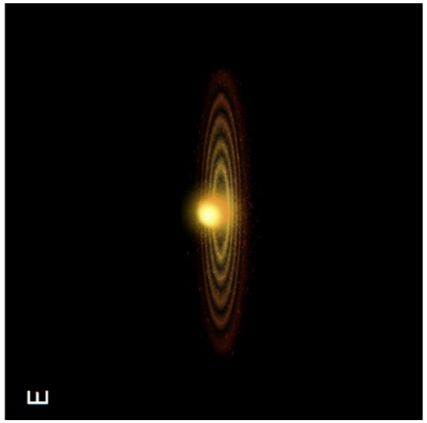


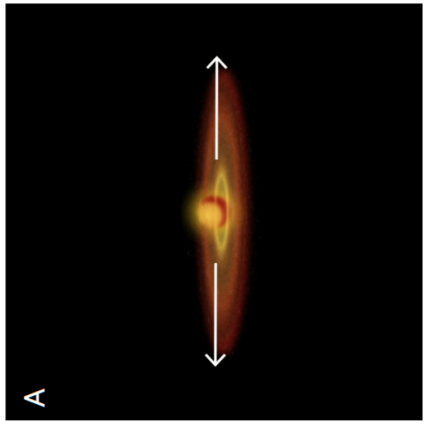


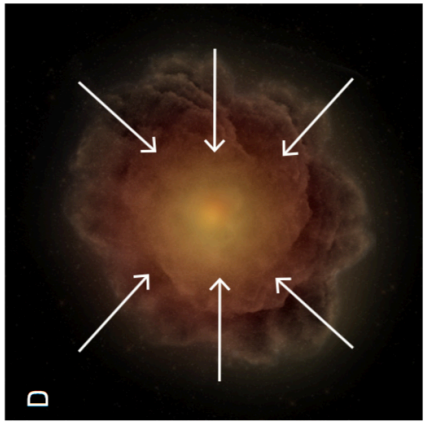












1. D - A slowly rotating nebula begins to collapse.
2. F - A protostar forms out of the gas.
3. C - As the cloud condenses it flattens out into a pancake shape.
4. A - As the protostar turns, dust close to the star is vaporized and blown away.
5. E - The nebula clears away as the dust grains clump into planetesimals.
6. B - Planetesimals collide and collect into planets that orbit the star.

Catalyst:

Sequence the 6 images in their correct order of planetary formation. Why did you put them in that order? Explain.

27L

1/22/19

A Planet is Born

Chondrule

Meteroid

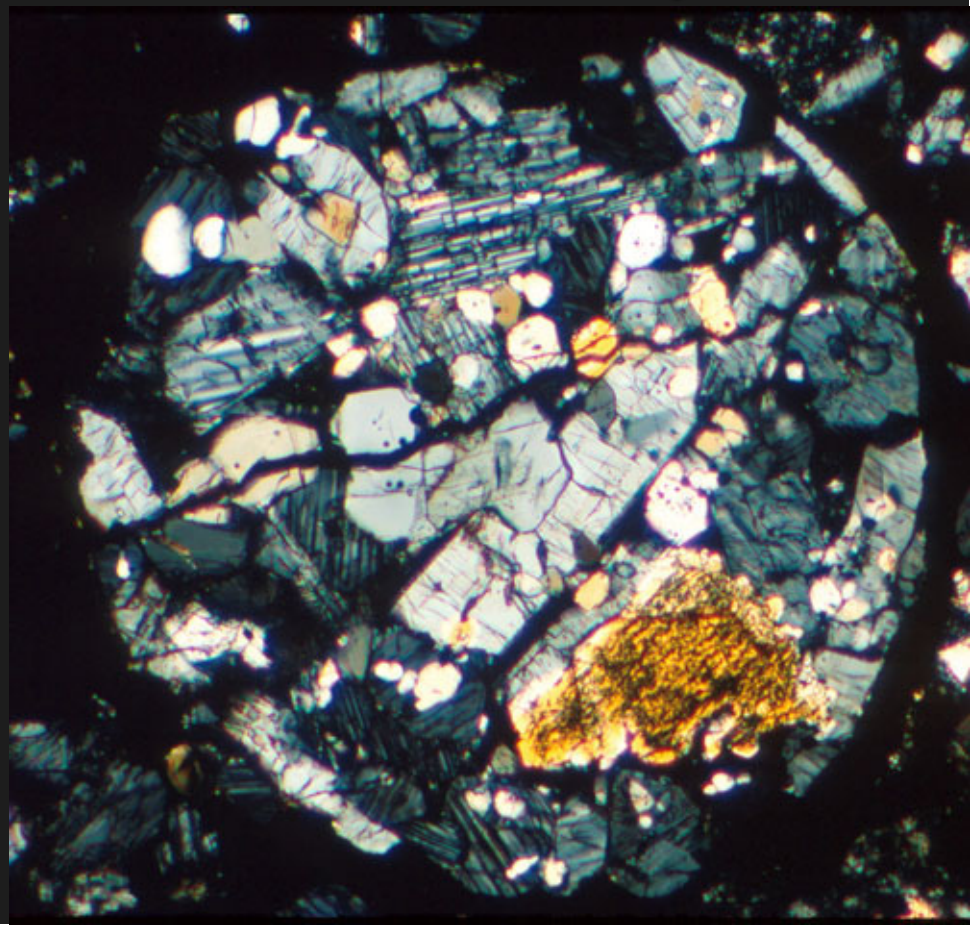
Asteroid

Comet

27R

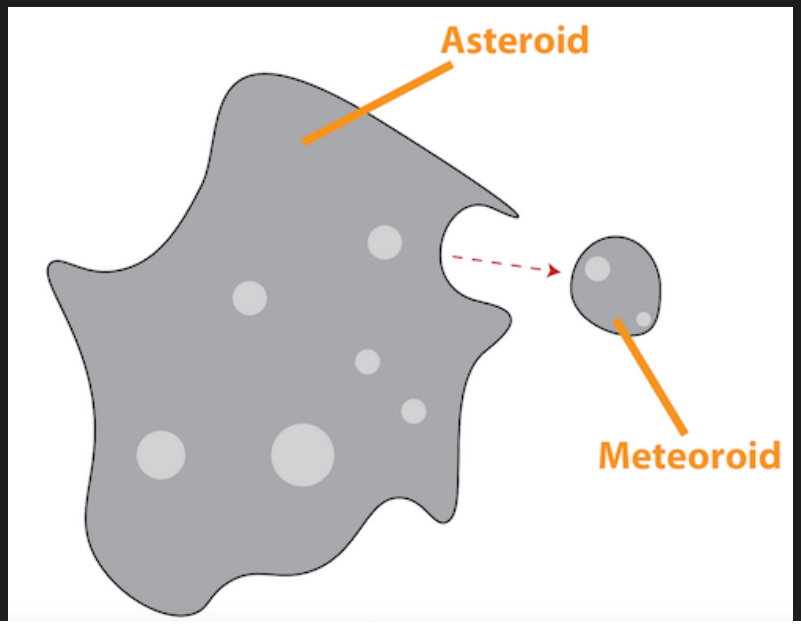
Chondrules

- Spherical drops of once molten or partially molten minerals
- Are considered the building blocks of the planets.
- Provide very good information on the earliest history of the solar system.



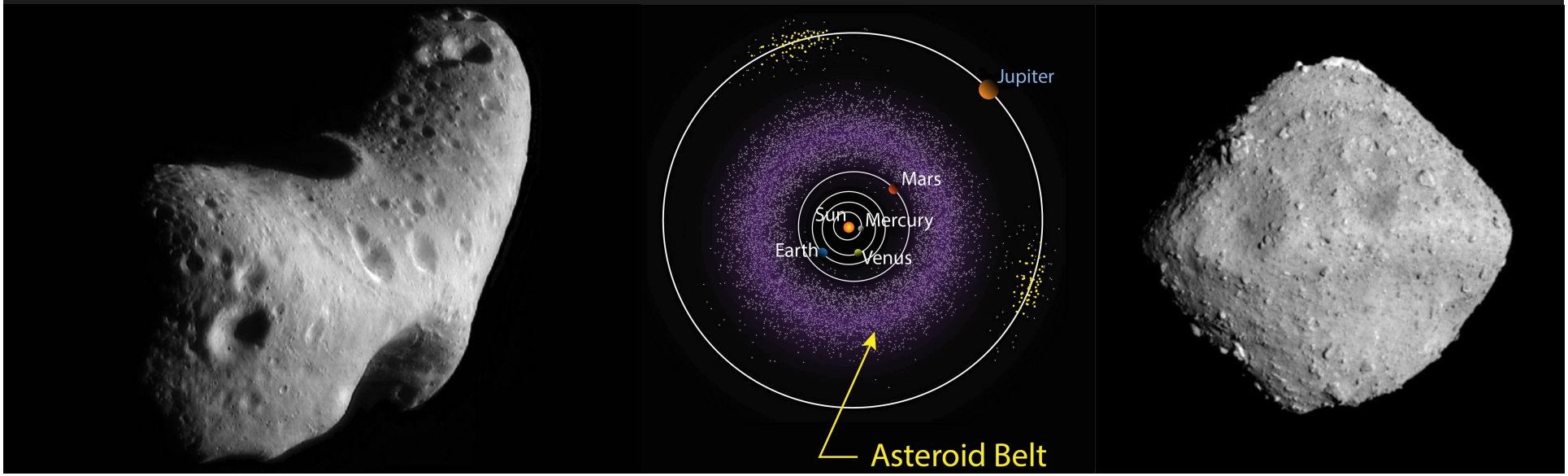
Meteoroids

- Solid objects orbiting around the Sun, often only millimeters in size.
- Have various compositions and densities, ranging from fragile snowball-like objects to nickel-iron dense rocks.
- Most burn up when they enter Earth's atmosphere.
- If any of the meteoroid survives the fall through the atmosphere and lands on Earth it is called a meteorite.



Asteroids

- Small rocky body orbiting the Sun but much smaller than a planet.
- Leftovers from the formation of our solar system.
- Most found in an asteroid belt between Mars and Jupiter
- No two asteroids are alike:
  - They have jagged and irregular shapes
  - Can be hundreds of miles in diameter or as small as a pebble
  - Mostly rock but can be made of metals like nickel and iron



Comets

- Travel around the sun in an elliptical orbit. Roughly the size of a small town.
- Comets are composed of dust and rock mixed with frozen water, methane, and ammonia, like a big dirty snowball.
- When a comet nears the sun, some of it melts and forms a long tail (gases in the comet are vaporized by the sun)
- When a comet moves farther away from the sun, the tail disappears

Let's Play: Active Accretion!

- We will actively model one theory that describes how scientists think asteroids and planets formed: **Accretion.**
- Learn how dust particles **accrete** to form **chondrules**, which **accrete** into **meteoroids**, which **accrete** to form **asteroids**!
- The goal is to tag as many people as you can.

Let's Play: Active Accretion!

- At the start of the game, **all students** will represent **dust**.
- You will jog (not run) in a circular Counter-clockwise (as all planets and asteroids move about the Sun), path around the "Sun" (Me) at the center.

Let's Play: Active Accretion!

- If one dust particle tags another, they form a pair, the students who are paired up are called **chondrules**.
- When the **chondrules** more students the group will stay together and try to tag others.
- Student groups of 4-10 are called **meteoroids**
- For student groups of 11 or more students are called **asteroids**.

1/22/19

Catalyst:

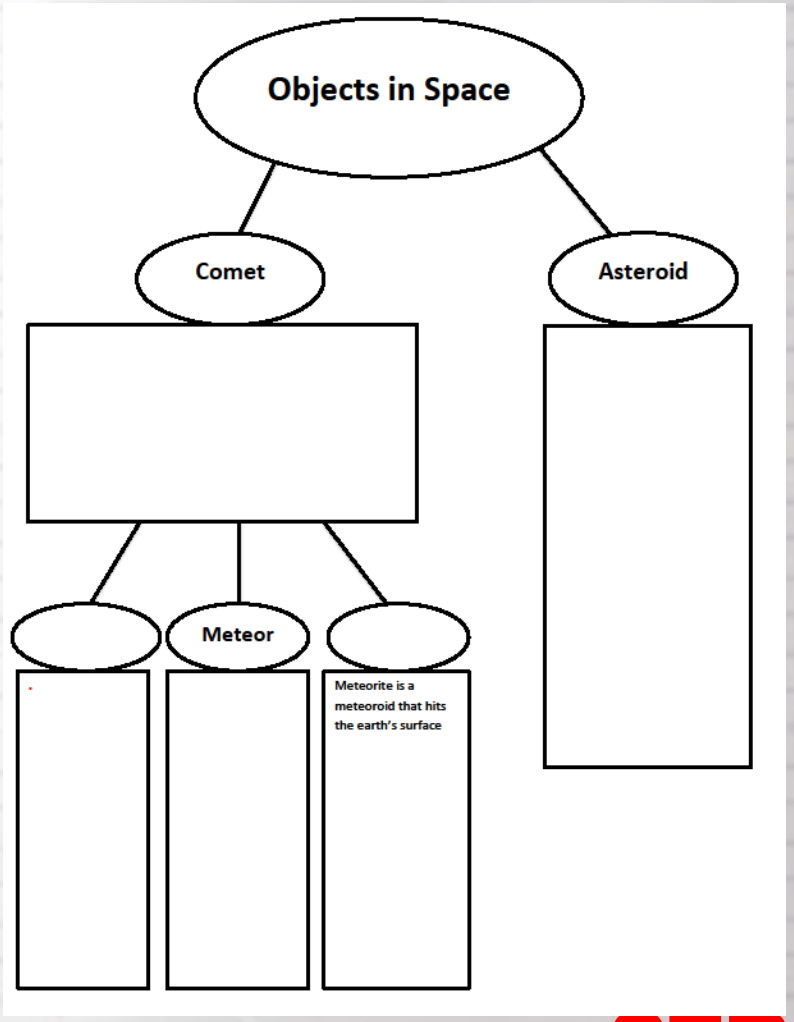
Sequence the 6 images in their correct order of planetary formation. Why did you put them in that order? Explain.

Reflection:

Summarize in your own words the formation of small celestial bodies and that of larger planets using our game as evidence.

27L

A Planet is Born



27R