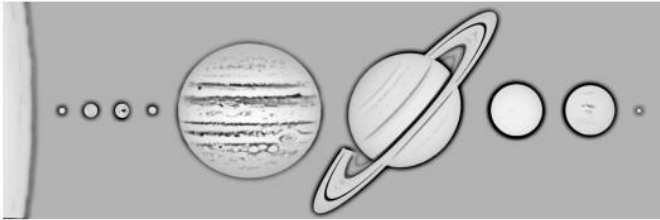


N, e, b, u, l, a, r T, h, e, o, r, y i, n, t, r, o, d, u, c, t, i, o, n

Complete each of the following activities to learn about the nebular theory.

Activity 1 – Is there a Pattern?

Make careful observations of the Solar System diagram (the Sun is on the left side of the picture, with the planets in the correct order from the Sun). Look for patterns and note what you see. **Use your observations to make a list of at least 3 questions about our Solar System.**



Question 1 -

Question 2 -

Question 3 -

Activity 2 – Accretion of Material Investigation

Materials: water, dropper, purple grid paper, straw

- Put the graph paper on the table.
- Place 10 drops of water on the graph paper. Be sure to put them fairly close together. Measure the diameter of the droplets. Do this by counting how many small squares the water droplets take up. They should be about the same size. Record the information in the data table below.

Water Drop	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
Diameter (small squares)										

- Use a straw and carefully blow two water droplets together to make a larger droplet. Measure the diameter of the new, larger drop. Record the data below. Then continue adding drops of water 1 at a time to the same larger droplet, and record the change in diameter. Make sure to measure the diameter after adding a new drop to the large drop. Continue this until all 10 drops have been combined into 1 larger drop.

Water Drops combined	2	3	4	5	6	7	8	9	10
Diameter (small squares)									

Title _____

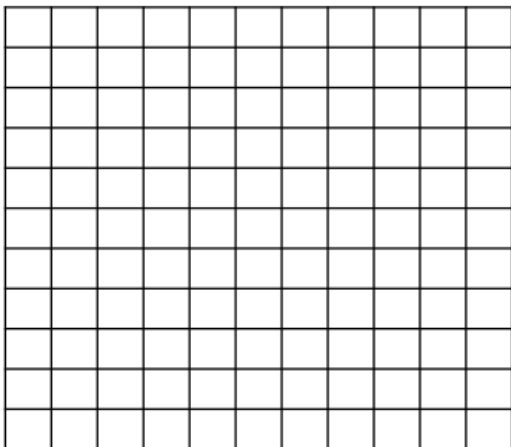
- Correctly create a graph showing the results of the data table above. Make sure to include a title and label the axis.

- What pattern do you observe in the graph?

- Many people believe that combining two spheres creates a new sphere that is twice as big. Explain if this is correct or incorrect:

- Explain how this investigation helped you understand how the planet Earth may have formed.

- What SEP was used in this investigation?



Activity 3 – Birth of the Solar System

Fill in the blanks as you watch the video. BEWARE – some of these answers will go by quickly! Work as a table to get them all answered.

1. Our own nebula began its collapse _____ years ago.
2. It is likely that the nebula had been slowly spinning in space ever since its creation. But as its material collapsed, it began to spin _____.
3. A dense clump of matter formed in the center, called a _____.
4. When the clump reached 18 million degrees Fahrenheit, _____ kicked in.
5. Four and a half billion years ago, our _____ was born.
6. The collapse of our giant cloud of dust may have been triggered by the blast from a nearby _____.
7. When compressed enough, _____ would start to have an effect and the cloud would begin to _____.
8. Within the cloud, swirling about the infant Sun, the _____ are beginning to take shape.
9. Tiny particles of dust begin to clump together in a process known as _____.
10. In about 1 million years, the clumps can grow into larger _____, or pieces of planets, and can keep on growing into full-sized _____.
11. At first, all the matter around our young star is so hot that it is a _____ form.
12. In the inner solar system, closest to the Sun, it stays hot: way too hot for _____ or _____ to condense; but _____ particles can condense here. The metallic planet that formed in this region is _____.
13. Further out, the temperature drops about 1000°F, so more _____ particles can condense, allowing the rockier terrestrial planets _____, _____, and _____ to form in this region.
14. We now know that there are at least tens of thousands of asteroids in the asteroid belt that are a _____ or larger in size; the average distance between asteroids in the asteroid belt is about _____ miles.
15. Beyond the asteroid belt is an invisible but critical border called the _____; beyond the frost line, the _____ planets take shape.
16. Since gas makes up 90% of their mass, they are also known as _____.
17. Uranus and Neptune are different from Jupiter and Saturn and probably should more accurately be called _____ giants rather than gas giants.
18. Experts now think that the planets could have actually formed in different places and then _____ into their current locations due to complex gravitational interactions.