NAME: _____ DATE: _____ PERIOD: _____
NEBULAR HYPOTHESIS - QUESTIONS AND MODELING

The nebular hypothesis is the most accepted explanation for how the Sun and planets in our solar system may have formed. Use what you have already watched, saw, heard, read, and wrote about the processes that created the sun and the planets in our solar system to answer the following questions.

If needed, review the video, Formation of the Planets, and the article, How Our Solar System Formed: A Close Look At The Planets Orbiting Our Sun.

PART 1: QUESTIONS
Read the following quotes as sources of information, then answer the questions that follow.

"In astrophysics, **accretion** is the accumulation of particles into a massive object by gravitationally attracting more matter, typically gaseous matter, in an **accretion** disk. Most astronomical objects, such as galaxies, stars, and planets, are formed by **accretion** processes."

- Wikipedia; Accretion (Astrophysics)

"Early on, our Solar System was a disk of dust and gas in orbit around the proto-Sun. The solid materials collided with each other and **accreted** to form gradually larger bodies, until the Solar System's four terrestrial planets (Mercury, Venus, Earth, and Mars) were formed."

- Planetary Accretion; Rebecca A. Fisher, Harvard University

1. What is the name of the process by which atoms clump together to form larger objects?

2. What force causes that process to occur?

3. Once a large enough object has formed, what process must occur within it before it can be considered a star?

4. Once our Sun fully formed into a star,it contained more than 99% of all the matter in our solar system. There was still some matter left over though.
   What force caused those leftover materials to clump together?

5. As the clumps grow larger, and larger, eventually what did they turn into?

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6. Place the following steps in the order they were created by writing numbers on the lines (1, 2, 3 etc).
   ____ Protostar
   ____ Planets
   ____ Accretion Disk
   ____Solar Nebula
   ____ A Star!
   ____ Protoplanets

PART 2: MODELING

Create a model of the planetary accretion process using playdough as a visual explanation.
Take pictures of each of the following steps.
Do NOT mix the play doh colors together. Return them to their own colored container.

1. Roughly tear the play dough into small pieces, about the size of dried peas or beans.	INSERT PICTURE 1 HERE:
2. Use your hand (apply a little pressure) to move the pieces of playdoh in a circular motion	INSERT PICTURE 2 HERE:
3. Continue until a few (or one) object forms from the pieces.	INSERT PICTURE 3 HERE:

4. What do the torn pieces of playdoh represent in step 1?

5. What does your hand represent in steps 2 and 3?

6. What does the largest clump(s) you formed represent in step 3?

7. What do the smaller, un-clumped, leftover pieces represent in step 3?