The cloud that became the Solar System was 
¾ Hydrogen, ¼ helium, 2% all the other chemical 
elements. It is called “The Solar Nebula” 

Something disturbed it to start the collapse 

As it collapsed it: 
• Heated up 
• Began to spin 
• Flattened 

As the disk formed, particles stuck together, and grew larger. Eventually they became mountain size “pieces of planets” called “Planetesimals”

The final stages of planetary formation was an “Era of Bombardment”. In the end, eight major planets were left with millions of leftover planetesimals.

Differentiation

Chemicals with different densities “separate out”. More dense sinks to the center and less dense rises towards the surface.

Major moons formed around planets exactly like planets formed around the sun. Smaller moons could be planetesimals that were captured later.
Rocky Planets
• Formed inside the frost line from only rock and metal, so they are relatively small.
• Interior got hot and differentiated
• Gases were released from rocks inside the planet and in some cases then were held in place by gravity to form an atmosphere

Gas Giant Planets
• Formed outside the frost line from rock, metal and ICE, so they are much more massive.
• Interior got hot, differentiation occurred, and ice vaporized to gas
• Gases were held in place by gravity to form thick atmospheres.
• Atmosphere was so thick that pressure deep inside caused gas to liquefy.

Major features explained
• Planets all rotate the same general way and orbit in a plane in the same direction
• Two major types of planets
• Asteroids and comets
• Weird exceptions?