

# Earth and Space Science

## Note Catcher

### Chapter 22.1

#### Early Astronomy

- ❖ \_\_\_\_\_ smaller bodies that orbit our sun.
- ❖ Our sun is just one of a much larger family \_\_\_\_\_  
\_\_\_\_\_
- ❖ The Milky \_\_\_\_\_
- ❖ A few hundred years ago, scientists thought \_\_\_\_\_  
\_\_\_\_\_

#### Ancient Greeks

- ❖ \_\_\_\_\_ is the science that studies the universe. It deals with the properties of objects in space and \_\_\_\_\_
- ❖ The “\_\_\_\_\_” of early astronomy was \_\_\_\_\_  
\_\_\_\_\_
- ❖ The early Greeks used \_\_\_\_\_  
\_\_\_\_\_
- ❖ The Greeks also used observational data as well as \_\_\_\_\_  
\_\_\_\_\_

#### Famous Greek Astronomers

- ❖ Aristotle (384-322 B.C. )
  - He was a famous Greek philosopher who concluded that Earth is round because \_\_\_\_\_
  - His belief that Earth is round was largely \_\_\_\_\_  
\_\_\_\_\_

❖ **Eratosthenes (276-194 B.C.)**

- He \_\_\_\_\_  
\_\_\_\_\_
- By observing the angles of the noonday sun in two Egyptian cities, he was able to calculate \_\_\_\_\_

❖ **Hipparchus (190 BC – c. 120 BC)**

- Greatest \_\_\_\_\_
- Known \_\_\_\_\_ he determined the location of 850 stars!

**Models of the Universe**

❖ **Geocentric Model---** \_\_\_\_\_

- In the ancient Greeks' geocentric model, the moon, sun, and the known \_\_\_\_\_  
\_\_\_\_\_
- An orbit is the curved path of a \_\_\_\_\_  
\_\_\_\_\_

❖ **Heliocentric Model—** \_\_\_\_\_

- In the heliocentric model, Earth \_\_\_\_\_
- **Aristarchus (312-230 B.C.)**- Greek who first proposed the heliocentric model. Using math, he also discovered that \_\_\_\_\_  
\_\_\_\_\_
- Despite this, the geocentric model dominated \_\_\_\_\_  
\_\_\_\_\_

**Retrograde Motion**

- ❖ Viewed from Earth, each planet, if watched night after night, \_\_\_\_\_  
\_\_\_\_\_
- ❖ Viewed from Earth, each planet appears to periodically \_\_\_\_\_  
\_\_\_\_\_

**Retrograde motion---** the \_\_\_\_\_  
\_\_\_\_\_

## Ptolemaic System

### ❖ Claudius Ptolemy (AD 90 – c. AD 168)

- Presented a model of the universe called the \_\_\_\_\_
  - Used a geocentric model with Earth at the center.
  - Attempted to \_\_\_\_\_
  - His model \_\_\_\_\_
- ❖ Ptolemy explained retrograde motion by saying \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- ❖ Ptolemy's explanation for retrograde motion was \_\_\_\_\_.

## Modern Astronomy

- ❖ Modern astronomy involved a break from \_\_\_\_\_  
\_\_\_\_\_
- ❖ Scientists began to discover a universe \_\_\_\_\_

## Modern Astronomers

### ❖ Nicolaus Copernicus (1473-1543)

- The first to conclude that \_\_\_\_\_
- He proposed a model of the **solar system** \_\_\_\_\_  
\_\_\_\_\_
- This was \_\_\_\_\_  
\_\_\_\_\_
- Copernicus used \_\_\_\_\_ for his model of the solar system.
- Are the orbits in our solar system circles? \_\_\_\_\_

### ❖ Tycho Brahe (1546-1601) – \_\_\_\_\_

- Built an \_\_\_\_\_
  - He developed and used several \_\_\_\_\_  
\_\_\_\_\_
- **Brahe made precise observations about Mars.** \_\_\_\_\_  
\_\_\_\_\_

❖ **Johannes Kepler (1571-1630)**

- Discovered the \_\_\_\_\_

❖ **Law # 1:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- Draw the ellipse below:

❖ **Law # 2: (The Law of Equal Areas) ---** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

❖ **Law # 3:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

❖ The closer a planet is to the sun, the \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

❖ **Galileo Galilei (1564-1642)**

- Galileo's most important contributions were his \_\_\_\_\_  
\_\_\_\_\_

- He developed his own \_\_\_\_\_ and made important discoveries:

1. Four \_\_\_\_\_

2. Planets are circular \_\_\_\_\_

3. Venus \_\_\_\_\_

4. The moon's \_\_\_\_\_

5. The sun \_\_\_\_\_

❖ **Sir Isaac Newton (1642-1727)**

- Although others had theorized the existence \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

❖ **Universal Gravitation (Gravity)**

- Gravitational force decreases \_\_\_\_\_ .
- The greater the mass of an object, \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- Weight \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- Is your weight the same on Earth and the moon? What about your mass? \_\_\_\_\_  
\_\_\_\_\_