Astronomy 1 Unit Study Guide

1. Draw and label an illustration of the Geocentric Model and Heliocentric Model of the solar system. (S6E1a) (690, 691)

2. Nicholas Copernicus proposed the heliocentric model of the solar system? (S6E1a) (691)(694)

3. Explain the Geocentric Model of the Solar System. (S6E1a) the planets, the Sun, and the Moon were fixed in seperate spheres that rotated around Earth. (690)

4. Explain the Big Bang Theory. (S6E1a) Approximately 13.7 billion years ago, the universe began with an enormous explosion. The entire universe began to expand everywhere at the same time (745)

5. Read the statements below. Identify whether the statement is True or False. If the statement is False, explain why it is False. (S6E1a)

a. The universe continues to expand. True (744)

b. The Big Bang theory suggests that the universe formed billions of years ago through a big explosion. a release of energy (744)

c. The solar system formed at the same time as the Big Bang Theory. (692, 693)
(F) 4.6 billion years ago 13.7 billion years ago

(F) d. The Big Bang is the only existing theory to explain the origin of the universe. (742)
There are 2 other theories. The steady state theory states the universe has always has been the same. The oscillating model states the universe began with an explosion

6. Identify the objects that are part of our solar system. (S6E1a)
Sun, planets, moons, comets, asteroids, dwarf planets, meteors

7. Describe the evidence that the universe is expanding. (S6E1a) (743) The Red Shift shows that galaxies beyond the local group shows a red shift when they move away. If they are moving away from Earth the galaxy must be expanding.

8. Describe the location of our Sun in the universe. (S6E1a) (741)
It is 26,000 light years from the galaxy center in one of the spiral arms.

9. Describe the location of the Sun in our Milky Way Galaxy. (S6E1a) (740)
The sun is about 26,000 light years from the center. The sun and the rest of the solar system are located near the outer edge of the Milky Way Galaxy.

10. Define a galaxy. (S6E1b) (740)
A galaxy is a large group of stars, gas, and dust held together by gravity.

11. Why can't the shape of the Milky Way Galaxy be seen from the Earth? (S6E1b) (741)
Because we are located within one of the spiral arms of the Milky Way.

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12. Define revolution. (S6E1c) (663)
Earth's yearlong elliptical orbit around the Sun.

13. Identify the Inner Planets and describe how they are different from the outer planets in our solar system. (S6E1c) (692)
Mercury, Venus, Earth, Mars > rocky planets with an iron core

14. Identify the Outer Planets and describe what they all have in common. (S6E1c)
Jupiter, Saturn, Uranus, Neptune > gas giant, large planets
hydrogen, helium, methane, ammonia

15. Although the planets in our solar system have distinctive characteristics, they also have similarities. Identify a characteristic that is similar among the planets in our solar system? (S6E1c) elliptical orbit around the sun
- many have an atmosphere, except for Mercury
- extreme temperatures

16. Why do objects appear to move across the sky? (S6E1d) Objects appear to move the sky because the earth is in motion. (725)

17. Based on your knowledge of the planets Earth and Venus, how are the two planets most different? (S6E1c) (697, 698) Earth and Venus have different atmospheres. Venus has 0 Earth has 1 moon. Venus has dense clouds so sunlight cannot reach it. Earth has abundant liquid water and supports life

18. Mercury is about 58 million km away from the Sun with an orbital speed of around 47.8 km/second. Uranus is about 2900 million km away from the Sun with an orbital speed of around 5.5 km/second. What conclusion can you draw about a planet's distance from the Sun and its orbital speed? (S6E1e) (694) The planets closer to the Sun travel faster than planets farther away from the Sun. Outer planets take much longer to orbit the Sun than the inner planets

19. Describe how distance affects the Sun's gravity on planets and other objects in the solar system. (S6E1e) the greater the distance the less the gravitational pull

20. Identify which statement below describes a comet, asteroid, or a meteor. 711, 712

a. Structure is considered to be like a large, dirty snowball comets

b. Pieces of dust and rock that burn up in the Earth's atmosphere meteor

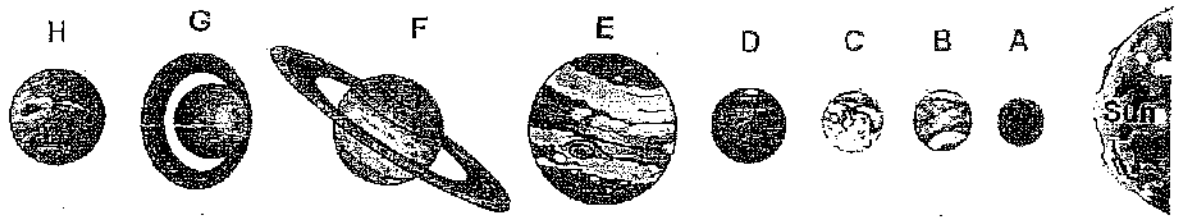
c. Piece of rock similar to the material that formed the planets asteroid

d. Composed of dust and rock mixed with frozen water, methane, and ammonia comet

e. Smaller pieces of rock broken from older asteroids become meteoroids.

f. Considered harmless even though they can be observed at times from Earth comet

g. Most of these are located between the orbits of Mars and Jupiter asteroid



Write the characteristics into the correct planet's box in the table on the next page. The number beside each statement indicates how many times the statement can be used.

*Note: Students are not expected to know each characteristic individually. Rather, students are expected to know characteristics of a planet collectively and/or characteristics that are common to several planets.

• Larger than Earth (4)	• Least dense planet
• Has one moon	• Spins clockwise
• All water is now frozen	• Has no moons
• Largest planet	• Spins the fastest
• "Earth-like" characteristics (3)	• Day is 10 hours long
• Once had active volcanoes	• Hottest planet (can melt lead)
• 1 year equals 29 ½ Earth years	• Appears red because of rusted soil
• Smaller in size in relation to Earth (2)	• Has at least 63 moons
• Only known planet to sustain life	• Has no atmosphere
• Thinner atmosphere than the Earth	• Large red spot
• Largest, most impressive ring system	• Has severe dust storms at hurricane speeds
• Faint ring of dust	• Has canyons, craters, mountains, volcanoes
• Gaseous planet (4)	• Second largest planet in the solar system
• Coldest planet	• Third largest planet
• Tipped on its side	• Atmosphere of methane
• A day is longer than a year due to slow spin	• More than 70% of the surface is covered by water
• Close to the Earth's size (95% of radius)	• Brightest object in the sky after the Sun and moon
• Atmosphere of hydrogen, helium, and methane	• Innermost and smallest planet in solar system
• Has large storm system like the Great Dark Spot	• Surface has many craters and high cliffs

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	Letter	Planet	Characteristics
22.	A	Mercury	has no atmospher has no moon All water is now frozen Smaller in size to Earth
23.	B	Venus	brightest object in the sky after Sun and moon Close to Earth's size (95% radius) has no moon / Earth like characteristics Smaller in size to Earth | spins clockwise A day longer than a year - slow spin
24.	C	Earth	has one moon Only Known planet to substan life
25.	D	Mars	Appears red because of rusted soil Earth like characteristics Once had active volcanoes Thinner atmosphere than Earth
26.	E	Jupiter	has at least 63 moons / spins fastest largest planet gaseous planet larger than Earth faint rings of Dust
27.	F	Saturn	gaseous planet — least dense planet second largest planet largest most impresive ring system larger size than Earth 1 year = 29½ Earth years
28.	G	Uranus	gaseous planet tipped on its side larger than earth faint ring of dust spins clockwise
29.	H	Neptune	gaseous planet has large storm system like the Great Dark Spot larger size than earth faint rings of dust Coldest Planet