

NAME: \_\_\_\_\_

For questions 1 – 8 fill in the table below.

NAME	DISTANCE FROM SUN (in AU)	ORBITAL PERIOD	ROTATION PERIOD	SIZE RANKING (1=largest, 8=smallest)	NUMBER OF MOONS
1) Mercury					
2) Venus					
3) Earth					
4) Mars					
5) Jupiter					
6) Saturn					
7) Uranus					
8) Neptune					

9) An astronomical unit (AU) is the average distance between \_\_\_\_\_ and \_\_\_\_\_.

10) What is the surface temperature of the Sun?

- a) 5,500° F                      b) 5,500° C                      c) 10 million C                      d) 15 million C

11) The diameter of the Sun is approximately how many times larger than Earth’s diameter?

- a) 10 times                      b) 100 times                      c) 1,000 times                      d) 1 million times

12) The surface of the Sun is known as the...

- a) chromosphere                      b) convective zone                      c) corona                      d) radiative zone                      e) corona

13) Which of the following are regions of the Sun’s *interior*—that is, they are under the surface?

- a) chromosphere                      b) convective zone                      c) corona                      d) radiative zone                      e) corona

14) Which of the following are regions of the Sun’s *atmosphere*?

- a) chromosphere                      b) convective zone                      c) corona                      d) radiative zone                      e) corona

15) Which are the *terrestrial planets*?

- Earth      Jupiter      Mars      Mercury      Neptune      Uranus      Saturn      Venus

16) Which are the *jovian planets*?

- Earth      Jupiter      Mars      Mercury      Neptune      Uranus      Saturn      Venus

17) Which planets have rings?

- Earth      Jupiter      Mars      Mercury      Neptune      Uranus      Saturn      Venus

Ast 1 homework sheet

*The Sun & solar system*

For questions 20 – 37 use the following choices. Just write the letter(s) of the correct answer for each question. In other words, if the correct answer is 'Venus' just write V.

- |             |           |           |            |
|-------------|-----------|-----------|------------|
| ME) Mercury | V) Venus  | E) Earth  | MA) Mars   |
| J) Jupiter  | S) Saturn | U) Uranus | N) Neptune |

- 18) Which planet has dark bands and white zones across its surface that look like stripes? \_\_\_\_\_
- 19) Which planet is a greenish-blue color and has few if any visible features? \_\_\_\_\_
- 20) Which planet is grey all over and covered with craters? \_\_\_\_\_
- 21) Which planet is a deep blue color all over, and usually shows some white clouds? \_\_\_\_\_
- 22) Which planet has the most dramatic looking ring system? \_\_\_\_\_
- 23) Which planet has significant amounts of water ice on its surface, but little if any liquid water? \_\_\_\_\_
- 24) Which planet has geologic features similar to Earth, but has such a dense atmosphere that its surface cannot be seen from space? \_\_\_\_\_
- 25) Which planet has liquid water oceans, trees, flowers, ants, and koala bears? \_\_\_\_\_
- 26) Which planet takes longer to turn once on its axis than it takes to orbit the Sun? \_\_\_\_\_
- 27) On which planet would one find *Olympus Mons* and *Valles Marineris*? \_\_\_\_\_
- 28) Which planet has the greatest temperature difference between 'day' and 'night'? \_\_\_\_\_
- 29) Which planet is rotating on its 'side,' so to speak? \_\_\_\_\_
- 30) On which planet would one find the *Great Red Spot*? \_\_\_\_\_
- 31) Which planet's interior is the most like Jupiter's? \_\_\_\_\_
- 32) To which planet do the Galilean moons belong? \_\_\_\_\_
- 33) To which planet does Titan belong? \_\_\_\_\_
- 34) Which of the following are the Galilean Moons?  
Callisto          Earth's Moon          Europa          Ganymede          Io          Titan

For questions 39 – 42 use the following choices. Just write the letter(s) of the correct answer for each question.

- |                  |           |             |             |
|------------------|-----------|-------------|-------------|
| IO) Io           | E) Europa | G) Ganymede | C) Callisto |
| EM) Earth's Moon | T) Titan  |             |             |

- 35) Which moon is the most geologically active place in the solar system? \_\_\_\_\_
- 36) Which moon is the most likely place other than Earth to have liquid water? \_\_\_\_\_
- 37) Which moon has a substantial atmosphere? \_\_\_\_\_
- 38) Which moon has comparatively dark, smooth regions called mare? \_\_\_\_\_
- 39) How many asteroids are believed to exist, roughly?  
a) thousands          b) 200,000          c) millions          d) more than a billion
- 40) How many 'comet-like objects' are believed to exist in the *Kuiper Belt*, roughly?  
a) 200          b) over 900          c) 2,000          d) many thousands          e) more than a billion

- 41) How many 'comet-like objects' are believed to exist in the *Oort Cloud*?  
 a) over 900    b) 2,000    c) many thousands    d) more than a billion    e) more than a trillion
- 42) How far is the *Kuiper Belt* from the Sun, in AU? \_\_\_\_\_
- 43) How far is the *Oort Cloud* from the Sun, in AU? \_\_\_\_\_
- 44) What direction does a comet's tail always point? \_\_\_\_\_
- 45) Which of the following is *primarily* responsible for the fact that Mercury has more craters on its surface than Earth does? (choose only *one* answer)  
 a) Mercury is smaller than Earth                      b) Mercury is closer to the Sun than Earth  
 c) Mercury has less atmosphere than Earth        d) Mercury has had more impacts than Earth
- 46) Which of the following is *primarily* responsible for the fact that Earth has more atmosphere than Mars? (choose only *one* answer)  
 a) Earth is larger than Mars                              b) Earth is closer to the Sun than Mars  
 c) Earth has had more impacts than Mars
- 47) Which of the following is *primarily* responsible for the fact that Earth has more active volcanoes today than Mars does? (choose only *one* answer)  
 a) Earth is larger than Mars                              b) Earth is closer to the Sun than Mars  
 c) Earth has had more impacts than Mars            d) Earth has more atmosphere than Mars
- 48) Describe briefly the evidence that Mars probably had liquid water flowing on its surface in the past.

As discussed in class, Kepler's Third Law can be written as

$$P^2 = R^3$$

where  $P$  is the orbital period of the planet measured in years, and  $R$  is the radius of the planet's orbit (its distance from the Sun) measured in astronomical units.

- 49) Mars is approximately 1.52 AU from the Sun. Verify that Kepler's Third Law is valid for Mars by using the above equation to calculate what Mars' orbital period *should* be (according to Kepler's Law) and then comparing it to the true value given in your book. (For credit you must *show your calculation* below, or on the back of this page.)

$P$  from Kepler's Law: \_\_\_\_\_

$P$  from the book: \_\_\_\_\_

- 50) Use Kepler's Third Law to estimate the period of a typical asteroid in the Asteroid Belt. (For credit you must *show your calculation* below, or on the back of this page.)