Name: _____ Pd ____ Sci #: _____ # Day 9: Space Science ___/61pts | 2pts ec printing

#4 Earth in the Solar System: The structure & composition of the universe can be learned from studying stars, galaxies, & their evolution.

a. Galaxies are clusters of _____ of stars & may have different shapes.

b. The Sun is one of many _____ in the Milky Way galaxy & stars may differ in size, temperature, & _____.

c. Know how to use _____ units & light _____ as measures of distances between the Sun, stars, & Earth.

d. _____ are the source of light for all bright objects in outer space & the Moon and planets shine by _____ sunlight, not by their own light.

e. Know the appearance, general composition, relative position & size, and motion of objects in the solar system, including planets, planetary satellites, comets, & asteroids.

1. Galaxies: **1pt ea: _____/5pts**

a. What is a galaxy? _____

b. Draw a picture of each type of galaxy below.

Spiral	Elliptical	Barred-Spiral	Irregular

2. Distance in Space **½ pt ea: _____/3pts**

An **Astronomical Unit** (AU) is $1.496 \cdot 10^8$ km (**the distance from the Earth to the sun)**. This unit is usually what is used to measure distances within our solar system. To measure longer distances (like the distance between Earth, stars & other galaxies), the **light year** (ly) is used. A light year is the **distance light travels through space in one year**, or $9.468 \cdot 10^{12}$ km.

a. What unit measures distance between planets in our solar system? _____

b. What unit measures distance to other stars or galaxies? _____

c. Why do scientists use these units (AU & Light years) to measure distance in space?

_____

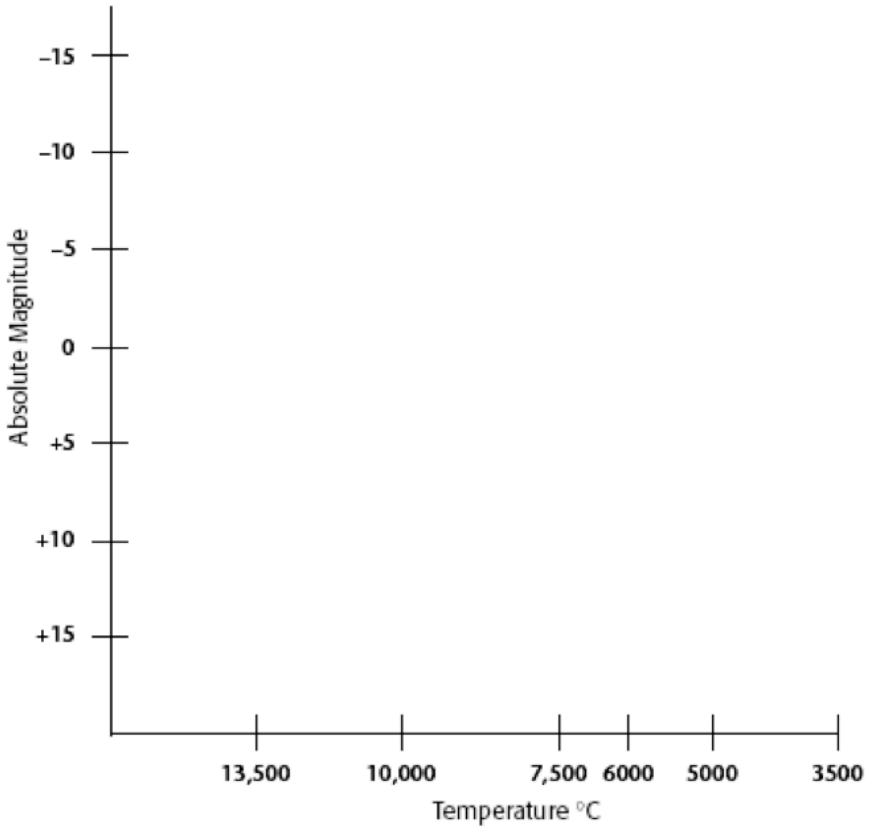
3. Motion in Space:

a. Define rotation:	b. Define revolution:	c. What causes seasons on Earth?

3. HR Diagram (pages 492-493) **1 pt each ____/ 6pts**

An HR diagram shows the relationship between a star's surface temperature and its absolute magnitude. Follow the instructions below to create your own HR diagram. Remember that a star's brightness increases as you move toward the top of the diagram.

1. Our sun is an average star. It should be located in the center of the diagram. **Draw & label the sun**.
2. Draw & label a **red dwarf star**. Red dwarfs are dim & have a low temperature.
3. Draw & label a **white dwarf star**. White dwarfs are dim & have a high temperature.
4. Draw & label a **blue star** on your diagram. Blue stars are very hot and bright.
5. Draw & label a **red giant** on the diagram. Red giants are cool & bright.
6. Most stars are plotted along the main sequence of an HR diagram. These stars can range from very bright, very hot stars, to dim, cool stars. Indicate & label on your diagram where **the main sequence** should go.



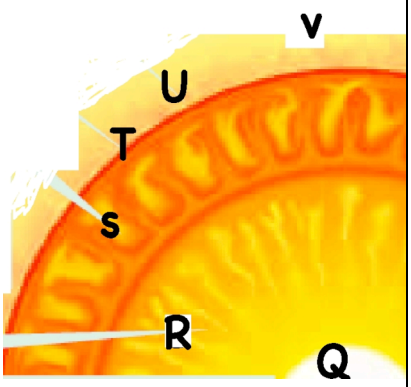
Draw a picture & write 2 facts about each of the planets in our solar system: 1 pt ea: ____/8pts

1.	2.	3.	4.
5.	6.	7.	8.

Identify the layers : The choices are:

a. radiative zone
b. convection zone
c. corona
d. photosphere
e. chromosphere

1. Layer V is:
2. Layer U is:
3. Layer T is:
4. Layer S is:
5. Layer R is:

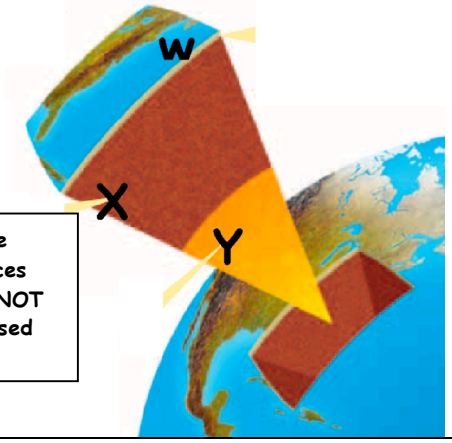


Identify the layers: the choices are:

a. atmosphere
b. mantle
c. coma
d. crust
e. core

6. Layer W is:
7. Layer X is:
8. Layer Y is:

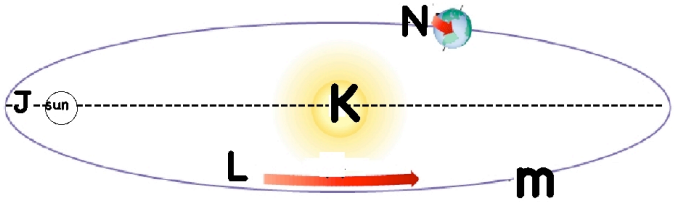
Some choices will NOT be used



Identify the locations/definitions: choose from: a. rotation b. aphelion c. orbit d. perihelion e. revolution

9. Location J shows:
10. Location K shows:
11. Location L shows:
12. Location M shows:
13. Location N shows:
14. movement of an object around its axis

Some of these choices may be used more than once or not at all



Choice A

Choice B

Multiple Choice:

15. Choice A shows: a. solar eclipse b. lunar eclipse c. an asteroid d. a comet

16. Choice B shows: a. solar eclipse b. lunar eclipse c. an asteroid d. a comet

17. An astronomical event during which the Sun is blocked from view by the moon is shown in: a. Choice A b. Choice B

18. An astronomical event during which the Sun is blocked from view by the moon a. solar eclipse b. lunar eclipse c. an asteroid d. a comet

19. An astronomical event during which the Earth's shadow blocks our view of the full moon a. Choice A b. Choice B

20. This is the one you should NEVER EVER look directly at:
a. solar eclipse b. lunar eclipse c. an asteroid d. a comet

21. Unlike most planets, Venus has ___ rotation, which means that it spins in a clockwise direction
a. meteorite b. prograde c. meteor d. retrograde e. eclipse

22. A meteoroid is called a ___ only after it has struck the ground on Earth
a. meteorite b. prograde c. meteor d. satellite e. eclipse

23. ___ are natural or artificial bodies that orbit larger celestial bodies, such as planets
a. meteorite b. prograde c. meteor d. satellite e. eclipse

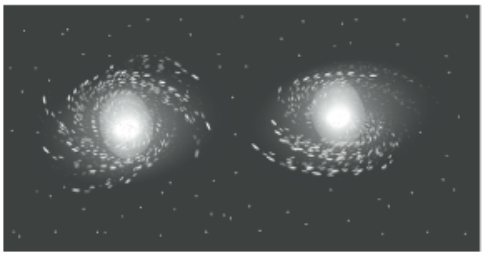
24. The inner planets of our solar system are called ___.
a. meteorite b. gas giants c. asteroids d. comets e. terrestrial planets

25. ___ are also referred to as "dirty snowballs"
a. meteorite b. gas giants c. asteroids d. comets e. terrestrial planets

1 pt each

____/25pts

#4: Earth in the Solar System



1 pt each _____/14 pts

1. The galaxies pictured would *best* be classified as
a. barred galaxies b. spiral galaxies
c. irregular galaxies d. symmetrical galaxies

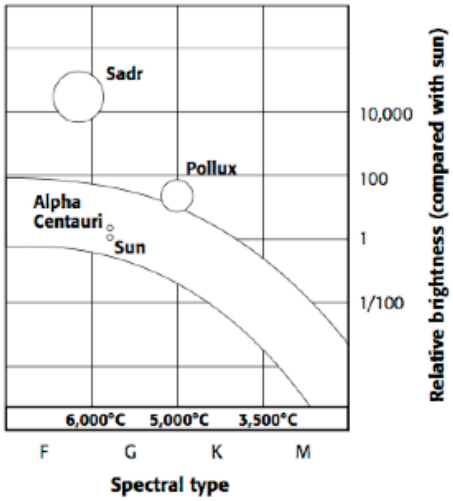
2. A galaxy is *best* described as a cluster of
a. hundreds of stars b. thousands of stars
c. millions of stars d.billions of stars.

3. To express the distance between the Milky Way galaxy and other galaxies, the *most* appropriate unit of measurement is the
a. meter b. kilometer c. light-year d. astronomical unit

4. Which of the following sets contains only objects that shine as a result of reflected light?
a. moons, planets, & comets b. moons, comets, & stars
c. planets, stars, & comets d. planets, stars, & moons

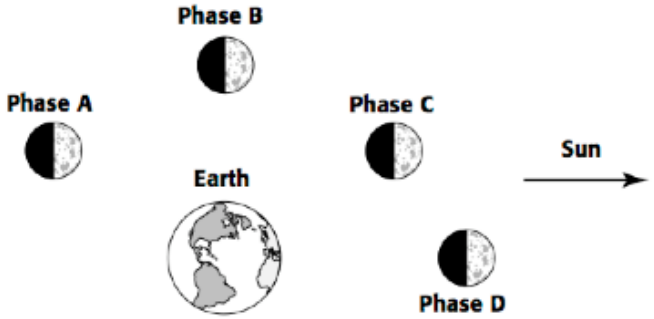
5. An object composed mainly of ice is orbiting the Sun in an elliptical path. This object is *most* likely
a. a planet b. an asteroid c. a meteor d. a comet

6. Which of the following stars has the coolest temperature?
a. a blue-white star b. a yellow star
c. a yellow-white star d. an orange star



7. Which statement about the H-R diagram is true?
a. Alpha Centauri is hotter and brighter than the sun.
b. Sadr is cooler but brighter than the star Pollux.
c. Pollux is the hottest star shown in the graph.
d. Sadr is the hottest star shown in the graph.

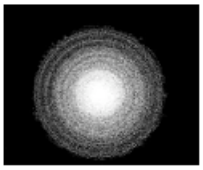
8. The universe contains galaxies, stars, and planets. How does gravity affect these bodies in space?
a. Gravity pulls bodies away from each other.
b. Gravity organizes bodies into nebulas, galaxies, and planetary systems.
c. Gravity attracts bodies with similar compositions to each other.
d. Gravity causes bodies to be scattered randomly throughout the universe.



9. The diagram shows different phases of the moon in relation to Earth and the sun. In which phase will an observer on Earth see a new moon?
a. Phase A b. Phase B c. Phase C d. Phase D

10. How is energy from the sun transferred to Earth?
a. fusion b. radiation c. conduction d. convection

11. What is the unit that astronomers use to measure the distances between Earth and stars called?
a. apparent magnitude b. absolute magnitude
c. light-year d. parallax



12. The picture shows an example of
a. an elliptical galaxy. b. an irregular galaxy.
c. a supernova. d. a spiral galaxy.

13. Why do scientists think that liquid water may have once existed on Mars?
a. Surface features on Mars suggest erosion & deposition by water.
b. Mars had an atmosphere that contained clouds.
c. Mars has two polar icecaps that contain frozen carbon dioxide.
d. Fossils of marine organisms have been discovered on the surface of Mars.

14. What is unusual about the rotation of Uranus?
a. Uranus rotates more slowly than other planets.
b. Uranus rotates more quickly than other planets.
c. Uranus's axis of rotation lies almost in the plane of its orbit.
d. Uranus's axis of rotation lies 90° to the plane of its orbit