Space Study Guide

Name ☆Key Period ____

Study Guide Due: _____

Space Final: _____

A. Formation of the Solar System: Number each step below in the order of which they form.

8 The planets begin to grow.

2 The nebula begins to collapse due to gravity.

1 A cloud of dust & gas, a nebula, forms

6 Planetesimals (building blocks of planets) begin to form.

7 Smaller planetesimals collide with larger ones.

3 The core of the nebula heats up, creating a solar nebula.

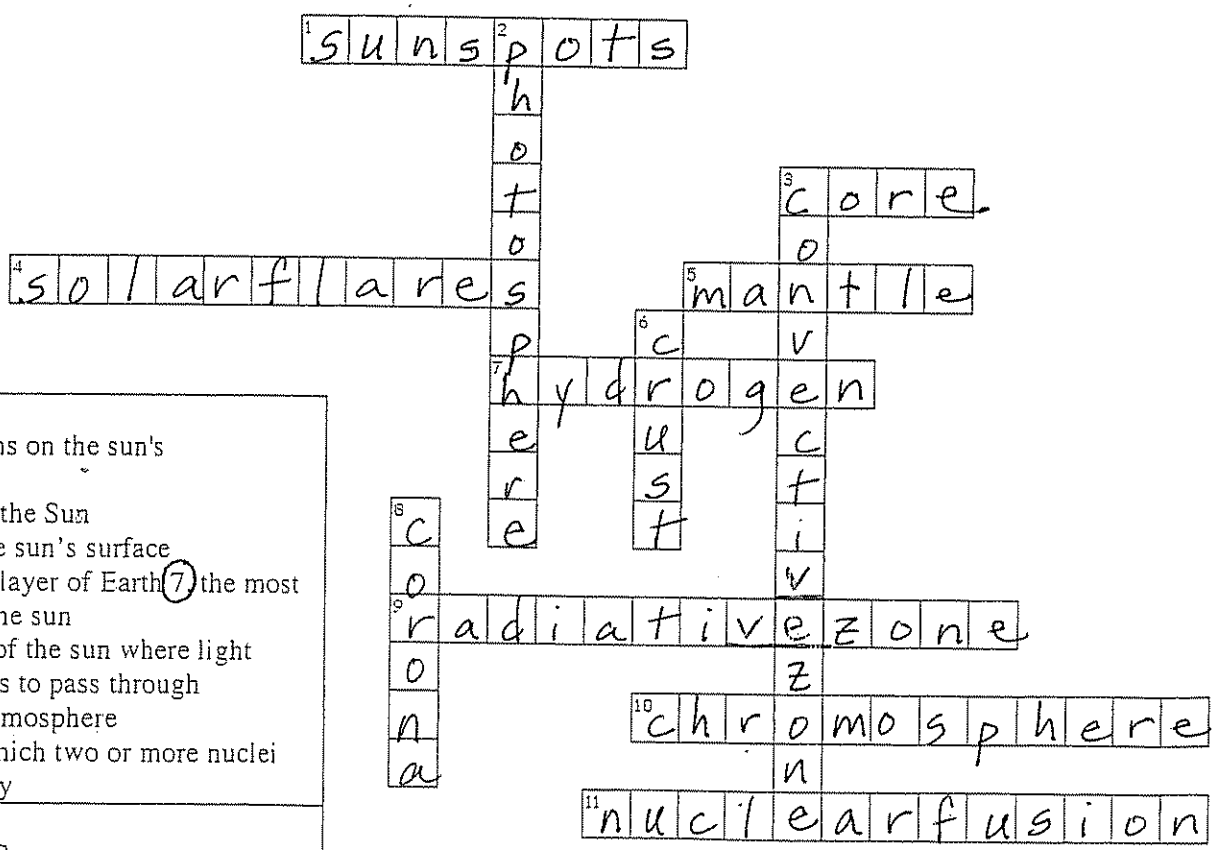
5 Remaining dust & gas leave, leaving a new solar system.

4 The solar nebula begins to rotate, flatten, and get warmer near its center.

B. Planetary Motion: Know the difference between rotation & revolution, and what is responsible for seasons.

spin on axis — orbit — Earth's tilt

C. Structure of the Sun & Earth: Be able to label & describe the layers of the Sun & Earth. For practice, complete the crossword.



Across

(1) Cooler, dark regions on the sun's photosphere

(3) The hottest part of the Sun

(4) Giant storms on the sun's surface

(5) The middle, dense layer of Earth (7) the most common element in the sun

(9) The thickest layer of the sun where light takes millions of years to pass through

(10) The sun's inner atmosphere

(11) The process by which two or more nuclei fuse & produce energy

Down

(2) The surface of the Sun

(3) A region of the sun where hot & cooler gases circulate

(6) The outermost layer of Earth

(8) The sun's outer atmosphere

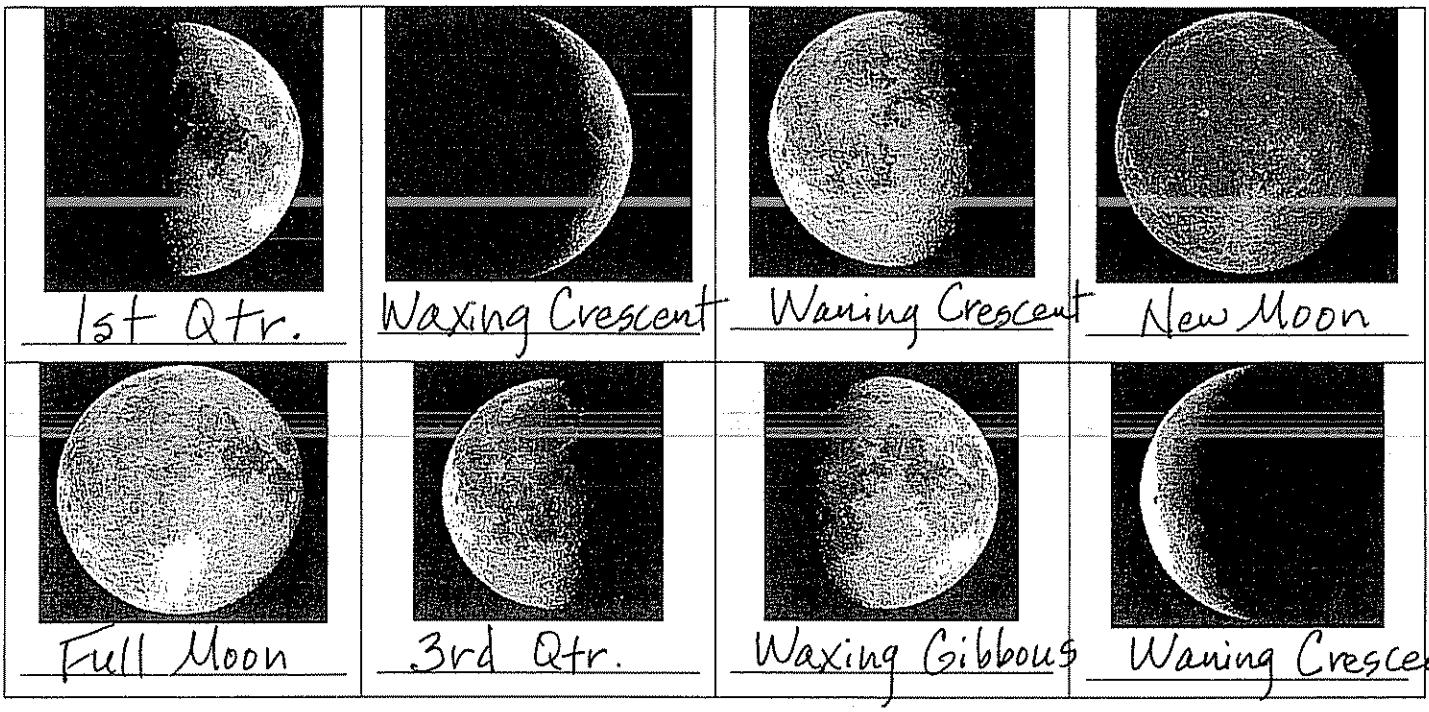
1 A.U = 150,000,000 Km (The avg. distance between the Earth & sun)
1 light year = 9.46 trillion Km (The distance light travels in one year)
1 light minute = 18 million Km

D. Distances in Space: Know the following: astronomical units, light-minutes, light-years.

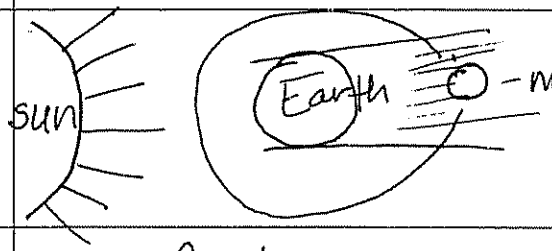
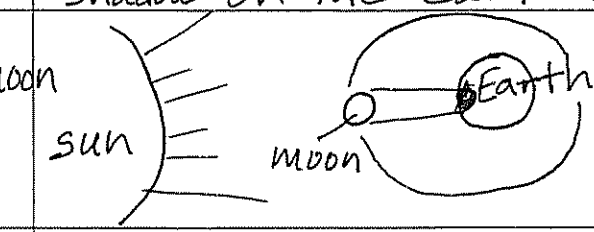
E. The Planets: Know the appearance, relative size, position from the Sun, & a few facts of each planet. Planets of our S. System handout → Inner vs. outer comparison table

Color, ring systems, rock or gas — large, small — My Very Energetic Mother Just Served Us Nachos.

F. Our Moon: Label each moon phase below. They are NOT in order.



G. Eclipses: Complete the chart below. [Fewer than 70 per century]

	Lunar Eclipse	Solar Eclipse
Description	The Earth is between the sun and the moon. The Earth casts a shadow on the moon.	The moon is between the Earth and the sun. The moon casts a shadow on the Earth.
Picture: Draw the Earth, Moon, & Sun positions as seen from space. Include the shadow in your drawing		
What moon phase is it?	full moon	new moon
Who sees it?	Everyone on the night side of the Earth.	Everyone in the shadow of the moon (the path of totality)

Why don't we see eclipses once a month?

The moon is tilted 5° to the Earth's orbit. The moon's shadow misses Earth as it passes above or below the Earth at the new moon. At most new and full moons the shadows miss their mark and no eclipse occurs.

dirty snowball | big rock | shooting star | remnants of comets & asteroids | remnants of comets & asteroids that penetrate Earth's atmosphere

H. Small Bodies: Know the difference between comets, asteroids, meteors, meteoroids & meteorites. Below, write the answer to each question, then find the answers in the word search.

1. The hottest planet in the solar system: Venus
2. A meteor that strikes the Earth's surface: meteorite
3. A small body made of ice, rock & dust that orbits the sun: comet
4. The outermost of the gas giants: Neptune
5. The largest moon in the solar system: Ganymede
6. This planet is tilted 95° on its side: Uranus
7. Once a planet, then a dwarf planet, now a KBO: Pluto
8. A region of space between Mars & Jupiter that cuts the solar system in half: asteroid belt
9. Our moon's real name: Luna
10. The North Star: Polaris
11. Pluto's largest moon: Charon
12. Besides Earth, the most studied planet: Mars
13. Closest planet to the sun: Mercury
14. A small irregular-shaped body made of rock & metal that orbits the sun: asteroid
15. The largest & fastest spinning planet: Jupiter
16. The largest known asteroid in our solar system: Ceres
17. Planet #10? : Eris
18. A huge spherical region that encapsulates our entire solar system: Oort cloud
19. A small rocky object orbiting the sun: meteoroid
20. The only planet with liquid water: Earth
21. A "shooting star": meteor
22. The second largest planet in the solar system: Saturn
23. A region of space outside of Pluto: Kuiper belt

(optional)

S	M	Y	G	J	F	S	E	I	P	G	A	A	S	Z	V	G	G	Y	D	P	K	J	L	X
G	Y	T	E	X	P	H	I	K	M	P	Y	N	N	T	A	S	K	O	I	M	L	P	B	D
O	N	I	L	I	B	H	X	F	D	R	B	U	R	S	I	U	A	O	O	K	V	U	F	E
G	M	D	G	W	M	X	Q	R	U	H	Y	L	N	G	C	B	U	Z	R	O	X	R	T	F
L	U	R	P	R	N	P	O	C	N	R	D	J	I	Z	P	G	X	A	E	D	J	C	G	O
I	Q	F	C	V	A	K	R	J	U	P	I	T	E	R	O	S	U	J	T	B	U	O	O	Z
P	D	W	N	I	Z	E	S	R	A	M	X	Y	F	C	L	O	D	G	S	I	C	R	B	O
R	L	Z	E	E	M	A	X	N	F	B	S	Z	S	V	A	Y	E	Q	A	O	B	T	X	R
H	R	K	I	B	P	O	Q	E	O	F	S	U	Y	C	R	N	Y	V	M	S	L	C	P	W
D	I	O	R	O	E	T	E	M	D	R	N	I	S	E	I	M	X	E	C	W	I	L	Q	G
A	D	G	R	R	D	A	U	H	M	E	A	V	R	R	S	I	T	M	A	S	C	O	C	J
X	T	Q	T	O	G	S	F	N	V	X	M	B	L	E	N	M	T	K	U	D	C	U	A	Z
K	I	M	M	E	E	M	F	C	E	G	R	Y	C	S	E	P	E	M	X	H	F	D	J	S
P	U	N	R	T	P	J	B	U	M	C	W	T	M	T	O	B	O	C	I	O	U	L	A	J
T	V	I	U	E	P	L	R	V	B	N	D	E	E	A	N	N	M	T	Q	E	U	T	E	I
P	I	G	P	M	G	O	L	G	T	X	B	O	M	V	G	K	O	I	O	R	U	O	G	P
O	C	E	B	E	O	I	I	O	P	Y	R	V	O	C	C	E	Y	G	C	R	F	W	K	G
G	T	Z	V	O	R	T	L	E	S	I	G	N	P	W	R	S	A	P	N	N	E	S	O	X
Q	B	T	V	P	Z	B	V	I	T	A	E	X	H	Z	B	W	T	L	M	E	X	Y	C	Y
B	L	Y	R	M	Q	D	E	E	Y	F	C	H	B	D	L	W	V	V	V	S	O	Z	P	D
O	P	G	W	N	G	Q	Q	L	O	A	S	T	E	R	O	I	D	B	E	L	T	P	O	O
D	A	D	I	K	W	E	C	V	T	L	Z	B	A	W	C	Z	T	L	W	B	L	B	M	E
L	D	B	F	F	J	E	T	C	I	P	X	W	Q	C	L	F	A	X	G	N	D	V	Y	B
E	A	R	T	H	Z	I	T	E	D	D	Q	C	B	Q	S	U	N	A	R	U	R	N	K	H
V	S	Y	K	R	B	N	W	P	L	K	R	F	A	R	A	Y	O	B	I	A	M	X	A	N

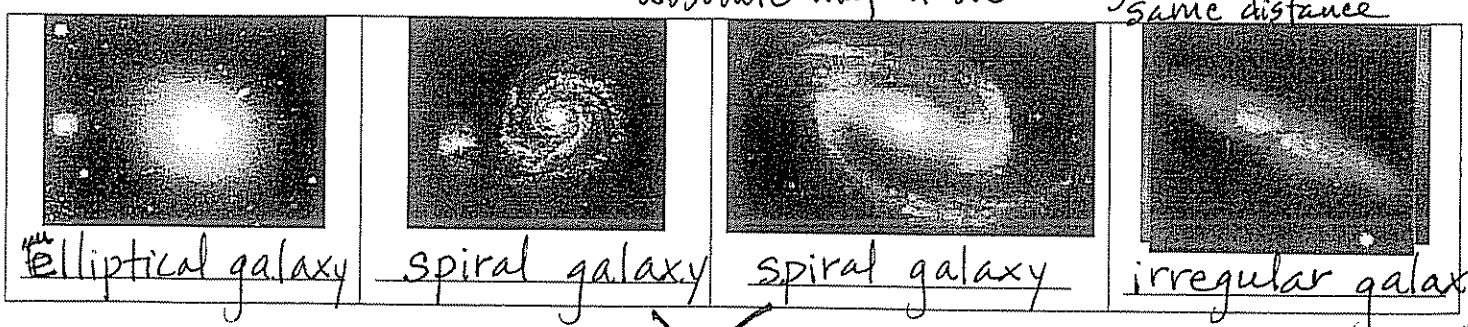
luminosity - how much energy output per sec.
brightness - magnitude

blue stars = hot and bright
red stars = cool and dim

I. Color & Brightness of Stars: Know how star color relates to temperature & luminosity. Know the difference between apparent magnitude, absolute magnitude, luminosity & brightness.

apparent magnitude - brightness as seen on Earth
absolute magnitude - brightness from same distance

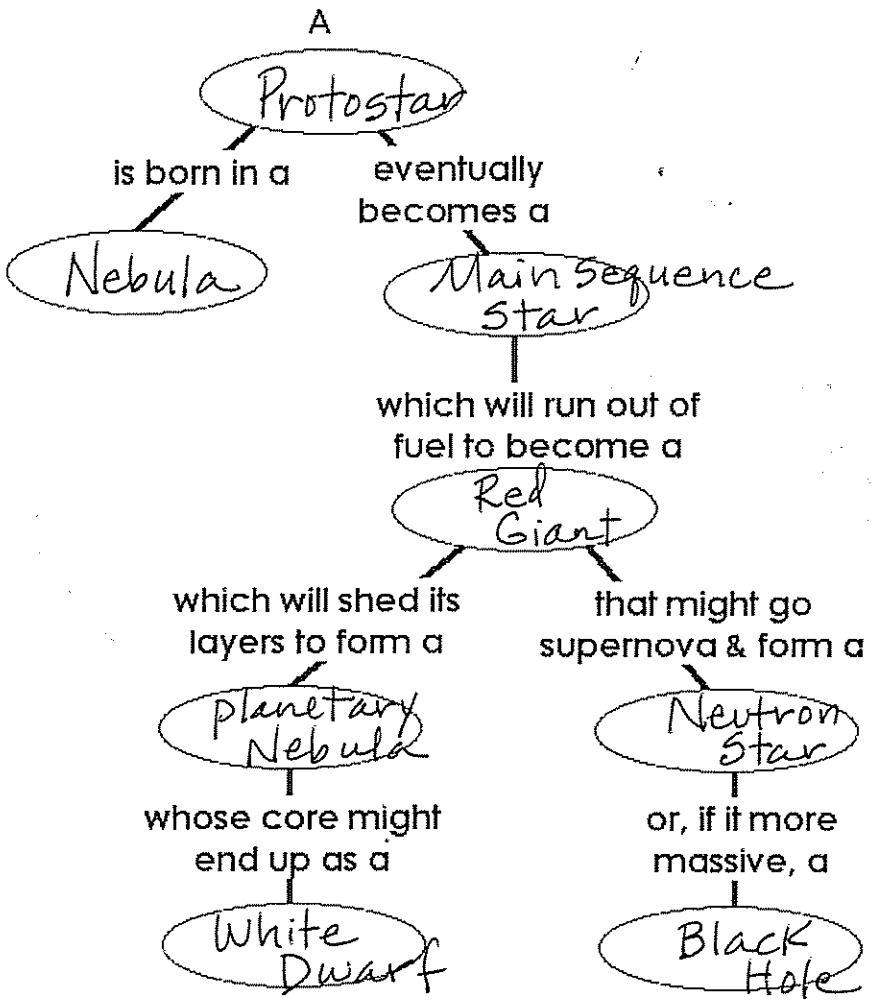
J. Types of Galaxies: Label each galaxy below.



elliptical galaxy | spiral galaxy | spiral galaxy | irregular galaxy

our milky way

K. Life Cycle of Stars: Complete the concept map below using the following words: Black Hole, Main-Sequence Star, Nebula, Neutron Star, Planetary Nebula, Protostar, Red Giant, White Dwarf.



. Big Bang Theory

escribe the Big Bang Theory. What is the evidence scientists have to pport this theory? The evidence is Cosmic Background Radiation.

The big bang theory is the theory that all matter and energy in the universe was compressed in a very small volume that exploded and expanded in all directions → 13 - 15 billion years ago.

L. HR Diagram: An H-R diagram shows the relationship between a star's surface temperature & its absolute magnitude. Follow the instructions below to create your own H-R diagram on the next page. You may want to use colored pencils or crayons. Remember that a star's brightness increases as you move toward the top of the H-R diagram.

1. Our sun is an average star. It should be located at about the center of the diagram. Draw & label the **sun**.
2. Draw & label a **red dwarf** star. Red dwarf stars are dim & have a low temperature.
3. Draw & label a **white dwarf** star. White dwarf stars are dim & have a high temperature.
4. Draw & label a **blue** star. Blue stars are very hot & bright.
5. Draw and label a **red giant**. Red giants are cool & bright.
6. Most stars can be plotted along the main sequence of an H-R diagram. These stars range from very bright, very hot stars to dim, cool stars. Indicate & label on your diagram where the main sequence should go.
7. Imagine that you've discovered a new star in the sky. Your measurements show that it has a temperature of 10,000°C & an absolute magnitude of +10. What type of star do you think it is? white dwarf