



LIVEfeed from
the International
Space Station

UNT5

Space Exploration

- SCIENCE9 -

January

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
8 Space Part 1 & 2 Part 1	9 Space Part 3 Part 2	10 Space Unit Test Part 3	11 Review Unit Test & Review	12 Review for final
15 Review for final	16 Review for final	17 Final Exam Part 1 Review	18 Final Exam Part 2 Final Exam	19 Go over Final Exam
22	23	24 *PAT	25	26
28	29	30	31 Semester 2 begins	1

9-5
9-1



Astronauts

Wanted

Questions to find out

- What's in space?
- How do we get to space?
- How do we survive in space?

PART 1: UNDERSTANDING EARTH & SPACE

I Can...

- Identify different perspectives of the nature of Earth and space
- Describe the characteristics of celestial bodies that make up the solar system
- Relate events on Earth to events/activities in space

WHAT'S IN SPACE? (brainstorm)

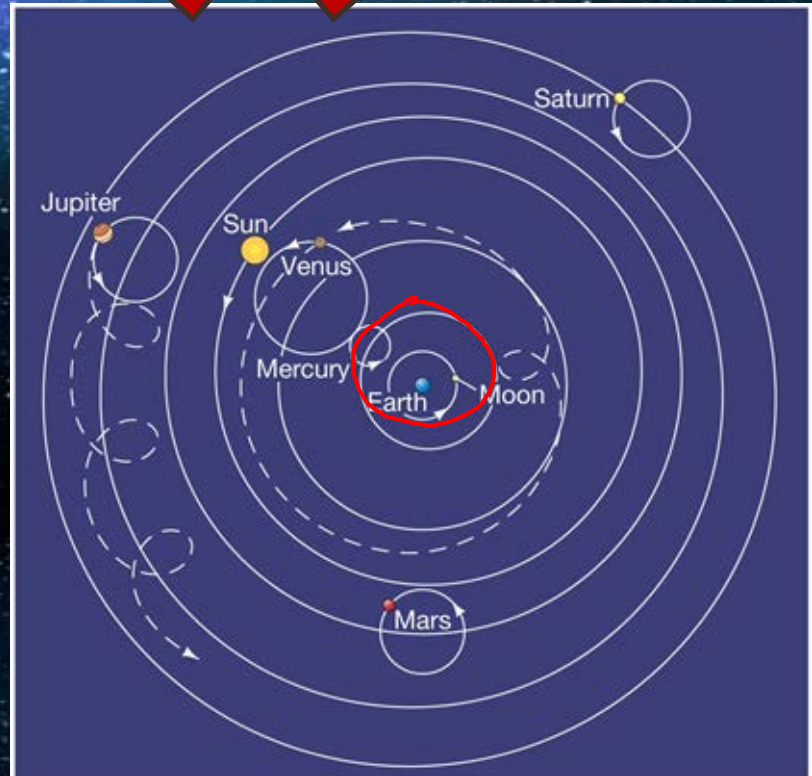
<https://youtu.be/1Eh5BpSnBBw>

planets
stars — black holes
aliens?
Milky Way galaxy

early ideas:
the geocentric model



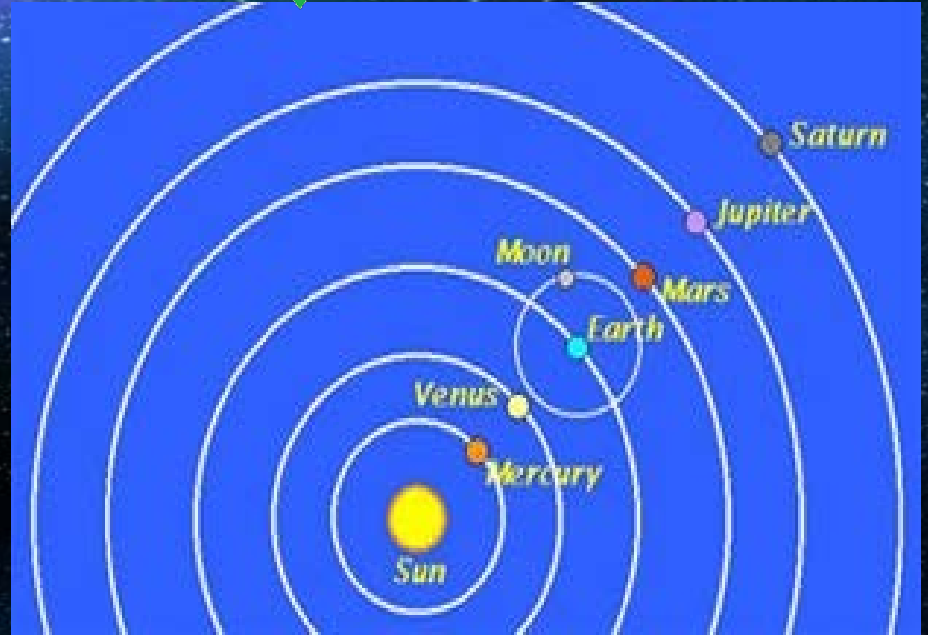
- Earth is at the center of everything
- circular orbits



later ideas:
the heliocentric model



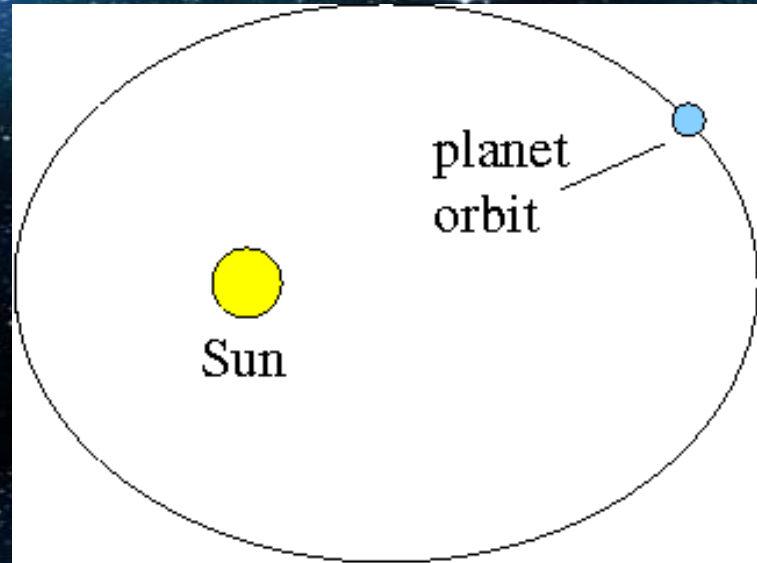
- The Sun is at the center of everything
- circu ~~X~~ orbits



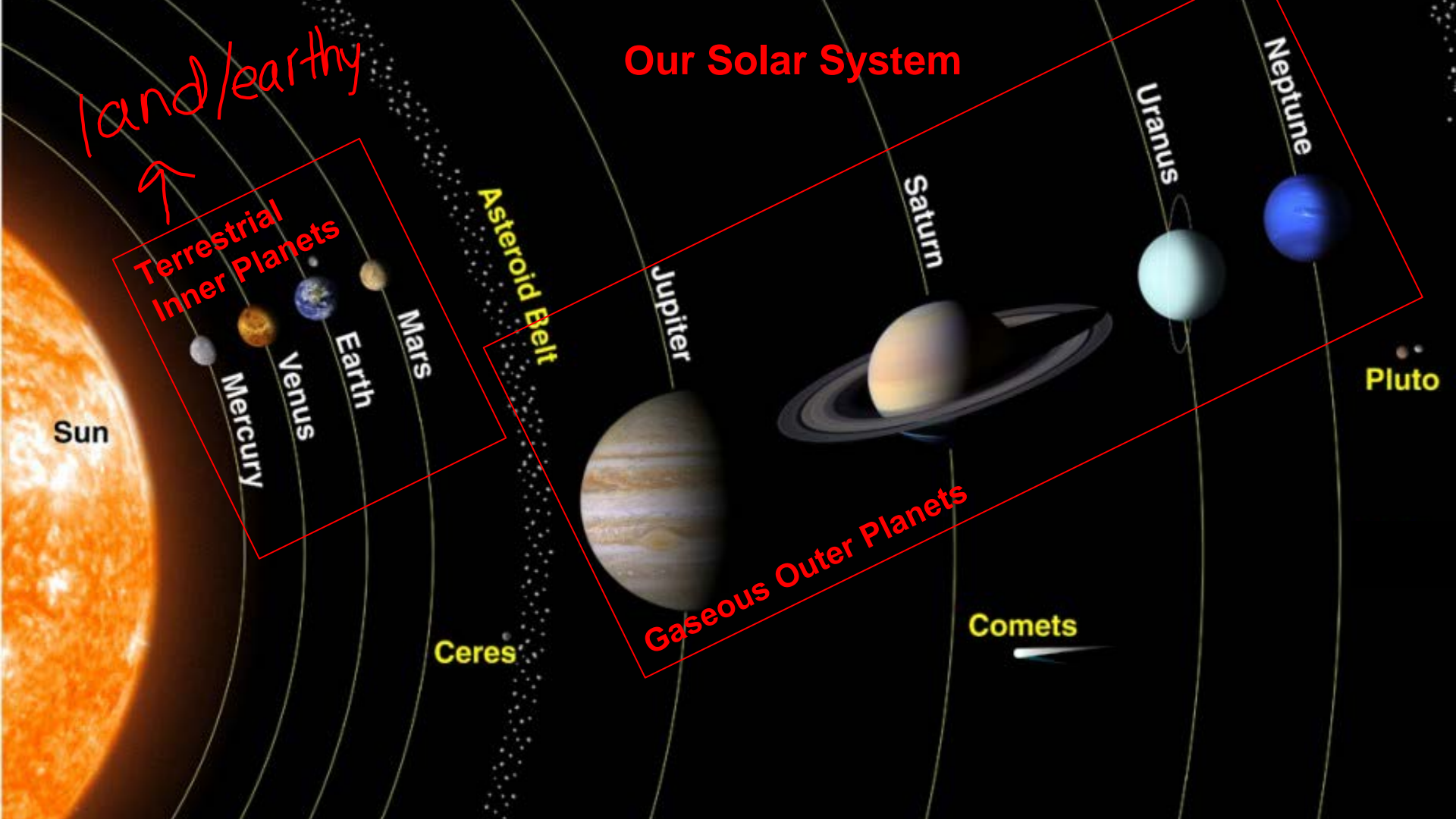
even later ideas:
elliptical orbits







- **Orbits are more like flattened circles, called ellipses**



Our Solar System



TRAITS	TERRESTRIAL / INNER PLANETS 	GASEOUS / OUTER PLANETS 
distance from sun	close	far
size	small	big
gravity	weaker	stronger
composition	rocky/ "Earthy"	gaseous
length of a "day"	longer	shorter
orbit time (length of a "year")	shorter	longer
moons	none/few	many
rings	no	yes

TRAITS	TERRESTRIAL / INNER PLANETS 	GASEOUS / OUTER PLANETS 
distance from sun		
size		
gravity		
composition		
length of a "day"		
orbit time (length of a "year")		
moons		
rings		

Universal Gravitation



All planets experience gravity to some extent; in outer space, however, there is no gravitational force pulling things down...

How does gravity affect water in space???

✓ Check Your Understanding

The chart that contrasts the geocentric model of the solar system with the current heliocentric model is

A.

Geocentric Model	Current Heliocentric Model
• Planets orbit the Sun	• Planets orbit Earth
• Orbits are circular in shape	• Orbits are elliptical in shape

B.

Geocentric Model	Current Heliocentric Model
• Planets orbit the Sun	• Planets orbit Earth
• Orbits are elliptical in shape	• Orbits are circular in shape

C.

Geocentric Model	Current Heliocentric Model
• Planets orbit Earth	• Planets orbit the Sun
• Orbits are circular in shape	• Orbits are elliptical in shape

D.

Geocentric Model	Current Heliocentric Model
• Planets orbit Earth	• Planets orbit the Sun
• Orbits are elliptical in shape	• Orbits are circular in shape

✓ Check Your Understanding

Planet	Average distance from sun (AU)	Diameter (km)	Period of revolution (Earth days or years)	Period of rotation (Earth days or hours)	Composition
Mercury	0.39	4,879	88.0 days	59.9 days	rocky
Venus	0.72	12,104	224.7 days	244 days	rocky
Earth	1.00	12,756	365.2 days	1.00 days	rocky
Mars	1.52	6,794	687.0 days	1.03 days	rocky
Jupiter	5.20	142,984	11.9 years	9.9 hours	gaseous
Saturn	9.54	120,536	29.5 years	10.7 hours	gaseous

What characteristics would you expect for a newly discovered planet 6.3 AU (astronomical units) from the sun?

- Inner or Outer planet?
- Terrestrial or gaseous?
- Big or small?

- Length of day?
- Length of year?

shorter
longer

✓ Check Your Understanding

As a planet's distance from the sun i, the time it takes to orbit the sun ii.

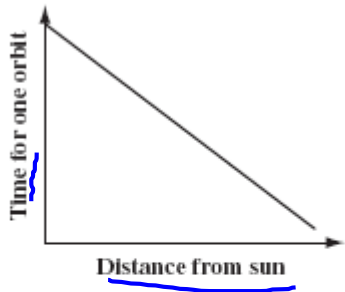
The statement above is completed by the information in row

ROW	i	ii
A	increases	decreases
B	increases	increases
C	decreases	does not change
D	decreases increases	does not change

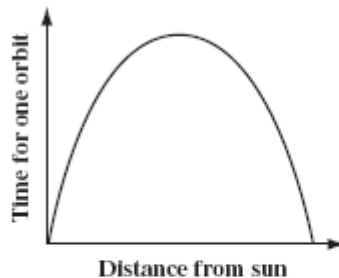
✓ Check Your Understanding

Which of the following graphs correctly represents the relationship between the orbit times of planets and their distance from the sun?

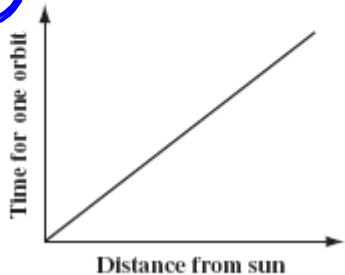
A.



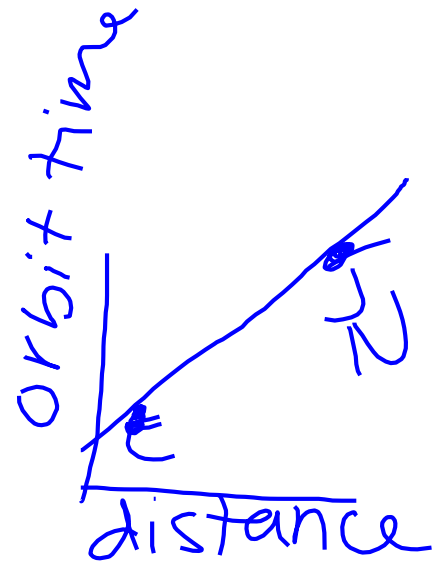
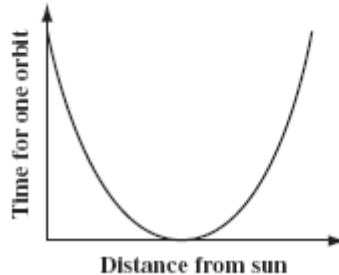
~~B.~~



C.



~~D.~~



✓ Check Your Understanding

Information about Jupiter

Length of year = 142 Earth months

Length of day = 10 Earth hours

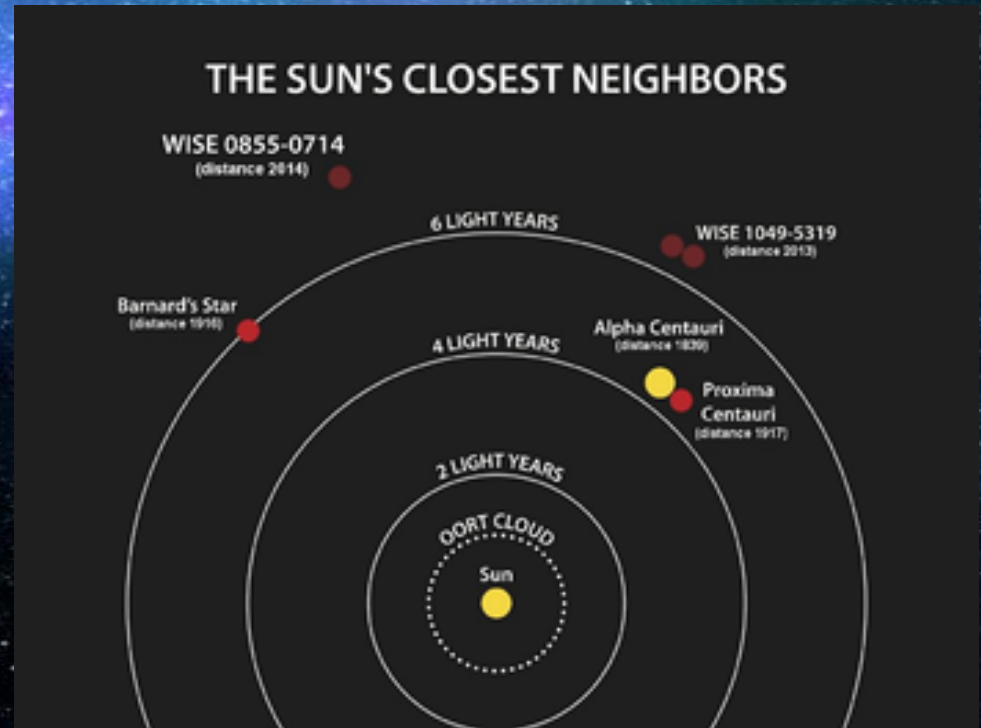
Jupiter spins on its axis *i* than Earth does, and it has an orbit that is *ii* than Earth's.

The statement above is completed by the information in row

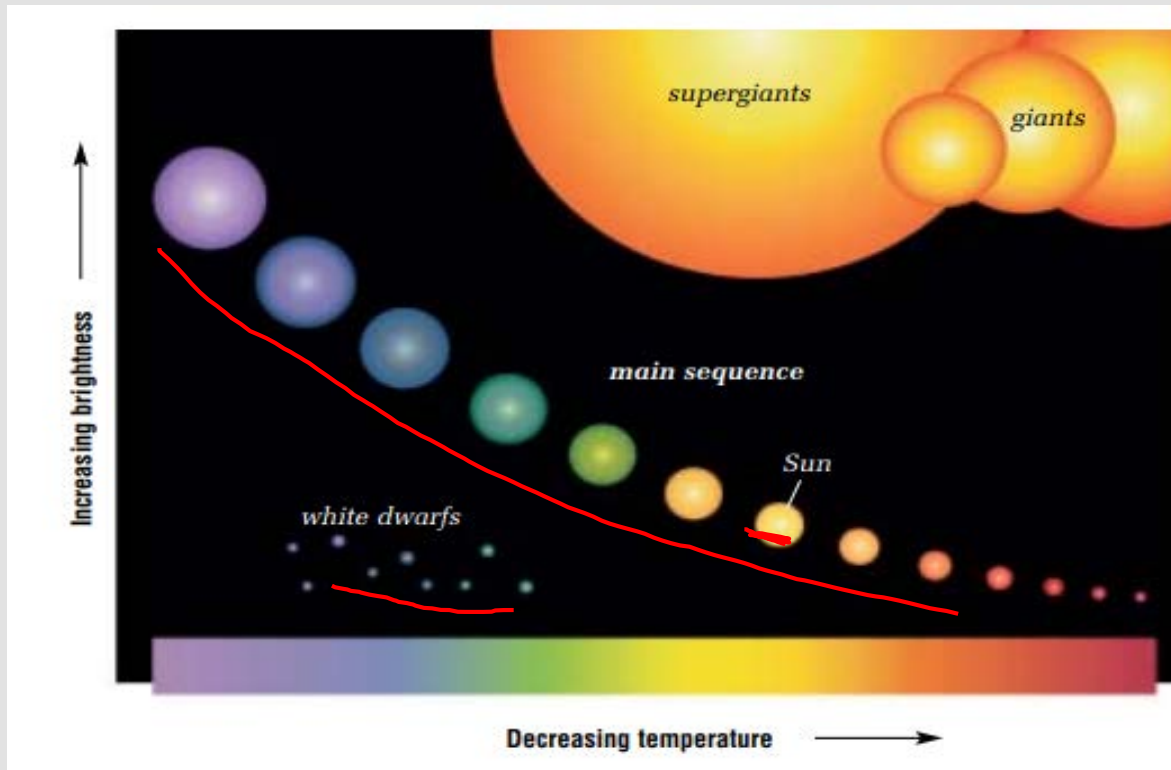
Row	<i>i</i>	<i>ii</i>
A.	slower	larger
B.	slower	smaller
C.	faster	larger
D.	faster	smaller

stars

- hot, glowing balls of gas (mainly hydrogen)
- not all the same



Comparing stars





stars

Where did/do they come from?

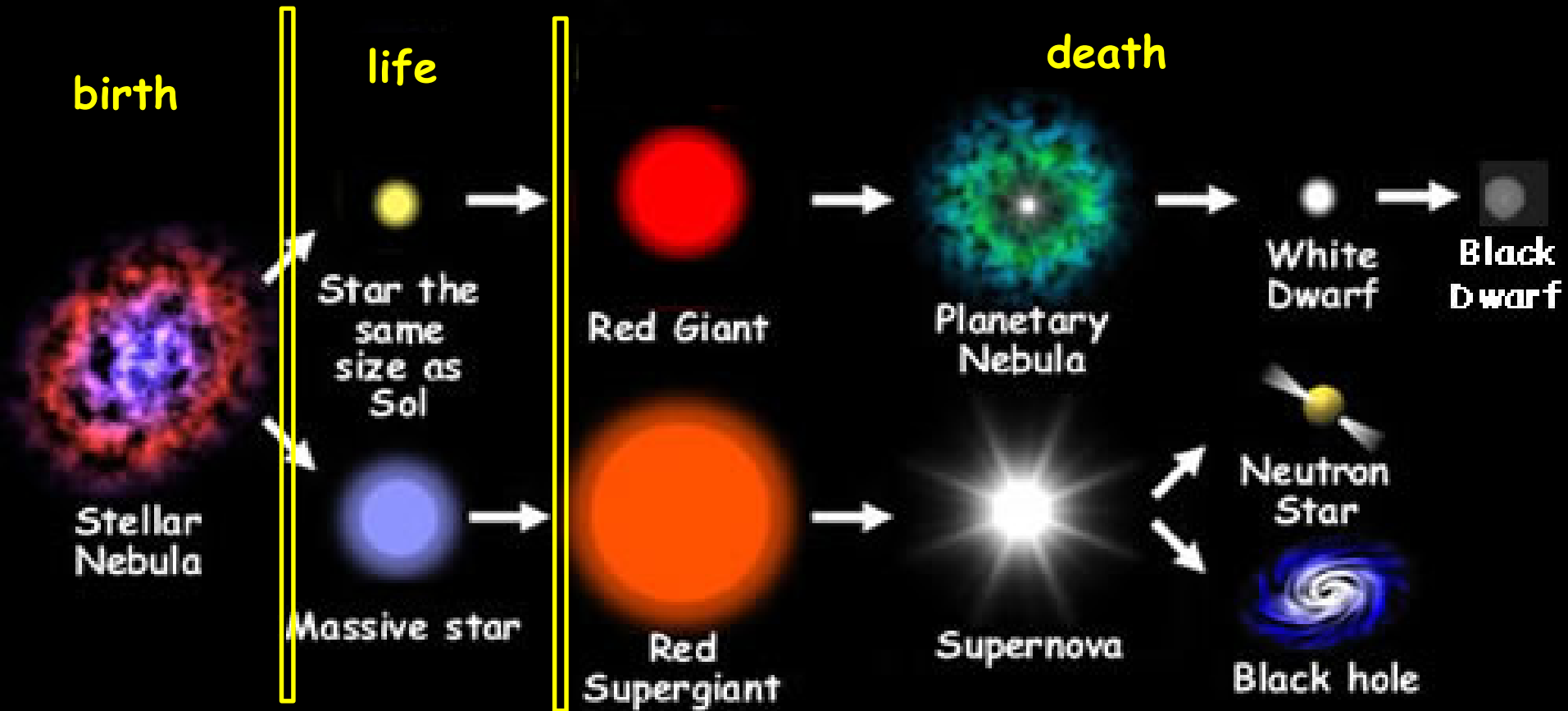
What happens to them?

nebula

vast cloud of
gas and dust
where stars
form



The Lifecycle of a Star



galaxy

a grouping of billions of stars, gas, and dust, held together by gravity



Organization of our Galaxy

Our solar system is just one of many that belong to the Milky Way Galaxy. Every spec you see represents another solar system...

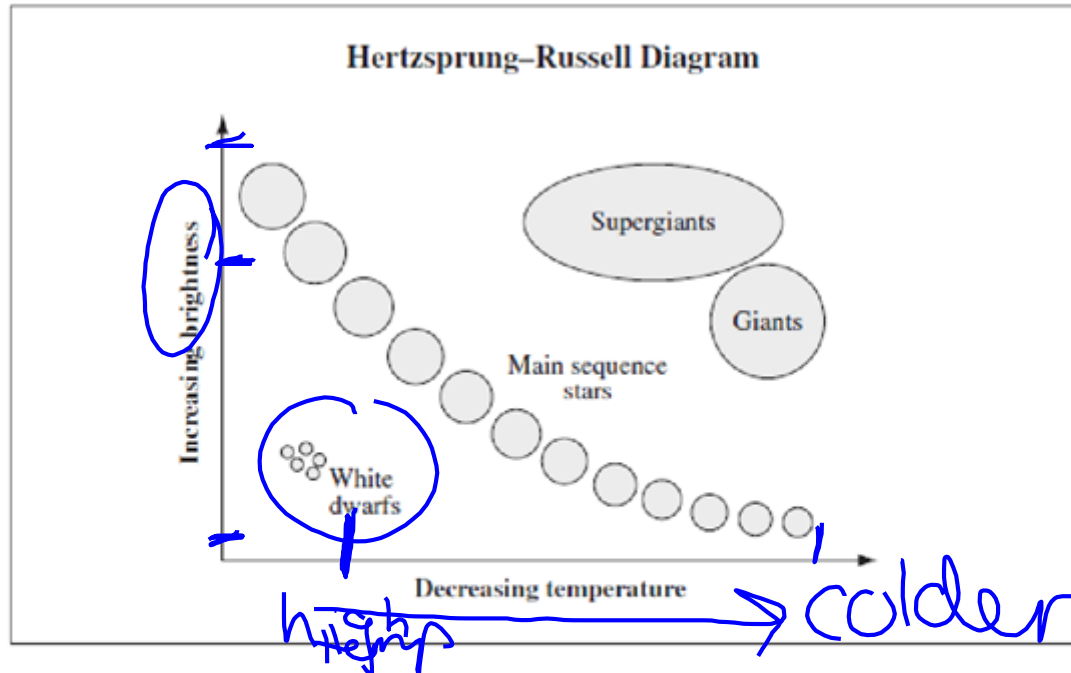


constellation

group of
stars that
form a
pattern



✓ Check Your Understanding



When compared with a giant star, a white dwarf star is

- ~~A.~~ brighter and hotter
- ~~B.~~ brighter and colder
- C. dimmer and hotter
- D. dimmer and colder

✓ Check Your Understanding

galaxy

nebula

A *i* consists of stars, planets, and dust, which are formed from a *ii* .

The statement above is completed by the information in row

Row	<i>i</i>	<i>ii</i>
A.	constellation	nebula
B.	nebula	galaxy
C.	galaxy	nebula
D.	galaxy	constellation