

What does our solar system contain?

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What is the name of the galaxy that our solar system is part of?

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Describe the following:

nebula -

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protostar -

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main sequence star -

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Describe and explain the initial formation of all stars.

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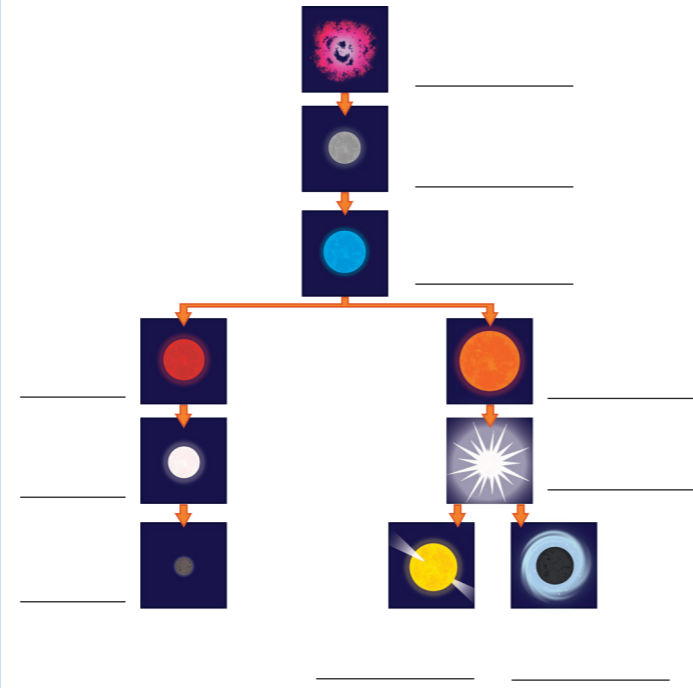
Fill in the blanks.

\_\_\_\_\_ reactions lead to an \_\_\_\_\_ between the gravitational collapse of a \_\_\_\_\_ and the \_\_\_\_\_ of a star due to \_\_\_\_\_ energy.

There are two different life cycles of stars. What determines which life cycle they follow?

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Fill in the blanks for the life cycle of a star.



How are elements formed in stars?

- a) up to and including iron? \_\_\_\_\_
- b) heavier than iron? \_\_\_\_\_

Explain why heavier elements are formed and how they are dispersed.

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What do the following orbit:

- a) planets? \_\_\_\_\_
- b) satellites? \_\_\_\_\_

How do satellites and planets maintain their orbit?

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What are the similarities and differences between artificial satellites and moons?

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What is the shape of the orbit of a planet around the Sun?

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Describe the difference between speed and velocity for an object in a circular orbit.

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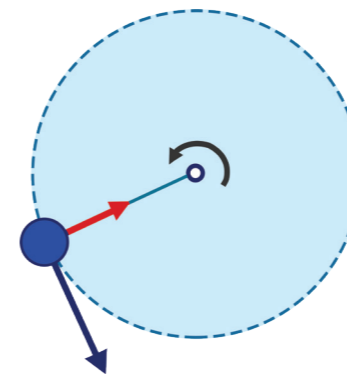
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In a stable orbit, what would happen if the speed changed?

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Label the diagram for centripetal force.



Define centripetal force.

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How are radius and speed related in an orbit?

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How can you keep an orbit stable when you change the radius?

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Describe and explain red-shift.

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Explain the link between the distance of galaxies from us and red-shift.

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Describe the Big Bang theory.

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Explain the evidence for the Big Bang?

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How is a theory developed?

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There is still a lot about the universe that we do not understand. Give some examples.

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My main areas for improvement are:

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What does our solar system contain?  
**the Sun**  
**eight planets**  
**dwarf planets**  
**natural satellites; the moons**

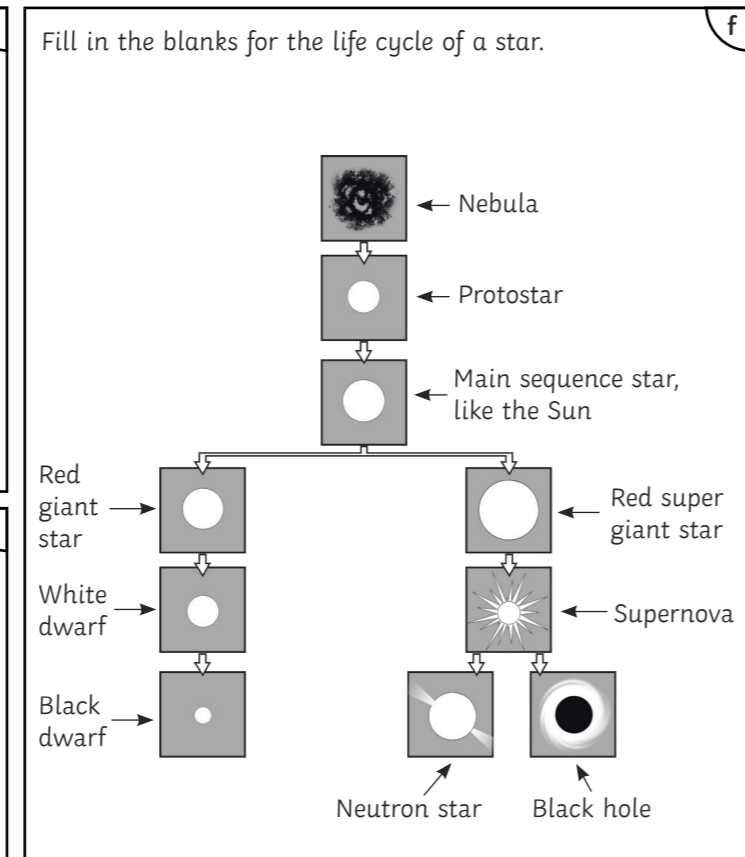
What is the name of the galaxy that our solar system is part of?  
**Milky Way galaxy**

Describe the following:  
 nebula - **cloud of gas and dust.**  
 protostar - **a hot dense mass formed by increasing gravity.**  
 main sequence star -  
**a star undergoing nuclear fusion of hydrogen into helium. It is stable due to balanced forces from the outward pressure of expanding hot gases and the star's gravity.**

Describe and explain the initial formation of all stars.  
**Gravity pulls a cloud of dust and gas together and begins to get denser. The gravity from this causes an increase in pressure and temperature. More gas is drawn in and the mass increases, therefore the gravitational pull increases. Eventually the temperature and pressure are so high that nuclear fusion of hydrogen into helium happens.**

Fill in the blanks.  
**Fusion** reactions lead to an **equilibrium** between the gravitational collapse of a **star** and the **expansion** of a star due to **fusion** energy.

There are two different life cycles of stars. What determines which life cycle they follow?  
**The size (mass) of the main sequence star.**



How are elements formed in stars?  
 a) up to and including iron? **Fusion reactions in stars.**  
 b) heavier than iron? **During a supernova.**

Explain why heavier elements are formed and how they are dispersed.  
**The temperature and pressure in a supernova is so large that nuclei are forced together. The explosion of a supernova disperses the elements throughout the universe.**

What do the following orbit:  
 a) planets? **the Sun**  
 b) satellites? **planets**

How do satellites and planets maintain their orbit?  
**gravity**

What are the similarities and differences between artificial satellites and moons?  
**Similarity: both orbit a planet.**  
**Differences: moons are natural and satellites are man-made.**

What is the shape of the orbit of a planet around the Sun?  
**Circular/Elliptical**

Describe the difference between speed and velocity for an object in a circular orbit.  
**The speed remains the same, but the velocity changes as it is constantly changing direction.**

In a stable orbit, what would happen if the speed changed?  
**The radius would change.**

Label the diagram for centripetal force.

Define centripetal force.  
**A force acting towards the centre which causes an object to keep moving in a circular path.**

How are radius and speed related in an orbit?  
**The greater the radius, the slower the speed.**

How can you keep an orbit stable when you change the radius?  
**Change the speed as well.**

Describe and explain red-shift.  
**Red-shift is the observed increase in wavelength of light towards the red end of the spectrum. This is because an object is moving away so the light's wavelength increases.**

Explain the link between the distance of galaxies from us and red-shift.  
**The further away they are, the bigger the red-shift.**

Describe the Big Bang theory.  
**The universe started from a very small region that was hot and dense; all the matter was packed together. Something caused the expansion of the universe and it has been expanding ever since.**

Explain the evidence for the Big Bang?  
**Red-shift: Provides evidence that the universe is expanding. If something is moving away then the wavelength seems larger.**  
**Change of galaxies' speed: Provides evidence of an expanding universe as the further away, the faster their speed of recession.**

How is a theory developed?  
**Scientists use observations, look for patterns in data and form predictions.**

There is still a lot about the universe that we do not understand. Give some examples.  
**How the increase in expansion of the universe is occurring.**  
**Dark mass.**  
**Dark energy.**

My main areas for improvement are:

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