

a What does our solar system contain?

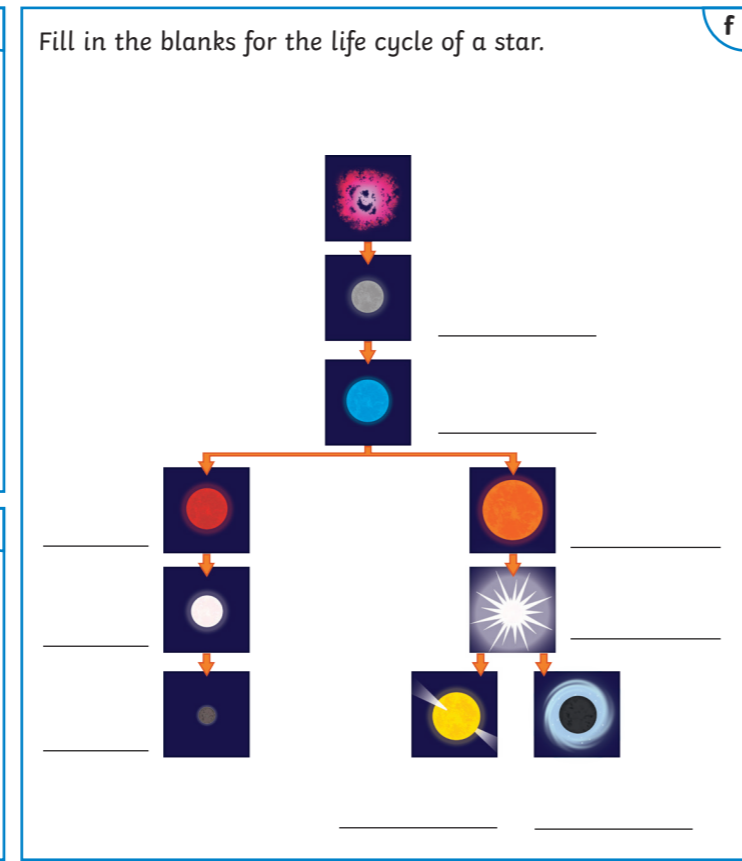
 What is the name of the galaxy that our solar system is part of?

b Describe the following:
 nebula - _____
 protostar - _____
 main sequence star - _____

c Describe and explain the initial formation of all stars.

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

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



g How are elements formed in stars?
 a) Up to and including iron? _____
 b) Heavier than iron? _____

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

i What do the following orbit:
 a) Planets? _____
 b) Satellites? _____

j How do satellites and planets maintain their orbit?

k What are the similarities and differences between artificial satellites and moons?
 Similarities - _____
 Differences - _____

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

l What is the shape of the orbit of a planet around the sun?

m When light moves away from a source, its wavelength increases and its frequency decreases. What is this called? Why?

n The diagram shows absorption spectra of our sun and a more distant galaxy. Explain which shows the more distant galaxy.

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

p List 5 key terms from this topic:

q Describe the big bang theory.

 Explain the evidence for the big bang?

 How is a theory developed?

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

s My main areas for improvement are:

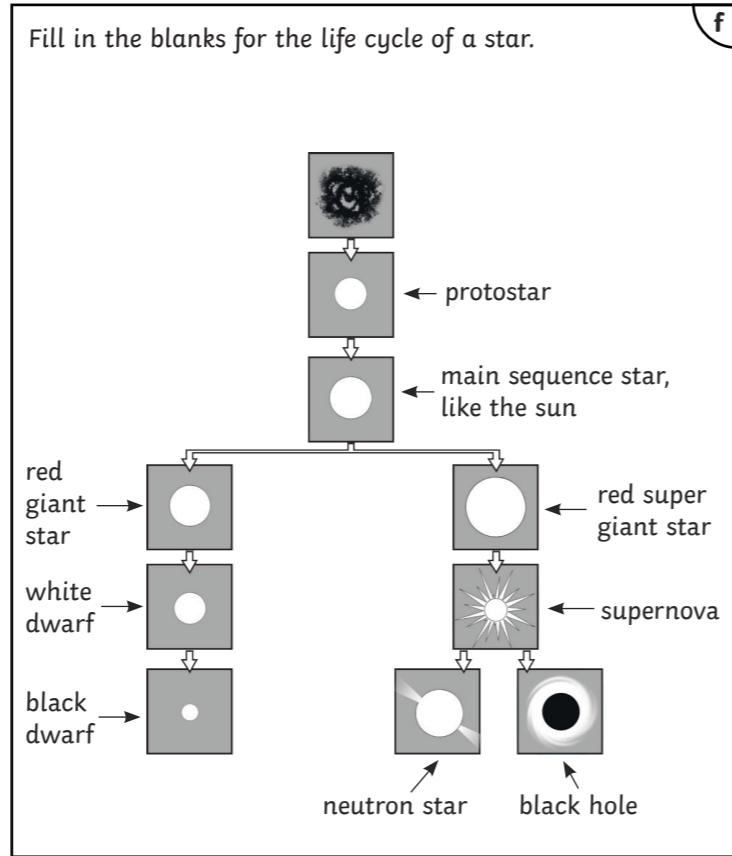
a What does our solar system contain?
The sun.
Eight planets.
Dwarf planets.
Natural satellites; the moons.
 What is the name of the galaxy that our solar system is part of?
Milky Way galaxy.

b 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.

c 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.

d 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.

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



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

h 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.

i What do the following orbit:
 a) Planets? **sun**
 b) Satellites? **planets**

j How do satellites and planets maintain their orbit?
Gravity.

k 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

l What is the shape of the orbit of a planet around the sun?
Circular.

m When light moves away from a source, its wavelength increases and its frequency decreases. What is this called? Why?
Red-shift. The wavelength increases and moves towards the red end of the light spectrum.

n The diagram shows absorption spectra of our sun and a more distant galaxy. Explain which shows the more distant galaxy.
The image on the right shows the more distant galaxy as the absorption spectra have been shifted to the red end of the spectrum.

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

p List 5 key terms from this topic:
universe
galaxy
nebula
protostar
main sequence
supernova
red-shift

q 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..

r 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.

s My main areas for improvement are:

