

The Sun

The Sun is a star just like our other stars but much, much closer. It is right at the centre of our Solar System. That is why it is called a solar system. The word solar means 'relating to the Sun'. The planets in our Solar System stay together because the Sun is so big its gravity keeps us all travelling round it in oval or circle-shaped orbits

Making Energy:

- The Sun gives us almost all the energy, light and heat needed for us to live on Earth.
- It uses two gases for this: hydrogen and helium.
- Energy is released at its core right in the middle of the Sun.
- The next layer is the radiative zone which takes energy to the next layer – the convection zone. It takes about 170 000 years for the energy to move from the core to the convection zone!
- The photosphere is at the Sun's surface and the energy gets to there from the convection zone in big bubbles. From here, the energy escapes from the Sun through the outer layers and some of it comes to Earth. It takes about eight minutes for heat to reach us from the Sun.



Did you know?

Surface temperature: 5505°C

Distance to Earth: 149.6 million km

Radius: 696 342 km

Circumference: 4 366 813 km (2,713,406 miles)

Mass: 1 989 000 000 000 000 000 000 000 000kg

(About 1.3 million Earths could fit inside the Sun)

Lifespan:

The Sun is actually a yellow dwarf star and started about 4.6 billion years ago. It shall eventually run out of energy, but don't worry...not for over 4.5 billion years yet! Before the Sun dies, it will get bigger and turn into what is called a 'red giant'. In 1.1 billion years from now, the Sun will be 10% brighter than it is today. This will make Earth really hot and damp. 3.5 billion years from now, it will be even brighter than that: 40% brighter than it is today. This will be so hot that the oceans will boil and the ice will melt. There will be no life on Earth by then, but with astronauts and scientists already making new discoveries and exploring other planets, where do you think humans will be by then?

Questions

1. What gases is the Sun mainly made from?

2. How long does it take energy to reach Earth from the Sun?

3. How far away is the Sun from Earth?

4. What type of star is the Sun now?

5. List the **four** layers of the Sun from the centre to the outside.

6. What keeps our Solar System of planets orbiting the Sun?

7. Solar means 'relating to the Sun'. Think of another example where we use the word 'solar'.

Questions

8. Will the Sun last forever? If not, why not?

9. Why has the author used an exclamation mark in this sentence to show surprise?
'It takes about 170 000 years for the energy to move from the core to the convection zone!'

10. Look at the final line - where do you think humans will be by then?

Answers

1. What gases is the Sun mainly made from?

Hydrogen and helium

2. How long does it take energy to reach Earth from the Sun?

Eight minutes

3. How far away is the Sun from Earth?

149.6 million km

4. What type of star is the Sun now?

A yellow dwarf

5. List the **four** layers of the Sun from the centre to the outside.

Core, radiative zone, convection zone, the photosphere.

6. What keeps our Solar System of planets orbiting the Sun?

The Sun's gravity

7. Solar means 'relating to the Sun'. Think of another example where we use the word 'solar'.

Any including: solar panels, solar energy, solar power, solar eclipse, solarium, solar cell, solar year

8. Will the Sun last forever? If not, why not?

No. It will use all its energy eventually.

9. Why has the author used an exclamation mark in this sentence to show surprise?

'It takes about 170 000 years for the energy to move from the core to the convection zone!'

Discuss around: 170 000 years is probably much longer than you would guess it would take for energy to move from the core to the next layer.

10. Look at the final line - where do you think humans will be by then?

Open ended for discussion.

There's every possibility we may be in other solar systems or galaxies by then.

The Sun

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Making Energy:

The Sun provides almost all the energy, light and heat needed on Earth and it mainly uses hydrogen and helium for this. Energy is made at its core in the centre of the Sun's sphere. Around the core is the radiative zone which carries the energy to the next layer – the convection zone. It takes about 170 000 years for the energy to move from the core to the convection zone! The photosphere is at the Sun's surface and the energy gets to there from the convection zone in large bubbles. From here, the energy escapes (through the chromosphere and corona) and some of it comes to Earth. It takes about eight minutes for heat to reach us from the Sun.



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Lifespan:

The Sun is actually a yellow dwarf star and was created about 4.6 billion years ago. The Sun will eventually run out of energy and fade, but don't worry...this won't be for another 4.5 to 5.5 billion years yet! Before the Sun eventually fades, in an unimaginable time from now, it will get bigger and turn into what is called a 'red giant'. In 1.1 billion years from now, the Sun will be 10% brighter than it is today. This will make Earth a bit like a greenhouse – hot and moist. 3.5 billion years from now, it will be even brighter than that: at 40% more than it is today. This will be so hot that the oceans will boil and the ice will melt. It's safe to say that there will be no life on Earth by then, but with space travel already making new discoveries and exploring other planets, where do you think humans will be by then?

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9. In the final paragraph it says that Earth will become 'a bit like a greenhouse'. A greenhouse is warm and moist inside because of the glass that lets heat and light in and keeps it in. Our Earth is not surrounded by glass, so what will let the heat and light in and keep it in?

10. Look at the final line - where do you think humans will be by then?

Answers

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3. In the final paragraph the author uses the word 'unimaginable'. Why have they used this word?

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3. In the final paragraph the author uses the word 'unimaginable'. Why have they used this word?

Discuss: because it is such a long time (much longer than our lifetimes or even back as far as Henry the VIII or our family trees). It is such a long time ago that we have nothing to compare it with and cannot imagine it.

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