BBC LEARNING ENGLISH

6 Minute English

The sun

NB: This is not a word-for-word transcript

Rob
Hello and welcome to 6 Minute English. I'm Rob…

Neil
… and I'm Neil. Hello.

Rob
Hello, Neil, and what a glorious sunny day it is today. Not a cloud in the sky! Spring is definitely here! Now, Neil, you're a bit of a sun worshipper, aren't you? You like sunbathing…

Neil
I do indeed! I love sitting in my deckchair in the garden, catching some rays…

Rob
Hmm, yes, you look a bit orange actually. Are you sure that tan's not fake?

Neil
Very cheeky, Rob, very cheeky…

Rob
Now the reason I mentioned sunbathing is because we're discussing the sun in this programme.

Neil
Yes, that's right. The sun is our nearest star – although it's a staggering 150 million kilometres away. Earth is one of nine planets that **orbit** – or circle around – the sun. And life on Earth couldn't exist without its warmth and light.

Rob
And we should mention… The sun is absolutely **massive**. Its volume is so large you could fit a million Earths inside it.

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Neil
That's amazing! It's also incredibly hot. Hotter than anything you could imagine.

Rob
So Neil, can you answer this question: How hot is the surface of the sun? Now I'll help you out by telling you that the sun's **core** – that's the centre – is a blistering five million degrees Celsius. But how hot is the sun's surface? Is it ...

a) 1.5 billion degrees Celsius
b) 1.5 million degrees Celsius
or c) 5500 degrees Celsius

Neil
Hmm. I have no idea. They all sound quite warm to me. But … I think it must be a bit cooler than the core. So I'm going to go for 1.5 million degrees.

Rob
Okay. Well, we'll find out if you're right or wrong later on. But now let's listen to Professor of Solar Physics Louise Harra to discover what the sun is made of.

Louise Harra, Professor of Solar Physics at UCL Mullard Space Science
It's just a big ball of gas. And we measure it… it's made mostly of hydrogen. So it's roughly 90% hydrogen, it's maybe 8% helium, and the rest of it's made up of things like iron, carbon, oxygen, nickel.

Neil
So the main gas is hydrogen, which accounts for 90% of the sun's **matter**. Now, 'matter' means what something is made of.

Rob
And hydrogen creates all the sun's **energy**. Heat and light energy is created all the time in the sun's core as a result of gas explosions or nuclear reactions. And this bit is hard to believe – it takes a hundred thousand years for this light energy to travel from the sun's core to the sun's surface.

Neil
But once it reaches the sun's surface – the **photosphere** – it can escape. In fact, it takes only eight minutes for light energy from the sun to reach the Earth. Scientists these days are able to see the photosphere in fantastic detail using powerful telescopes.

Rob
Though Galileo observed dark spots on the sun through his telescope several hundred years ago, didn't he? Which brings us on to another question: How old is the sun?

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Neil
Well, I happen to know that it came into being around four and a half billion years ago.

Rob
Did you study solar physics at university, Neil?

Neil
No, just… you know, just general knowledge.

Rob
Well, the sun **came into being** – or was created – a very long time ago! We're going to hear now from Professor of Physics, Yvonne Elseworth. What does she say about how long the sun is going to stay the same?

Yvonne Elseworth, Poynting Professor of Physics at the University of Birmingham
In terms of its current lifestyle it's here for as long again, so we're about half way through. And then it becomes a different sort of star – it becomes a giant star and that's probably curtains for us, actually. It'll get a bit warm, a bit toasty, and we'll get enveloped in the sun, and it won't be nice...

Neil
So the sun is going to stay the same for another four and a half billion years. But the professor also says that the sun will change. When it becomes a giant star, it will be **curtains** for our planet – and 'curtains' means the end, I'm afraid!

Rob
Yes, it does. And as a giant star, the sun will get hotter – it will make the Earth **toasty**. Now, toasty usually means hot in a nice way.

Neil
That's right – for example, my toes are warm and toasty in my new slippers. But in reality the giant sun will make the Earth unbearably hot. It will surround – or **envelop** – our planet and burn it up.

Rob
Well, I'm glad we're not going to be around when that happens. Now, remember at the beginning of the show I asked you how hot is the sun's surface? Is it a) 1.5 billion b) 1.5 million or c) 5500 degrees Celsius?

Neil
And I said 1.5 million…

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Rob
It's way too hot, I'm afraid you were wrong. The answer is actually 5500 degrees Celsius. But still, if you're planning on visiting the sun, remember to take your sunglasses and plenty of sunscreen! Now, before we go, it's time to remind ourselves of some of the vocabulary that we've heard today. Neil.

Neil
orbit
massive
core
energy
matter
photosphere
come into being
curtains for something
toasty
envelop

Rob
Thanks. Well, that brings us to the end of today's 6 Minute English. We hope you enjoyed today's programme. Please join us again soon. Bye bye.

Neil
Bye.

Vocabulary

orbit
circle around a bigger object, for example another planet or star

massive
very large and heavy

core
the central part of an object

energy
the ability of a physical object or process to work

matter
what something is made of: solid, liquid or gas

photosphere
the surface of a star

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come into being
be created

curtains for something
the end

toasty
comfortably warm

envelop
cover completely

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