

# Cool Facts about a Hot Place

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Year 4



## Overview

This article presents a lot of facts about the sun and information about how the sun affects Earth. Although some of the concepts may be challenging, the writer uses humour and comparisons with familiar things to help readers get a sense of the enormous numbers involved.

The text is broken up into many small sections, each with a clear subheading that states a fact. Each fact is expanded on and supported by illustrations. The conversational tone mixes in asides, rhetorical questions, and chatty comments, which help make the complex content engaging and accessible.

This article:

- provides important facts about the sun and the Earth
- uses examples and comparisons to support concepts of scale
- has illustrations, photographs, and diagrams to support the information
- includes a glossary.

There is a PDF of the text available at [www.schooljournal.tki.org.nz](http://www.schooljournal.tki.org.nz)

Texts related by theme "Solstice" SJ 2.4.04 | "Taonga Puoro" SJ 2.2.09 | **Connected** number 3 2009

## Text characteristics from the year 4 reading standard

### It's far away!

The sun is 150 million kilometres away, four hundred times further than the moon. If you rode a skateboard towards the sun at 100 kilometres an hour (that's a seriously fast skateboard), it would take you 170 years to get there.



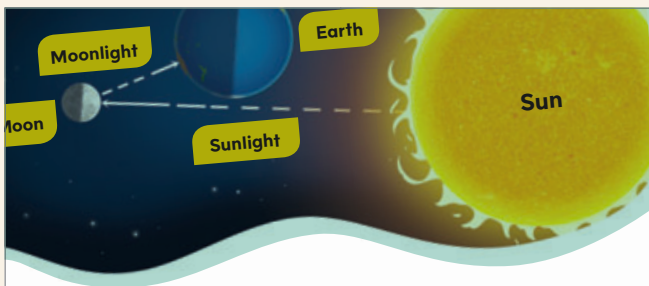
a straightforward text structure, such as a structure that follows a recognisable and clear text form

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some compound and complex sentences, which may consist of two or three clauses



### It makes the moon shine!

The moon doesn't shine by itself. The moon's surface reflects light from the sun. That's what makes it seem to shine.

some words and phrases that are ambiguous or unfamiliar to the students, the meaning of which is supported by the context or clarified by photographs, illustrations, diagrams, and/or written explanations

### It's small!

The sun is huge compared to Earth. But some stars are much bigger than our sun. Some are more than 1,000 times bigger. If you put one of those stars where our sun is, its surface would reach all the way to Earth. We'd be toast!



figurative language, such as metaphors, similes, or personification

Reading standard: by the end of year 4

# Possible curriculum contexts

## SCIENCE: Planet Earth and Beyond

Level 2 – Astronomical systems: Share ideas and observations about the Sun and the Moon and their physical effects on the heat and light available to Earth.

## ENGLISH (Reading)

Level 2 – Ideas: Show some understanding of ideas within, across, and beyond texts.  
– Purposes and audiences: Show some understanding of how texts are shaped for different purposes and audiences.

## ENGLISH (Writing)

Level 2 – Ideas: Select, form, and express ideas on a range of topics.  
– Purposes and audiences: Show some understanding of how to shape texts for different purposes and audiences.

## Possible reading purposes

- To learn important facts about the sun
- To understand the importance of the sun to life on Earth.

## Possible writing purposes

- To research and write about another star or planet
- To make a poster or chart to show comparisons of the sun and the planets
- To explain other ways of comparing huge numbers using familiar examples.



# Text and language challenges

## VOCABULARY

- Possibly unfamiliar words or concepts, including “white-hot gas”, “Pointers”, “Southern Cross”, “Alpha Centauri”, “energy”, “fussy”, “Southern Hemisphere”, “Northern Hemisphere”, “reflects”, “average handful”, “blazing hydrogen gas”, “temperature”, “degrees Celsius”, “steel”, “puff”, “magnetic storms”
- A range of measurements and statistics describing time, size, distance, and temperature, many of which are almost impossible to imagine
- Comparative words and phrases, such as “four hundred times further”, “much closer”, “a million times”, “further away”, “nearest”, “near”, “longer”, “an average handful”, “three times as much”, “much bigger”.

## Possible supporting strategies

Some of these suggestions may be more useful before reading, but they can be used at any time in response to students’ needs.

- Most of the vocabulary will be accessible for year 4 students, but the technical words and terms may be difficult for some. Identify those that may challenge some students and use word analysis, the context, or the glossary to help explain them.
- Make a concept map of words that are used to indicate measurements of time, size, distance, age, weight, and temperature. (Although the article mostly describes these in comparative terms rather than absolute units, you could have a valuable discussion of the units used for different measurements.)
- Some English language learners may benefit from practising forming comparative adjectives – positive (big), comparative (bigger), superlative (biggest). Students could also place words on clines to show degrees of comparison.
- The *English Language Learning Progressions: Introduction*, pages 39–46, has useful information about learning vocabulary.
- See also *ESOL Online, Vocabulary*, for examples of other strategies to support students with vocabulary.

## SPECIFIC KNOWLEDGE REQUIRED

- Familiarity with the Earth, sun, moon, and stars
- Some understanding of scale and the use of analogies to show scale
- Understanding of the Earth, sun, moon, and some stars as they are observed in everyday life (and currently on the New Zealand flag)
- Knowledge that night and day are experienced at different times around the world
- Familiarity with the use of comparisons for descriptions
- Knowledge of the use of telescopes to view the stars.

## Possible supporting strategies

- Review what students know about the sun: what it is, how far away it is, why it is essential for life on Earth.
- To show the impact of the sun, you could make a sun calendar to show the changing relationships between the Earth and the sun over a year. You could also make models of the Earth and the sun to show their movements through the day and through the seasons.

## TEXT FEATURES AND STRUCTURE

- A factual explanation of why the sun is special
- An introductory paragraph giving the purpose for the article
- Subheadings that state a fact for each short section
- Sections that contain explanations, examples, and comparisons
- A conversational tone
- The use of humour, asides, rhetorical questions, and chatty comments
- A glossary
- Cartoon-like illustrations relating to information in the text
- Diagrams and photos that elaborate on facts and information in the text.

## Possible supporting strategies

- Review what students know about the differences between informational and fictional texts. The use of cartoon-like illustrations may confuse some students – explain how they support the humorous tone of the article but don’t mean the text is fiction.
- Explain to students that the diagrams support the information and ideas in the text. Make sure they understand the labels and also the representation of the sun’s relationship to Earth and the moon. You will probably need to explain that the diagrams are not drawn to scale.
- Point out the subheadings and discuss the use of the exclamation mark on each one.
- The use of devices such as humour and rhetorical questions can be particularly confusing for new learners of English. Check that they understand what the author is saying. Humour can also be explained with the use of illustrations or drama.
- Review the use of a glossary and, if necessary, remind students how to use it as they read.



# Instructional focus – Reading

## Science: Planet Earth and Beyond

(Level 2 – Astronomical systems: Share ideas and observations about the Sun and the Moon and their physical effects on the heat and light available to Earth.)

**English** (Level 2 – Ideas: Show some understanding of ideas within, across, and beyond texts; Purposes and audiences: Show some understanding of how texts are shaped for different purposes and audiences.)

### First reading

- Skim and scan the article together, looking at the illustrations and subheadings. Encourage the students to ask questions about the text based on their skimming and scanning.
- Set a purpose for reading. This could be based on students' questions about the sun.
- It could be helpful to record students' current understandings about the sun so they can refer to them and modify their ideas as they read.
- Draw a concept map and ask students for contributions. Then ask them to add ideas to the map as they read. This could run alongside a concept map related to measurements, as described in the Vocabulary section on page 2 of these notes.

### If the students struggle with this text

- Discuss the introductory paragraph, prompting students to suggest why the sun is special. Examine each subheading to connect the fact it conveys with the assertion that the sun is special. Ask students what they already know about each fact and what they think they will read about in each section. Use the illustrations to support these discussions.
- Prompt the students to ask questions about each section, then remind them to look for the answers when they read the text themselves.
- Set short reading goals of one or two sections, pausing to clarify words, terms, and concepts before moving on to the next section.
- Students can work in pairs or small groups, sharing what they know before and after reading each section.

### Subsequent readings

#### The teacher

If possible, provide a globe that students can hold and move to support their thinking. They could also use a large ball to represent the sun. Support them to make connections that will help them understand the text.

- *In the section about day and night, what do you already know about where the sun rises and sets?*
- *From our classroom, which way is east? Which way is west?*
- *Do you have friends or relatives who live on the other side of the world? What can you tell us about the time differences between you and them?*
- *Why do you think New Zealand starts each day ahead of other countries?*

To scaffold understanding of the ideas and to reuse academic language, you could create split information activities where students work in pairs or groups, each with only part of the information, and then come together to share their knowledge, or use information transfer tasks where students put the information into another form, such as a chart or graph.

#### The teacher

Model how to make alternative comparisons on one section of the text.

- *The section "It's far away!" explains distance by saying how long it would take to get to the sun on a skateboard. How long would it take if you went in a jet that travelled at 1,000 kilometres an hour? First we have to work out how many hours are in a day, a week, and a year ...*

Direct students to work on another section of the text and come up with their own comparisons. Make sure they have calculators on hand if necessary.

- *How do examples help you understand huge measurements?*

#### The teacher

Direct the students to evaluate the article.

- *What are the three most important or interesting facts you've learnt from reading this text? Explain why and use evidence or examples from the text to support your reasons.*
- *Who did the writer have in mind as his audience? What was his purpose?*
- *What features helped you understand and enjoy the article?*

You could ask students to complete an information matrix like the one below.

You could vary the headings, depending on your students' needs.

3 things I found most interesting	3 technical words	3 words I didn't know	3 other facts

#### The students:

- draw on what they have observed themselves to confirm that the sun rises on one side of the sky and sets on the opposite side each day
- use their local geographical knowledge to confirm that the "sides" are the east and the west
- make connections between the words and images in the text and their prior knowledge of time differences to confirm that daytime occurs at different times around the world
- deepen their understanding of the text by using models of the Earth and the sun to replicate the illustration and confirm the text.

#### The students:

- reread a section and identify an example or comparison
- discuss and decide on an alternative example
- with support if necessary, express their example in relation to the text (for example, "It would take you seventeen years to reach the sun in a jet travelling at 1,000 kilometres per hour.")
- compare the examples and evaluate their usefulness for understanding the big ideas.

#### The students:

- identify and reject information and evaluate ideas as they select the facts that are most interesting or important for them
- find evidence to support their choices
- consider the writer's purpose and his audience
- give reasons to support their answers.

#### GIVE FEEDBACK

- *I noticed you used your finger to follow the movement of Earth in the diagram on page 27, and by looking at the lines showing the tilt of Earth, you worked out why we get seasons. Remember that diagrams and text work together.*
- *You checked the glossary to find out how big a billion was. I see you also wrote down a word to look up later – these are both good strategies for solving words.*
- *You gave good reasons for thinking the writer achieved his purpose: you explained what it was you enjoyed and how he made the article interesting.*

#### METACOGNITION

- What reading strategies are most helpful when you're reading an article like this? Show me a place where you used that strategy.
- You wondered what would happen as the sun starts fading away in a few billion years' time. Thinking outside the text is a good way to extend your understanding.



Reading standard: by the end of year 4



The Literacy Learning Progressions



Assessment Resource Banks

# Instructional focus – Writing

**Science: Planet Earth and Beyond** (Level 2 – Astronomical systems: Share ideas and observations about the Sun and the Moon and their physical effects on the heat and light available to Earth.)

**English** (Level 2 – Ideas: Select, form, and express ideas on a range of topics; Purposes and audiences: Show some understanding of how to shape texts for different purposes and audiences.)

## Text excerpts from “Cool Facts about a Hot Place”

### It’s a star!

Not a movie star – a real star. The sun is a huge ball of white-hot gas, just like the other stars you see at night. It looks different from them because it’s much closer.

## Examples of text characteristics

### SUBHEADINGS

*Subheadings tell readers what each section will be about. Interesting subheadings help grab readers’ interest.*

## Teacher (possible deliberate acts of teaching)

Ask questions as the students prepare to write.

- *When you’ve decided what you want to write about, think about your audience. Who do you want to read your work? How old will they be? What will they already know?*
- *How will you make your writing interesting for your audience?*

Remind students how to use headings.

- *Have you put each new piece of information, or sub-topic, into a new paragraph?*
- *What subheading will best tell your readers what each section is about?*
- *Think about your audience: make the subheadings interesting so they want to read every section.*

### It’s hot!

On the sun’s surface, the temperature is almost 6,000 degrees Celsius. That’s hot enough to melt steel. In the middle of the sun (called the core), the temperature is 15 million degrees. That’s hot enough to turn steel into a puff of smoke.

### COMPARISONS

*Writers often help their readers understand big facts or complicated information by using comparisons or examples. These help readers by using things they’ll already be familiar with.*

Explain how writers help their readers understand big ideas.

- *In this extract, the writer compares the heat of the sun’s surface with the temperature needed to melt steel. I don’t know what temperature that would be, but it must be very, very hot indeed.*
- *Next he tells us what the core temperature would be. He uses the steel comparison again to help us understand that something as solid as steel would turn into a puff of smoke.*

Ask questions to help students think about ways to communicate their ideas.

- *If you want readers to understand how big, small, hot, or distant something is, what familiar measurement can you compare it with?*
- *How can you find information that will help you make comparisons?*
- *What other examples in this article could help you make comparisons in your own writing?*

Some students, especially English language learners, could benefit from working in small groups with explicit teacher modelling before writing comparisons independently.

### Glossary

**billion:** one thousand times one million (or 1,000,000,000)

**hydrogen gas:** a gas that burns very hot and very easily

**million:** one thousand times one thousand (or 1,000,000)

**Southern Cross:** a group of bright stars shaped like a cross (the stars of the Southern Cross are part of the current New Zealand flag)

### GLOSSARY

*Writers add a glossary when they use words their readers probably won’t know. The explanation in the glossary will help readers understand the text.*

Prompt students to consider their audience.

- *Look over your writing, thinking about the people you expect will read it.*
- *Have you used any words they won’t know?*
- *Can they work these words out easily? If not, you can underline or bold the word and then make a glossary at the end of your article.*
- *How will you find a simple explanation for the words?*
- *Remember – the explanation in the glossary has to match the way the word is used in the article.*
- *Ask your partner to check that you’ve put the hardest words into the glossary and that they understand the explanations.*

### GIVE FEEDBACK

- *You decided to make a poster about Matariki for the junior school, so you chose a few simple facts and a labelled drawing of the Matariki stars. You’ve thought about your audience. This should work well for them.*
- *I noticed that as you revised your work, you asked your partner to help with the subheadings. As you did this, you had to make some changes to the paragraphs. That was useful, because your article is much clearer now, and the subheadings tell me exactly what each section is about.*

### METACOGNITION

- What would you do differently if you were writing this for someone who had never seen a ...? How would you help them understand?
- Tell me about your revision process. How did you decide what to change and what was OK?
- Testing the glossary on a writing buddy worked well. Can you explain how you did this for Jacob and his buddy?

Writing standard: by the end of year 4

The Literacy Learning Progressions