

Beyond the Earth

REM 651

A TEACHING RESOURCE FROM...



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BEYOND THE EARTH

Introduction

Descriptions and facts about the natural and man-made objects in space are the subjects of this book. The first part includes the birth and death of stars, supernovas, black holes, constellations, galaxies, asteroids, meteors, and comets. The second part includes information about space “firsts,” living in a space station, the shuttle, man-made Earth satellites, space probes, and future explorations.

Comprehension questions follow each article. Relevant research questions require students to consult resource books. Review pages test students’ retention of the information learned. An answer key is provided.

This book was designed for use in grades 4-8. Readability is on the 3rd-4th-grade level.

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Star Light, Star Bright

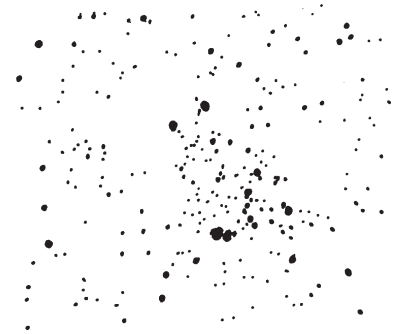
Stars look like tiny, twinkling lights in the sky. They are actually huge balls of glowing gas. They seem to twinkle because the motion of the earth's atmosphere causes their beams of light to flicker.

On a dark, clear night, the stars seem to be close to Earth. They are really far, far away. Some stars are so far away that the light from them may have been traveling for thousands or millions of years before it reaches our eyes.

There are more than a billion billion (1,000,000,000,000,000) stars in space. They look like they are close together, but they are trillions of miles apart. Not all stars are alike. They can be classed by shape, size, temperature, age, and brightness. Small stars are the size of Jupiter. Others are hundreds of times bigger than our sun.

Stars are born in giant clouds of gas and dust. As the particles whip around in the cloud, some of them come together to form clumps. These clumps are the beginnings of new star formations.

The new stars grow in size. They live for millions or billions of years. They finally grow old and either blow themselves apart or shrink into small, dead stars called **white dwarfs**. The gases from the exploded stars help to create more clouds which will then make more new stars. We can't actually see these things happening. The different stages of growth in the life of a star takes millions of years. That is why, when we look for certain stars in the sky, they are always there.



-
1. What are stars? _____
 2. What makes them seem to twinkle? _____

 3. How long does it take for some star's light to reach our eyes? _____

 4. How many stars are there in space? _____
 5. Where are stars born? _____
 6. What happens to very old stars? _____

 7. Why can't we see a star grow? _____

Research: What is the diameter of Jupiter? _____

Star Light, Star Bright - Review

Fill in the blanks with words from the box.

shrink	live	atmosphere	far	sun	white
born	growth	light	apart	flicker	dwarfs
gas	new	die	Jupiter	years	clumps
billion	cannot	trillions	blow	because	space

Stars are huge balls of glowing _____. The motion of the Earth's _____ causes their beams of light to _____.

Some stars are very _____ away from Earth. The _____ from them may have been traveling for thousands or millions of _____ before we see it.

There are more than a billion _____ stars in _____. They are _____ of miles _____. Small stars are the size of _____. Some are hundreds of times bigger than our _____.

Stars are _____ in giant clouds of gas and dust. The _____ formed in these clouds are the beginnings of _____ stars.

Stars _____ for millions or billions of years. They finally _____. Some _____ themselves apart. Others _____ into small, dead stars called _____.

We _____ actually see the different stages of _____ in the life of a star _____ it takes millions of years to happen.

The Closest, The Brightest, and The Big Blast

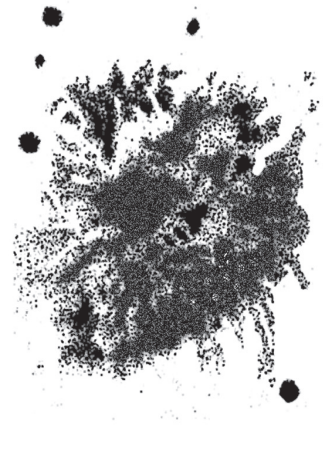
Our **sun** is a star and, like all stars, it is a ball of glowing gases. It is over a million times bigger than Earth. Although that sounds huge, it is only average in size. And, like other stars, the sun will grow old and die. However, that won't happen for another five billion years.

The sun is about 93 million miles away from Earth. Compared to other stars, it is very close. Light from the sun reaches Earth in just over eight minutes. The next closest star is **Alpha Centauri**. It is over 25 trillion miles away and it takes about 4-1/2 years for its light to reach us.

The brightest star in the nighttime sky is **Sirius**. It is 40 times brighter than the sun. Because it is so far away, we do not see it as a blinding light. It just looks like a very bright star in the sky.

Some stars do not die quietly. They go out with a big bang. On February 24, 1987, a rare sight occurred in Chile, South America. A distant star became a million times brighter and then vanished. The star had died in a tremendous blast. The sudden outburst of this kind of violent star explosion is called a **supernova**. It had been 383 years since a supernova had been visible to the naked eye. Only a few such sightings have occurred in all of history. Usually they are seen only through powerful telescopes. Scientists traced the blast to a far-away star 20 times the size of the sun. The actual explosion had occurred 170,000 years ago. It took that long for the light from the supernova to reach Earth.

After a giant star explodes, the remaining mass, or matter, collapses into a small, dense, heavy object. This new form of the old star is called a **neutron star**. It is about 20 miles across and weighs more than the entire sun.



-
1. When might our sun die? _____
 2. How long does it take light from the sun to reach Earth? _____
 3. Name the second closest star to Earth. _____
 4. Which star in the nighttime sky is the brightest? _____
 5. What is a supernova? _____
 6. How long ago did the 1987 star blast occur? _____
 7. What kind of star is heavier than the sun? _____

Research: How fast does light travel? _____

The Closest, The Brightest, The Big Blast - Review

Write the letter of the word that matches the definition.

A average

B rare

C vanished

D violent

E telescope

F scientist

G supernova

H dense

I collapse

J neutron star

- _____ 1. disappeared; stopped existing
- _____ 2. an instrument that makes distant objects appear closer and larger
- _____ 3. a star that suddenly increases a million times in brightness
- _____ 4. not the largest or smallest but in between them
- _____ 5. break down; cave in; crumple
- _____ 6. packed closely together; compact
- _____ 7. not found, seen, or happening very often
- _____ 8. showing, having, or resulting from great physical force
- _____ 9. a very compact, dense star
- _____ 10. someone who has a great knowledge of a certain branch of science

Complete each sentence with the correct word from the box.

often	billion	short	ten	seldom
long	small	million	large	five

11. Our sun is over a _____ times bigger than Earth.
12. We _____ see a supernova with our eyes.
13. A neutron star is a _____, dense, heavy object.
14. Light from an exploding star takes a _____ time to reach Earth.
15. Our sun will die in about _____ billion years.