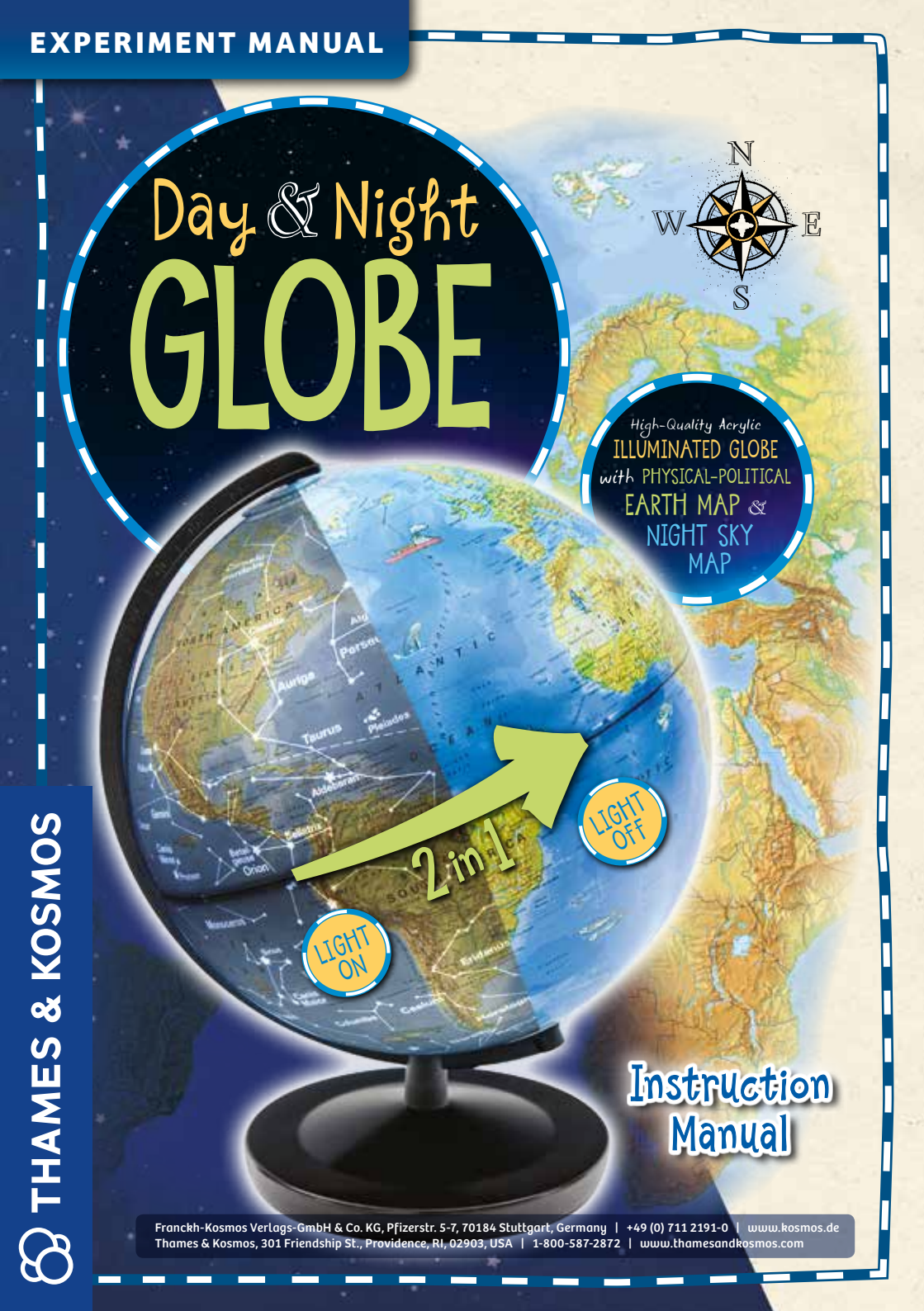
EXPERIMENT MANUAL

Day & Night GLOBE



Instruction Manual

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THAMES & KOSMOS

WARNING!

This is not a toy. This is a lamp in the form of a globe. It is a functional educational product for use only with adult supervision.

Safety Information:

This light-up globe is not a toy. Children may only use it under adult supervision. Make sure that the globe is securely positioned so that it cannot tip over or fall. If the electric cord is damaged, please consult the manufacturer or a qualified specialist. If the globe is defective or does not light up, please make sure that the light bulb is correctly screwed in, as described in the instruction manual under the section on replacing the light bulb.
Never pull on the cord when you want to unplug the globe from the outlet. Do not hang anything on top of the globe when the light is on.
Keep the packaging and instructions as they contain important information.

Disposal of Electronic Components

When the electric components in this product have reached the end of their lifespan, they should not be disposed of through normal trash collection. Instead, they should be taken to a collection center for recycling electric and electronic devices. The symbol on the product, the manual, or the packaging indicates this. The materials are recyclable according to their labeling. By making the material in old products available for reuse or recycling, you are making an important contribution to protecting our environment. Please ask your municipal administration about existing collection centers.

Kosmos Quality and Safety

More than one hundred years of expertise in publishing science experiment kits stand behind every product that bears the Kosmos name. Kosmos experiment kits are designed by an experienced team of specialists and tested with the utmost care during development and production. With regard to product safety, these experiment kits follow European and US safety standards, as well as our own refined proprietary safety guidelines. By working closely with our manufacturing partners and safety testing labs, we are able to control all stages of production. While the majority of our products are made in Germany, all of our products, regardless of origin, follow the same rigid quality standards.

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›››› IMPORTANT INFORMATION

Advice for parents and supervising adults

With this globe your child can explore the map of the world by day, and when the globe is **lit up in a darkened room or at night,** they can look at the stars in the sky.

Before your child uses the globe, please discuss how it works, plug the power cord into an outlet, and show your child how the light on the globe can be turned on and off. Select a stable surface for your globe, so that it doesn't tip over or fall, and don't leave the globe's light turned on unsupervised.

The stars shown on the globe can also be observed outside in the night sky. Talk to your child about the possibility of evening excursions that can supplement using the globe.

We hope you and your child enjoy using the Day & Night Globe!

Replacing the light bulb

Only an adult should change the light bulb.

To tighten or replace the light bulb, please note:

Remove the power cord from the outlet. Set the globe onto a pillow to avoid scratching it. Carefully pull the meridian arm out from the North Pole. Remove the time dial with its small guiding sleeve. Tilt the globe slightly to the side. You'll see the light bulb through the opening at the South Pole. Tighten the bulb or replace it, and put the globe back together by reversing the steps above. Put the time dial and its guiding sleeve back on.

Please only use the type of light bulb indicated here: LED filament light bulb, E12 socket size, max. 2W.

See also the label on the underside of the globe base.

Our final quality inspection entails putting all models through an additional 5000-volt capacity test. The electrical equipment is made to accommodate continuous operation.

Care instructions:

Your globe doesn't need any special care or maintenance. To clean the globe, just use a cloth to wipe away any accumulated dust. Use a little lukewarm water if necessary, but don't use soap. The plastic parts usually stay glossy for many years. You can polish the surface by rubbing it with a slightly damp cloth every now and then. Never expose the globe to direct heat, like a heater or direct sunlight.

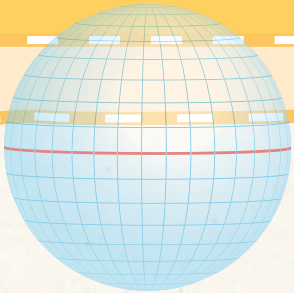
Please note that the tape with the printed blue line marks the equator but also serves to prevent light from shining through the area where the two hemispheres meet.

Description	Art. No.
Globe	719 769
Instruction book	719 766

Other items you will need:

To replace the light bulb:
LED filament light bulb, E12 socket size, max. 2W.
For observing the stars outside, you'll need warm clothes.

TIP!
The night sky on your globe can best be seen in a darkened room or at night.



Interesting Facts From Around the GLOBE

The equator is the imaginary circle that divides the Earth into a northern and a southern hemisphere. It's like a belt that goes around the belly of the Earth.

Grid

You can see a grid on your globe that covers the whole planet. These lines are called the lines of latitude and longitude.

As early as 2,000 years ago, scholars thought about how it would be possible to describe the location of each exact point on the Earth. And they found a solution: They imagined covering the Earth with a gridded network of lines. Since the Earth is a sphere, these lines are always circles. Some of these lines run parallel to the equator; these are the lines of latitude, or parallels. The other lines connect the poles; these are the lines of longitude, or meridians. If you want to describe where a city is located, for example, you just have to give the numerical values of the lines of longitude and latitude that intersect at that location.

The prime meridian at the Royal Observatory in Greenwich.

Lines of Longitude

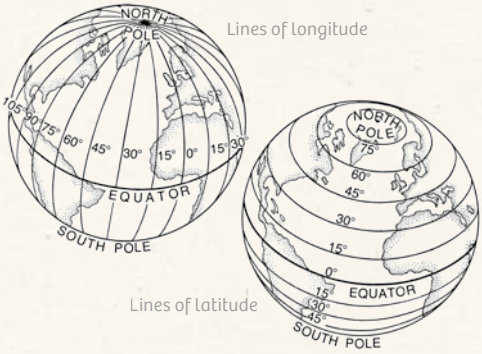
The prime meridian, also known as the zero meridian, is the starting point for counting the degrees of longitude on the Earth.

The lines of longitude run from north to south and connect the North and the South Poles. They also determine the time zones around the globe, in most cases. Different time zones correspond with degrees of longitude, starting with the English city of Greenwich, where the prime meridian is located.

This time zone, which is measured by celestial observations made in Greenwich, is called GMT. That is the abbreviation for "Greenwich Mean Time." GMT serves as the basis, or reference point, for each of the other time zones around the planet.

Though GMT was the global standard for a long time, we now use **UTC,** or **Coordinated Universal Time,** to standardize time zones.

Place the number 24 from the transparent disk on the upper pole of your globe so that it lies on the degree of longitude that runs through London. Now you can read what time it is along the other lines of longitude relative to Coordinated Universal Time.



Lines of Latitude

Lines of latitude always indicate the distance to the equator. The equator is located at 0 degrees latitude. It circles the globe around its center (like a belt).

The farthest points from the equator are the North Pole (+90 degrees) and the South Pole (-90 degrees).

What Does "Geo" Mean?

The ancient Greeks called the Earth *"geos."* That's where terms like "geography," "geology," and "geoscience" come from.

Count the continents ...

HOW MANY DID YOU COUNT? THERE ARE DIFFERENT OPINIONS AS TO HOW MANY CONTINENTS THERE ARE.

Sometimes *North America* and *South America* are counted as individual continents since they are only connected by the narrow Central American land bridge. Sometimes the clusters of islands in the South Pacific are counted as a continent called *Oceania.*

Geographically, *Europe* isn't its own distinct continent since it's not surrounded by the ocean on all sides. In fact, it is only one part of the enormous Asian landmass, which is thus called *Eurasia.* Europe is really only seen as its own continent for historical reasons.

An arbitrary border with *Asia* was created; it runs through the Ural Mountains, south through the Caspian Sea, then toward the west to the Black Sea and through the Sea of Marmara to the Mediterranean.

Africa on the other hand, has been considered to be its own continent since antiquity, despite the narrow land bridge connecting it to Asia (which has since been separated by the Suez Canal).

Antarctica is the coldest continent and is located at the South Pole. It is nearly completely hidden under a massive sheet of ice that is nearly three miles thick in some places. This is where 90% of the ice on Earth is located. The continent is often falsely called the "Antarctic." However, this term applies not only to the mainland, but also to the seas and regions that surround it.

By the way, the term *"continent"* originates from the Latin term *"terra continens,"* which means "connected land."

Geography can be translated literally as "description of the Earth" — meaning knowledge of the appearance of the surface of the Earth, the processes going on there, and their effects on people, as well as the changes to the surface created by human activity. In contrast to this area of study, geology is the science of the Earth's composition and how it changes.

The Four Cardinal Directions

The poles determine the cardinal directions on the Earth. **North** is the direction toward the North Pole; **south** is the opposite direction. And the direction in which the Earth turns and the opposing direction are called **east** and **west.** (So there are no West or East Poles!)

Your globe's North Pole is at the top. This is how globes are usually oriented.

However, it is only convention that dictates that globes are positioned this way, just like it is only a general agreement to represent maps so that the upper border is to the north. In the universe at large, there is no "up" or "down" that one can orient oneself upon. On the surface of the Earth, however, these terms are meaningful: Down means "toward to the center of the Earth" and up means the opposite direction.

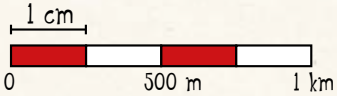
Proportions – Scale

Your globe is a very small model of the Earth, which is a good thing because otherwise it would take up a lot of room! The sphere is about 26 centimeters in diameter (or about 10 inches). So it is about 49 million times smaller than the actual Earth.

The Earth's diameter is about 12,700 kilometers (or 7,900 miles). That means that the surface of the Earth covers about 510 million square kilometers (or 197 million square miles). And the equator is 40,075 kilometers (or 24,901 miles) long.

The scale of your globe is 1:49,000,000. In other words, a distance of 1 centimeter (cm) on the globe is 490 kilometers (km) in reality.

In contrast, a hiking map usually has a scale of about 1:25,000, meaning that 1 cm on the map is 250 meters (m) in real life. The scale is shown as a bar on every map.

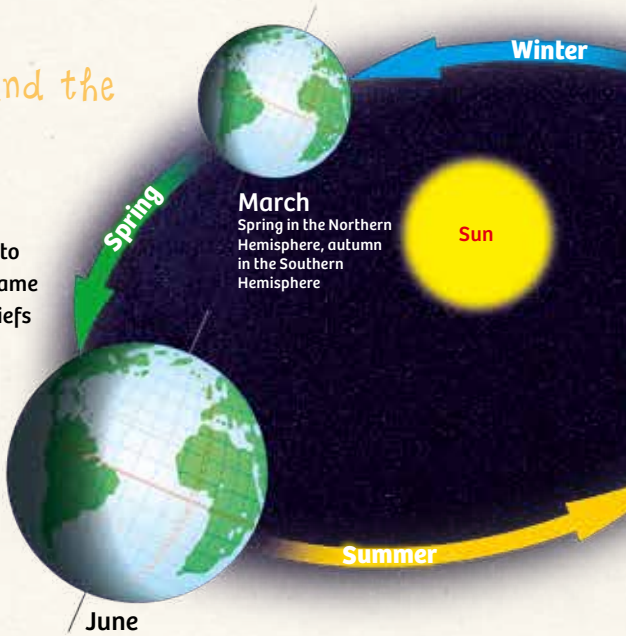


Continents

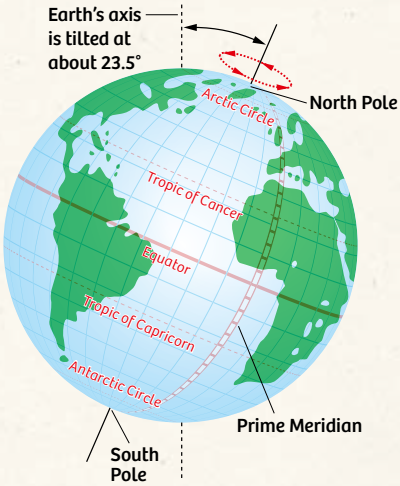
The Earth's landmasses are divided into multiple continents, as you can see on the globe. They are spread out in oceans. The continents divide the oceans into different bodies of water. The continents include *Asia* and *Europe*, *Africa*, the *Americas*, *Australia*, and *Antarctica*. Asia has the largest surface area of any of the continents, while Australia has the smallest.

A Year – One Time Around the SUN

People from earlier times considered Earth to be the center of the universe, a belief that came not from science, but from the religious beliefs of those times. It wasn't until 1543 that Nicolaus Copernicus put forth evidence of the "Copernican" system in a publication that described the Earth as circling around the sun. Nevertheless, it wasn't until decades later that this opinion became generally accepted. Today we know that the Earth circles the sun on an elliptical orbit (a slightly egg-shaped path), not a perfect circle.



It takes exactly one year for the Earth to travel around the sun. And actually, this came about simply because we call the time it takes for one orbit a year. A year is 365 days and about 6 hours long, and it corresponds with 365.25 Earth rotations.



Day and Night on the Earth

In the morning, the sun appears over the horizon in the east, and appears to move across the sky before it sets in the west. For a long time, people believed that the sun moved, and that's still how we express it in language: for example, we say, "The sun comes up." However, we now know that this is just an illusion. The sun doesn't actually come up, instead it is the Earth that turns.

It's not the sun that climbs higher and higher in the sky in the morning, instead it's the Earth that turns toward the sun. That's why the sun appears to move in an arc across the sky. One complete rotation of the Earth from east to west is called one day. We divide a day into 24 hours, and each hour into 60 minutes.

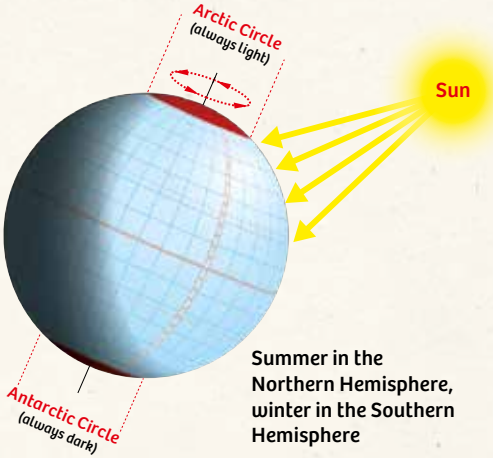
The Earth makes one complete rotation on its axis every 24 hours. The axis is an imaginary line through the two poles. Since the Earth rotates toward the east, the sun also comes up in the east. For the parts of the Earth that are facing the sun, it is day, while for the areas facing away from the sun, it is night.

Seasons

Have you wondered why your globe is tilted at an angle? There's a good reason: In reality the (imaginary) axis of the Earth is tilted in relation to its orbit around the sun, which has effects that we notice here on Earth.

Summertime occurs when the Northern Hemisphere is positioned to receive full sun. The longest day is on the 21st or 22nd of June, which is the **summer solstice.**

When it's half a year later, on the opposite side of the Earth's orbit, the sun's light falls most directly on the Southern Hemisphere. Now it's summer in the Southern Hemisphere, while in the Northern Hemisphere, winter is beginning. The date when the Northern Hemisphere receives the least light is the 21st or 22nd of December, or the **winter solstice.**



Summer in the Northern Hemisphere, winter in the Southern Hemisphere

Between the two solstice dates are the days that mark the transitions to *spring* and *autumn.* They begin on March 20th or 21st (called the **spring equinox)** and September 22nd or 23rd (called the **autumn equinox).**

The Tropics

As you might have already noticed, the sun reaches a much higher point in its arc across the sky during the summer than it does in the winter.

The place where the sun is directly overhead at noon on the first day of summer in the Northern Hemisphere is on a line parallel to the equator, but approximately 2600 kilometers north of it. We call this the Tropic of Cancer, and you can find it marked on your globe. Of course, there is also a Southern Tropic, called the Tropic of Capricorn, where the sun is directly overhead at noon on the first day of winter in the Northern Hemisphere.

Polar Circles

In the winter, there are certain places that don't experience a sunrise at all. These locations lie above (in the Northern Hemisphere) or below (in the Southern Hemisphere) parallels that are called the Arctic and Antarctic Circles, respectively.

In the Northern Hemisphere, there are periods when the sun doesn't rise above the Arctic Circle for days at a time (the farther north, the darker the days — at the pole itself it's dark for six months). However, in the summer, the sun doesn't set for the same number of days, not even at midnight. This is the land of the midnight sun. In the south, it is exactly the opposite.

Exploring the GLOBE

You'll see many illustrations of animals on your globe. Look at what you can find! For example, where do **pandas** live?

Or what about kangaroos?

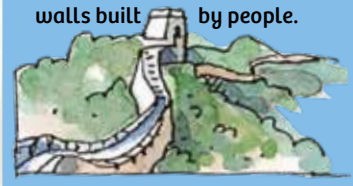
Where on the globe can you find the monarch **butterfly?** In the summer monarch butterflies migrate thousands of miles from North America to South America and the Amazon River basin.

And where does the biggest living land mammal live?

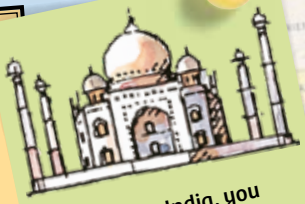
Look for the African elephant with its enormous ears. This elephant can't sweat, but uses its ears to help release heat and cool its body.

There are also many animals in the oceans. Where does the turtle swim?

The Great Wall of China is a former border fortification at the north and northwest borders of China. It is several thousand miles long and consists of natural borders, like rivers and mountains, as well as walls built by people.



You'll also see buildings and other man-made objects and landmarks.



In northern India, you can see one of the most celebrated buildings in the world. The Taj Mahal is an enormous palace that the ruler Shah Jahan constructed as a tomb for his wife.

Earth is home to millions of species of plants and animals. Different species are native to different locations, but this is constantly changing as living things move around the planet. How many animals and plants can you count on the globe?

Nearly half of Canada is covered with forest. Trees are cut down and made into lumber and paper, and new trees are planted in their place.

Easter Island is an island in the Southeastern Pacific Ocean. It belongs to Chile and is only 15 miles long. Easter Island is also home to extraordinary giant ancient stone statues, called moai.

Many ships sail across the oceans in order to transport goods all over the world and to catch fish. Where can you find a fishing boat or a cargo ship?

Timbuktu is an ancient city in Mali. For centuries, it was an important trading center for goods like salt and gold, as well as knowledge and culture. Many people don't know Timbuktu is a real place, but you can find it on the globe!

The longest coral reef is the Great Barrier Reef, measuring over 1,200 miles. It extends along the northeast coast of Australia. The reef came into being over millions of years through the accumulation of small coral polyps. It is now a giant structure and its clear waters and the many hollows inside it have become habitats for thousands of species of creatures.

Extremes on Planet EARTH

HIGHEST WATERFALL

Angel Falls in Venezuela is 3,212 feet high, with a drop of 2,648 feet of free falling water. That's more than twice the height of the Eiffel Tower! The fall flows to the Churun River and originates on one of the mesas surrounded by deep valleys common to this very rainy area.

LOWEST ELEVATION

At 1,412 feet below sea level, the shores of the **Dead Sea** lie on the border between Israel and Jordan. There's no place on the surface of the Earth that is lower than this slowly receding salt sea.

HIGHEST MOUNTAIN RANGE

The **Himalayas** at the northern border of the Indian subcontinent are the highest mountain range. They include more than 50 towering summits of around 25,000 feet in height, including **Mount Everest,** which is the tallest at 29,029 feet, and is covered in ice year-round. In 1953, a person climbed Mount Everest for the first time. And by the way, the word "Himalayas" comes from the ancient Indian language Sanskrit and means "abode of snow."

DRIEST PLACE

If you don't like rain, you may want to consider moving to the **Atacama Desert** in Chile. It is the driest desert on Earth. There is very little precipitation here, sometimes only in the form of a little fog drifting in from the ocean. In some parts of this desert, it hasn't rained for 400 years. And there are even deserts in polar regions — some Antarctic valleys are dry and free of snow and ice.

WETTEST PLACE

The place that gets the most rainfall per year is **Mount Waialeale** in Hawaii. This 5,148 foot mountain on the island of Kaua'i receives rain approximately 335 days a year. It totals around 12,000 liters per square meter of rainfall (also called "millimeters of rainfall") per year. For comparison, in the United States the average rainfall per year is about 760 millimeters or 30 inches. It's no wonder this area is full of beautiful plants, rivers, and waterfalls.

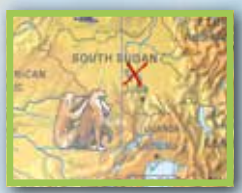
WINDIEST PLACE

Antarctica is undoubtedly the stormiest continent. The record for the windiest place is held by the deserted **Commonwealth Bay** on this continent. Icy winds at speeds of over 149 miles per hour sweep down from the glaciers to this bay. Penguins here usually cluster together in dense crowded groups to defy the cold and storms.

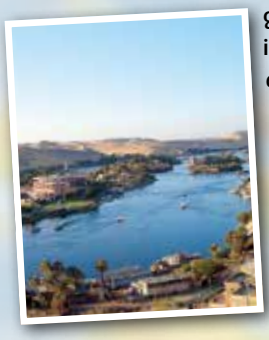
LARGEST ATOLL

The atoll **Kiritimati** ("Christmas Island") is the largest coral island in the world, covering about 150 square miles of land. It has one of the largest lagoons and is one of the Line Islands (part of the island state of Kiribati). Approximately 6,500 people live on Kiritimati.

LONGEST RIVER



The **Nile** is the longest river, and flows across large areas of Africa. From East Africa through Lake Victoria and north to the Mediterranean, it is 4,258 miles in length, and gave rise to the important culture of ancient Egypt.



COLDEST POINT

In the middle of the ice and snow of Antarctica, far from the sea and at 11,447 feet in altitude, Russian scientists at the **Vostok research station** have recorded the lowest temperatures on Earth: -128.56 °F. By the way, the highest temperature recorded at that location is -5.8 °F.

TALLEST BUILDING

At the time of printing, the tallest skyscraper in the world is the **Burj Khalifa** in **Dubai (United Arab Emirates),** with 163 stories at 2,717 feet tall. However, the Jeddah Tower, formerly known as the Kingdom Tower, is currently under construction in Saudi Arabia. The building will be 3,281 feet tall and will open in the year 2020.

HOTTEST POINT

The Libyan Desert, part of the Sahara, is extremely hot. In **El Azizia,** temperatures of 136 °F have been recorded in the shade. **Death Valley** in California is only slightly cooler, with high temperatures recorded at just under 134 °F.

LONGEST TUNNEL

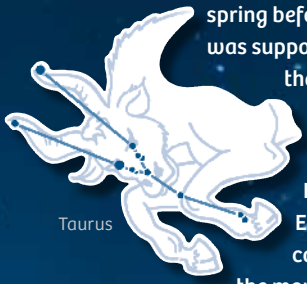
The longest railway tunnel in the world is the **Gotthard Base Tunnel** under the **Swiss Alps,** with a length of 35 miles (57 km).

Discover the CONSTELLATIONS

TIP!
It's easiest to see the night sky on your globe in a darkened room or at night.

CONSTELLATIONS

To make it easier to recognize the individual stars in the sky, long ago people began to group clearly visible groups of stars into constellations. At first, these constellations served as something of a calendar. The first farmers many thousands of years ago named the first constellation that became visible in the spring before dawn Taurus. It was supposed to remind them that it was time to plow their fields with oxen and plant corn.


Taurus

In the same way, the Egyptians named the constellation visible in the morning sky just before the Nile flooding. They called it Canis Major ("greater dog"), because it warned them like a watchdog before the yearly flood.

The constellations were dreamed up by humans, based on how the stars appear to humans standing on Earth. The individual stars of the 88 constellations don't actually "belong together" in outer space. They often vary greatly in their distances from us. For example, the light from the left-most star in Cassiopeia, the "beginning star" of the W-shaped constellation, takes about 450 years to get to us, while the star on the right, the "end star" of the constellation, only takes about 55 years to reach us.

ECLIPTIC CONSTELLATIONS

There are 88 constellations in the sky that lie on the ecliptic. The ecliptic runs through the center of a band called the zodiac. The sun, moon, and all the planets pass through this band. The names of these constellations come from their zodiac signs, which is how they are known in horoscopes.

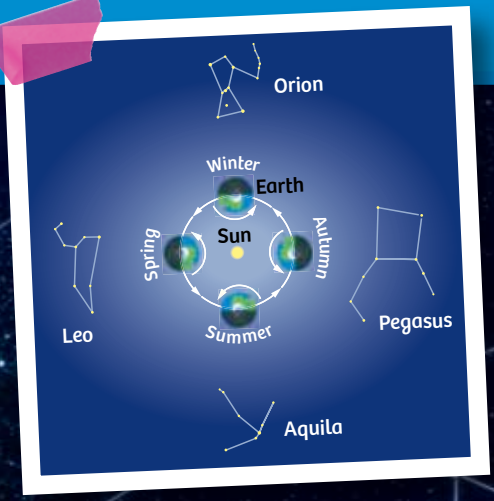
The sun makes one complete circuit around the zodiac every year. The moon and all the planets also do so since they circle the sun at about the same level as the Earth.


Gemini


Leo

STARS AND CONSTELLATIONS

A long time ago, people believed that the stars were like points of light fastened to the sky. Today we know that stars are glowing spheres of gases in the universe, just like our sun. More than 2,000 years ago, our ancestors invented the constellations in order to orient themselves in the night sky. And since they are so old, the constellations are still known by their Latin names. But the stars of a constellation aren't really physically near one another, in reality they are often extremely far apart!



The Earth makes one rotation each day, and revolves around the sun once a year. For that reason, our view of the night sky is constantly changing.

Why is it so difficult to recognize the constellations in the sky? The reason is that the night sky is constantly changing. If you look out at the stars in the evening, and then go out one hour later. You'll see that the whole sky has shifted. This is because the Earth is always turning. In addition, the Earth goes around the sun once a year. Therefore, the direction in which we look out at the universe changes a little every night. And that's why we see different constellations in the winter than we do in the summer.

KEYWORD "Milky Way"

The Milky Way is the band of light that you can see in the sky when it's very dark. It consists of thousands of faint stars. The Milky Way is the galaxy where our solar system is located. If we could see it from very far away, we would see that it is part of a large spiral galaxy. There are many other such spiral galaxies in the universe.

THE BRIGHTNESS OF THE STARS

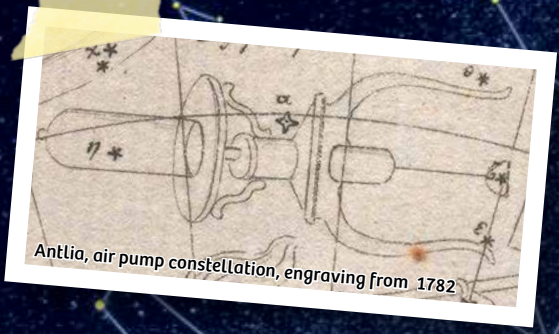
You've probably noticed that the stars in the night sky are not all equally bright. Along with a few brightly shining stars, there are also many weaker points of light.

To indicate the stars' brightness, astronomers used a system that is more than 2,100 years old, and was created by the Greek astronomer Hipparchus: He divided stars into classes of magnitude from 1 to 6, in which the brightest stars were assigned to the first class, and the weakest were part of the sixth.

In the mid-19th century, the English astronomer Norman Robert Pogson developed a brightness scale based on this earlier way of organizing them. According to his scale, we receive one hundred times more light from a star of the first class than we do from one of the sixth class. On your globe, the stars are divided into five different sizes — the brightest stars are ranked at 0 and are marked by a large star (★) and the weaker a star is, the smaller it is shown. The weakest are shown with only a dot (●).

STARS OF THE SOUTHERN HEMISPHERE

On your globe, you can find the stars that you can see in North America and in the Northern Hemisphere, as well as the stars of the Southern Hemisphere. These can be seen on the bottom half of your globe.



Antlia, air pump constellation, engraving from 1782

Southern Cross

A long time ago, when explorers left Europe and began to sail around the world by ship, these constellations were new for them. In order to be able to orient themselves by the night sky, they created constellations for the stars in the Southern Hemisphere as well. These constellations got names such as air pump, telescope, compass, pendulum clock, and carpenter's square, objects that the sailors had with them. Check on your globe to see which objects you see that seem to come from ship navigation.

The starry sky in spring

YOU WILL NEED:

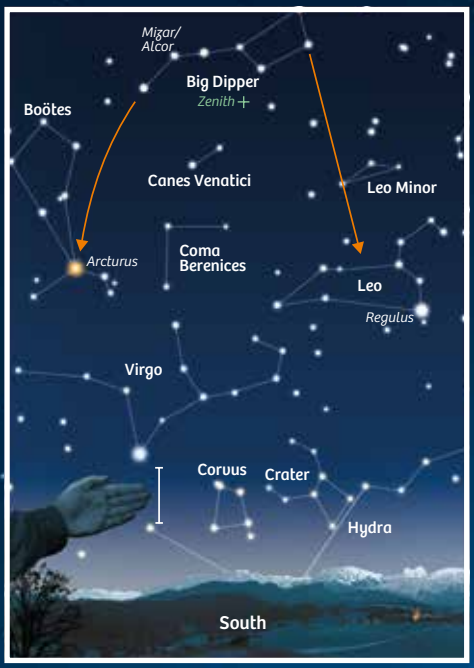
› *Your globe or a warm jacket for looking at the stars outside*

HERE'S HOW:

1. Look for the Big Dipper, which will be high in the sky. You will need to tilt your head back to see its seven stars, which are all more or less equally bright. Four stars make up the dipper's ladle, and three more compose the curved handle.

2. Now extend the curve of the dipper's handle toward the horizon. You will find the bright star Arcturus in the constellation of Boötes (meaning "herdsman" or "plowman" in Greek). It shines with a reddish-orange glow.

3. If you extend a line from the two stars at the front edge of the dipper's ladle and proceed in a downward direction, you will come to the constellation of Leo. This will also be about halfway up the sky, and looks a bit like a large clothes iron. Its brightest star, called Regulus, shines with a slightly blue color.



DID YOU KNOW ...

... that the big dipper isn't officially a constellation? It is actually part of the constellation of Ursa Major, which includes several other stars. Take a look at Ursa Major on your globe in the dark!

The starry sky in summer

YOU WILL NEED

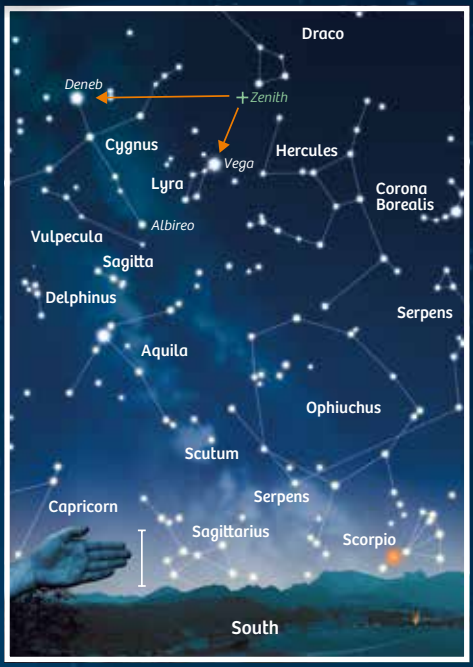
› *Your globe or a jacket for looking at the stars outside*

HERE'S HOW:

1. In the summertime it won't get dark until late, so you will have to stay up later to watch the stars. Up high in the sky near the zenith (the point in the sky directly above you), you will see a bright star. That is Vega, the principal star in the constellation of Lyra.
2. A little to the left next to Vega, you will see another bright star, Deneb, which is the principal star in the Cygnus constellation. It will also be high up in the sky.
3. The constellation of Cygnus looks a little like a giant cross, so it is sometimes also called the "Northern Cross." If it's really dark, you will be able to see that Cygnus is right in the middle of the Milky Way.

TIP!

If you can't find the Milky Way in the sky, look at your star map again. Can you find Cygnus, the constellation of the swan, that glides alongside the Milky Way?



TIP!

The best time to see the Milky Way is in late summer or autumn. That's when it starts to get dark earlier, and the light of this faint, white band passes high overhead through the zenith. Try to look for it shortly before or after the new moon, so that the light of the moon doesn't disturb your viewing.

The starry sky in fall

TIP!
Spend an evening noticing how the sky changes over several hours. Can you see that the North Star always stays in the same place?

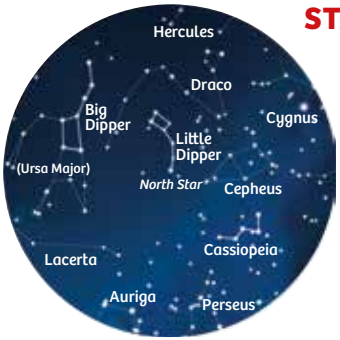
YOU WILL NEED

› *Your globe or a warm jacket for looking at the stars outside*

HERE'S HOW:

1. At this time of year, you will find the Big Dipper low above the northern horizon.
2. If you connect the two right stars of the dipper's ladle and extend that line upward, you will come to the North Star. It will be the brightest star in the Little Dipper constellation.
3. Keep extending this same line the same distance again beyond the North Star and you will come to the constellation of Cassiopeia. It will be riding high in the sky and looks like the letter "M." If you look at it from the other side, it looks like a "W."

STARS EXPLAINED!



The North Star is positioned exactly above Earth's axis. It is the only star in the sky that doesn't move, always remaining in the same place. The stars around it are called circumpolar stars (literally, "around the pole star" — the North Star is also known as a pole star, or Polaris). While they do move, they never set. So you can always see them on any clear night.

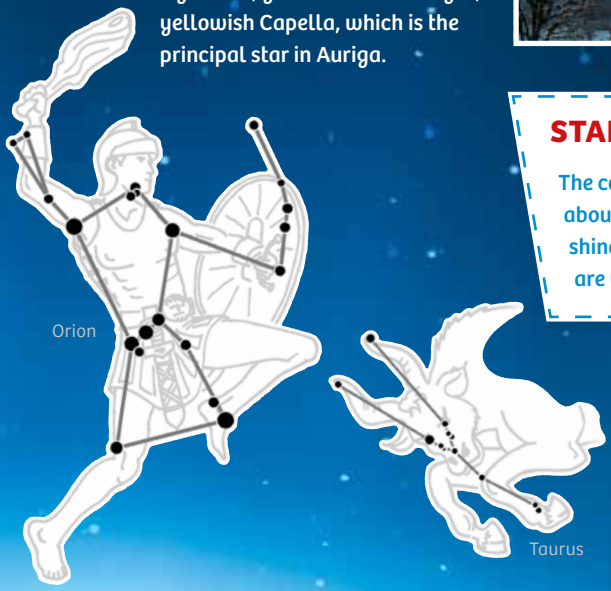
The starry sky in winter

YOU WILL NEED

› *Your globe or a warm jacket, a hat, and gloves (and perhaps something warm to drink, and a few cookies) for looking at the stars outside*

HERE'S HOW:

1. A little above the horizon, you will see the constellation of Orion. You will recognize it by its three stars close together, all in a single line. This is Orion's Belt.
2. To the left just above the belt, you can find the orange-colored star known as Betelgeuse, which is the principal star in the Orion constellation. Beneath the belt and to the right, you will find the bright star Rigel. It has a bluish-white glow.
3. Now tilt your head back and look high in the sky: There, you will see the bright, yellowish Capella, which is the principal star in Auriga.



STARS EXPLAINED!

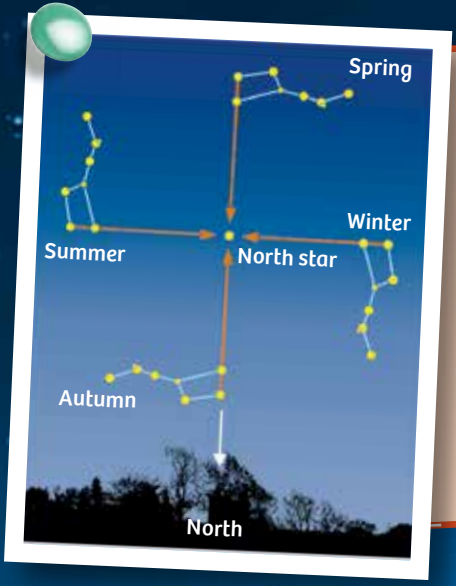
The colors of stars reveal something about their temperatures. Hotter stars shine white to blue, while cooler ones are yellowish or orange-red.

THE CIRCUMPOLAR CONSTELLATIONS

While the rhythm of the seasons is what determines whether or not all the other constellations are visible to us, there is a group of constellations that we can see in the sky throughout the year. We can follow them as they revolve around the North Pole every day, since they never go down, and thus they are called the **circumpolar constellations**. Look down at the north pole of your globe from above and you'll see them.

The most well-known of these constellations is Ursa Major, whose brightest stars combine to form the Big Dipper, which can be used to find the North Star. You can't see this star on your globe because it lies just where the North Pole is marked.

This includes Draco, Lacerta, Camelopardalis, Lynx, Ursa Minor (the Little Dipper), Cepheus, and Cassiopeia.



TIP!

When you see the Big Dipper, you can tell what direction you're looking without using a compass or GPS. Extend the line between the two rear stars of the bowl approximately five times in the direction of the top of the bowl. There you'll find a single bright star, the North Star in the Little Dipper. Now turn to face the North Star and look down to the horizon. You'll be facing due north. Then south is behind you, right is the east, and left is the west.

Depending upon the season, you have to look for the Big Dipper in various regions of the sky: In the winter, it is low in the northeast part of the sky, in the spring it is high in the northeast sky, near the zenith, in the summer it is high in the northwest sky, and in the autumn it is low in the northwest sky.

20 Beautiful Constellations

Constellation	Common Name (Latin Name)	Visibility
	Great Bear/ Big Dipper (Ursa Major)	year-round
	Cassiopeia (Cassiopeia)	year-round
	Leo (Leo)	January – June
	Boötes (Boötes)	March – September
	Virgo (Virgo)	March – July
	Northern Crown (Corona Borealis)	March – October
	Lyra (Lyra)	April – December
	Swan/ Northern Cross (Cygnus)	May – December
	Eagle (Aquila)	June – November
	Scorpion (Scorpius)	June – August

Constellation	Common Name (Latin Name)	Visibility
	Dolphin (Delphinus)	June – December
	Archer (Sagittarius)	July – September
	Andromeda (Andromeda)	July – February
	Pegasus (Pegasus)	August – January
	Charioteer (Auriga)	October – May
	Bull (Taurus)	October – March
	Twins (Gemini)	November – May
	Orion (Orion)	November – March
	Lesser Dog (Canis Minor)	December – May
	Greater Dog (Canis Major)	January – March

The table above lists several constellations that are especially easy to find in the night sky. They are listed according to what time of year they appear in the sky between approximately 8 and 10 pm. For orientation, the Latin constellation names are given, as they are often used in books or on star charts.

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