The Sun

The Sun

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The Sun is up.

The Sun is up.

The Sun is up.

The Sun is up.

The Sun is big.

The Sun is big.

The Sun is big.

The Sun is big.

The Sun is not dim.

The Sun is not dim.

The Sun is not dim.

The Sun is not dim.

The Sun is hot.

The Sun is hot.

The Sun is hot.

The Sun is hot.

The Sun is a lot of gas.

The Sun is a lot of gas.

The Sun is a lot of gas.

The Sun is a lot of gas.

The Sun is red as it sets.

The Sun is red as it sets.

The Sun is red as it sets.

The Sun is red as it sets.

Scat

Scat

Scat

Scat

A plant gets energy from the Sun.

A plant gets energy from the Sun.

A plant gets energy from the Sun.

A plant gets energy from the Sun.

An insect eats the stems of the plant.

An insect eats the stems of the plant.

An insect eats the stems of the plant.

An insect eats the stems of the plant.

A frog snaps up the insect.

A frog snaps up the insect.

A frog snaps up the insect.

A frog snaps up the insect.

A fox grabs the frog.

A fox grabs the frog.

A fox grabs the frog.

A fox grabs the frog.

The fox drops scat next to the plant.

The fox drops scat next to the plant.

The fox drops scat next to the plant.

The fox drops scat next to the plant.

The scat rots and the plant gets its energy.

The scat rots and the plant gets its energy.

The scat rots and the plant gets its energy.

The scat rots and the plant gets its energy.

Lunch

Lunch

Lunch

Lunch

You just had lunch. You are full of energy. Use it!

You just had lunch. You are full of energy. Use it!

You just had lunch. You are full of energy. Use it!

You just had lunch. You are full of energy. Use it!

March across the thick grass.

March across the thick grass.

March across the thick grass.

March across the thick grass.

Run past the bush on the path.

Run past the bush on the path.

Run past the bush on the path.

Run past the bush on the path.

Kick and roll the black rocks.

Kick and roll the black rocks.

Kick and roll the black rocks.

Kick and roll the black rocks.

Go up the hill to collect sticks.

Go up the hill to collect sticks.

Go up the hill to collect sticks.

Go up the hill to collect sticks.

Toss the thin sticks into the ditch.

Toss the thin sticks into the ditch.

Toss the thin sticks into the ditch.

Toss the thin sticks into the ditch.

The Big Bang

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Long, long, long ago, there was nothing. Just a blank.

Long, long, long ago, there was nothing. Just a blank.

Long, long, long ago, there was nothing. Just a blank.

Long, long, long ago, there was nothing. Just a blank.

All that exists sprang up in a spot not even as big as a speck of dust.

All that exists sprang up in a spot not even as big as a speck of dust.

All that exists sprang up in a spot not even as big as a speck of dust.

All that exists sprang up in a spot not even as big as a speck of dust.

It began swelling. In a blink,
it got as big as a melon.

It began swelling. In a blink,
it got as big as a melon.

It began swelling. In a blink,
it got as big as a melon.

It began swelling. In a blink,
it got as big as a melon.

Then, it exploded! It was the strongest blast that you can think of. It was a BIG bang!

Then, it exploded! It was the strongest blast that you can think of. It was a BIG bang!

Then, it exploded! It was the strongest blast that you can think of. It was a BIG bang!

Then, it exploded! It was the strongest blast that you can think of. It was a BIG bang!

It flung heat and particles.
They went zipping along.

It flung heat and particles.
They went zipping along.

It flung heat and particles.
They went zipping along.

It flung heat and particles.
They went zipping along.

The Big Bang was the beginning of everything including the stars and the Sun, the planets, and us.

The Big Bang was the beginning of everything including the stars and the Sun, the planets, and us.

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The Earth Moves

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Earth has an axis that tilts it to the side. This tilt does not change.

Earth has an axis that tilts it to the side. This tilt does not change.

Earth has an axis that tilts it to the side. This tilt does not change.

Earth has an axis that tilts it to the side. This tilt does not change.

It rotates on this axis at a constant pace. It takes Earth one day to complete a spin.

It rotates on this axis at a constant pace. It takes Earth one day to complete a spin.

It rotates on this axis at a constant pace. It takes Earth one day to complete a spin.

It rotates on this axis at a constant pace. It takes Earth one day to complete a spin.

But, Earth moves more than just this. It moves in space.

But, Earth moves more than just this. It moves in space.

But, Earth moves more than just this. It moves in space.

But, Earth moves more than just this. It moves in space.

It makes a trip around the Sun. The path it takes is called an orbit.

It makes a trip around the Sun. The path it takes is called an orbit.

It makes a trip around the Sun. The path it takes is called an orbit.

It makes a trip around the Sun. The path it takes is called an orbit.

If you trace this path, the shape is an ellipse.

If you trace this path, the shape is an ellipse.

If you trace this path, the shape is an ellipse.

If you trace this path, the shape is an ellipse.

It takes one year's time for Earth to complete its ride around the Sun.

It takes one year's time for Earth to complete its ride around the Sun.

It takes one year's time for Earth to complete its ride around the Sun.

It takes one year's time for Earth to complete its ride around the Sun.

A Day on Earth

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We live on the surface of a rocky planet, Earth. It is orbiting the Sun and always spinning on its axis.

We live on the surface of a rocky planet, Earth. It is orbiting the Sun and always spinning on its axis.

We live on the surface of a rocky planet, Earth. It is orbiting the Sun and always spinning on its axis.

We live on the surface of a rocky planet, Earth. It is orbiting the Sun and always spinning on its axis.

The Sun shines. Its rays are steady. They are always streaming into space.

The Sun shines. Its rays are steady. They are always streaming into space.

The Sun shines. Its rays are steady. They are always streaming into space.

The Sun shines. Its rays are steady. They are always streaming into space.

Standing on Earth's surface, we do not feel our daily spin. But, we can see the Sun's rays creep across the horizon to begin a day.

Standing on Earth's surface, we do not feel our daily spin. But, we can see the Sun's rays creep across the horizon to begin a day.

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Standing on Earth's surface, we do not feel our daily spin. But, we can see the Sun's rays creep across the horizon to begin a day.

They fill the sky from the east as the planet continues to spin. By midday, we can see the Sun way up in the sky.

They fill the sky from the east as the planet continues to spin. By midday, we can see the Sun way up in the sky.

They fill the sky from the east as the planet continues to spin. By midday, we can see the Sun way up in the sky.

They fill the sky from the east as the planet continues to spin. By midday, we can see the Sun way up in the sky.

The sunshine reaching the surface heats the air, the land, and the sea. The planet keeps spinning and the Sun sinks low.

The sunshine reaching the surface heats the air, the land, and the sea. The planet keeps spinning and the Sun sinks low.

The sunshine reaching the surface heats the air, the land, and the sea. The planet keeps spinning and the Sun sinks low.

The sunshine reaching the surface heats the air, the land, and the sea. The planet keeps spinning and the Sun sinks low.

The Sun dips below the horizon in the west. The planet itself blocks the Sun and shields this side from rays. A new spot is beginning its day.

The Sun dips below the horizon in the west. The planet itself blocks the Sun and shields this side from rays. A new spot is beginning its day.

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Glow

Glow

Glow

Glow

Over four billion years ago, clouds of dust and gas swirled in space. Our solar system began to form from these twirling bits.

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Over four billion years ago, clouds of dust and gas swirled in space. Our solar system began to form from these twirling bits.

They spun as a force called gravity was drawing them together. In some spots, the gas and dust turned into clumps.

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They spun as a force called gravity was drawing them together. In some spots, the gas and dust turned into clumps.

One particular clump grew so hot and so dense that it did a spectacular thing…

One particular clump grew so hot and so dense that it did a spectacular thing…

One particular clump grew so hot and so dense that it did a spectacular thing…

One particular clump grew so hot and so dense that it did a spectacular thing…

It started to make the parts of two atoms join together to make one new atom. This joining of parts, called fusion, was the spark that turned the clump into a star.

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The star is our Sun. It puts out an enormous amount of energy as heat and light. It glows.

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The star is our Sun. It puts out an enormous amount of energy as heat and light. It glows.

Other clumps formed comets, asteroids, and planets like the one we call home. Without the light and heat from the Sun's glow, there would be no life here on Earth.

Other clumps formed comets, asteroids, and planets like the one we call home. Without the light and heat from the Sun's glow, there would be no life here on Earth.

Other clumps formed comets, asteroids, and planets like the one we call home. Without the light and heat from the Sun's glow, there would be no life here on Earth.

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Incredible Life

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Life on Earth is fueled by the Sun. Its energy radiates as light and heat that hit the Earth.

Life on Earth is fueled by the Sun. Its energy radiates as light and heat that hit the Earth.

Life on Earth is fueled by the Sun. Its energy radiates as light and heat that hit the Earth.

Life on Earth is fueled by the Sun. Its energy radiates as light and heat that hit the Earth.

This light and heat are able to keep Earth warm. It is warm enough that the planet has a huge supply of liquid water available.

This light and heat are able to keep Earth warm. It is warm enough that the planet has a huge supply of liquid water available.

This light and heat are able to keep Earth warm. It is warm enough that the planet has a huge supply of liquid water available.

This light and heat are able to keep Earth warm. It is warm enough that the planet has a huge supply of liquid water available.

Plants are capable of using this water and the Sun's light to make their own food. In their leaves, they combine it with air to make simple sugars that fuel their growth.

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Plants are capable of using this water and the Sun's light to make their own food. In their leaves, they combine it with air to make simple sugars that fuel their growth.

A tamarind tree grows to great heights in the jungles of Madagascar. To fuel its body, a lemur will eat the tree's leaves and fruits which were made with the Sun's energy.

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A tamarind tree grows to great heights in the jungles of Madagascar. To fuel its body, a lemur will eat the tree's leaves and fruits which were made with the Sun's energy.

The lemur might get caught by a fossa. The fossa will gain energy from the lemur which gained energy from the tree which gained energy from the Sun!

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The lemur might get caught by a fossa. The fossa will gain energy from the lemur which gained energy from the tree which gained energy from the Sun!

Without energy from the Sun, its light and heat, none of this would be possible. The Sun is responsible for all of the incredible life on Earth!

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The Reason for the Seasons

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From here on Earth's surface, we see our planet's rotation with each dawn. Earth rotates on an internal axis that completes one full turn each day.

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The axis has a tilt that is important. The tilt creates seasons as the Earth revolves around the Sun over the course of a year.

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It is summer in the Northern Hemisphere. The tilt has pushed the upper part of the planet closer to the Sun.

It is summer in the Northern Hemisphere. The tilt has pushed the upper part of the planet closer to the Sun.

It is summer in the Northern Hemisphere. The tilt has pushed the upper part of the planet closer to the Sun.

It is summer in the Northern Hemisphere. The tilt has pushed the upper part of the planet closer to the Sun.

The Sun's energy does not have to travel far through Earth's atmosphere to reach the planet's curved surface. It is the hottest it will be all year here.

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As Earth continues its journey around the Sun, the tilt's relation to the Sun shifts a bit each day. Six months pass and Earth's annual revolution is halfway complete.

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As Earth continues its journey around the Sun, the tilt's relation to the Sun shifts a bit each day. Six months pass and Earth's annual revolution is halfway complete.

Now, it is winter in the Northern Hemisphere. The tilt has pushed the upper portion of the planet farther from the Sun. Energy has to travel far through the atmosphere at an angle. It is the coldest it will be all year here.

Now, it is winter in the Northern Hemisphere. The tilt has pushed the upper portion of the planet farther from the Sun. Energy has to travel far through the atmosphere at an angle. It is the coldest it will be all year here.

Now, it is winter in the Northern Hemisphere. The tilt has pushed the upper portion of the planet farther from the Sun. Energy has to travel far through the atmosphere at an angle. It is the coldest it will be all year here.

Now, it is winter in the Northern Hemisphere. The tilt has pushed the upper portion of the planet farther from the Sun. Energy has to travel far through the atmosphere at an angle. It is the coldest it will be all year here.