NEW JERSEY CENTER
FOR TEACHING & LEARNING

1st Grade

The Sun, Moon, Earth and Stars

2015-11-20

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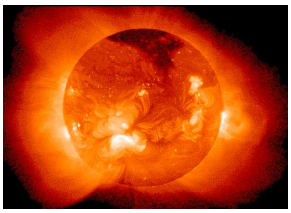
The Sun



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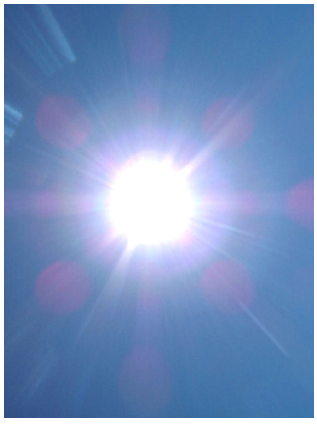
Think about the sky on a clear day.
What can you always see?

The Sun

The sun is the star that is closest to Earth.

We only see the sun during the daytime.

What are some ways that the sun affects *your* life here on Earth?



Energy from the Sun Activity

The sun is the closest and most important star to us here on Earth. The sun gives us the light and warmth all living things need to survive.

This activity will have us going on a walk to explore all of the things which depend on the sun's energy!

1 Which word completes the following sentence: The Sun is the _____ star in our sky.

- ○ A Closest
- ○ B Farthest

1 Which word completes the following sentence: The Sun is the _____ star in our sky.

- ○ A Closest
- ○ B Farthest

Answer

A

2 What do humans get from the Sun?
(Choose all that apply!)

❑A Warmth

❑B Light

❑C Food

❑D Rain

2 What do humans get from the Sun?
(Choose all that apply!)

❑A Warmth

❑B Light

❑C Food

❑D Rain

Answer

A and B

Energy From the Sun Name_____
Homework #1

1st Grade PSI

Take a walk with your parents through your neighborhood. Talk with your parents about the sun and its energy. Answer the following questions after your walk.

1. Draw and label plants in your neighborhood that get energy from the sun.

2. Draw and label animals in your neighborhood that get energy from plants.

Does the Sun Move?

We know that if we go outside during the day, we will see and feel the sun. However, is the sun always in the same place when we go outside?

Talk to a partner about how you can tell that the sun moves in the sky every day.

Patterns of the Sun

Everyday, the sun follows the same pattern:

In the morning when we wake up, we can see the sun come up. This is called the sunrise.

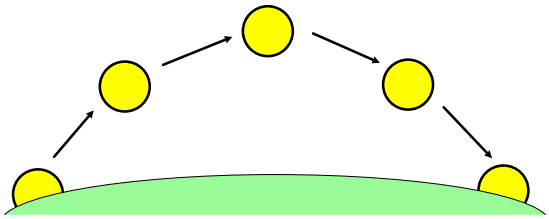
Patterns of the Sun

When our day is over and we're ready for bed, we can see the sun go down. This is called the sunset.

What do you think happens to the sun during the night?

Where does the sun goes when it sets?

Patterns of the Sun



During the day, the sun appears to move from one side of the sky to the other.

Do you know what direction the sun appears to travel across the sky?

The Sun's Motion Activity

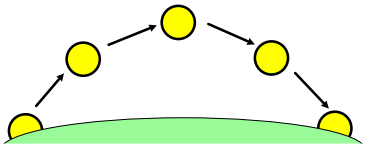
When standing on the ground, looking up, it seems that Earth is standing still and the sun is doing all of the moving. Early humans guessed that this was the case.

In this activity, we will look to see if this is the only way to explain what we see every day!

Follow-up: The Sun's Motion Activity

What did we learn from our activity?

With your group write down 3 ideas you learned from this activity.



4 At about what time could you expect to see a sunset?

- A 5:00 AM
- B 11:00 AM
- C 7:00 PM
- D 11:00 PM

4 At about what time could you expect to see a sunset?

- A 5:00 AM
- B 11:00 AM
- C 7:00 PM
- D 11:00 PM

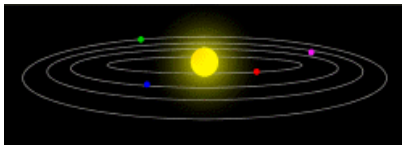
Answer

C

Slide 18 (Answer) / 90

Patterns of the Sun

Earth travels, or revolves, around the sun.



Earth spins, or rotates, on its center point, like a person spinning a basketball on their finger.

Slide 19 / 90

Patterns of the Sun

What is the difference between ROTATING and REVOLVING?

Define the two terms in your own words.

Do you think all objects in our sky do both?
Do they all rotate and revolve?

Slide 20 / 90

5 What do we call one trip on Earth around the Sun (one revolution)?

- A One day
- B One year
- C One hour
- D One lightyear

5 What do we call one trip on Earth around the Sun (one revolution)?

- A One day
- B One year
- C One hour
- D One lightyear

Answer

B

6 What do we call one spin of Earth on its axis (one rotation)?

- A One day
- B One year
- C One hour
- D One lightyear

6 What do we call one spin of Earth on its axis (one rotation)?

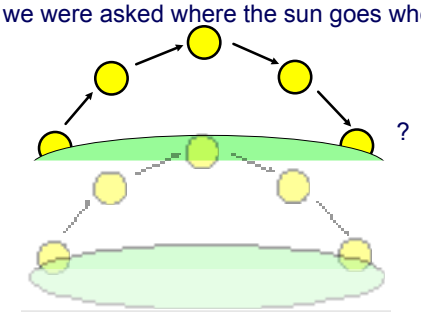
- A One day
- B One year
- C One hour
- D One lightyear

Answer

A

Where Does the Sun Go?

Earlier, we were asked where the sun goes when it sets.



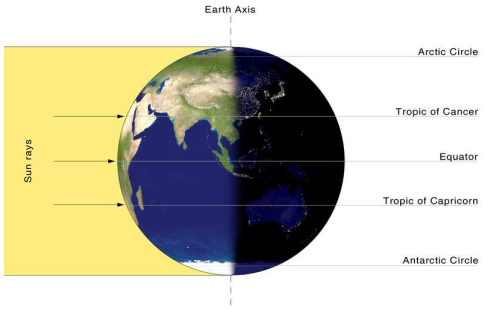
Just because the sun is setting for us does not mean that it is setting for everyone on Earth!

This is a result of the shape of Earth and Earth's rotation.

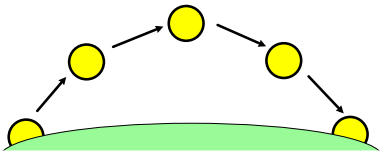
Where Does the Sun Go?

What do you notice about how sunlight hits Earth in the picture below?

What role do you think this plays in sunrise/sunset and day/night on Earth?



Shadow Tracking Activity



If we were to go outside, would we be able to tell that we were moving? How?

In this activity, we will look to our shadows as a way to tell that Earth is constantly rotating!

Follow-up: Shadow Tracking Activity

How do our shadows change over the course of a day?

How does this relate to the Sun?

Shadow Tracking
Homework #2

Name_____

1st Grade PSI

Go outside with your parent or friend. You will need a piece of chalk. Choose a sunny day. Stand on the sidewalk and mark your place with an X. Record the length of your shadow at three different times during the day. Stand on the X and have your partner measure (with ruler) how long your shadow is, record the result on your homework paper. Draw an arrow to show where the sun is in the sky. Do this same activity two more times later in the day.

Parent's Notes:
Shadows move and change throughout the day. As the earth rotates (spins) around the sun, the position of the sun changes. Be sure you child draws an arrow to show where the sun is in the sky each time the shadow is measured. Question your child for understanding that the sun is not in the same position throughout the day.

Time of Day	Length of Shadow	Position of Sun

Questions-

1. Why did you choose a sunny day to record your shadow?

2. Did the length of your shadow change? Why?

Patterns of the Sun

Each day, the sun rises and sets.

Do you notice anything similar about this motion from one day to the next?

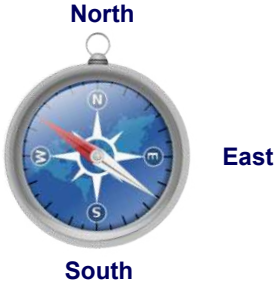
Does it always happen at the same time?

Does the sun always rise and set in the same location?

Compass

We can track the motion of the sun using a tool called a compass.

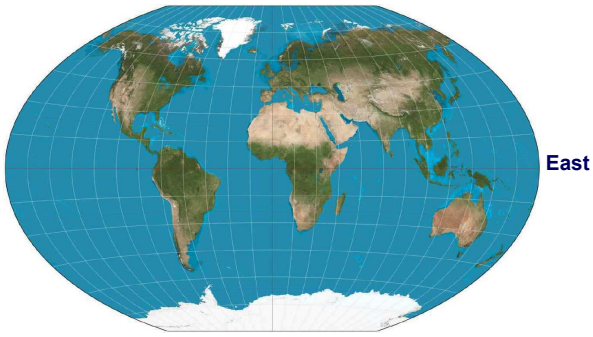
A compass tells us where an object is using four directions:



Compass

We can put these terms on a map of Earth to show direction:

North



West East

South

Compass Rose Lab

Where is the sun when you first get to school? What about during recess or at the end of the school day?

The sun always rises and sets close the same location each day. The location will change a little with the seasons.

In this activity, you will be making your own device to show whether these events happen in the North, South, East or West!

Follow-up: Compass Rose Lab

Where does the sun rise each day?

Where does the sun set?

7 Which way is the arrow pointing?

- A North
- B South
- C East
- D West

7 Which way is the arrow pointing?

- A North
- B South
- C East
- D West

Answer

A

8 Which way is the arrow pointing?

- A North
- B South
- C East
- D West

8 Which way is the arrow pointing?

A North

B South

C East

D West

Answer

C

Slide 35 (Answer) / 90

9 Which way is the arrow pointing?

A North

B South

C East

D West

Slide 36 / 90

9 Which way is the arrow pointing?

A North

B South

C East

D West

Answer

D

Slide 36 (Answer) / 90

10 Which way is the arrow pointing?

A Northwest

B Southeast

C Northeast

D Southwest

10 Which way is the arrow pointing?

A Northwest

B Southeast

C Northeast

D Southwest

Answer

A

The Moon

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The Night Sky

Now lets think about when we look in the night sky.
What types of objects do you see?

The Moon

During some nights, you can see our moon in the sky.

Moons vs Planets

Moons and planets (like Earth) have some things in common, such as their shape and what they are made of.

What do you think is the main difference between our moon and a planet such as Earth?

What Makes Something a Moon?

We learned before that Earth travels around the sun. The difference between a planet and a moon is that a moon always travels around a planet.

How many moons do we have traveling around us?

Number of Moons

Earth only has one moon.

This is not the case for every planet in our solar system.

In fact, Mercury and Venus don't have any moons while Jupiter has over 63!

11 How many moons does Earth have?

11 How many moons does Earth have?

Answer

1

Slide 44 (Answer) / 90

Slide 45 / 90

12 Which best explains the difference between a planet and a moon?

- A Planets are in outer space but moons are not.
- B Planets have humans on them but moons do not.
- C Moons are affected by the sun but planets do not.
- D Moons travel around planets and planets travel around the sun.

Slide 45 (Answer) / 90

12 Which best explains the difference between a planet and a moon?

- A Planets are in o
- B Planets have
- C Moons are affe
- D Moons travel ar travel around th

Answer

D

Shining Moon Activity

In all of these pictures, the moon appears to be shining very brightly. What do you think causes the moon to light up in the night sky?

In this activity, we will explore what it is that causes the moon to shine down on us!

Follow-up: Shining Moon Activity

What causes the moon to shine in the night sky?

Does the Moon Always Look the Same?

If we were to go outside and draw a picture of the moon every night for a month, will our pictures always look the same?

Moon Phase Activity

Our moon looks like it is always changing from one night to the next. Each night, you are looking at a different phase of the moon.

This activity will have you exploring the different phases of the moon!

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Follow-up: Moon Phase Activity

What do we call it when the moon is a big circle in the sky?

What do we call it when we can't see any of the moon?

Slide 50 / 90

Moon Phases

When we can't see any lit part of the moon, we call this a New Moon.

When we can see the whole moon in the sky, this is called a Full Moon.

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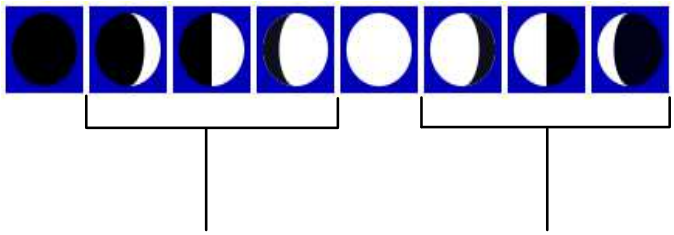
Moon Phases



When the moon seems to be getting bigger each night, it is said to be waxing.

When the moon seems to be shrinking each night, it is said to be waning.

13 A student looks in the sky on a clear night and does not see the moon. What phase of the moon is this?

- A Full
- B Crescent
- C Waning
- D New

13 A student looks in the sky on a clear night and does not see the moon. What phase of the moon is this?

- A Full
- B Crescent
- C Waning
- D New

Answer

D

14 A student looks at the moon for 3 straight nights and draws the pictures below.

Which drawing would you expect to see next?

A 

C 

B 

D 

14 A student looks at the moon for 3 straight nights and draws the pictures below.

Which drawing would you expect to see next?

Answer

C

A 

C 

B 

D 

Shining Moon & Moon Phases
Homework #3

Name_____

1st Grade PSI

In class you have been learning about the relationship between the sun and the moon. Think about class activities and discussions to answer the following questions. Write answers or draw pictures to illustrate answer.

1. What makes the moon look like it is shining at night?

3. Every month the moon revolves around the earth and this is why it appears differently in the sky. Draw a picture to show what the moon looks like at these phases.

Half Moon **Full Moon** **Crescent Moon**

The Stars

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The Stars

If you look out the window, how many stars can you see in the sky?

The Stars

During the day, we can only see the sun. How does this change at night after the sun goes down?

The Stars

On clear nights, we are able to see thousands of stars shining in the sky.

How do these stars look different than our sun?

The Stars

If a star-gazer looked up in the sky during the day, they would not be able to see much.

Why do you think these stars only show up at night? Where do they go during the day?

The Stars and Sun

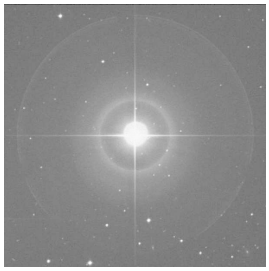
When the sun is in the sky, no other stars can be seen. The sun is the largest, brightest and hottest star for us to see here on Earth.

Why do you think other stars don't have as much of an impact on Earth as the sun?

Distance to the Stars and Sun

The sun is the closest star to Earth. (The sun is about 93 million miles away!)

How far away do you think the next closest star is?



Distance to the Stars and Sun

Imagine that you are in a car that is going 60 miles per hour (basically as fast as your parents drive on the highway).

In order to reach the next closest star, you would have to drive at this speed for more than 47,500 years!

This distance is 4.24 light years away, which is 25 trillion miles.

Where Do the Stars Go? Activity

We established that the sun plays a role in keeping other stars hidden during the day.

This activity will show you how the sun does this!

Follow-up: Where Do the Stars Go? Activity

Why can't we see any other stars besides our sun during the day?

15 How many stars can we see during the day?

15 How many stars can we see during the day?

Answer

1

Slide 67 (Answer) / 90

16 At what time of day would we see the most stars?

- A 8:30 AM
- B 11:00 AM
- C 12:00 PM (noon)
- D 4:15 PM
- E 9:30 PM

Slide 68 / 90

16 At what time of day would we see the most stars?

- A 8:30 AM
- B 11:00 AM
- C 12:00 PM (noon)
- D 4:15 PM
- E 9:30 PM

Answer

E

Slide 68 (Answer) / 90

17 Which best explains why we can't see stars during the day?

A They only shine at night.

B Stars shine brighter at night.

C The sun keeps us from seeing other stars.

D Stars are closer at night.

17 Which best explains why we can't see stars during the day?

Answer

C

Stars
Homework #4

Name_____

1st Grade PSI

Go outside on a starry night with a parent or guardian. Observe the twinkling stars in the sky.

Why can't we see the same stars during the day?

_____

_____

_____

The Seasons

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Weather

Describe the current weather outside. What is the temperature?

Is there any rain or snow?

Is your weather like this all year-round? Discuss your thoughts with a partner.

Rotation-Revolution Activity

Whether it is very hot or very cold outside depends on how the Earth moves around the sun.

In this activity, you will look at the difference between a rotation and a revolution.

Seasons

Many areas on Earth experience four different seasons over the course of a year.

Can you name them?



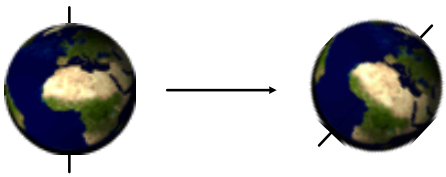

Seasons

During part of the year, the weather can be very hot...

... other times, it can be very cold.

What do you think causes this?

Earth's Tilt Activity



The seasons actually depend on how Earth travels around the sun.

This activity will show you more about this!

Follow-up: Earth's Tilt Activity

Think of how the Earth looks as it travels around the sun. How does this affect the seasons?

Earth's Tilt
Homework #5

Name_____

1st Grade PSI

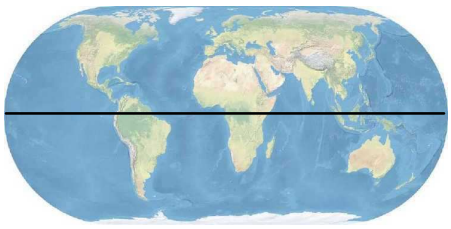
With a family member, use a flashlight for the sun. Take an apple or orange and poke a stick through it. This will be the earth. Walk around the sun to show how the Earth tilts towards the sun and then tilts away from the sun as it revolves around the sun. Put a sticker or make an X on the top to show where we live. This is the Northern Hemisphere. Draw a picture of what you did below, showing the Earth, the sun and the Northern Hemisphere.

Earth's Hemispheres

As we saw in the activity, the seasons depend on which part of Earth is getting more sunlight.

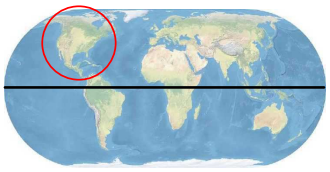
We can break the world into two halves, called hemispheres:

Northern



Southern

18 In which hemisphere is the United States?



- A Northern
- B Southern

18 In which hemisphere is the United States?

- A Northern
- B Southern

Answer

A

19 Which best shows how Earth rotates?

- A 
- B 
- C 

19 Which best shows how Earth rotates?

○ A 

○ B 

○ C 

Answer

B

Slide 81 (Answer) / 90

Seasons Activity

Earth's tilt affects how much direct sunlight we get at different times of the year. This affects our weather as well as our lives throughout the year.

This activity will have you look at different events that happen during each of the four seasons!

Slide 82 / 90

Follow-up: Seasons Activity

What is your favorite season? Explain why!

Spring	Summer
Autumn	Winter

Slide 83 / 90

Seasons
Homework #6

Name_____

1st Grade PSI

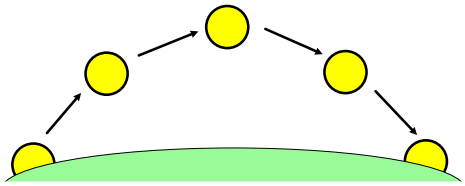
In class today, you learned about how the tilt of the Earth helps create the four seasons. Take home the season chart you made in class today.

Sit down with an adult and use your season chart to discuss what you have learned about the four seasons. Remember to include how the "tilt" of the Earth creates the four seasons. What effect does this have on the length of the daylight?

_____

_____

Seasonal Sun Activity



We learned that the amount of sunlight we receive changes throughout the year. Does this have any affect on how our sun's path across the sky looks?

This activity will give us an answer to this question!

Follow-up: Seasonal Sun Activity

How does our sun's path across the sky differ during the summer and winter?

20 The sun is _____ in the sky during the summer.

- A Higher
- B Lower
- C In the same spot

20 The sun is _____ in the sky during the summer.

A Higher
B Lower
C In the same spot

Answer

A

21 John looks outside and notices that the sun is very low in the sky throughout the day. What affect do you think this would have on the temperature?

- A Temperature will be higher.
- B Temperature will be lower.
- C Temperature will not be affected.

21 John looks outside and notices that the s un is very low in the sky throughout the day. What affect do you think this would h

Answer

B

A Temperature wi

B Temperature will

C Temperature will

22 The sun is very high in the sky throughout the day. Which sentence will be true?

A The day will be very long.

B The day will be very short.

22 The sun is very high in the sky throughout the day. Which sentence will be true?

A The day will be ve

B The day will be s

Answer

A

Seasonal Sun
Homework #7

Name_____

1st Grade PSI

Take home your seasonal sun picture. Use this picture to discuss with your family what you did in school today. After your discussion, answer the following questions. Use your seasonal sun picture to help you answer the questions.

1. Is the sun lower in winter or summer?

2. During summer, is there more daylight than in winter?