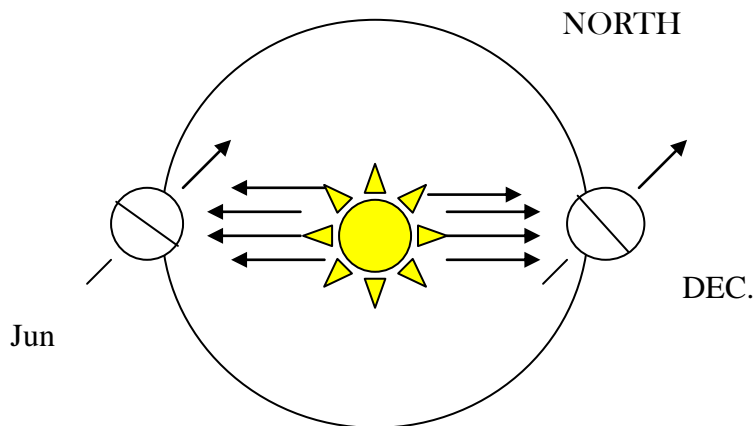


The Winter Solstice

Reading and Discussion

While the earth spins, like a top, it is also going through space on a **tilt** which is always in the same direction. The earth is always tilted towards the **North Star** on a 23.5° angle in relation to its circular track around the sun. Because of this tilt, the sun's rays on the earth are denser in one position and less dense in another. It used to be thought that the earth moved closer or further away from the sun as the seasons changed, but now we know it is the tilt and position that give us **winter** and **summer**.



The term **solstice** is given to the two times when the angle of the earth, and its position in relationship to the sun, cause the sun to be either at the furthest point, or the shortest point from the equator.

In the **northern hemisphere**, the winter solstice occurs on December 21st. This is the longest night of the year after which the nights steadily give way to longer and longer days. The summer solstice is June 21st, the shortest night of the year. After June 21st, the days grow shorter and the nights longer.

In June, the earth is tilted so that the northern hemisphere of the planet gets the highest density of rays while the southern hemisphere gets a lower density of rays. In this position, it is summer above the equator and winter below. As the earth travels around the sun to the opposite side of its circular pattern, the tilt causes the reverse to occur. The highest concentration of solar rays falls on the southern hemisphere, giving it summer, while above the equator winter comes with a lower density of solar rays.

Ancient Fears

By December, the sun is very low in the northern sky. The hours of daylight are much shorter than they were in summer and the sun's rays are not dense enough to supply warmth. In ancient times this was a fearful occurrence. In winter, food could not be grown and not much could be gathered. The people were often cold and feared that the days would just keep getting shorter and shorter until daylight was gone for good. The

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world would then be in darkness forever. People worried that life would end, because they did not know about science and the earth's yearly trip around the sun.

After the shortest day and the longest night, on December 21st, the earth's continuing rotation around the sun causes the nights to start being shorter again and the days longer. It is a slow process, as the earth still has a long way to go until June, but people noticed. The first farmers, called **Neolithic** people, were very much aware of the sun. They knew that without it, they would die. They kept an eye on the sun and could tell that the days were suddenly getting longer again. This was cause for great celebrations!

Most ancient faiths and cultures celebrated the winter solstice in some way. To some, the sun was a god. The winter solstice meant that a new god had come to replace the old one. Some considered the winter solstice a promise of new life and thanked their fertility gods. Many considered it a new lease on life, a promise that another growing season would come. It was the end of one year and the beginning of a new one.

The return of longer days was considered a return of light itself. The celebrations at this time of year were often called the "**festival of lights**." We get many of our winter holiday traditions from the ancient myths and celebrations. In some cultures, wreaths are thought to symbolize the season's cycles. Candles, of course, symbolize light. Bells, trees, candy, gift giving, and mistletoe all have very old ties to the winter solstice celebrations. They still influence people today.

Ancient Science

Although we think that the ancient people did not understand science, we now realize that they knew about some of the workings of the universe. Many ancient stone structures, around the world, prove they had some knowledge. There are structures in England, Ireland, Scotland, Africa, South America, and North America that are still mysteries to the modern archeologists who study them.

Stonehenge, in England, is the most famous. It maps the sun's daily moves across the earth. Others align only with the winter or summer solstice sun. Some structures are built with openings that capture the sun's rays on marks made on the floor or on walls. It is believed that some of these structures were built to honor the sun. Some were built to keep track of time, like huge calendars.

There is a large tomb in Ireland, called **Newgrange**, which was built especially to capture the winter solstice sun at daybreak on December 21st. On that morning *only*, the sun shines in through a special opening and crosses the floor of the tomb. It is the only time sunlight enters the tomb. Archeologists believe this was done to grant the dead a lighted way into the next life as the New Year began.

The sun is just as important to us today as it was in ancient times, but sometimes we take it for granted. We may not always need it to give us light for our activities. We have other means of lighting and heating our homes now, but we still look forward to sunny days. Many people still celebrate the winter solstice as a time of hope, peace, and well wishing. It is still nice to notice that the days are getting longer again!

Name _____

Date _____

Activities

Activity A: Questions:

1. When does the summer solstice begin? _____
2. If you were in Tierra del Fuego, at the southern tip of South America, for New Year's Eve, would you need a winter coat? _____
3. The days get shorter and the nights longer after which solstice, summer, or winter? _____
4. In the northern hemisphere, it is warm in summer and cold in winter. This is caused by _____
5. What is the most celebrated effect of the winter solstice? _____

Activity B: True or False:

1. ____ As the earth moves further away from the sun, winter sets in.
2. ____ "Solstice" is a dance the Inca's did when winter came.
3. ____ The earth is on a 90° tilt, which is why our seasons change.
4. ____ Ancient people knew nothing about what was going on in the sky.
5. ____ In June, the sun is very low in the northern sky.
6. ____ Many cultures consider winter solstice a new lease on life.
7. ____ Wreaths and candles were originally symbols of the "festival of Lights".
8. ____ Years ago, people didn't worship the sun like we do; they didn't have sun screen to protect them.
9. ____ Stonehenge, in England, was once used for religious ceremonies, now it is called Newgrange, and is used for concerts.
10. ____ If you are in the USA at midnight on June 21st, and your friend is in India, you both experience a warm spring night that is the shortest night of the year.

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Answer Sheet

Activity A

1. June 21st
2. No
3. Summer
4. The tilt of the earth and its position on its circular trip around the sun.
5. The days start getting longer

Activity B

1. F
2. F
3. F
4. F
5. F
6. T
7. T
8. F
9. F
10. T