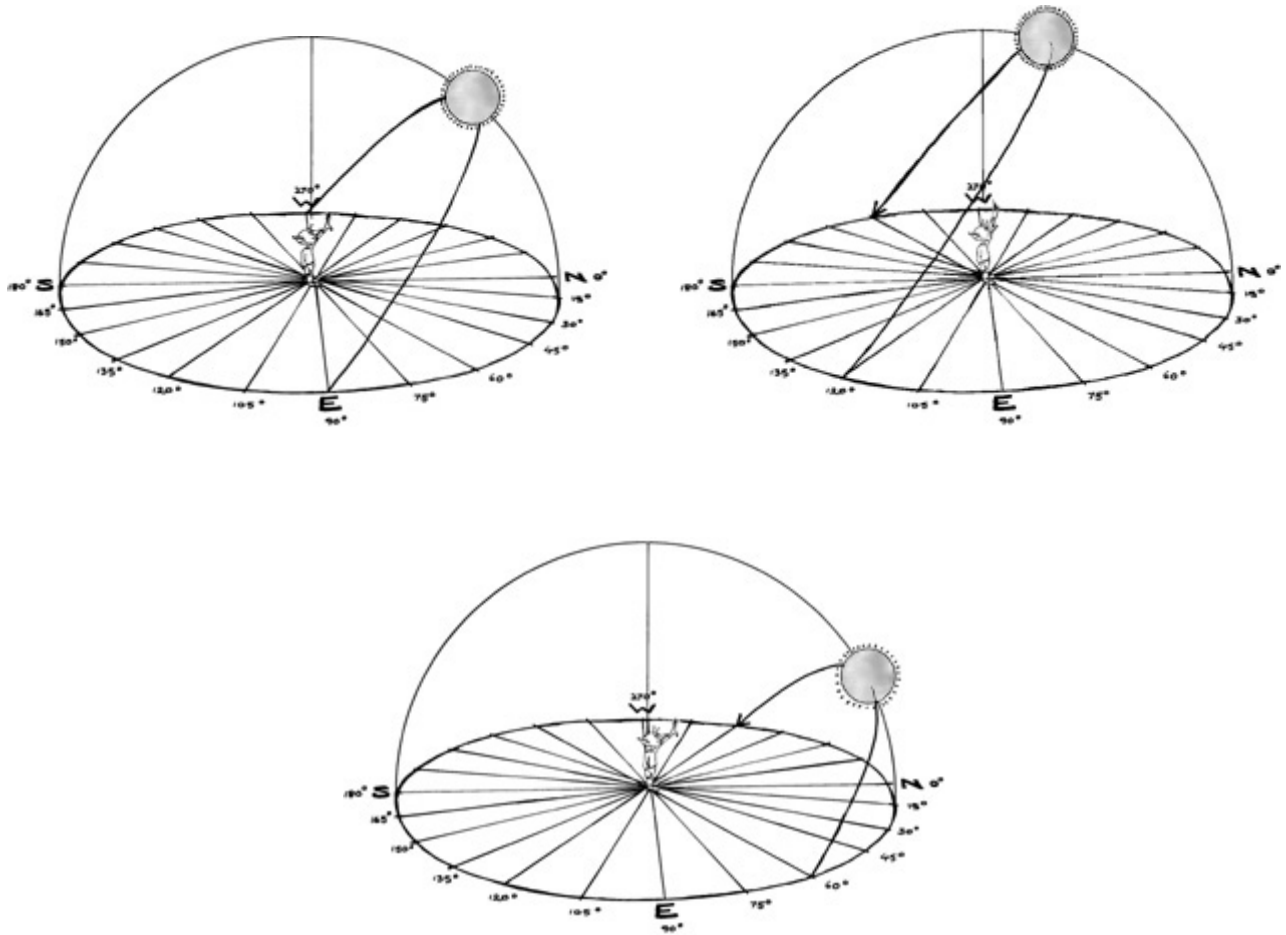


Name: \_\_\_\_\_

# The Sun's Path



## Why and how does it change?

The purpose of this laboratory experiment is to have students collect data regarding the sun's path and other related phenomenon such as: length of shadows, length of day, where sunrise and sunset occur, relationship between latitude and the sun's altitude at solar noon throughout the year. The website: [http://solar.anu.edu.au/level\\_1/Sun/SunPath/index.html](http://solar.anu.edu.au/level_1/Sun/SunPath/index.html) is used to collect data for this lab. This lab counts as 240 minutes (6 lab periods) toward the State requirement of 1200 minutes.

# Duration of Insolation

Using the simulator, calculate the duration of insolation for our latitude (43°N), a location 43° south of the equator, the North Pole, the South Pole and the equator for each of the following dates.

Round the “Duration of Insolation” column to the nearest whole hour.

43°N

Date	Sunrise	Sunset	Duration of Insolation
03/22			
06/22			
09/21			
12/22			

43°S

Date	Sunrise	Sunset	Duration of Insolation
03/22			
06/22			
09/22			
12/22			

North Pole

Date	Sunrise	Sunset	Duration of Insolation
03/22			
06/22			
09/22			
12/22			

South Pole

Date	Sunrise	Sunset	Duration of Insolation
03/22			
06/22			
09/22			
12/22			

Equator

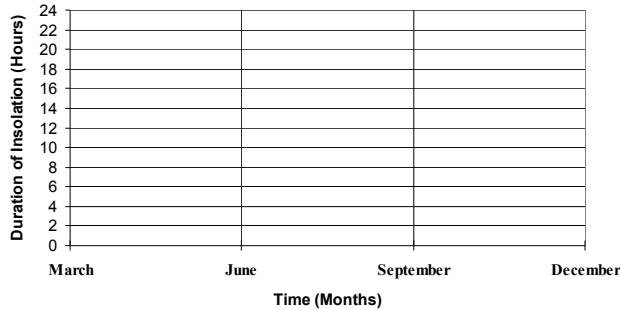
Date	Sunrise	Sunset	Duration of Insolation
03/22			
06/22			
09/22			
12/22			

Complete the data table below using the data collected on page 2.

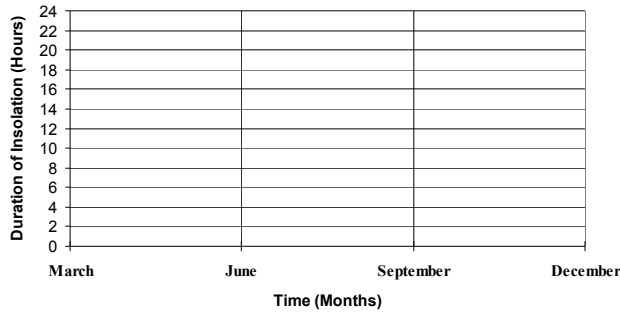
<b>March 22</b>		<b>June 22</b>		<b>September 22</b>		<b>December 22</b>	
Location	Duration of Insolation	Location	Duration of Insolation	Location	Duration of Insolation	Location	Duration of Insolation
90°N		90°N		90°N		90°N	
43°N		43°N		43°N		43°N	
Equator (0°)		Equator (0°)		Equator (0°)		Equator (0°)	
43°S		43°S		43°S		43°S	
90°S		90°S		90°S		90°S	

Complete the graph for each hemisphere and the Equator below. Be sure to create a key for each graph.

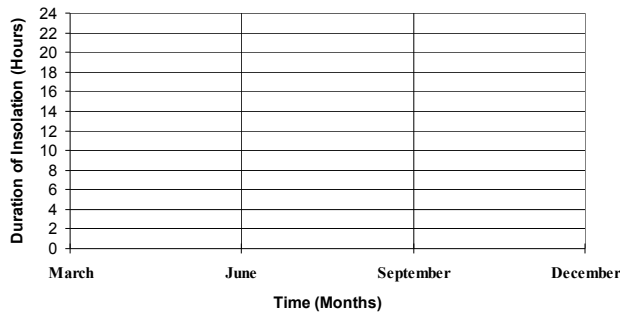
### Duration of Insolation versus Time for Northern Hemisphere



### Duration of Insolation versus Time for Southern Hemisphere

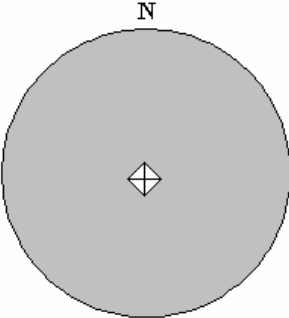
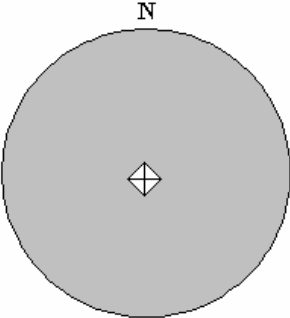
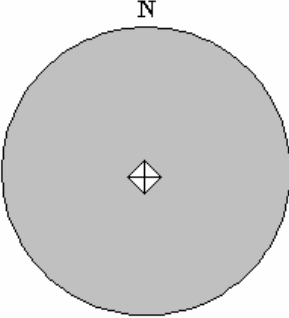
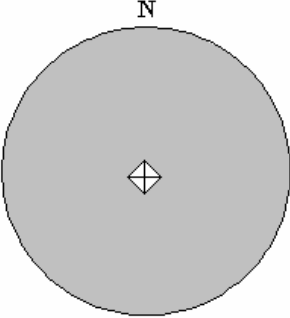
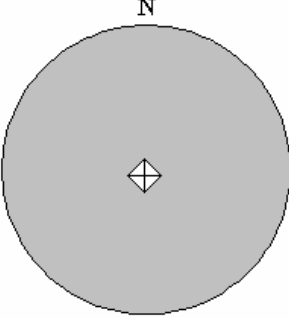
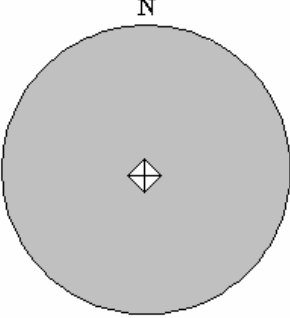
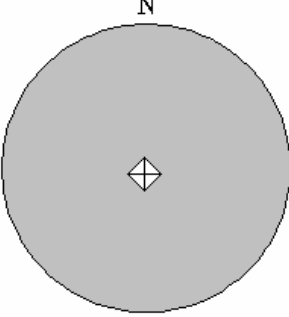
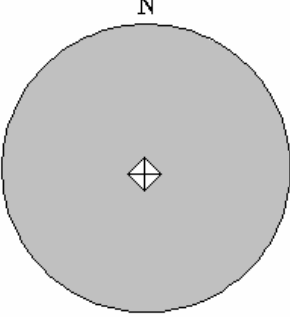


### Duration of Insolation versus Time for Equator



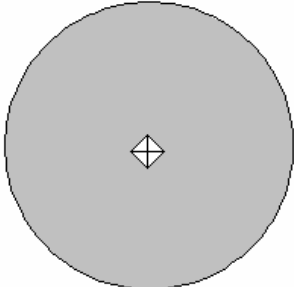
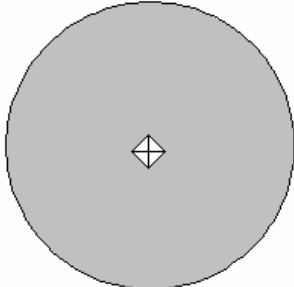
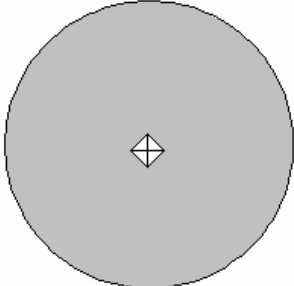
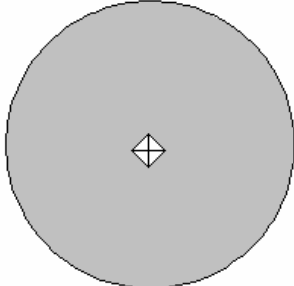
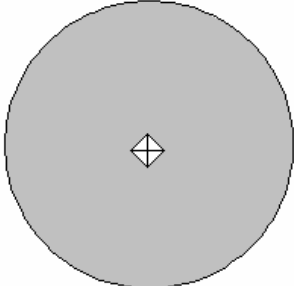
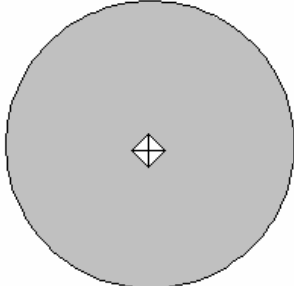
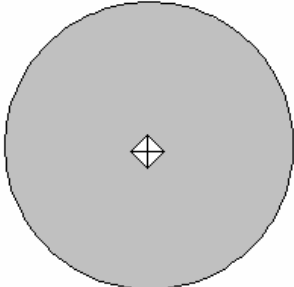
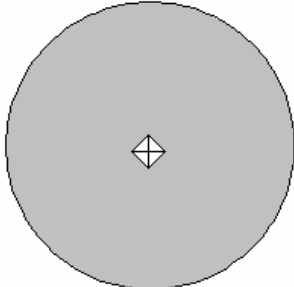
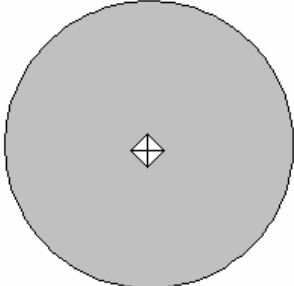
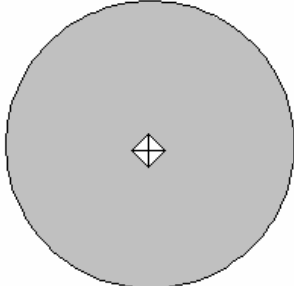
# Yearly Shadows

Using the simulator, draw the shadows at solar noon for each latitude and date.  
THE LENGTH OF THE SHADOW IS EXTREMELY IMPORTANT, AND MUST BE  
DRAWN AS ACCURATELY AS POSSIBLE.

<b>43° North</b>	<b>43° South</b>
<b>March 22</b> 	<b>March 22</b> 
<b>June 22</b> 	<b>June 22</b> 
<b>September 22</b> 	<b>September 22</b> 
<b>December 22</b> 	<b>December 22</b> 

# Daily Shadows

Using the simulator, draw the shadows for each time indicated. Set the date to March 22.

Time of Day	43°N	43°S
Sunrise	<p>N</p> 	<p>N</p> 
9AM	<p>N</p> 	<p>N</p> 
Solar Noon	<p>N</p> 	<p>N</p> 
3PM	<p>N</p> 	<p>N</p> 
Sunset	<p>N</p> 	<p>N</p> 

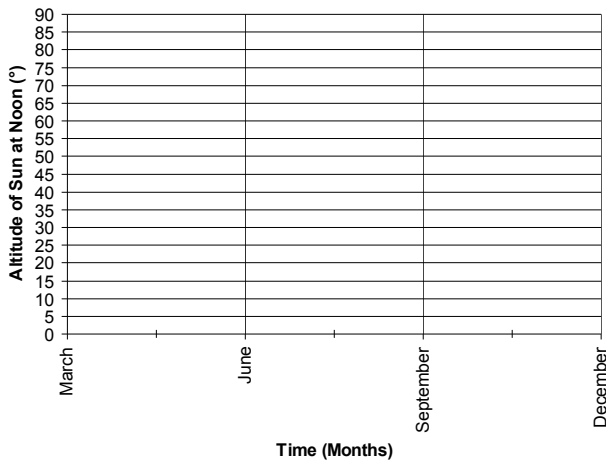
# Altitude of Sun at Solar Noon

Using the simulator, record the Sun's altitude at Solar Noon for each of the locations below on each of the dates the seasons change (round to the nearest **WHOLE NUMBER**).

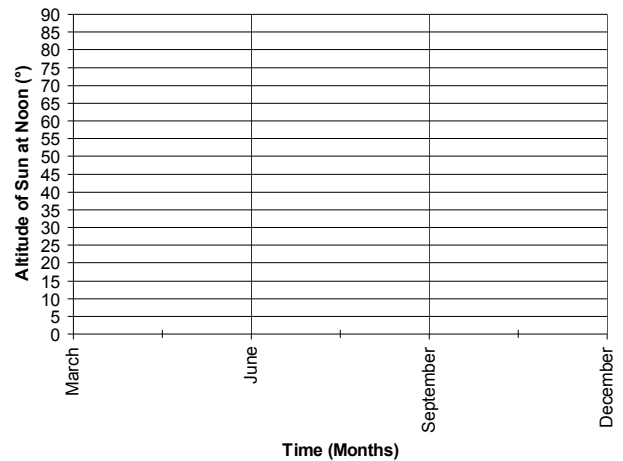
	03/22	06/22	09/22	12/22
43°N				
23 ½°N				
Equator (0°)				
23 ½°S				
43°S				

Complete the graph for each hemisphere and the Equator below. Be sure to create a key for each graph.

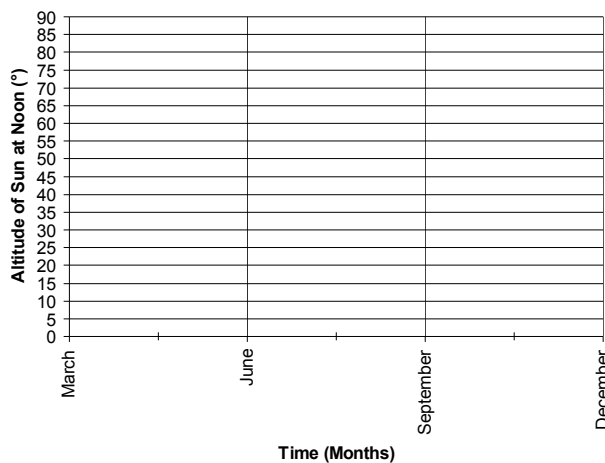
Time versus Altitude of Sun In Northern Hemisphere



Time versus Altitude of Sun In Southern Hemisphere



Time versus Altitude of Sun at the Equator



# Sun's Path Across the Sky

For each of the dates and locations below, draw the path the sun takes across the sky.

Pay particular attention to where the sun rises and sets and how high in the sky it moves.

	<b>43°N</b>	<b>0°</b>	<b>43°S</b>
<b>03/22</b>			
<b>06/22</b>			
<b>09/22</b>			
<b>12/22</b>			

# Sun's Path at the Poles

For each of the dates and locations below, draw the path the sun takes across the sky.

Pay particular attention to where the sun rises and sets and how high in the sky it moves.

	90°N	90S°
<b>03/22</b>		
<b>06/22</b>		
<b>09/22</b>		
<b>12/22</b>		