Does the amount of daylight change during the year?

Modified from "The Real Reasons for Seasons: Sun–Earth Connections" lab book,

Modified for 5th grade

Does the period of sunlight get longer/shorter during the year?

During the summer, depending on where you are on the Earth, you may find that the Sun sets later (and maybe rises earlier…) than it sets during the winter. Maybe you've heard about the long, dark winters at the North and South Poles…Perhaps you've seen a documentary about the Emperor Penguins and their long wait in the darkness as they incubate their eggs in Antarctica?

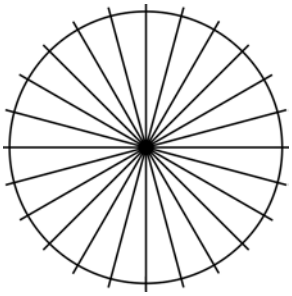
If you know about some of these things, maybe you're convinced that the length of the sunny period (the "day") changes during the year…But are there any patterns in the changes to the length of each day's sunny period (the "day")? Let's plot some data and see if we can make sense of it.

Hours of daylight in a 24-hour day…

One way to represent "parts of a whole" is to use a pie chart.

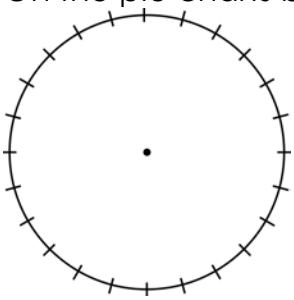
You may know that one meaning of the word "day" is the length of time it takes the Earth to rotate (spin) once on its axis. For example, when the date changes from July 7 to July 8, the Earth has completed one rotation, and is starting a new one. We divide the "day" up into 24 equal parts we call "hours," and we divide each "hour" up into 60 equal parts we call "minutes."

Here is a pie chart, which has been divided up into 24 equal "slices" to represent the 24 hours in a day. Each slice represents one hour.



Make your own pie charts

On the pie charts below, fill in "slices" of 6 hours, 12 hours, and 14 hours



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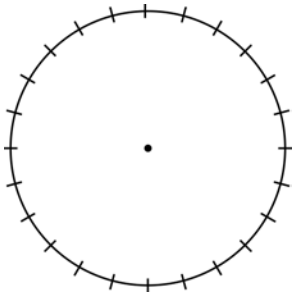

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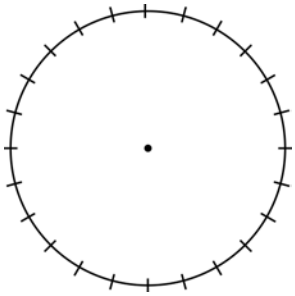

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Two places…

Here are the sunrise, sunset, and number of daylight hours for two different places on the Earth. For now, let's call them locations A and S. Times given are for the 1st of each month, in the local time zone.

Location A

Month	Sunrise (AM)	Sunset (PM)	Daylight hours (hours : minutes)
January	6:05	8:43	14:38
February	6:36	8:32	13:56
March	7:05	8:01	12:56
April	7:34	7:16	11:42
May	7:00	5:36	10:36
June	7:24	5:13	9:49
July	7:35	5:15	9:40
August	7:20	5:35	10:15
September	6:43	6:00	11:17
October	6:58	7:24	12:26
November	6:17	7:53	13:36
December	5:56	8:24	14:28

Location S

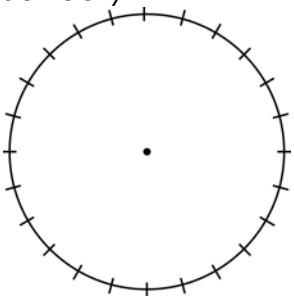
Month	Sunrise (AM)	Sunset (PM)	Daylight hours (hours : minutes)
January	7:25	5:02	9:37
February	7:14	5:33	10:19
March	6:41	6:03	11:22
April	6:55	7:33	12:38
May	6:14	8:00	13:46
June	5:50	8:26	14:36
July	5:51	8:36	14:45
August	6:13	8:18	14:05
September	6:40	7:39	12:59
October	7:05	6:53	11:48
November	6:35	5:11	10:36
December	7:06	4:51	9:45

Questions

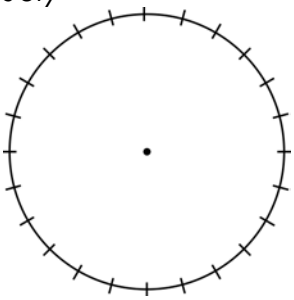
1) **Make six pie charts showing daylight hours and night hours: one pie chart each for locations A and S in January, July, and October. Use different colors for day and night in your pie charts.**

Location A

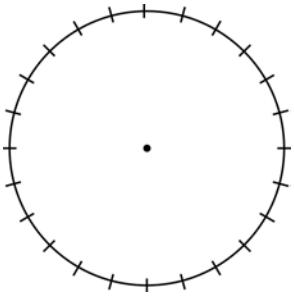
January



July

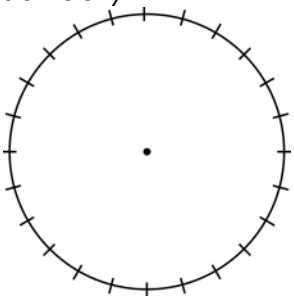


October

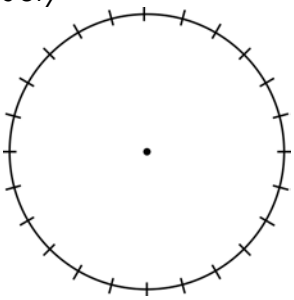


Location S

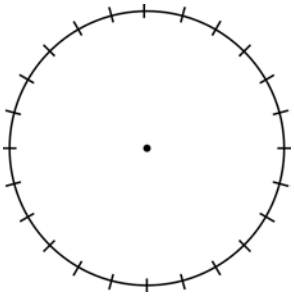
January



July



October



2) **In which hemisphere (Northern/Southern) is each location (circle one for each)?**

Location A	Northern	Southern
Location S	Northern	Southern

How did you decide the hemisphere for each location?