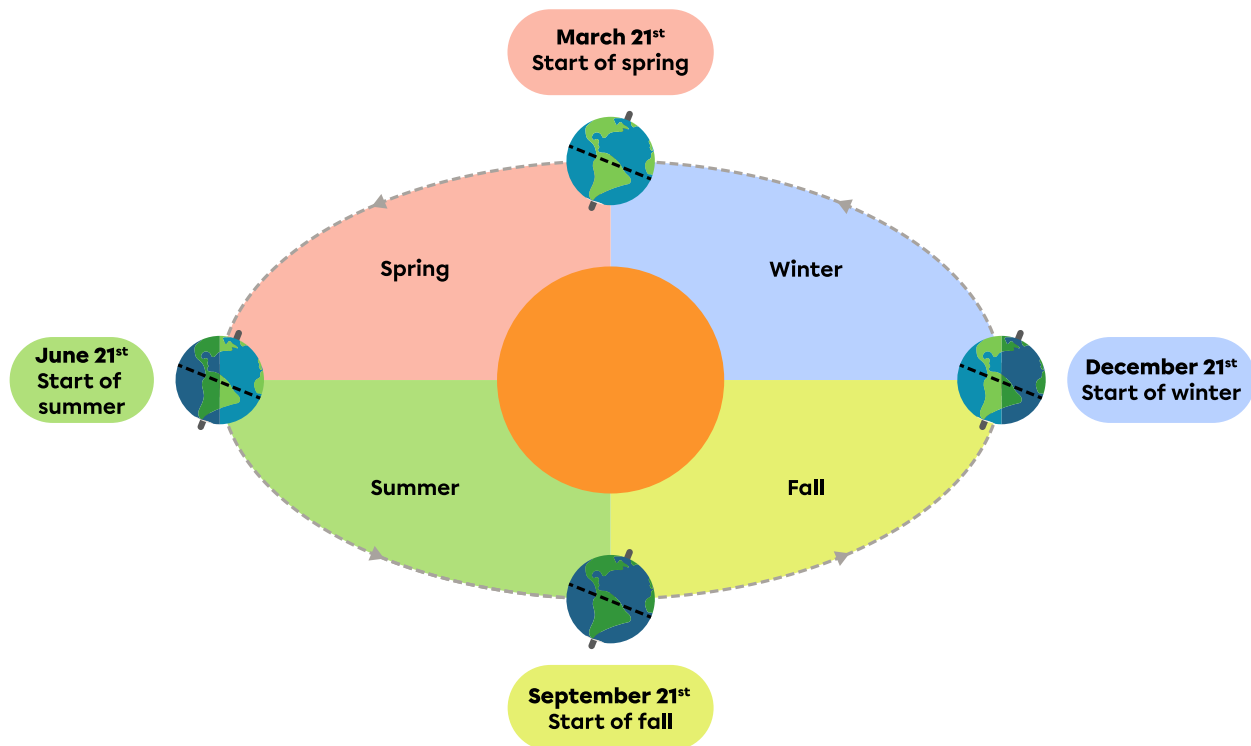


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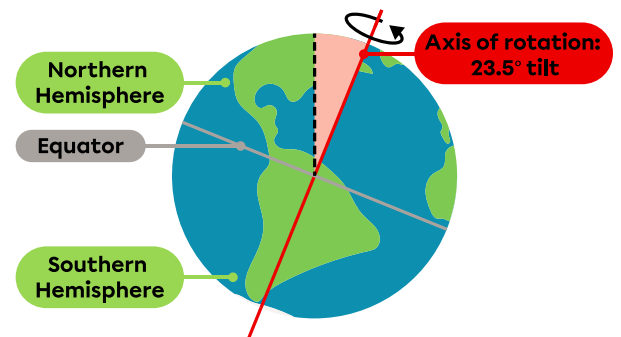
The Cycle of Seasons

The image below shows the seasonal cycle in the Northern Hemisphere. As you can see, on the first day of each season, the Earth is in a different position relative to the Sun.



You may also notice that the Earth's axis of rotation is tilted.

This tilt of about 23.5° causes the number of daylight hours to change over the course of the seasons.



Definition

Daylight hours is the amount of time between sunrise and sunset.

Context

To better understand the variation in daylight hours, look at the sunrise and sunset times on the first day of each season in four locations in Quebec.

- Which day had the longest daylight hours?
- Which day had the shortest daylight hours?
- Did all the locations have the same amount of daylight hours?

We've collected some **data** to answer these questions. Your task is to analyze it and figure out the **results**!

What is data?
Data are the facts or measurements you collect during an experiment.
What is a result?
A result is information you get after analyzing the data.



Legend

Province of Quebec

Example

On March 21 in Montreal, the sun rose at 6:54 a.m. and set at 7:08 p.m. How many daylight hours were there?

To find the total daylight hours, calculate the amount of time between 6:54 a.m. and 7:08 p.m.

Now that you've calculated the daylight hours, draw a line to show whether each element is data or a result.

Montreal

March 21

6:54 a.m.

7:08 p.m.

12 hrs 14 min

Data

Results

Data and results tables

The following tables show the sunrise and sunset times for Montreal, Quebec City, Sept-Îles, and Kuujjuaq on the first day of each season.

Use the space provided to calculate the daylight hours, then fill in the tables with your results.

Table 1. Sunrise and sunset times for March 21			
Location	Sunrise	Sunset	Daylight hours
Montreal	6:54 a.m.	7:08 p.m.	12 hrs 14 min
Quebec City	6:44 a.m.	6:59 p.m.	
Sept-Îles	6:24 a.m.	6:41 p.m.	
Kuujjuaq	6:31 a.m.	6:51 p.m.	

Table 2. Sunrise and sunset times for June 21			
Location	Sunrise	Sunset	Daylight hours
Montreal	5:05 a.m.	8:46 p.m.	
Quebec City	4:50 a.m.	8:43 p.m.	
Sept-Îles	4:15 a.m.	8:39 p.m.	
Kuujjuaq	3:29 a.m.	9:41 p.m.	

Table 3. Sunrise and sunset times for September 21			
Location	Sunrise	Sunset	Daylight hours
Montreal	6:40 a.m.	6:52 p.m.	
Quebec City	6:31 a.m.	6:43 p.m.	
Sept-Îles	6:11 a.m.	6:24 p.m.	
Kuujjuaq	6:17 a.m.	6:34 p.m.	

Table 4. Sunrise and sunset times for December 21			
Location	Sunrise	Sunset	Daylight hours
Montreal	7:31 a.m.	4:13 p.m.	
Quebec City	7:27 a.m.	3:59 p.m.	
Sept-Îles	7:22 a.m.	3:25 p.m.	
Kuujjuaq	8:19 a.m.	2:44 p.m.	

Show Your Work

Use this space to calculate the daylight hours.

Calculations for March 21				
Montréal		Quebec City	Sept-Îles	Kuuujuaq
18 18:	68 08 p.m.			
-				
6:	54 a.m.			
<hr/>				
12 hrs	14 min			

Calculations for June 21				
Montréal		Quebec City	Sept-Îles	Kuuujuaq

Calculations for September 21				
Montréal		Quebec City	Sept-Îles	Kuuujuaq

Calculations for December 21				
Montréal		Quebec City	Sept-Îles	Kuuujuaq

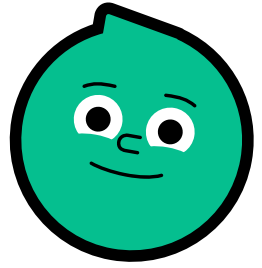
Questions

Now that you've processed the data and have your results, answer the following questions.

Question 1

Which day had the longest daylight hours?

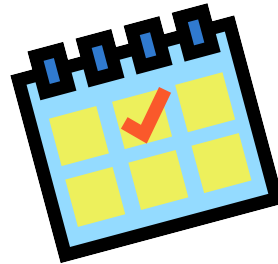
- ☐ March 21
- ☐ June 21
- ☐ September 21
- ☐ December 21



Question 2

Which day had the shortest daylight hours?

- ☐ March 21
- ☐ June 21
- ☐ September 21
- ☐ December 21



Question 3

Did all the locations have the same amount of daylight hours? Use one of your results to justify your answer.

- ☐ Yes
- ☐ No
