|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name: | **[insert name]** | Period: | **[insert Period]** | Date: | **[insert date]** |

Patterns in Ecliptic Data

# Background

We know that solar eclipses are caused by the moon traveling between the sun and the moon. The moon casts a shadow on the earth and causes that region to experience daytime with no daylight. Total eclipses can only be viewed if you are directly inside the shadow cast by the moon, and those outside it have the opportunity to view a partial solar eclipse.

We’ve seen this phenomenon happen in different locations in the world. For example, our scientists recorded this type of occurrence in February in Chile and in August in the United States. So why doesn’t this happen in the same location every time?

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# Using Data and Models

To help us understand why these eclipses occur in different locations, we are going to use data about previous eclipses between 2010 and 2020. This will help us to notice any patterns that may exist.

1. Using the table below, you will see the dates of the recorded solar eclipses between 2010 and 2010. Each date is a link that will show you the path of the moon’s shadow on a map of the Earth. This path shows us where a solar eclipse was visible.
2. With that map, you will determine where the eclipse was mostly viewed. We want to know if it was mostly ABOVE or mostly BELOW the Earth’s equator. The equator is shown as a gray dashed line on the map.
   1. Use the plus and minus signs on the map to help you zoom in and out.

|  |  |
| --- | --- |
| **Date of Eclipse** | **Relation to Equator**  *Options: Above or Below* |
| [January 15, 2010](https://eclipse.gsfc.nasa.gov/SEgoogle/SEgoogle2001/SE2010Jan15Agoogle.html) |  |
| [July 11, 2010](https://eclipse.gsfc.nasa.gov/SEgoogle/SEgoogle2001/SE2010Jul11Tgoogle.html) |  |
| [May 20, 2012](https://eclipse.gsfc.nasa.gov/SEgoogle/SEgoogle2001/SE2012May20Agoogle.html) |  |
| [November 13, 2012](https://eclipse.gsfc.nasa.gov/SEgoogle/SEgoogle2001/SE2012Nov13Tgoogle.html) |  |
| [May 10, 2013](https://eclipse.gsfc.nasa.gov/SEgoogle/SEgoogle2001/SE2013May10Agoogle.html) |  |
| [November 3, 2013](https://eclipse.gsfc.nasa.gov/SEgoogle/SEgoogle2001/SE2013Nov03Hgoogle.html) |  |
| [April 29, 2014](https://eclipse.gsfc.nasa.gov/SEgoogle/SEgoogle2001/SE2014Apr29Agoogle.html) |  |
| [March 20, 2015](https://eclipse.gsfc.nasa.gov/SEgoogle/SEgoogle2001/SE2015Mar20Tgoogle.html) |  |
| [March 9, 2016](https://eclipse.gsfc.nasa.gov/SEgoogle/SEgoogle2001/SE2016Mar09Tgoogle.html) |  |
| [September 1, 2016](https://eclipse.gsfc.nasa.gov/SEgoogle/SEgoogle2001/SE2016Sep01Agoogle.html) |  |
| [February 26, 2017](https://eclipse.gsfc.nasa.gov/SEgoogle/SEgoogle2001/SE2017Feb26Agoogle.html) |  |
| [August 21, 2017](https://eclipse.gsfc.nasa.gov/SEgoogle/SEgoogle2001/SE2017Aug21Tgoogle.html) |  |
| [July 2, 2019](https://eclipse.gsfc.nasa.gov/SEgoogle/SEgoogle2001/SE2019Jul02Tgoogle.html) |  |
| [December 26, 2019](https://eclipse.gsfc.nasa.gov/SEgoogle/SEgoogle2001/SE2019Dec26Agoogle.html) |  |
| [June 21, 2020](https://eclipse.gsfc.nasa.gov/SEgoogle/SEgoogle2001/SE2020Jun21Agoogle.html) |  |
| [December 14, 2020](https://eclipse.gsfc.nasa.gov/SEgoogle/SEgoogle2001/SE2020Dec14Tgoogle.html) |  |

## Data Analysis

Use your data from above to answer the questions below.

|  |  |
| --- | --- |
| **Question/ Prompt** | **Your Response** |
| 1. About how many months come between each eclipse? |  |
| 1. In years that have two solar eclipses, do they tend to happen in the same area? If not, is there a different pattern you notice? |  |