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|  | Australian Curriculum Year 7 Science sample assessment ׀ Student booklet  Why do the seasons change? |

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| *C:\Users\Deborah\Dropbox\01 QSA\Sample assessments\Year 7 Science Reasons for the Seasons\Images\IMG_1631.JPG* |
| Image: Queensland Curriculum and Assessment Authority, 2013 |

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| Collect evidence and use a model to explain observations about day length, climates, seasons and eclipses and draw a conclusion about the predictability of the seasons. |
| You will:   * use credible sources to research information * construct scientific explanations for observations about the Earth * develop representations to support your explanations * draw a conclusion about the predictability of the seasons. |

## Section 1. Creating a model to explain observations

A group of students made the following observations about the Earth.

They grouped similar observations together.

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A total solar eclipse occurred in 2012 but it only lasted a few minutes and the next one seen in Australia will be in 2028.

Climate is the typical weather of an area and there seems to be distinct climate zones over the Earth.

Yes, and in Antarctica there are usually two weeks in midwinter, around June 21, when the sun does not rise, and a couple of weeks in summer, around Christmas, where there is 24 hours of sunlight.

Traditional ecological knowledge shows that plants and animals have grown and moved in predictable ways for thousands of years, following seasonal patterns.

I love the tropical climate of   
Far North Queensland.

Locations around the equator have nearly even day and night times, but near the poles locations show a bigger difference in daylight hours over a year.

When its winter in the southern hemisphere, its summer in the northern hemisphere.

The students then used everyday items to develop a model of the sun, Earth and moon system to help explain some of their observations.

The model is shown below with some features labelled.

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1

2

6

4

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3

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Feature key

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| * **Feature 1** The sun is stationary * **Feature 2** The Earth, moon and sun are spheres * **Feature 3** The axis of the Earth is titled * **Feature 4** The earth can rotate on its axis * **Feature 5** The moon can rotate around the Earth * **Feature 6** The Earth orbits the sun at a distance fixed by the arm (in this model) |

## Section 2. Developing scientific explanations

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| Develop a scientific explanation for each observation that the students made about the Earth. |

### For each observation you will:

#### Investigate

1. Use reliable sources to collect information to explain the observation.

**Hints:** The key words in the Wordle below may be helpful as a guide — and don’t forget to include a bibliography.

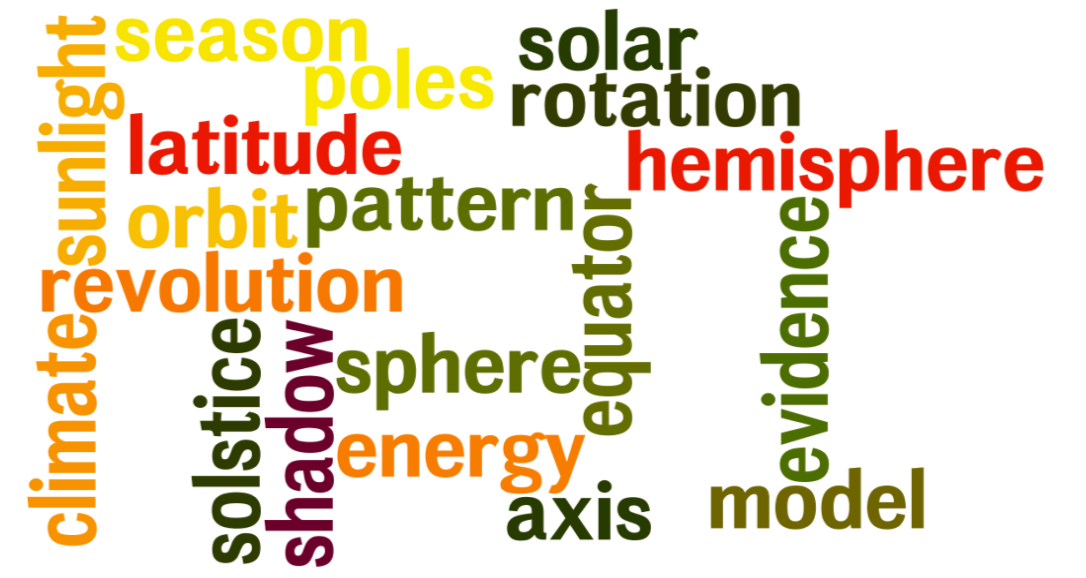
1. Summarise relevant information and keep a bibliography of your sources.
2. Write a scientific explanation for the observation.

**Hint:** To write a scientific explanation you should:

* + - make a **claim** about the problem or observation
    - provide **evidence** for the claim from your research or investigation
    - provide **reasoning** that links the evidence to the claim.

#### Analyse

1. Develop a representation to support your explanation.
2. Identify which feature/s of the model supports your explanation and briefly explain how it does this.
3. Identify and explain the pattern and timeframe of the occurrence of the observation.



## Section 3. Drawing a conclusion

#### Evaluate

1. Draw a conclusion to answer the question:

**Why are observations of the Earth predictable?**

1. Support your conclusion with evidence from your knowledge, explanations and model of the sun, Earth, moon system.
2. Attach your conclusion to the end of your explanations.