

The Wonder of  
**Grade 6**

# The Wonder Of Astronomy

**Year 6 Month 7 – 5 DAY SAMPLE**



**Daily  
Wonder**  
Home Learning Hub

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## Month Overview

### CURRICULUM AREAS/LEARNING OUTCOMES – CONCEPTS/BIG IDEAS

**Language Arts: Concept:** Exploring and sharing multiple perspectives extends our thinking. **Connection:** Your child will learn about different cultures and their perspective on the stars above. This builds an appreciation for diversity as well as an understanding of our connection.

**Social Studies: Concept:** Systems of government vary in their respect for human rights and freedoms. **Connection:** Your child will gain an appreciation for the Indigenous knowledge and connection to astronomy, and the work being done to bring respect and honour to this age-old wisdom within the context of science.

**Science: Concept:** The solar system is part of the Milky Way, which is one of billions of galaxies. **Connection:** Your child will learn about the constellations in the Milky Way, and experience night sky observations.

**Math: Concept:** Data from the results of an experiment can be used to predict the theoretical probability of an event and to compare and interpret. **Connection:** Your child will work on probability math questions using the Grade 6 math workbook and online worksheets.

### SOCIAL EMOTIONAL LEARNING

**Competency: Positive Personal and Cultural Identity:** Positive Personal and Cultural Identity involves the awareness, understanding, and appreciation of the factors that contribute to a healthy sense of oneself; it includes knowledge of one's family background, heritage(s), language(s), beliefs, and perspectives in a pluralistic society. People who have a positive personal and cultural identity value their personal and cultural narratives and understand how these shape their identity. They exhibit a sense of self-worth, self-awareness, and positive identity to become confident individuals who take satisfaction in who they are and what they can do. They contribute to their own well-being and to the well-being of their family, community, and society.

**Facet: Understanding Relationships and Cultural Contexts:** Students understand that their relationships and cultural contexts help to shape who they are. This includes culture in its broadest sense, including how one identifies in terms of ethnicity, nationality, language(s), abilities, sexual orientation, gender identity, age, geographic region, and religious or spiritual beliefs. Students explore who they are in terms of their relationship to others and their relationship to the world (people and place) around them.

**Connection:** Your child will gain an understanding and appreciation for the impact that culture, geographic region, science, and spiritual beliefs have on their own identity. Studying the various cultures that have impacted their learning expands their personal identity and brings more honour to each culture's contribution.

### FIRST PEOPLES' PRINCIPLES OF LEARNING

**Principle:** Learning ultimately supports the well-being of the self, the family, the community, the land, the spirits and the ancestors.

**Connection:** When your child gains a deep appreciation and connection to astronomy, and how they fit into this vast universe, it becomes grounding to see our place amongst the stars. This knowledge supports the healthy identity of the child, and encourages reverence for the stories, knowledge and wisdom that has been passed down for thousands of years. This honouring is healing to family, community, land, spirit and ancestors.



## CURRICULUM OVERVIEW

*“Man by himself, insofar as he makes use of his healthy senses, is the greatest and most exact physical apparatus which exists.” -Goethe*

In this unit, your child will discover the wonder of the human body as the greatest instrument of measurement.

Your child will discover the ability to use their upright vertical position as a way to orient their direction on Earth and among the stars. They will follow the movements of the stars and the moon with their eyes and use their arms to measure their angles. This unit will involve a commitment to regular observation of the night sky and how the stars and moon move across the sky. Taking these observations back into the daily morning lessons, your child will be able to develop an understanding of a complete celestial globe and get their bearings in space, defining “great circles” known as the horizon, meridian and celestial equator. Your child will observe the northern sky and gain an understanding of the circumpolar constellations and stars. Your child will develop an understanding of the relationship between the Earth and the sun and why there are four seasons. Your child will observe the phases of the moon. They will connect ancient Greek myths and Indigenous stories to what they observe in the night sky.

During this unit, your child will focus on probability activities. You can use the Grade 6 math book you have for practice. [Here is a website](#) for further help.

### Examples of Probability Math Activities

- Single-outcome probability events (e.g., spin a spinner, roll a die, toss a coin)
- Listing all possible outcomes to determine theoretical probability
- Comparing experimental results with theoretical expectations
- Lahal stick games (requires teams)

Lahal is a traditional game of First Nations people. The game pieces consist of 11-13 sticks and 4 bones. The sticks are also painted in different colours for different reasons and are made of different types of wood. The bone game pieces are made of antlers or bone. [Instruction here.](#)

## MATERIALS NEEDED

- Library books/online resources-Indigenous stories of the stars
- Grade 6 math workbook
- Chapter book for independent reading
- 2 hula hoops
- Compass
- Ruler
- Sketch book
- Beeswax –or firm modelling clay
- Night Sky app (optional)



## PARENT PREPARATION

**Stories:** You will want to have some star stories and myths from the Indigenous people **of the land you live on**. You will be guided to share stories about the seasons, the moon, the sun, the Pole Star, the Great Bear, the Big Dipper. Here are some stories we found, but your local library may have the best options for your area.

### Star Stories

- [Ininewuk Stories of the Stars](#) - Manitoba First Nations
- [Star Stories](#) - A Youtube playlist of Indigenous Star Stories, from the National Museum of the American Indian
- [Night Sky Star Stories](#) - Another Youtube playlist of Canadian Indigenous star stories as told by Wilfred Buck
- [Native American Starlore](#) - Western Washington University
- [Ursa Major](#) - The Great Bear
- [The Hunting of the Great Bear](#) - An Iroquois Legend
- [Ihkitsikammiksi](#) - Ursa Major & Indigenous Skylore
- [Why the North Star Stands Still](#) - A Paiute Legend
- [Native American Star Legends](#) from the Myths of Many Tribes

### Season Myths

- [Native American Season Mythology](#)
- ['Change of the Season' story](#) -

### Moon Myths

- [Native American Moon Mythology](#)
- [Indigenous Moon Stories](#)
- [Cree Moon Origin Story](#)

### Sun Myths

- [Native American Sun Mythology](#)
- [Solar Folklore](#)
- [The Sun-Catcher, or Boy Who Set a Snare for the Sun](#)
- [Son of the Sun](#)

**Movement:** When it comes to Intentional Movement Activities for this unit, you could:

Choose a [Sun Salutation](#) sequence for 1 week.

Choose a [Moon Salutation](#) sequence for 1 week.

Practice [hula hoop activities](#) for 1 week.

**Evening Observation:** This unit requires regular night sky observation. The first week requires a significant time commitment to gather enough data for analysis and interpretation. You will want to find a good spot to observe the horizon near your home. Being close to home may be useful because your child will need to observe the stars in 30-minute intervals over a 2.5 hr period. The best places are by the sea or a large open field. If you are not living near either of these spots, you can choose the best location that allows a view of the horizon line. Perhaps you can sit on your roof! You may want to download the [Night Sky app](#). This could be useful if naked eye observation is difficult due to weather or the time of year.

**PARENT PREPARATION CONTINUED...**

**Understanding the Lunar Cycle:** Your child will be learning about the lunar cycle through nightly observation and sketching. It will be useful for you to check what moon phase you are starting the unit in, so you can be prepared to offer some rituals for the New Moon and/or Full Moon when the time comes.

**Lunar Cycles and Ritual Ideas:** Most of us are aware of the full moon – it’s probably the most commercial part of moon energy, for many reasons. When the moon is at its fullest, most illuminating state, so are we – the moon can change the tides in the ocean, so we can’t be naive to her changing the tides within us, too. As humans, we navigate the world blindly. But if we slowed down, noticed the details, and paid attention to what is going on around us and within us, we would understand that we, too, are a part of nature. Much like those with wombs, the moon cycles through phases each month. We are bright and full at times, and other times we are hidden and dark. We’re incredible. And regardless of gender, everyone has a womb space – it’s the place our profound intuition resides, below our navels, above our genitals. Astrologers, healers, and the spiritually connected teach that the full moon and the new moon energies are the most powerful, so here we’ll take a look at how you can get in tune with their energies. [New Moon and Full Moon Ritual Ideas.](#)

**Optional Background Reading:** [An Introduction to the Study of the Stars](#) was used for inspiration and knowledge throughout this uni.

**Extra Resources:** [Waldorf Astronomy Ideas](#) from The Parenting Passageway

The night sky is a source of knowledge, curiosity, beauty, and the unknown. Traditionally, Indigenous people were and are still inextricably linked to the stars. These connections between sky and earth helped define self, family, community, and the seven generations.

*“Before we were here, we were in the Spirit-Star World. We are spiritual beings, briefly here, trying to be human beings. After we leave here, we go back to the Star World. Stars are our oldest living relatives.”*

-Annette S. Lee, Astrophysicist, Artist, and Director of Native Skywatchers

In 2008, Canada began a major effort to right the wrongs of colonization. The process, which aimed to recognize the rights of Indigenous groups and shape a new relationship of respect, was broadly referred to as [truth and reconciliation](#). In the realm of Scientific study of Astronomy, this took the shape of a conscious effort to include Indigenous culture and technology in the story of Canadian science.

**These sites offer an understanding of Indigenous Astronomy:**

- [Stories in the Stars / Pride in our Hearts](#)
- [One Sky, Many Worlds – Indigenous Voices in Astronomy](#)
- [Relearning the Star Stories of Indigenous Peoples](#)



### DEVELOPMENTAL CONNECTION

*The Stars once spoke to (hu)man  
It is World Destiny that they are silent now.  
To become aware of this Silence  
Can become Pain for Earthly humanity.  
But in the deepening Silence  
There grows and ripens what the  
Human Being speaks to the stars.  
To become aware of this Speaking  
Can become Strength for Spirit Humanity.*  
-Rudolf Steiner

As your child is moving into a new growing phase, they begin to fully experience the weight of their bones and their bodies. Movement can seem sluggish and a weariness can be expressed. The child at this age has become very “earth-bound”, and this is one reason why the study of Geology is so fitting at this stage. The child so clearly can relate to the weight of the rocks upon the earth. However, just as we provide the child with the study of Geology, we want to give them the opposite experience of weightlessness. We want to give them the experience of the intangible, the wondrous, and the magical. We want to connect them to the wonder of the universe. We want to teach them about Astronomy. This stage of their development also marks a shift into a thinking stage. They are developing skills in observation and are able to make connections between things now. They can follow logical thought and patterns. This is the growth of intellectual, material, cause-and-effect thinking. Your child is ready to develop an intellectual awareness of the relationship between the earth, sun, and moon, as well as planets and the main constellations of the night sky.

### PARENT REFLECTION

**Questions to consider at the beginning of the unit:** What relationship do you have with astronomy? What relationship do you have to cultural myths around the stars and the Zodiac? Do you feel you are able to make space and bring reverence to all angles that astronomy can be brought to your child? Can you commit to ensuring that your child sets a schedule of star and moon observation throughout this unit?

**Questions to consider at the end of the unit:** What wonder did you discover in this unit? Was your child able to maintain a schedule of star and moon observation? What wonderful moments did your child receive through this unit? Have you gained more insight into yourself and/or your child through this exploration?



## Verses, Poetry & Song Suggestions

### OPENING VERSE FOR GRADE 6

*I place myself steadfastly into existence.  
With certainty I tread the path of life.  
Love I nurse in the core of my being.  
Hope I lay in all my doing.  
Confidence I impress into my thinking.*

### CLOSING VERSE FOR GRADE 6

*Be ye lamps unto yourselves.  
Be your own confidence.  
Hold to the truth within yourselves,  
As to the only lamp.*

This can either be spoken or sung. [Here's the tune](#) if you wish to sing it.

### UNIT POEM SUGGESTION

#### Peace on Earth

*by William Carlos Williams, 1913*

The Archer is wake!  
The Swan is flying!  
Gold against blue  
An Arrow is lying.  
There is hunting in heaven-  
Sleep safe till to-morrow.  
The Bears are abroad!  
The Eagle is screaming!  
Gold against blue  
Their eyes are gleaming!  
Sleep!

Sleep safe till to-morrow.  
The Sisters lie  
With their arms intertwining;  
Gold against blue  
Their hair is shining!  
The Serpent writhes!  
Orion is listening!  
Gold against blue  
His sword is glistening!  
Sleep!  
There is hunting in heaven-  
Sleep safe till to-morrow.



**UNIT SONG SUGGESTIONS**

**Full Moonlight Dance**

Karen Beth

[Here's the tune](#)

**Moderato**

Un - der the full moon - light we dance, spir - its  
 dance we dance, join - ing hands we dance, join - ing souls re - joice!

**The Sun Descends**

*The sun descends in fiery tone,  
 All alone.  
 The blackbird sings;  
 The day is done.*

[Here's the tune](#)

*The sun descends*

The sun - de - scends in fier - y tone. All  
 a - lone. the black bird sings the day 'is done



## DAY 1

### GOALS OF THE LESSON

Your child will begin the scientific process of questioning and predicting, and planning and conducting. This evening they will begin the observation of the stars and the moon.

### WHAT TO KNOW BEFORE YOU BEGIN TODAY

Your child will be asked to begin an evening sky observation for the next 3 weeks. You will need to choose the most ideal viewing location conveniently located at or near your home, so that you can see as much of the 360 degree view of the horizon as possible. Being near the sea or an open field works very well. This observation will take place every 30 minutes over a 2 ½ hour span, so being close to home is most convenient. Of course, there will most likely be objects on the horizon line, and this is fine. This observation is about using the human tools of sight, and our experience of standing on the earth, to be able to look outwards to the horizon and upwards to the heavens.

## TODAY'S LESSON

**STEP 1: Opening:** Begin the morning lesson with the morning verse. We suggest sticking with the same opening verse for the whole school year. Here's our suggestion for Grade 6:

*I place myself steadfastly into existence.  
With certainty I tread the path of life.  
Love I nurse in the core of my being.  
Hope I lay in all my doing.  
Confidence I impress into my thinking.*

You may add any other poetry or verse that speaks to you and relates to the subject or the season. See our suggestions above or choose your own.

**STEP 2: Intentional Movement Activity (IMA):** The practice of Vinyasa yoga offers many flows with references to the sun and moon. Spend Week One with the Sun Salutation each morning. You can find a suitable video on YouTube if this helps. Using the hula hoop for morning movement would also be a fun activity. Try basic hip rotation and then move on to other body parts.



**STEP 3: Five minute Math Activity or Game:** Choose a math game or activity to play for 5 minutes. [See Lahal Game](#) for one idea. Then your child will practice probability math. Refer to your Grade 6 math workbook or the online worksheet suggestions in the monthly overview.

**STEP 4: New Material: The Horizon and the Great Circle**

**Guided Lesson:** Johann Wolfgang von *Goethe* (28 August 1749 – 22 March 1832) was a German poet, playwright, novelist, scientist, statesman, theatre director, and critic. He said that the human body is the finest instrument we have. We must now learn the use of this instrument.

**Question/Prediction:** Why do you think our body is such a good tool for measurement?

(Support your child to consider the vertical position we stand in, and to consider our sight line as clues. Our sight line offers the perpendicular line to our vertical standing line.)

Tonight, you will begin your Study of the Stars by trying to take your bearings when you stand under the starlit sky. Without using your compass first, you may not know yet where North and South, East and West are. The only certainty you have is that you stand on a point on Earth.

**Question/Prediction:** When you stand on your point to gaze at the night sky, what shape do you think the sky will appear to you?

You look up to the sky and see a multitude of stars, some brighter, some less bright. Your first experience is that they shine down on you from a majestic dome extending around you. You see stars to your left and right, in front of you and, as you can ascertain when turning round, behind you as well as above you. You do not know how far they are away from you, but all stars seem to have the same distance, and you stand in the center of this celestial globe.

Earth and Heavens meet in the Horizon (from the Greek word meaning “to form a boundary”), and the study of this Horizon has to be our first task.

**Indigenous Star Myths- Guided Lesson:**

When most of us look at the night sky, we’re used to seeing stories not of Indigenous origin, but of Greek or Roman: Andromeda chained to a rock, Perseus staring down a sea monster, Hercules slaying a lion. But just as the people of early Western civilizations looked to the stars and told stories about them, so did Indigenous people around the world. In North American communities, the stars hold bears, sweat lodges, thunderbirds, and more.

Some of those stories are part of how Indigenous people made sense of the world around them—a form of science separate from, but with kinship to, the enterprise of observation, prediction, and questioning built around the scientific method.



**Share a Star Story that comes from the Indigenous People of the land you live on.** See Parent Preparation in the unit overview for links to stories of visit your local library to find local books.

### **Evening Lesson**

**Planning and Conducting**-With support, your child will plan the appropriate investigations to answer these questions. They will find their location to observe the stars, and commit to the sketching at 30 min intervals for 2.5 hours.

### **Materials Needed:**

- Hula Hoop
- Ruler
- Compass
- Sketch book and pencil

Standing in your chosen spot, take your arms and stretch them out on either side of you, so they are pointing to the horizon line. Now, keeping your fingers “touching” the horizon line, rotate your body around. When you have made one full rotation, you return to where you started. The horizon has revealed itself to be what shape? (a circle) Now you can experience the horizon as a circle around you, and that you are at the centre of this circle, standing at equal distance from all points on the horizon.

Well, now we know it is a circle, because your body just rotated around and came back to its starting point. But how does this circle actually appear to your sight? (It appears as a straight line). We can't see the curvature of the horizon.

Take a ruler and hold it up to the horizon line. Now can you agree that it certainly appears straight to your eyes?

The Horizon is a circle that appears to us as a straight line. This circle is referred to as a Great Circle. We can always recognize a Great Circle by either finding ourselves at the centre of it, or by seeing it as a straight line.

If you have a hula hoop, hold it up at eye level, covering the horizon line, and rotate your body 360 degrees. This is the Great Circle. There are many Great Circles, but the uniqueness of the Great Circle of the Horizon is that as you rotate your body, your arms point to the horizon and the angle of your arms never changes. Your arms are perpendicular to your vertical body, and they are creating a right angle. This is another example of your body as an instrument of measurement.

## **ASTRONOMY**

### **Star and Moon Gazing Assignment-Using your compass:**

1. Stand in an open spot that allows a 360 degree view of the sky and face due East. Choose a bright star that is fairly close to the horizon. Sketch the star, as well as a landmark in order to place the star in relationship to that structure.
2. Turn 180 degrees, finding West, and choose a second bright star, slightly higher in the sky and draw it with a landmark.
3. Turn 90 degrees to left (now facing South), choose a 3<sup>rd</sup> star, draw it with the landmark.



4. Turn 180 degrees (now facing due North), choose a 4<sup>th</sup> star, draw it with a landmark. You will now have 4 different drawings.
5. Return to the same spot 30 minutes later and repeat the observations and drawings in all four directions.
6. Repeat 30 minutes later, and again 2 more times.
7. You should have 4 or 5 drawings for each direction over a span of 2 ½ hours.
8. Mark the time and date of each sketch on the back of the paper and save these drawings for further study.

Redo this assignment two more times on different nights during this week. It isn't necessary to choose the same star on other nights, but stars must be consistent on a given night.

**Moon Assignment:**

1. Observe the moon (shape, location) over 28 days.
2. Draw each night's moon. Include the date drawn.

**STEP 5: Learning Portfolio:** Your child will create a title page for the astronomy unit. They will use Vincent van Gogh's *Starry Night* as inspiration. The following links contain information about the painting, and two different tutorials to guide your child through the sketching stage.

- [The Van Gogh Gallery: The Story of Starry Night](#)
- [How to Draw Starry Night with Step-by-Step Instructions](#)
- [YouTube Guided Drawing Tutorial of Starry Night](#)

**STEP 6: Story:** Create a reverent space. Light a candle. This is either independent reading for your child, or a time you read the chosen chapter book to them. A book with an astronomy theme would be best for this unit!

**STEP 7: Closing:** Recite your closing verse to end the morning lesson. Here's one suggestion, but feel free to choose your own. This can either be spoken or sung. [Here's the tune](#) if you wish to sing it.

*Be ye lamps unto yourselves.*

*Be your own confidence.*

*Hold to the truth within yourselves,*

*As to the only lamp.*



## DAY 2

### GOALS OF THE LESSON

Your child will continue the scientific process of questioning and predicting, and planning and conducting. This evening they will continue to observe and sketch the stars and the moon. They are gathering information to analyze, so as to figure out the course of the stars in the N, S, E, W horizons, as well as what phase of the moon they are in. They will identify First Peoples' perspectives and knowledge as sources of information.

### WHAT TO KNOW BEFORE YOU BEGIN TODAY

Today you will support your child in recalling the experience from last night's sky observation. They will continue to work with the horizon tonight and be introduced to the Zenith.

**Moon Observation:** Once your child has sketched the moon for a few nights, they will see whether it is waxing or waning, and what phase you are in. Ideally, on the morning lesson of Day 4, you will have them figure out what phase of the moon cycle you are in. If by chance, you are at the new moon or full moon in the first days, it would be useful to share the new moon or full moon information around ritual and ceremony that can be found in the monthly overview. Your own personal ritual can be incorporated into the evening observation.

## TODAY'S LESSON

**STEP 1: Opening:** Begin the morning lesson with the morning verse. Include poems to recite each morning.

**STEP 2: Intentional Movement Activity (IMA):** The practice of Vinyasa yoga offers many flows with references to the sun and moon. Spend Week One with the Sun Salutation each morning. You can find a suitable video on YouTube if this helps. Using the hula hoop for morning movement would also be a fun activity. Try basic hip rotation and then move on to other body parts.

**STEP 3: Five minute Math Activity or Game:** Choose a math game or activity to play for 5 minutes. [See Lahal Game](#) for one idea. Then your child will practice probability math. Refer to your Grade 6 math workbook or the online worksheet suggestions in the monthly overview.

### STEP 4: Guided Review: The Horizon and the Great Circle

What was it like standing under the night sky? How did you feel? What shape did the sky feel to you? What experience did you have of your body being a useful tool? What was it like to sketch a star in each direction? Were you able to do this every 30 minutes for 2.5 hrs? If not, what would make it easier for this evening? What do you need to change?



What does horizon mean? Can you describe the interesting qualities of the horizon? What are the qualities of a Great Circle? Based on the myth you heard yesterday, what values can you see in the Indigenous way of seeing the world and their connection to the stars?

**Language Arts Writing:** Write a rough copy paragraph or a poem summarizing your experience of standing under the majestic dome of the night sky. Describe the Horizon and the Great Circle. Describe how you felt in your heart, in your body, in your mind.

**STEP 5: New Material: The Zenith**

**Guided Lesson:** Looking at the horizon is easy for us; our eyesight directs us to a spot we can easily identify. The line between the earth and the sky stands out clearly for us. Our upright body gives us a feeling of a vertical line, and our eyesight and outstretched arm create the right angle. Our eyesight focuses on a point in the distance. We can point to a spot on the horizon with ease. We can even take our ruler and line it up with the horizon. The point directly above us is called the Zenith. Zenith is an Arabic word that means “apex”.

**Question and Prediction:** What do you think it will be like to look directly above you tonight? What do you think it will be like to try and choose one star above you to look at that is directly above you? How do you think you will feel when you are staring straight up above you at the sky?

**How Else is our Body a Great Tool for Measuring?**

Astronomers measure how far apart objects appear in the sky by using angles. By definition, there are  $360^\circ$  in a circle, so a circle stretching completely around the celestial sphere contains  $360^\circ$ . The half-sphere or dome of the sky then contains  $180^\circ$  from horizon to opposite horizon. Thus, if two stars are  $18^\circ$  apart, their separation spans about  $1/10$  of the dome of the sky. To give you a sense of how big a degree is, the full Moon is about half a degree across. This is about the width of your smallest finger (pinkie) seen at arm's length.



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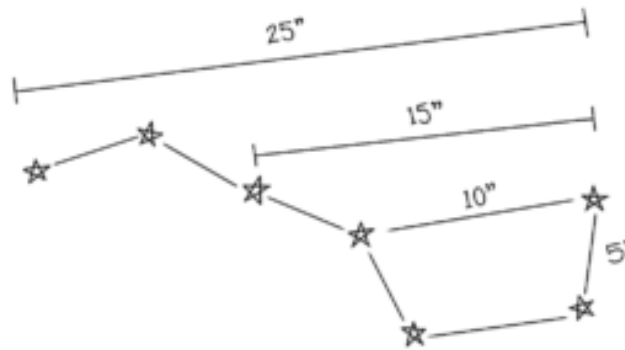
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**Evening Lesson**

**Planning and Conducting:** Your child will continue with the star and moon observations. They will continue the same sketching exercise as yesterday. They will sketch one star at the horizon in each direction; they can choose a different star.

**Materials Needed:**

- Compass
- Sketch book and pencil

**Guided Experience:** Stand in your observation spot. Locate the horizon. How does it feel to locate it? How does your body feel as you gaze at the horizon? Now look directly above you and locate the Zenith. Find the star directly above you. How can you be sure that you are looking at the star directly above you? How do you feel in your body as you try to locate this star? How does your head feel?

**Star Observation:** Sketch the stars in each direction. Mark the date and time on the back of the paper. Keep track of your sketches.

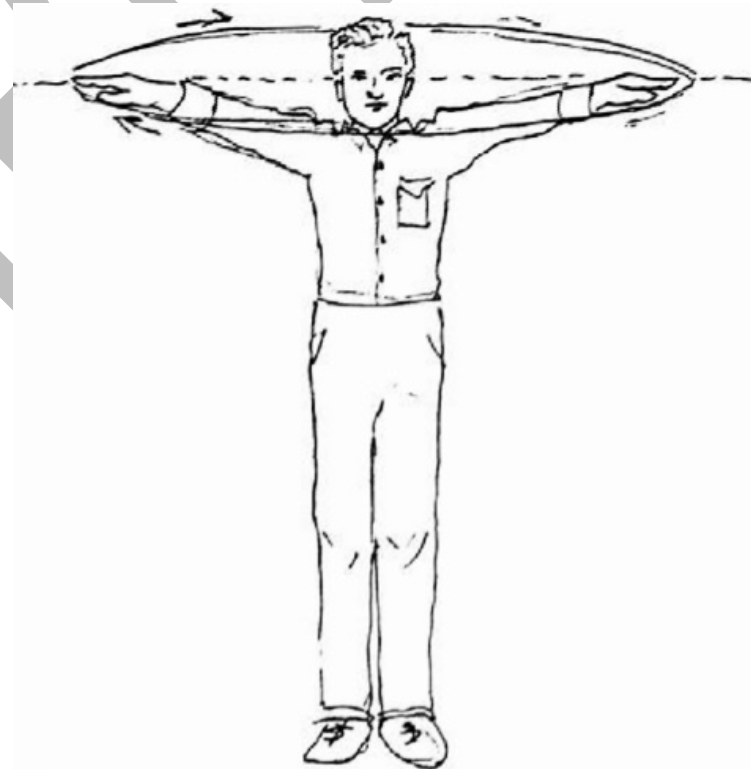
**Moon Assignment:** Sketch the moon.

**STEP 6: Learning Portfolio:** Your child will create a sketch of their experience of discovering the Horizon and the Great Circle. See example of Fig 2 beside, from [An Introduction to the Stars](#).

Create a beautiful title and interesting page layout and border.

**STEP 7: Story:** Create a reverent space. Light a candle. This is either independent reading for your child, or a time you read the chosen chapter book to them. A book with an astronomy theme would be best for this unit!

**STEP 8: Closing:** Recite your closing verse to end the morning lesson.





## DAY 3

### GOALS OF THE LESSON

Your child will continue the scientific process of questioning and predicting, and planning and conducting. This evening they will continue to observe and sketch the stars and the moon. They are gathering information to analyze, so as to figure out the course of the stars in the N, S, E, W horizons, as well as what phase of the moon they are in. There may be a need to evaluate the process and make necessary changes to bring greater success to the evening observations.

### WHAT TO KNOW BEFORE YOU BEGIN TODAY

Today you will support your child in recalling last night's experience of the Zenith and their sky observation. They will be introduced to the Nadir.

The evening sky observation may be difficult to commit to. It would be great to experience it every night for 5 days in a row, but 3 nights in the week can be sufficient if you are finding it difficult.

## TODAY'S LESSON

**STEP 1: Opening:** Begin the morning lesson with the morning verse. Include poems to recite each morning.

**STEP 2: Intentional Movement Activity (IMA):** The practice of Vinyasa yoga offers many flows with references to the sun and moon. Spend Week One with the Sun Salutation each morning. You can find a suitable video on YouTube if this helps. Using the hula hoop for morning movement would also be a fun activity. Try basic hip rotation and then move on to other body parts.

**STEP 3: Five minute Math Activity or Game:** Choose a math game or activity to play for 5 minutes. See [Lahal Game](#). Then your child will practice probability math. Refer to your Grade 6 math workbook or the online worksheet suggestions in the monthly overview.

### STEP 4: Guided Review: The Zenith

What was your experience of the star observation last night? Were you able to conduct your sketching activity at regular intervals? If this is not working easily for you, what can you change to bring about more success in your observation? Could you identify the Zenith when you looked up? What did you experience? How did it feel in your body when you looked for the Zenith? How did this compare to your experience of looking at the horizon?



**Language Arts Writing:** Proofread and edit your rough copy writing.

**STEP 5: New Material: The Nadir**

**Guided Lesson:** As you experienced, the horizon is easy for us to locate. It feels natural in our bodies to observe this place where earth and sky meet. We are very conscious and aware of it. Why do you think this is the case? (guided answer—perhaps because as humans, we are a balance between the earthly and the heavenly).

We are aware of the space above us, but it is hard to be exact about the spot directly overhead. The sky is so vast, so overwhelming in its majestic beauty. We probably even feel a bit light-headed, as we tip our heads back and try to locate the Zenith. In all ways the experience of trying to get our bearings in the dome of the sky is overwhelming.

Just as the Zenith is the point directly above us in the sky, the Nadir, an Arabian word meaning “foot-point”, refers to the point directly below us. Although we cannot see the Nadir, we can imagine the line that would run directly below us, vertically, extending into the earth and through the other side.

**Question and Prediction:** Imagine the circle that can be created between the Zenith and the Nadir. How would it lie in relation to the Great Circle of the Horizon?

**Canadian Perspective on the Indigenous Study of the Stars:** Every ancient culture has different stories based on this massive canopy from horizon to horizon that unfolds before our eyes every night. Just like the telescope we use to gather information about a planet, the story about Mars, for example, circling around in the sky like a startled moose is also an instrument of astronomical observation. In 2008, Canada began a major effort to right the wrongs of colonization and its wrongful treatment of Indigenous people. The process, which aimed to recognize the rights of Indigenous groups and shape a new relationship of respect, was broadly referred to as [truth and reconciliation](#). The scientific community is embracing this healing as well. This took the shape of a conscious effort to include Indigenous culture and technology in the story of Canadian science.

**Guided Discussion:** Why do you think it is important to have a respect and reverence for the Star Stories of the Indigenous people, and especially the groups that have lived for thousands of years on the land you live on?

**Indigenous Myth-** Share a Star Story with your child. *See Parent Preparation in the Unit Overview for links to stories.*



**Evening Lesson**

**Planning and Conducting**-Your child will continue with the star and moon observations. They will continue the same sketching exercise as yesterday. They will sketch one star at the horizon in each direction; they can choose a different star.

**Materials Needed:**

- Compass
- Sketch book and pencil
- Hula hoop

**Guided Experience:** Stand in your observation spot. Locate the horizon. Try to locate the Zenith. Now, imagine the Nadir running vertically below you. Take your hula hoop and create the Great Circle at the horizon. Now, using your hula hoop, imagine creating a circle with the Zenith and the Nadir. There is another Great Circle that runs through the Zenith and the Nadir. Picture the Great Circle at the Horizon, and the Great Circle between the Zenith and the Nadir. Can you see what angle those two circles create when they intersect? (Hmmm—I wonder! If your child is not sure, the answer can be more fully explored tomorrow.)

**Star Observation:** Sketch the stars in each direction. Mark the date and time on the back of the paper. Keep track of your sketches.

**Moon Assignment:** Sketch the moon.

**STEP 6: Learning Portfolio:** Your child will write a good copy of their Horizon and Great Circle experience. Be sure to include a beautiful title.

**STEP 7: Story:** Create a reverent space. Light a candle. This is either independent reading for your child, or a time you read the chosen chapter book to them. A book with an astronomy theme would be best for this unit!

**STEP 8: Closing:** Recite your closing verse to end the morning lesson.



## DAY 4

### GOALS OF THE LESSON

Through questioning and predicting, and planning and conducting, they are being led to analyze the information they have gathered and interpret what they are observing in the night sky. They are gaining more insight into their body as a tool of measurement. They are learning about the Earth and the Seasons.

### WHAT TO KNOW BEFORE YOU BEGIN TODAY

Today you will support your child in recalling last night's experience of the Zenith and the Nadir. Through wonder, you are guiding them to hold these Great Circles in their mind, and to imagine the way that the Great Circle at the Horizon, and the Great Circle of the Zenith and Nadir will interact. They are meeting at a right angle. Two hula hoops can show this in real life. Here is a sketch that illustrates it as well. See Fig 5 below.

Your child will work with the Earth and the Seasons today. Have an Indigenous Story about the seasons that you can share today. *See Parent Preparation for links to stories.*

Here is some scientific background reading: [The Science of the Seasons](#)

## TODAY'S LESSON

**STEP 1: Opening:** Begin the morning lesson with the morning verse. Include poems to recite each morning.

**STEP 2: Intentional Movement Activity (IMA):** The practice of Vinyasa yoga offers many flows with references to the sun and moon. Spend Week One with the Sun Salutation each morning. You can find a suitable video on YouTube if this helps. Using the hula hoop for morning movement would also be a fun activity. Try basic hip rotation and then move on to other body parts.

**STEP 3: Five minute Math Activity or Game:** Choose a math game or activity to play for 5 minutes. See [Lahal Game](#).. Then your child will practice probability math. Refer to your Grade 6 math workbook or the online worksheet suggestions in the monthly overview.

**STEP 4: Guided Review: The Zenith and the Nadir:** Recall your experience under the sky last night. How did you feel? Could you picture the Great Circle running through the Zenith and the Nadir? Imagine the Great Circle of the Horizon and the Great Circle of the Zenith and Nadir. Where do they intersect? What angle does this make? What can we take from this information about our own bodies and our own position on earth? (Guide your child to consider that our upright body stands vertically and our eyesight and extended arm reach towards the horizon. When



our arms point to the horizon, we have created a right angle (90 degrees) with our body.) If you have two hula hoops now, can you create the two Great Circles and experience their relationship to each other?

**Guided Question:** Do you have the same Horizon point, Zenith and Nadir as someone else? Hmm...interesting! Every human has their own Horizon, Zenith and Nadir.

**Indigenous Myth:** What wisdom was shared in the myth from yesterday? What value or connection can you embrace from this myth?

**Language Arts Poetry Recitation:** *Read this poem out loud. Practice reading it with attention to your tone, volume and pace.*

I feel my destiny  
My destiny finds me  
I feel my star  
My star finds me  
I feel my goals in life  
My goals in life are finding me  
My soul and the great world are one

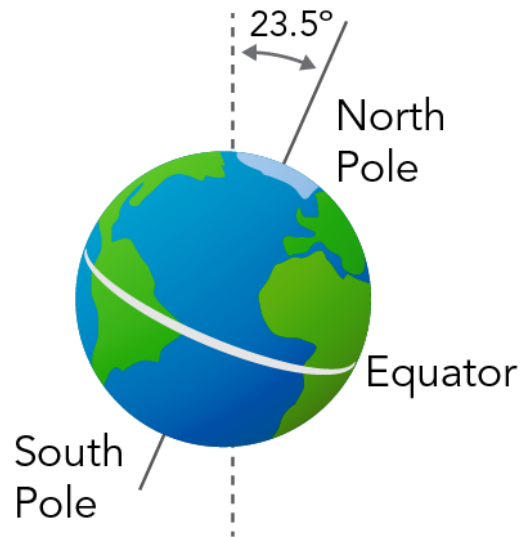
**STEP 5: New Material: The Earth and the Seasons**

**Indigenous Myth:** Share a story about the seasons with your child. *See Parent Preparation for links to stories.*

**Guided Lesson:** Each night you are observing the movement of the stars and the changing of the moon. What about the movement of the Earth? What kind of movement does it have? (See what knowledge your child has before you give them the answers).

Seasons are caused because of the Earth's changing relationship to the Sun. The Earth travels around the Sun, called an orbit, once a year or every 365 days. As the Earth orbits the Sun, the amount of sunlight at each location on the planet gets everyday changes slightly. This change causes the seasons. Not only does the Earth revolve around the Sun every year, but the Earth rotates on its axis every 24 hours. This is what we call a day. The Earth doesn't rotate in a straight, vertical manner relative to the Sun. It is slightly tilted. The Earth is tilted 23.5 degrees from its orbital plane with the Sun. The planet is always tilted in the same direction as it **orbits** the Sun.



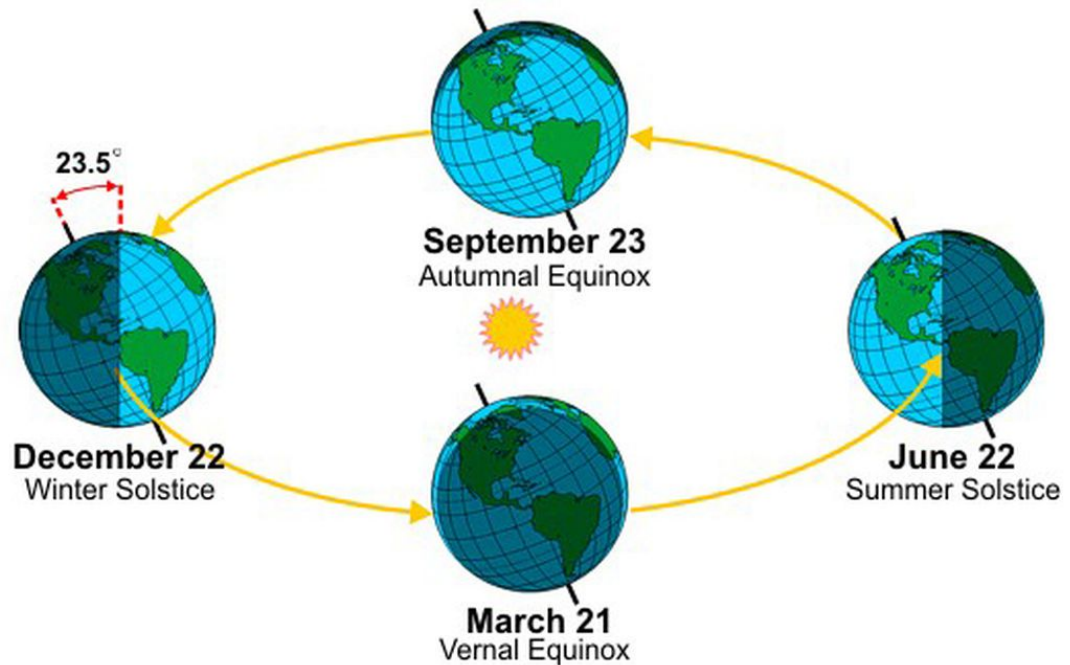


**Earth and the Seasons: Sketch the Earth in the Four Seasons**

Today you will use this diagram as a guide to create your own. This will go into your portfolio tomorrow. You will sketch four images of the Earth and cut them out. Create the Sun and cut it out. Be sure to lightly shade the areas that are not receiving the sunlight.

**Misconception Alert**

People often think that the Earth is closer to the Sun during the summer. And it's farther away during the winter. This is not correct. In fact, the Earth is closest to the Sun in January! The distance between the Earth and the Sun does not affect the seasons. Seasons change because of the tilt of the Earth and the planet's movement around the Sun.





**Evening Lesson**

**Planning and Conducting:** Your child will continue with the star and moon observations. They will continue the same sketching exercise as yesterday. They will sketch one star at the horizon in each direction; they can choose a different star.

**Materials Needed:**

- Compass
- Sketch book and pencil

**Guided Experience:** Begin the observation by connecting with the horizon, using your outstretched arm to point to the horizon. Use your other arm to point vertical above you towards the Zenith. Imagine the vertical line beneath you reaching the Nadir. Here you are standing in the middle of the Universe. You are the only one who sees this exact horizon, zenith and nadir.

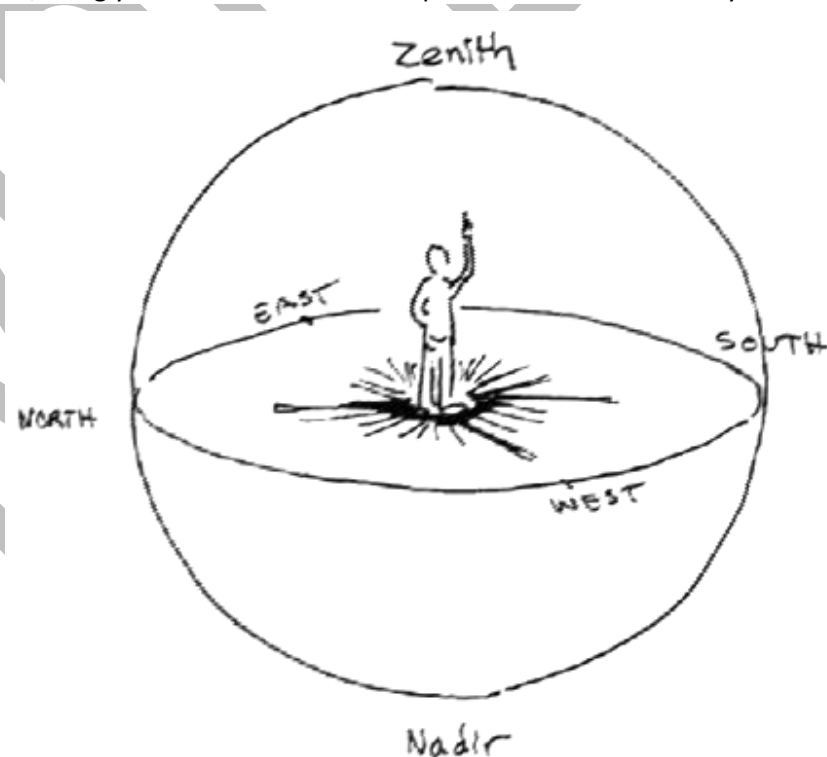
**Star Observation:** Sketch the stars in each direction. Mark the date and time on the back of the paper. Keep track of your sketches.

**Moon Assignment:** Sketch the moon.

**STEP 6: Learning Portfolio:** Your child will create a page that includes a beautifully written copy of the above poem about destiny. They will sketch the image of the Horizon, Zenith and Nadir. See Figure 5 beside from [Intro to the Study of the Stars](#) by C.R. Mirbit. Create the title: My Personal Horizon, Zenith and Nadir.

**STEP 7: Story:** Create a reverent space. Light a candle. This is either independent reading for your child, or a time you read the chosen chapter book to them. A book with an astronomy theme would be best for this unit!

**STEP 8: Closing:** Recite your closing verse to end the morning lesson.





## DAY 5

### GOALS OF THE LESSON

They are learning about the Earth and the Seasons. They are learning about the lunar cycle. They are learning about how the days of the week were named.

### WHAT TO KNOW BEFORE YOU BEGIN TODAY

Today your child will review their understanding of the Earth and the Seasons: [The Science of Seasons](#)

They will use their moon sketches from the last 4 nights to figure out where they are in the lunar cycle. If you haven't already, today you will share the moon rituals for the New Moon and the Full Moon. Share an Indigenous story about the Moon.

## TODAY'S LESSON

**STEP 1: Opening:** Begin the morning lesson with the morning verse. Include poems to recite each morning. **Have your child recite the destiny poem written into their portfolio.**

**STEP 2: Intentional Movement Activity (IMA):** The practice of Vinyasa yoga offers many flows with references to the sun and moon. Spend Week One with the Sun Salutation each morning. You can find a suitable video on YouTube if this helps. Using the hula hoop for morning movement would also be a fun activity. Try basic hip rotation and then move on to other body parts.

**STEP 3: Five minute Math Activity or Game:** Choose a math game or activity to play for 5 minutes. See [Lahal Game](#). Then your child will practice probability math. Refer to your Grade 6 math workbook or the online worksheet suggestions in the monthly overview.

**STEP 4: Guided Review: The Earth and the Seasons:** How long does it take for the Earth to orbit around the sun? How long does it take for the Earth to rotate on its axis? What degree does it tilt towards the sun? What creates the change in the seasons?

### Movement exercise for review:

1. You will need 3 people for this activity.
2. Choose one person to be the sun. They stand still in the centre.
3. Choose one person to represent the earth. The earth spins, taking 24 hours to complete one rotation. The "earth" person slowly (as to not get dizzy) turns on the spot some distance from the 'sun' person.



4. The third person represents the moon. The moon is orbiting the earth. This takes 29.54 days to complete one full circle around. The moon person can begin to slowly orbit the earth.
5. Finally, the earth is also orbiting the sun. Slowly and carefully, add in this final movement around the sun.

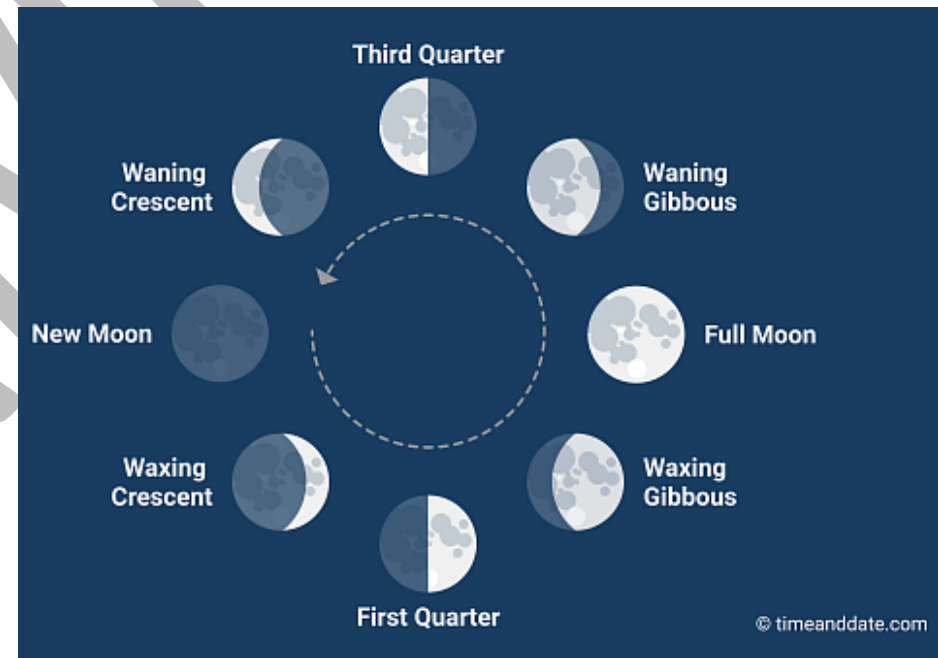
**Indigenous Myth:** What wisdom was shared in the myth from yesterday? What value or connection can you embrace from this myth?

**Lunar Cycle:** Using your moon sketches from the last 4 nights, put them together in order. Can you tell yet whether the moon is waxing (increasing in visibility) or waning (decreasing in visibility)? Look at the chart below to see if you can identify what phase the moon is in. If you can't tell yet, keep sketching and check again in a few more days! Once you know what phase you are in, you can create a special ritual on the New Moon and the Full Moon.

**New moon:** A new moon is considered the 'dark phase' of the moon, and yet the energies are a little lighter, and represent growth, expansion, and awareness – welcoming in the new, and rebirth. This is the optimal time to set intentions, and think deeply about what you would like to manifest and achieve. What are your goals? What areas of your life do you want to begin again? The new moon is the perfect time to draw a line under the last month, and start writing a new life-script.

**Full moon:** Two weeks after a new moon, light from the sun gathers and builds across the surface, until we see a complete, full, shining moon. It represents the culmination of our energies, helping us to put into fruition the intentions we set two weeks before. The full moon represents completion and letting go. After we utilise our full energies, what follows is called a waning moon (as the light decreases) and represents moving away from the things that are no longer serving us, and shows us the shadows and darkness that we are maybe avoiding, or struggling to process. The full moon is often a deeply emotional time for many people, and can coincide with headaches and insomnia as we process these emotions.

The moon's energy is potent and powerful, just like we are. Think of the way that the moon can move the ocean tides and guide the menstrual cycle for girls and women. It can be used as a way to connect more deeply with ourselves, and our feelings. Particularly during a full moon, you can try to harness that spiritual energy





through journaling, meditating, or charging your crystals. Remember that there's no right or wrong when it comes to the divine, so experiment and find whatever feels best for you.

**Indigenous Myth:** Share an Indigenous Myth about the Moon.

**STEP 5: New Material:** What is the Meaning of the Names of the Days of the Week?

**Guided Lesson:** Did you know that the days of the week have a cosmic theme? If you know French, it can be easier to guess the meaning of the name of each day. See if you can figure it out.

**Monday**—What is it in French? (lundi) (Moon—Lune)

Monday also sets the emotional tone for the week ahead. Given its energetic theme, it's easy to feel all sorts of moody on this day, but it's also important to be mindful of the tone you're setting for yourself:

**Tuesday-** French? (mardi) Mars. Tuesday comes from the Germanic language, named after Tyr. He was the God of War in Norse Mythology. Tuesday is ruled by Mars, the planet that rules energy and action, which means Mars-day is the day we get things done. Monday is for setting intentions, and Tuesday is for executing, got it? This is a day to make decisions and get projects off the ground.

**Wednesday-** French? (mercredi) Mercury. In the Germanic language, Wednesday got its name from Odin (Wodin's Day), honouring Odin the Wise in Norse Mythology. Wednesday is ruled by Mercury, the planet of communication and thought process, which is why it's considered the perfect day to deliver a message and organize your schedule.

**Thursday-**French? (jeudi) Jupiter. In the Germanic language it was named for Thor, Thor's day. Thor is the hammer-wielding Norse god of thunder, strength and protection. The Roman god Jupiter, as well as being the king of gods, was the god of the sky and thunder. Thursday is ruled by lucky Jupiter, the planet of abundance and expansion, which makes it the perfect day to learn something new.

**Friday-** French? (vendredi) Venus. In the Germanic language, we get the name Freya, who was the goddess of beauty in Norse Mythology, just as Venus is the goddess of beauty in Roman mythology. Let me guess, it's Friday and you're in love? It's no coincidence everyone loves Friday, considering it's the day of Venus, planet of love and beauty. This is the perfect time to kick back, socialize, and connect with others.

**Saturday-** French? (samedi) Saturn. We get the name from the planet Saturn. Saturday is ruled by Saturn, the planet of structure and discipline. Believe it or not, this is an *adulting* kind of day. So, whether you're catching up on work, running an errand, or simply babysitting your kids, this is a day for taking responsibility.



**Sunday-** Pretty obvious, right? Sun. In French, dimanche means “the day of our Lord”. We get the name for Sunday from the Sun! Sunday is ruled by the sun, which represents our ego and soul purpose. This is the perfect day to embrace your individual light and true colour.

**Evening Lesson:** If your child already has four sketches of the stars, and they would like to complete that observation, they could just sketch the moon.

**Planning and Conducting-**Your child will continue with the star and moon observations. They will continue the same sketching exercise as yesterday. They will sketch one star at the horizon in each direction; they can choose a different star.

**Materials Needed:**

- Compass
- Sketch book and pencil

**Guided Experience:** Begin the observation by connecting with the horizon, using your outstretched arm to point to the horizon. Use your other arm to point vertically above you towards the Zenith. Imagine the vertical line beneath you reaching the Nadir. Here you are standing in the middle of the Universe. You are the only one who sees this exact horizon, zenith and nadir.

**Star Observation:** Sketch the stars in each direction. Mark the date and time on the back of the paper. Keep track of your sketches.

**Moon Assignment:** Sketch the moon.

**STEP 6: Learning Portfolio:** Your child will create a page titled: Earth and the Seasons. Create a page that highlights the movement of the Earth around the Sun and the change of the seasons in one year. Use your cut-outs from yesterday and the diagram you looked at yesterday to help you create the page in your portfolio.

**STEP 7: Story:** Create a reverent space. Light a candle. This is either independent reading for your child, or a time you read the chosen chapter book to them. A book with an astronomy theme would be best for this unit!

**STEP 8: Closing:** Recite your closing verse to end the morning lesson.