MANITOBA MUSEUM

LEARNING & ENGAGEMENT
T 204-988-0626 / E programs@manitobamuseum.ca
ManitobaMuseum.ca

Virtual Field Trip: What's Up
Program Resources
Grades K-4

Thank you for booking a Virtual Field Trip at the Manitoba Museum. We have designed this resource guide to help you enrich your students' learning before and after their visit. All of these activities are reflective of the Manitoba Curriculum Framework of Outcomes and are a perfect way to get your students ready for the program or to recount their adventures at the Manitoba Museum.

This program highlights the various objects that we can see in the sky, both during the day and at night. Students will learnt o find some milestones in the sky, and follow those milestones through a day and a year to see the daily and seasonal changes which occur.

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Vocabulary
Here are some key vocabulary words that your students may encounter during their adventure with the Learning & Engagement team at the Manitoba Museum.

Sun: the Sun is a star, a huge glowing ball of gasses that is much larger than the planets All of the planets orbit around the Sun. The Sun is the source of heat and light for all of the planets.
Light:
Heat
Day
Daytime
Night time
Morning
Afternoon
Seasons
Shadow
Cycle

Solar System – a system of planets which all orbit the same star. Our solar system consists of one star (the sun), 8 major planets, several dwarf planets, hundreds of moons, and millions of smaller bodies such as asteroids and comets. Thousands of other stars have been found to have their own solar systems.

Inner Planets – in our solar system, the inner planets are Mercury, Venus, Earth, and Mars. They are close to the sun than the asteroid belt, have rocky surfaces, and few or no natural satellites (moons).

Outer Planets – in our solar system, the outer planets are Jupiter, Saturn, Uranus, and Neptune. They are farther from the sun than the asteroid belt, are gas giant planets with no solid surface, and have systems of rings and moons.

Rotation – all celestial objects rotate to some degree, spinning like a top around an axis (a line drawn from the object's north pole to south pole). The earth rotates in roughly 24 hours.

Revolution – all of the objects of the solar system revolve around another object, moving in an elliptical (oval-shaped) path around it while also rotating on their axis. The path an object takes around the sun is called the object's orbit. The earth takes roughly 365 days to revolve around the sun. The moon takes roughly 27 ½ days to revolve around the Earth.

Axis – a line drawn between an object's north and south poles, that defines the object's rotation.

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Star Stories with Marvin

A series of short videos about some of the constellations seen from Manitoba. Find it here: https://www.youtube.com/playlist?list=PLneSQDXBVcAdXv6nTBXgSOdwRyS7QdvOs

Useful web links:

- https://manitobamuseum.ca/main/visit/planetarium/astronomy-resources/ - the Planetarium's resource page
- www.heavens-above.com – provides star maps and times of satellite passes for any location on Earth. Make sure you set your location before using!
- www.skynews.ca – Canadian astronomy magazine with up-to-date information on what's going on in the night sky
- https://thinkzone.wlonk.com/SS/SolarSystemModel.php - solar system scale model calculator
- Rasc.ca – Canada's astronomy club. Publications include Sky News magazine and SkyWays, an astronomy handbook for teachers.

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Activities: The Sun

- Brainstorm all of the ways we use energy from the Sun. Answers include daylight, plants use light to grow, sun's energy warms the earth, sun's heat drives weather and ocean currents; sunlight can be converted to electricity using solar panels. What others can you and your students come up with?
- Go outside on a warm, sunny day to feel the heat of the Sun, and experiment with light and shadows. Since light travels in a straight line, it is blocked by solid objects and leaves an area without light in the opposite direction. The Earth blocks light as well, and so only the side of teh earth facing the sun receives sunlight. The other side receives no sunlight and is therefore dark, only lit up by the much more distant stars and maybe the moon.
- Have students observe where the sun rises or sets over a period of several weeks to see seasonal changes(ideally around the winter solsctice, when the sun sets early).
- For older students, use a curved mirror (like a make-up mirror) or a lense to focus sunlight to create heat. WARNING: you can start a fire this way! Do this activity outside, and in an area away from flammable materials. You can pop a balloon with the heat from a magnifying glass, or rig up a simple solar oven to heat things up (see an example at https://www.instructables.com/The-Shoebox-Solar-Oven/).

Activity: Phases of the Moon

Have students create a model of the Moon by painting one half of a styrofoam ball black and one side white. Mount the ball on a pencil as a handle.

Set up a bright lamp at one end of the room to represent the Sun. Darken any other lights in the room.

The model uses the student's head as the Earth. Have them hold up the Moon at arm's length, and orient it so that the white side is facing towards the "Sun". Then have them spin to their left slowly, keeping the Moon upraised and making sure the white side is always pointed at the Sun. (In a very dark room, you can use just an unpainted model of the moon, but the dark side really helps to make the phases obvious in a room that is a bit too bright.)

Have the students create the various phases of the Moon by finding the correct position for the Moon model. Remember to keep the white side of the moon pointed at the Sun! This means as they spin to the left, they will have to spin the Moon model the opposite way to keep things lined up.

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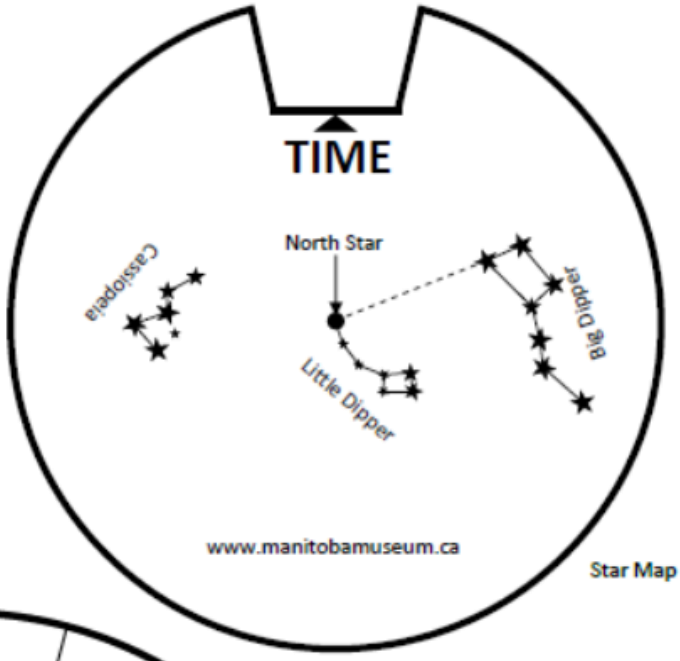
Make Your Own Star Clock

Instructions

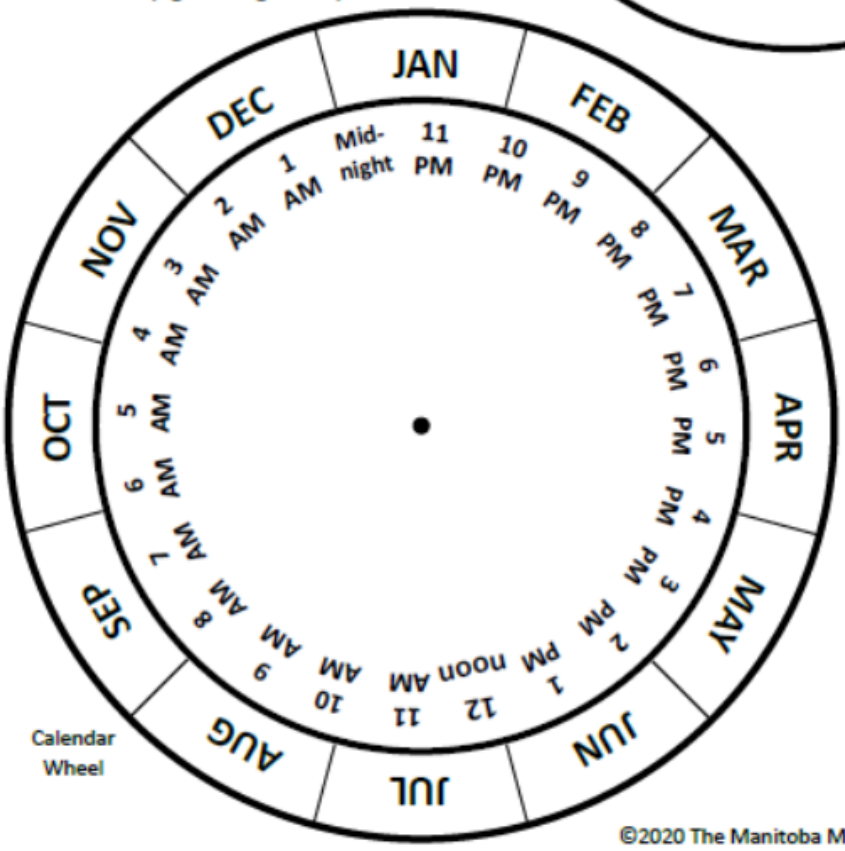
Print on cardstock or glue sheet to cardboard. Cut out both pieces along the outside edge. Put the star map on top of the calendar wheel. If you have a paper fastener, you can poke it through the North Star and through the center of the calendar wheel to hold it together. Or, place both on a piece of cork and push a pin through to hold them.

To tell the time, go outside and hold the calendar wheel so the current month is at the top. Face north. Spin the star map around the north star until the position of the Big Dipper and Cassiopeia match the view in the real sky. The time is then revealed in the open notch in the star wheel.

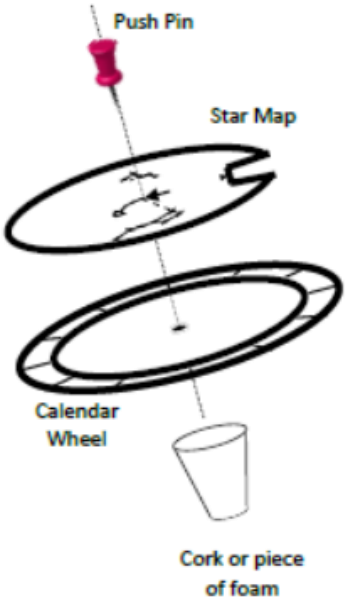
(Note: this star clock doesn't take into account Daylight Savings Time!)



Star Map



Calendar Wheel



Cork or piece of foam