Learning Activity

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Science and Technology
Grades 3 and 4

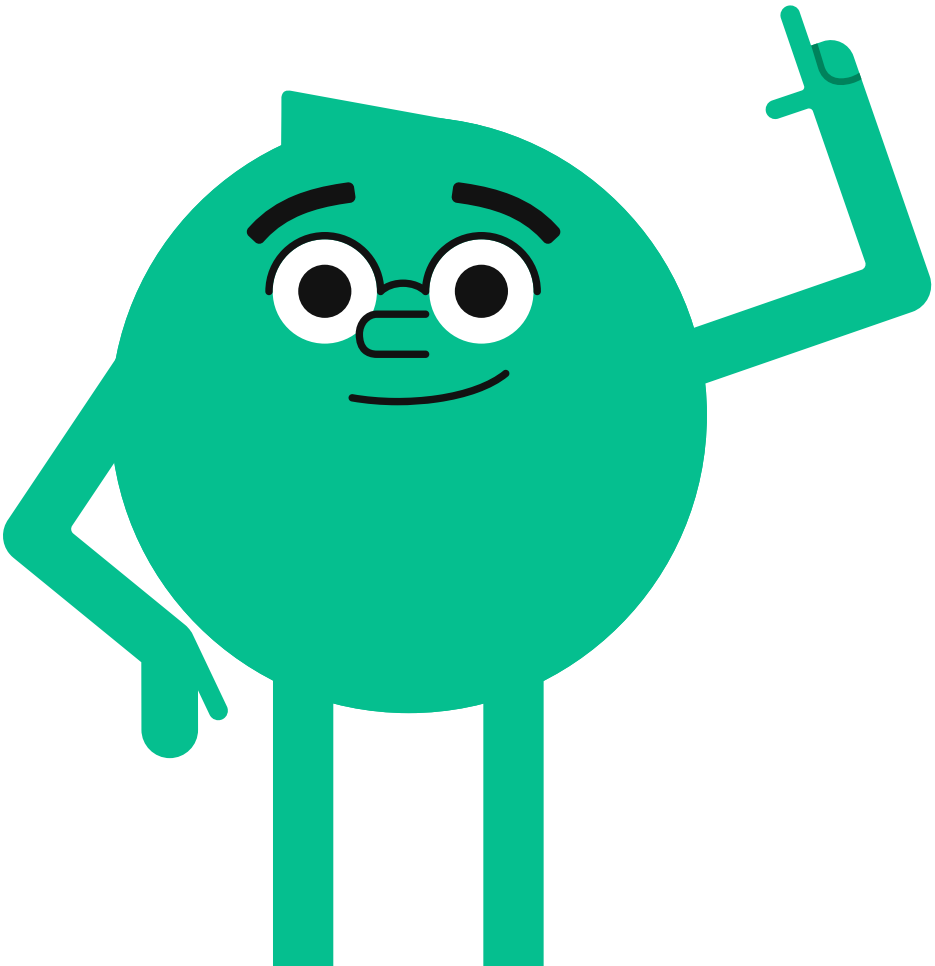
Make Your Own Star Finder

Teacher's Guide

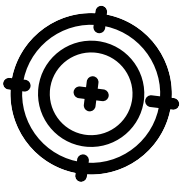
Activity Summary

Humanity has always been fascinated by the sky and its twinkling celestial bodies! The stars and constellations have inspired stories and legends even before they helped sailors find their way at sea. Stars haven't just captivated adults—they also spark wonder in kids!

This learning activity teaches elementary students in Cycle 2 how to make a star finder and learn how to use this astronomy tool.



Objectives



Recognize stars and constellations on a map of the sky.

Activity Format

Work individually or in teams of two.

Duration

Introduction	10 minutes
Mission 1. Make your own star finder.	50 minutes
Mission 2. Learn how to use your star finder.	40 minutes
Total	100 minutes

Key Concepts

Before getting started, students need to understand the difference between a star and a constellation. If necessary, you can refer to the following resource.

Alloprof. "Concept sheet: Stars and Constellations | Elementary." 2026. *https://www.alloprof.qc.ca/en/students/vl/sciences/stars-and-constellations-elementary-s1808p34*

Material

Materials

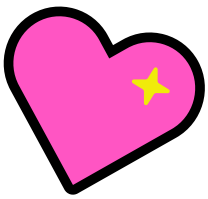
- Star finder sheets A and B (available in the Appendix)
- Student Booklet
- Cardboard sheet
  You can use a sheet of white or coloured cardboard.
  Each student could also bring in some cardboard from home, such as an empty cereal box.
- Paper fastener
- Scissors
- Glue stick

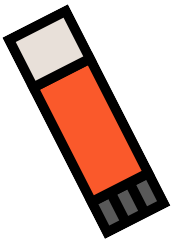
Recommended Application

The astronomy software *Stellarium* is an online planetarium that lets you observe the stars in the night sky by modifying several parameters, including:

- Date and time
- Geographic location
- Display of star names and those of many other celestial bodies
- Display of constellation names and their imaginary lines
- Display of cardinal points
- Display of the horizon
- Etc.

For this activity, this software is optional. That said, it can be helpful to use it along with the star finder to show your students the constellations and answer their questions.

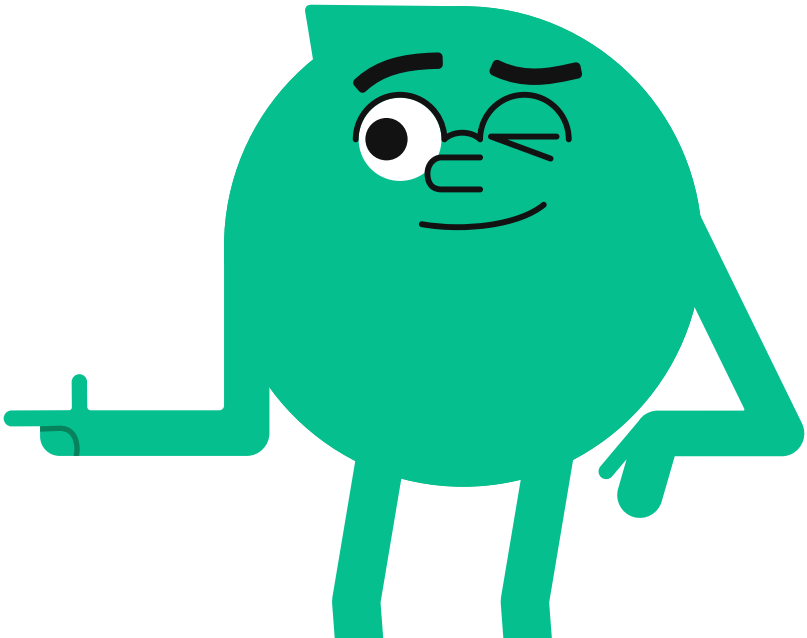




Example of Night Sky Observation

March 2, 2026, at 7 p.m. in the city of Montreal, Quebec.

Astronomy software (free)
Stellarium Web. “Online Planetarium.” 2025.
https://stellarium-web.org/



What to Prepare Before the Activity

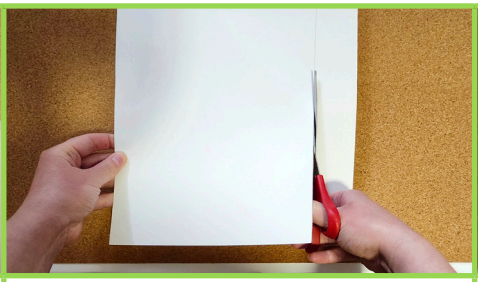
Print the Documents

For every student:
- Print out sheets A and B of the star finder (available in the Appendix).
- Print the Student Booklet.

Prepare Sheet A and the Cardboard Sheet

To save time, you can prepare part of the star finder for each of your students beforehand.

To do so, you'll need the following **materials** for each star finder:
- Cardboard sheet (white cardboard, cereal box, other)
- Sheet A of the disc
- Ruler
- Scissors or paper cutter
- Retractable utility knife

		
1. Place sheet A on the cardboard. 2. Using a pencil and ruler, trace the outline of sheet A on the cardboard.	3. Using scissors or a paper cutter, cut the cardboard along the marked lines.	4. Hold the cardboard and sheet A together, making sure the edges are aligned. 5. Using a retractable utility knife, pierce sheet A and the cardboard where the North Star is marked with the ⊗ symbol.

Prepare the Materials Kit

For every student, you can prepare the following items:
- The previously prepared sheet A and cardboard sheet
- Sheet B
- A paper fastener

The remaining materials will be provided by the student (scissors and glue stick), but you can bring extra supplies, just in case.

Recommended Steps

Introduction (10 minutes)

Read the Some Useful Information *Before You Start!* section of the Student Booklet aloud to the class and make sure the students understand what a star finder is.
Next, ask a student to read the *Your Missions* section aloud to the class.

Mission 1. Make Your Own Star Finder (50 minutes).

Hand out the materials to each student, making sure they each have what they need to make their star finder (scissors and glue stick).
Guide students through each step by making a star finder yourself at the same time. Make sure that each step is clearly understood and completed by each student so that all their star finders work properly.

Another Option

If possible, while you are making your star finder, another adult (resource teacher, special education technician, etc.) could circulate amongst the students to make sure all their star finders are working properly.

Mission 2. Learn How to Use Your Star Finder (40 minutes).

Explain to your students how to use a star finder. Projecting the following resources during your lesson can be helpful.

Alloprof. "Concept Sheet: How to Use a Star Finder?" 2026. https://www.alloprof.qc.ca/en/students/vl/sciences/stars-and-constellations-elementary-s1808p34#how-to-use-a-star-finder

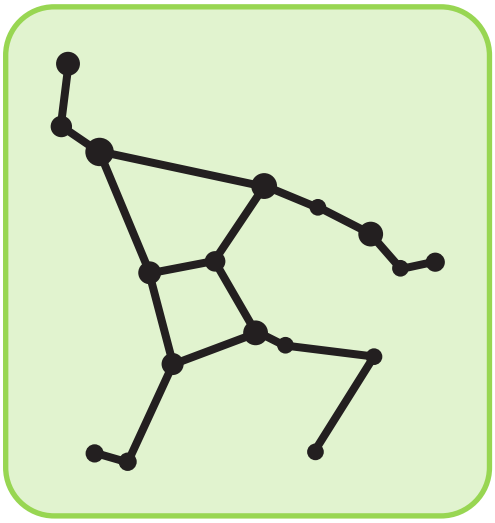
To make sure your students have understood how to use the star finder, answer their questions together as a class.

Students can then start answering the questions in the Student Booklet.

You can decide whether students work individually or in teams of two. Regardless, each student has their own star finder and fills out their own Student Booklet. The advantage of working in teams is that students can talk and help each other learn how to use the star finder and answer the questions.

At the end of Mission 2, read the *Now It's Your Turn!* section aloud to the class (or ask one of your students to do so). In this section, students are encouraged to observe the night sky with their family using their star finder. They also receive guidance on finding a suitable location to observe the night sky without light pollution.

Answer Key for the Student Booklet



Question 1

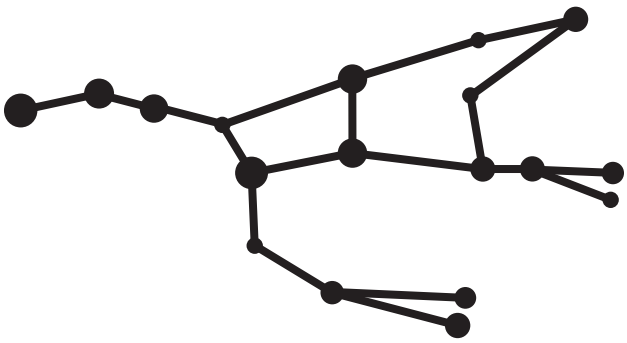
Write the name of this constellation.

Hercules Constellation

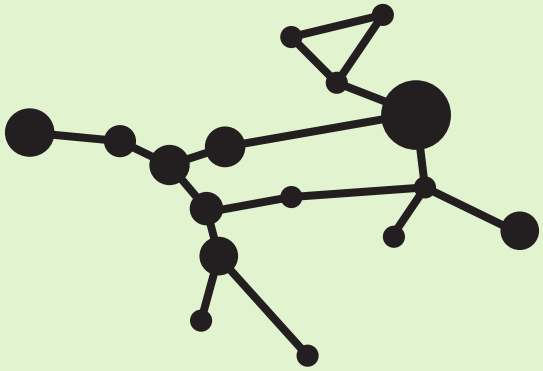
Question 2

Draw the imaginary lines connecting the stars of Ursa Major (Big Dipper).

The Ursa Major Constellation



The Canis Major Constellation



Question 3

On January 20th, at 8 p.m., can you see the Canis Major constellation in the night sky?

Canis Major is located near the southeastern horizon.

☑ I can see this constellation.
☐ I cannot see this constellation.

Question 4

It's your birthday! On your special day, you want to observe the night sky.
1. Write the date of your birthday.
2. Name two constellations you would be able to see near the southern horizon at 11 p.m. on the night of your birthday.

There are several possible answers. Here is an example:

My birthday is **January 1st.**

At 11 p.m., near the southern horizon, I will be able to see the following constellations:

Lepus

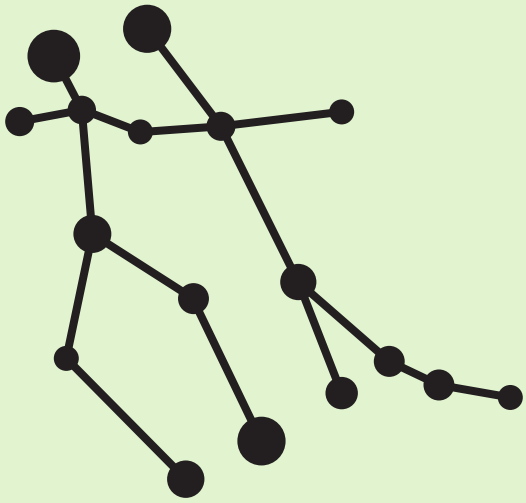
Canis Major

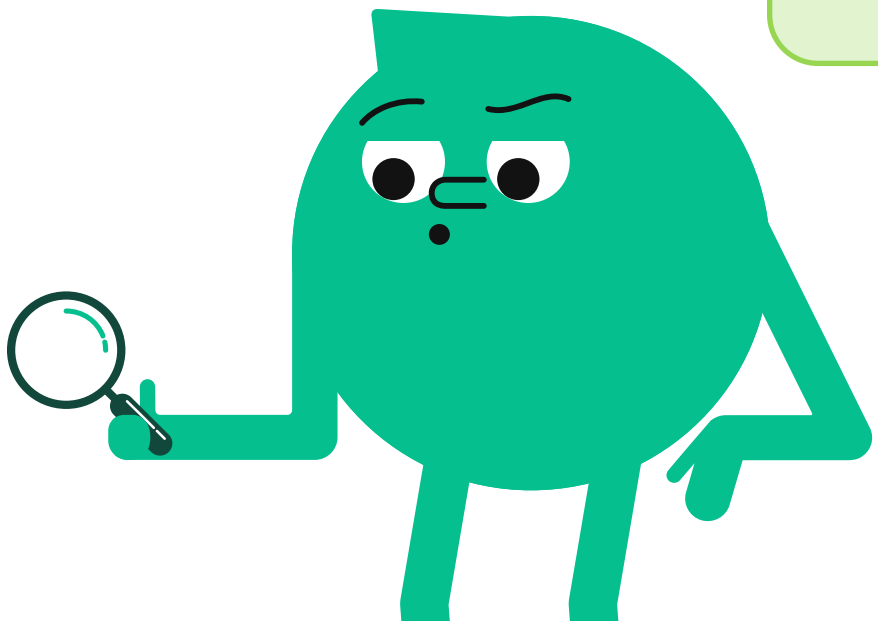
Question 5

You want to see the Gemini constellation in the night sky. Write a date and time when you would be able to observe it near the eastern horizon.

There are several possible answers.
Here are a few examples:
- *July 25th at 5 a.m.*
- *August 10th at 4 a.m.*
- *September 9th at 2 a.m.*
- *October 25th at 11 p.m.*
- *November 25th at 9 p.m.*
- *December 10th at 8 p.m.*

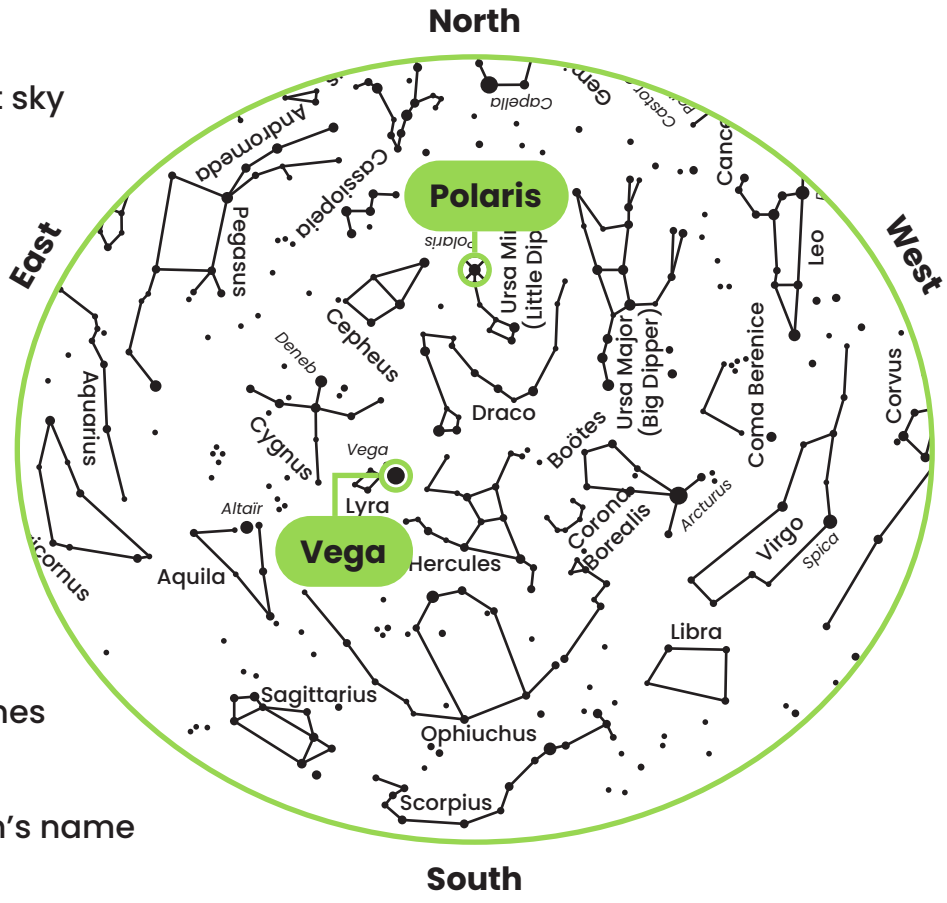
The Gemini Constellation





Question 6

Here's an image of the night sky in Rougemont, Quebec on June 21, 2026, at 11 p.m. To help you, *Polaris* (the North Star) and the north, south, east, and west horizons are marked.

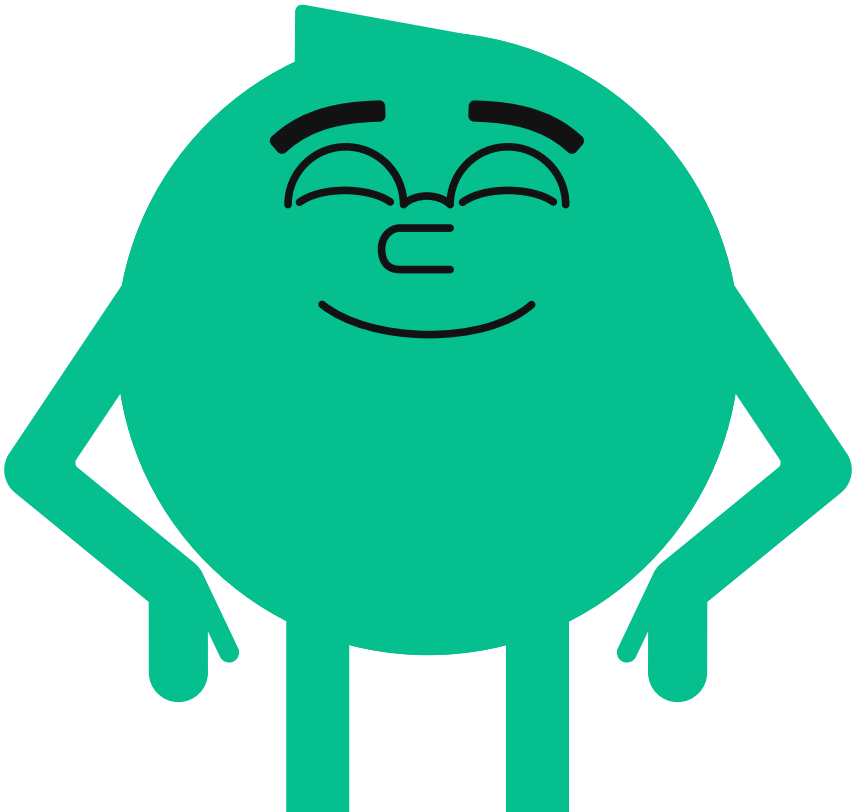


On the image:

a. Identify the star Vega by circling it and writing its name.

b. Choose **two** constellations.
   For each constellation:
   - ☐ Draw the imaginary lines connecting the stars of that constellation.
   - ☐ Write the constellation's name next to your drawing.

There are several possible answers. The following image shows the star Vega and all the constellations you can identify using your star finder.



To Go Further

Refer to the following concept sheet: https://www.alloprof.qc.ca/en/students/vl/sciences/stars-and-constellations-elementary-s1808p34

You've done this activity in class? Do you have any suggestions or comments? Tell us what you think!