

Teacher's Guide: Space Centre Scavenger Hunt

Audience: Grades 4 - 6 students

Objectives: To explore and observe various aspects of space and astronomy in a fun and engaging way.

Curricular competencies:

- Demonstrate a sustained curiosity about a scientific topic or problem of personal interest.
- Make observations in familiar or unfamiliar contexts.
- Communicate ideas, explanations, and processes in a variety of ways.

Preparation:

- Before starting the scavenger hunt, divide students into groups of 3 – 4. This will provide an opportunity for students to work collaboratively with their peers.
- Print out enough copies of the scavenger hunt (double sided) for the number of groups.
- To ensure students stay on task, give a time limit of approximately 30 minutes. Some groups may not be able to complete all the questions (complete in class at another time).
- Assign each group to a different section, to avoid crowding at some of the stations. Once completed, they can move on to the next section. This activity does not need to be completed in chronological order.

Classroom follow-up:

- In class ask the students to share their findings, observations, and ideas. Refer to the answer key for sample answers. There are a few links to good web resources included in the answer key.
- Debrief questions you could ask:
 - “What did you like most about this activity?”
 - “What is one interesting thing you learned?”
 - “Would you want to go to space?”

Group members: _____



Space Centre Scavenger Hunt



Welcome to the Cosmic Courtyard at H.R. MacMillan Space Centre! **Your mission** is to travel to space and head for Mars. Follow the steps below to complete your mission. Have fun!

Preparation

An **EVA** (Extra-Vehicular Activity) **spacesuit** is used for planetary explorations or spacewalks. What do you think spacesuits protect astronauts from when spacewalking?

Find the spacesuit and take a picture in it.

Find some **astronaut food**. What do you notice about the packaging? Does it look good? Share your ideas with someone. What would **you** like to eat in space? Write it below.

Leaving Earth

Find the giant **J-2 engine**. There were 6 of these engines on the Saturn V rocket. One J-2 engine weighs as much as 9 grizzly bears! So heavy!

The **Saturn V rocket** also had **F-1 engines**, which were much bigger than the J-2 engines. These engines are found at the base of the Saturn V. How many **F-1 engines** can you find on the model in the display cabinet? _____

In Space

Find the **ISS (International Space Station) cabin**. Stand on the disk and press the buttons. Stare at the dots for 20 seconds. How do you feel? Share your thoughts with someone.

Find a **model of the ISS**. (Hint: Look up!). Notice the wing-like structures. Are wings necessary for space travel? What purpose do they serve? Write your thoughts below.

Find the model of the **Canadarm2** with **Dextre** attached (near the Groundstation Canada Theatre). They both hold objects, but they do it in different ways. Can you explain how each works? Why do they need to hold objects?

On the Moon

Find the **piece of the Moon**. What colour is it? _____ Why do you think it's that colour?

Find the **Moon probe** and the information nearby. What 2 Canadian innovations went to the Moon?

Which **moons** in our solar system have liquid on them?

Find the big **meteorite**. How heavy is it? _____ kilograms. (This is as heavy as a small dog!) Now, look at the picture of the colourful Moon behind it. How are the craters formed?

What does the size of the craters tell you about its formation?

Find the **6 small meteorites**. Notice the different shapes, sizes, and textures. What are meteorites mostly composed of?

On Mars

Find **the planet Mars**. How do you know it's Mars?

Find **Sojourner** (small rover on Mars). Why do we need to send a rover to Mars?

Compare the model of Sojourner and to the picture of the rover Curiosity (the image of the rover on the wall). What are the biggest differences and similarities between Sojourner and Curiosity?

Try exploring Mars with the **Mars Explorer simulation**. Would you make a good planetary geologist?

Look for the **Alien Encounters game**. Follow the prompts and **draw a picture** of your favourite alien.

Space Centre Scavenger Hunt Answer Key

Preparation

An **EVA** (Extra-Vehicular Activity) **spacesuit** is used for planetary explorations or spacewalks. What do you think spacesuits protect astronauts from when spacewalking? Find the spacesuit and take a picture in it.

Spacesuits are worn to protect astronauts from radiation, dust, debris, and extreme temperatures. It also provides oxygen and monitors their vital signs.

Find some **astronaut food**. What do you notice about the packaging? Does it look good? Share your ideas with someone. What would **you** like to eat in space? Write it down below.

Astronaut food is often vacuum-sealed, lightweight, freeze-dried, and simple.

Leaving Earth

Find the **giant J-2 engine**. There were 6 of these engines on the Saturn V rocket. One J-2 engine weighs as much as 9 grizzly bears! So heavy!

The **Saturn V rocket** also had **F-1 engines**, which were much bigger than the J-2 engines. These engines are found at the base of the Saturn V. How many **F-1 engines** can you find on the model in the display cabinet?

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In Space

Find the **ISS (International Space Station) cabin**. Stand on the disk and press the buttons. Stare at the dots for 20 seconds. How do you feel? Share your thoughts with someone.

Dizzy, nauseous, disoriented, weird, etc. (or nothing at all)

Find a **model of the ISS**. (Hint: Look up!). Notice the wing-like structures. Are wings necessary for space travel? What purpose do they serve?

The wing-like structures are solar panels that generate energy for the space station.

Find the model of the **Canadarm2** with **Dextre** attached. (Near Groundstation Canada Theatre) They both hold objects, but they do it in different ways. Can you explain how they each work? Why do they need to hold objects?

Dextre's multi-jointed arms with its human-like sense of touch delicately grips equipment. Canadarm2's hand (called a latching end effector) uses 3 cables to tighten around an object and hold it in place. They are used to move equipment, supplies, and astronauts.

On the Moon

Find the **piece of the Moon**. What colour is it?

Black

Why do you think it's that colour?

It is because of the type of rock it is. It is a type of igneous rock called basalt that formed when hot, molten rock cools and solidifies. (More about the [Apollo 17 samples](#).)

Find the **Moon probe** and the information nearby. What 2 Canadian innovations went to the Moon?

Canadian geologist Dr. David W. Strangway developed an experiment to study lunar soil. The legs of the Lunar Module Eagle were built in Montreal.

Which **moons** in our solar system have liquid on them?

Europa and Enceladus have liquid water oceans; Titan has liquid methane oceans. Scientists are making new discoveries about the moons in our solar system all the time. Discover more about water in our solar system with [NASA's Ocean Worlds](#).

Find the big **meteorite**. How heavy is it? 13 kilograms. (This is as heavy as a small dog!) Now, look at the picture of the colourful Moon behind it. How are the craters formed?

Due to meteorite impacts.

What does the size of the craters tell you about its formation?

How big the meteorites were and how fast they were moving when they landed.

Group members: _____

Find the **6 small meteorites**. Notice the different shapes, sizes, and textures. What are meteorites mostly composed of?

Iron and nickel

On Mars

Find **the planet Mars**. How do you know it's Mars?

It's red!

Find **Sojourner** (small rover on Mars). Why do we need to send a rover to Mars? Compare the model of Sojourner and to the picture of the rover Curiosity (the image of the rover on the wall). What are the biggest differences and similarities between Sojourner and Curiosity?

Sending a rover is safer than sending humans.

Sojourner was the very first Mars rover. It is very simple compared to Curiosity and much smaller. The most obvious feature on Sojourner is the solar panel on its 'back'. The solar panels provided energy for the rover. Sojourner has fewer instruments than Curiosity and doesn't have 'arms' to extend its reach.

Try exploring Mars with the **Mars Explorer simulation**.

Look for the **Alien Encounters game**. Follow the prompts and **draw a picture** of your favourite alien.

Web Resources

NASA's Ocean Worlds - <https://www.nasa.gov/specials/ocean-worlds/>

Apollo lunar 'soil' study -

https://www.lpi.usra.edu/lunar/missions/apollo/apollo_17/experiments/sep/

Lunar module legs - <https://ingeniumcanada.org/channel/articles/did-you-know-that-the-eagle-landed-on-the-moon-on-legs-made-in-quebec>

Space Centre online resources - <https://www.spacecentre.ca/online-resources>