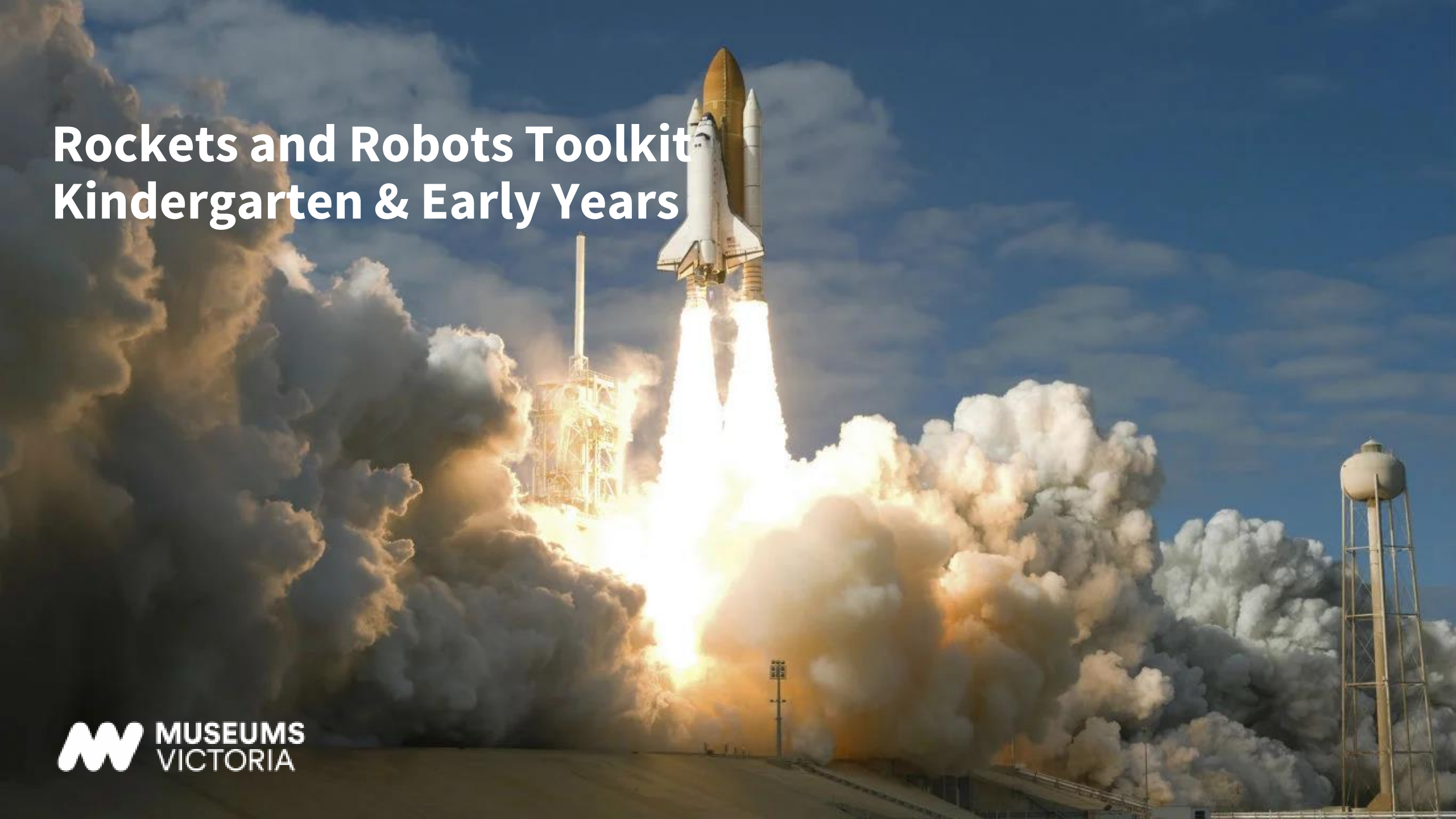
Rockets and Robots Toolkit
Kindergarten & Early Years



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Contents

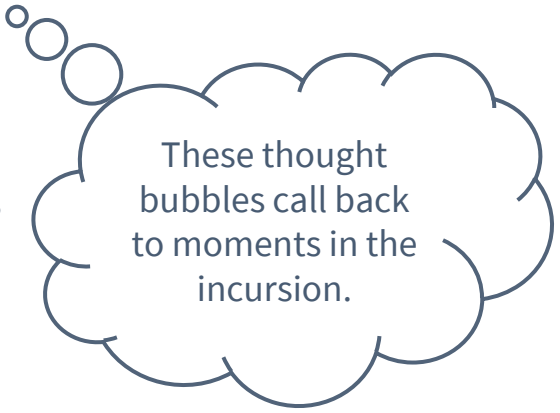
Rockets and Robots Toolkit – Post Visit Resource

How to use this resource

This post visit resource has been developed exclusively for educational purposes by Museum Victoria's Outreach Education Team.

Teachers are encouraged to:

- Download and use this resource to engage and inform learners
- Differentiate and make any adjustments to the learning resource for the needs of your students
- Use this resource as a unit of learning or to compliment an existing unit of learning
- Print out and distribute any activities and slides for your colleagues and students
- Facilitate further learning and explore resources via the links provided



Note:

- Curriculum links to the VEYLDF can be found on slide 14 and suggest some ways this content can be aligned to your environment.

Key Concepts and Vocabulary

- **astronaut** – a person who is trained to travel in space
- **rocket** – a device that can be used to launch spacecraft; it moves objects forward by shooting out gas in the opposite direction
- **rover** – a device that moves across the surface of a planet or moon; it can be a moving robot built to explore places that are too far away or dangerous for humans
- **planet** – a large, natural, ball-shaped object that orbits, or travels around, stars (like the Sun)
- **force** – a push or a pull on an object, e.g. the force of a rocket's gas pushing down creates a force in the rocket in the opposite direction
- **algorithm** – a description of the steps required to solve a problem
- **code** – the format in which a computer or robot needs instructions
- **programming –** the process of creating and giving instructions to a computer or robot through code
- **simple robot** – a machine programmed by humans to carry out a task
- **sensor** – a device that detects or senses heat, light, sound, motion, etc., and then reacts to it in a particular way
- **bug –** a coding error in a computer program
- **debug –** the process of finding errors in a computer program

Movement and Song

Hello from the Moon!
Learn more about what astronauts wear when they go to space, then get dressed and blast off on an adventure!

Click the link to watch the video (4 mins)

Brain break bops – Rocket Launch
Blast off your chair (or the floor) in this great self-regulation activity with included songs and posters.

Click to see the brain break bops (#5)

Can you remember getting dressed for space?

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Images from Mars Rover - Perseverance

Did you know there are 19 cameras on the Perseverance rover on Mars?

These cameras take thousands and thousands and thousands of amazing photos that people can look at and wonder about Mars' amazing landscape.

Click here to see the gallery photos

Also look for the 'Raw Image of the Week', which changes every week and can be an exciting routine for your learners.

Do you remember seeing Mars photos?

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Meteoroids, Meteorites, and Meteors!

Meteoroids: These rocks still are in space. Meteoroids range in size from dust grains to small asteroids.

Meteors: When meteoroids enter Earth's atmosphere (or that of another planet, like Mars) at high speed and burn up, the fireballs or "shooting stars" are called meteors.

Meteorites: When a meteoroid survives a trip through the atmosphere and hits the ground, it's called a meteorite.

Do you remember touching a Meteorite?

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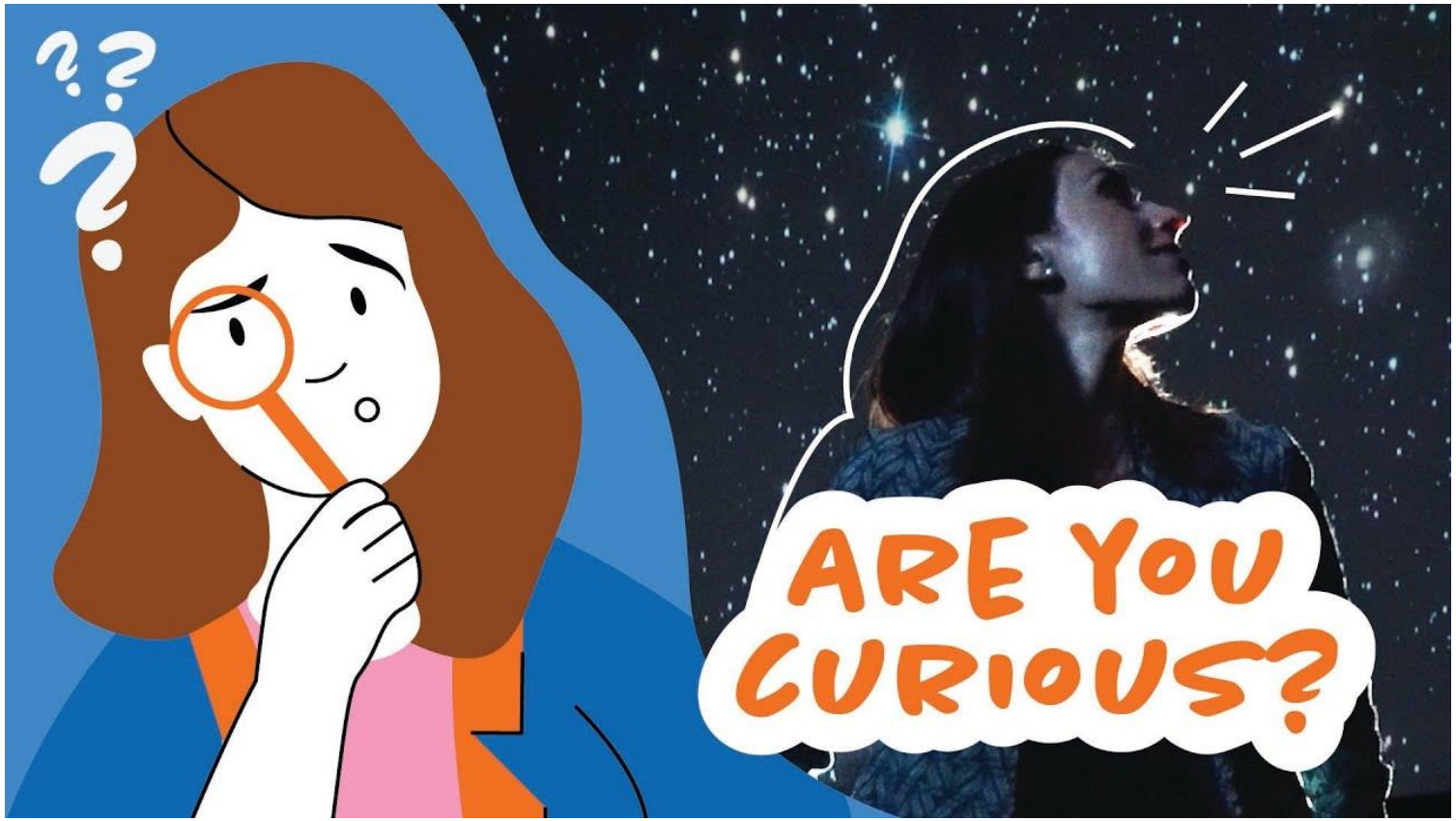
Science is a Superpower: The Science of Curiosity?

Check out this awesome video from our Science is a Superpower collection!

Asking questions is the secret to science. Join Holly as she discovers that things are not always what they seem and what can be learned from looking at the stars.



Click the link to watch the video (6 mins)

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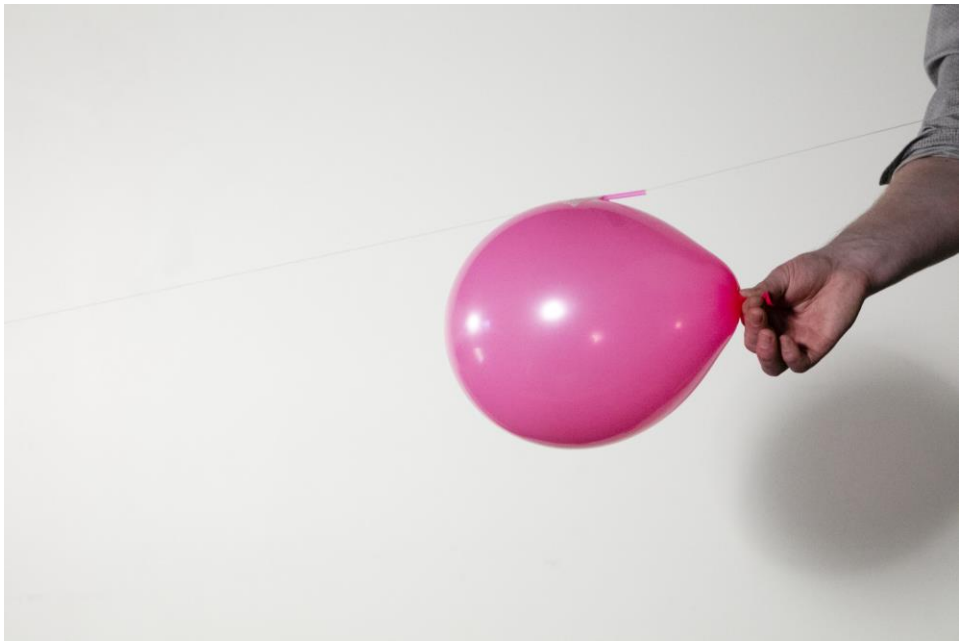
Rocket Launch – Balloons

Do you remember the ballon on a string?

Rockets need a lot of energy to get into space, just like everything that moves around! When a balloon is blown up, it has a lot of ‘potential energy’, just like an elastic band that has been stretched. When it is let go, it pushes all the air back through the hole, propelling the balloon around the room.



Balloons:

1. Blow up a balloon and hold it by the neck, pinching to stop the air escaping.
2. Release the balloon and watch it fly like crazy around the room!
3. Try with more or less air to see how it changes the flight.

Craft Rocket:
Try making a rocket using toilet paper rolls or other craft supplies. You could add fins and even attach your balloon.

Rocket on a string:
To help our balloon rocket fly in a straight line, attach it to a straw or your craft rocket, then thread through string, hold taut, and let go!!!

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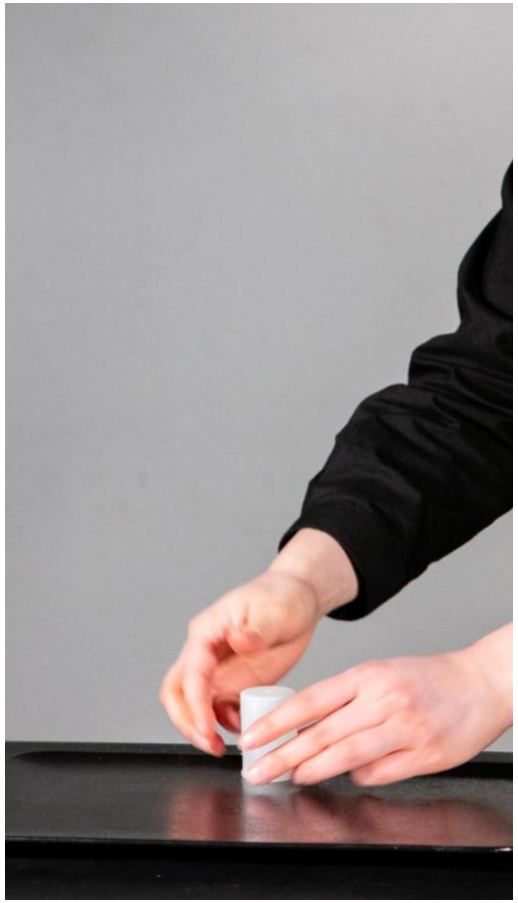
Rocket Launch – Alka Seltzer and Film Canister



Do you remember seeing this rocket?

Resources:

- Film Canister
- Alka Seltzer
- Paint/food dye/markers

Caution: Do not let children handle these once sealed, unless they are wearing eye protection. It is best to do this outdoors.

Fill a film canister halfway with water. Add half an Alka Seltzer, showing children the gas bubbles that form. Quickly seal the lid, give it a shake, set it lid-side down on the ground, and stand back.

Count how long it takes to blast off!

What made the rocket go up? How can we make it blast off faster or slower? Play around with quantities of water and tablet.

To visualize the size of the impact downward to shoot the rocket up, use watered-down paint or food dye instead of plain water. Set the rocket on paper for blast off to create some explosion art. Use markers to decorated the rocket for some extra excitement!

Activity – Design a Planet

Our solar system has eight planets in it: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune. However, our galaxy, The Milky Way, has billions and billions of planets, and the universe has even more.

There are many kinds of planets. Look at pictures of the planets in our solar system, and then use these questions to design your own planet:

- What size is your planet?
- What texture is your planet? Is it smooth, lumpy, something else?
- What materials/colours make up your planet?
- Does your planet have anything spinning (orbiting) around it like moons or rings?
- Does your planet have any rivers or oceans, or is it dry?
- Does your planet have plants or animals?

Extension – Planets must orbit a star, be (mostly) round, and have no other debris/rubble in their orbit path.

Learn more about space and planets at the Melbourne Planetarium at Scienceworks!

Also check out the Planetariums Space Fact Sheets.

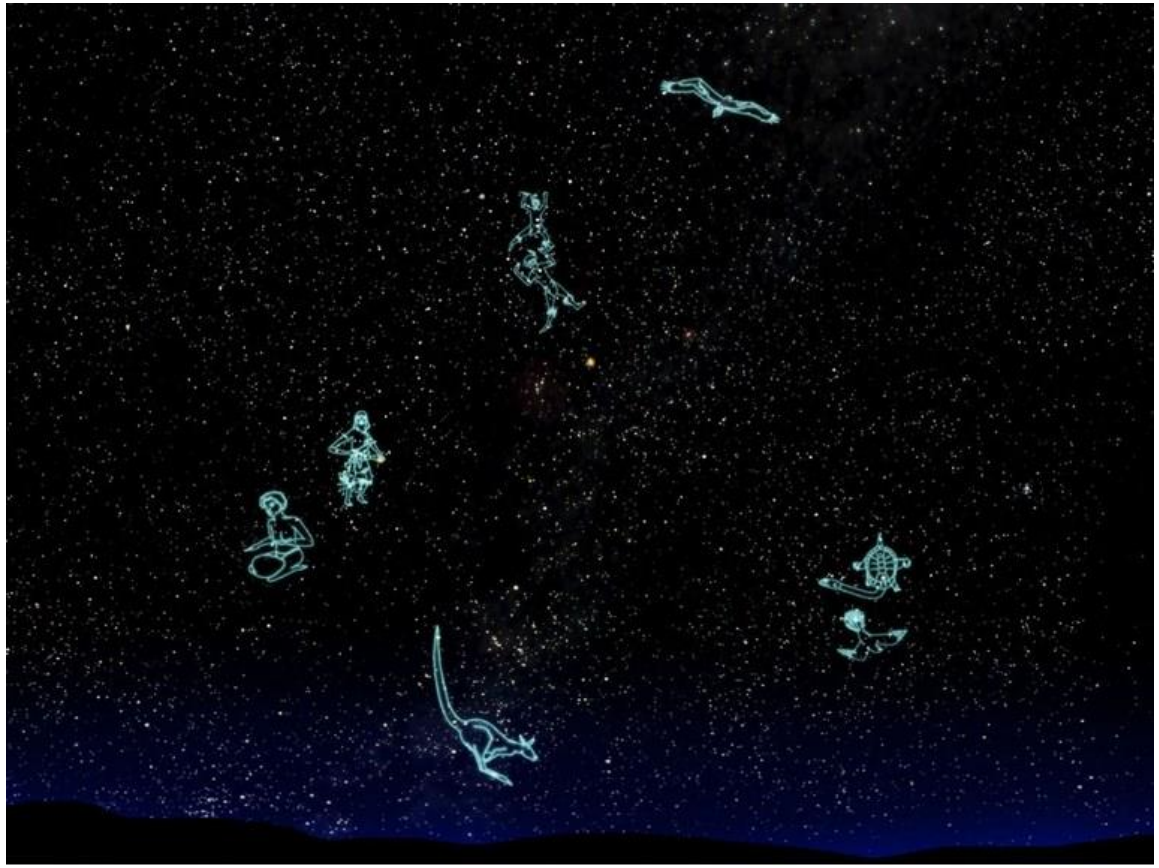
First Scientists

First Peoples cultures of Australia have a rich tradition of observing the stars. There are over 250 different language groups, each one viewing the stars a little differently. Because of this there is an amazing array of stories about the sun, moon and constellations as well as eclipses, comets, meteors and aurorae.

Seasonal changes in the stars reflect changes down here on Earth give hints about the changing seasons and when to look for certain foods. Many groups have stories about the dark patches in the sky, such as the Coalsack near the Southern Cross. For almost all First Peoples groups in Australia, the Sun was seen as a woman and the Moon as a man.

Learn more about First Peoples in Australia Astronomy

Print out a Bunjil's Feather activity



Stories in the stars - Museums Victoria

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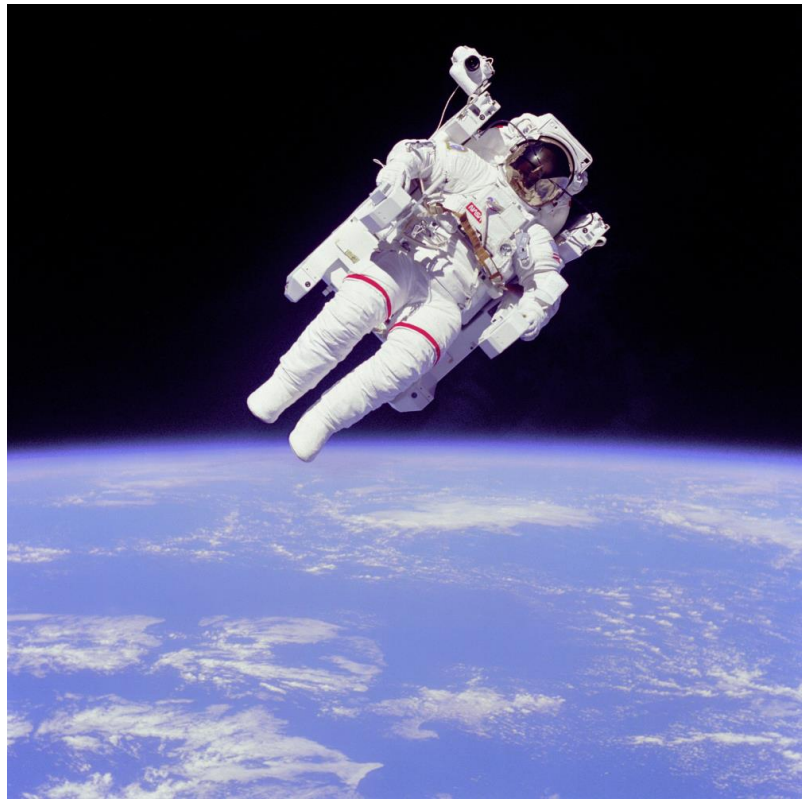
NASA – Space Place

The National Aeronautics and Space Administration (NASA) is a U.S. government agency responsible for space science and technology. They were a very important part of the mission that landed the Perseverance rover on mars!

NASA has an awesome website full of learning resources for kids, including amazing games, crafts, activities, videos, and more!

Here are four of our favorites:

- Make a Comet on a Stick!
- How Do We Launch Things Into Space?
- What Did Hubble See on Your Birthday?
- Make a Pinwheel Galaxy Pinwheel



Home | NASA Space Place – NASA Science for Kids

Coding Without Computers – STEM Skills

Click the link to watch the video (Video 3 - 7 mins)

In a world where we are increasingly dependent on technology, computational thinking skills help unlock a range of skills that are desirable for a future full of opportunity.

This Museums Victoria video suggests some great activities to promote computational thinking skills for our learners without needing access to technology like robots and computers.

Continue your Museum journey….

LEARN

Ask us - Museums Victoria

We can help you identify an animal or object, answer a science question, learn about the museum, or even access an amazing object!

CREATE

Painting a Nebula

Massive, glowing, colorful space clouds! Bring these stunning nebulae into your home with a few art supplies.

LISTEN

The Fact Detectives!

The fact detective podcast is a great listen for curious minds. We recommend the episodes on Planets, Spaceships, and Meteorites!

VISIT

Now that we have visited you, why don't you visit us!
Check out what's on at Scienceworks and Melbourne Museum.

What's On Scienceworks
What's On Melbourne Museum

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Useful Links

1. Ask us - Museums Victoria

We can assist you with general research questions or provide access to museum expertise.

2. Professional learning for early childhood teachers - Museums Victoria

Museums Victoria offers free professional learning programs for early childhood educators and teachers using the VEYLDF within their service. These reinforce the importance of promoting STEM mindsets to set children up to succeed.

3. Museum Teachers - Museums Victoria

Museum Teachers is open to all Victorian teachers and educators to create the best learning outcomes through our museums.

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VEYLDF Links

- ✓ 4.3 Children transfer and adapt what they have learned from one context to another.
- ✓ 4.4 Children resource their own learning through connecting with people, places, technologies and natural and processed materials.
- ✓ 5.1 Children interact verbally and non-verbally with others for a range of purposes
- ✓ 5.2 Children engage with a range of texts and gain meaning from those texts
- ✓ 5.4 Children begin to understand how symbol and pattern systems work

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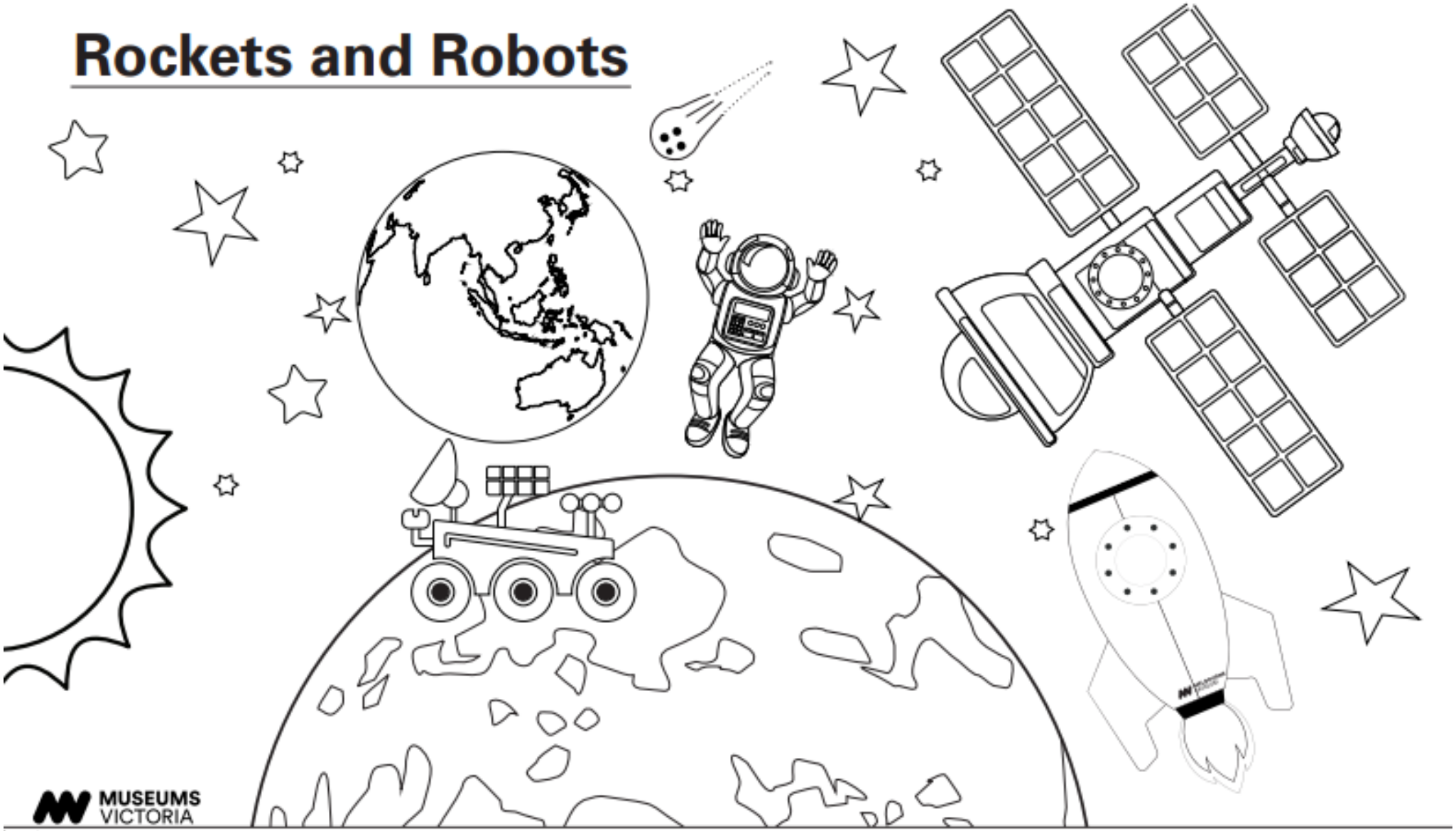
Colouring and Creativity

Rockets and Robots



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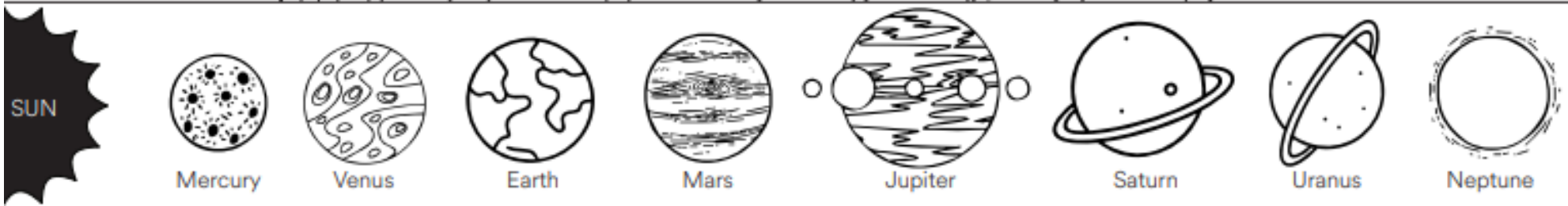

Colouring and Creativity

What does your planet look like?