

# Year 5 Knowledge Organiser: Out of this World!

Cross-curricular subject links: Science and Maths.

Curriculum Driver: **Discovery, Success, Inspiration**

Trips/Enrichment: National Space Centre

**GARP/GASP:** What impact did African-American women such as Katherine Johnson, Dorothy Vaughan and Mary Jackson have in Science, particularly in the success of the NASA space programme?

## Subject/Conceptual knowledge/skills:

Design Technology  
Structures, Mechanisms and Engineering

### LEAPS:

- I can discuss and explain the purpose of my products.
- I can generate, develop, model and communicate my ideas.
- I can produce appropriate lists of tools, equipment and materials I need.
- I understand and can follow procedures for safety.
- I can accurately measure, mark out, cut and shape materials and components.
- I can evaluate my work during its process.
- I can investigate how well products work and how well products achieve their purposes.
- I can evaluate inventors, designers, engineers, chefs and manufacturers' products who have helped shape the world.

## Core Knowledge

A moon buggy is a vehicle used by astronauts for surface exploration in space. It is battery powered and four wheeled but it only has a top speed of 8 miles per hour.

Wheels, axles and pulleys are all types of mechanisms. A mechanism is a device that changes movement in some way.

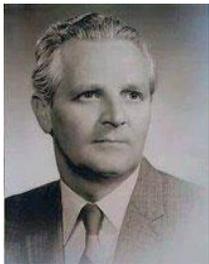
A vehicle frame is the main supporting structure of a motor vehicle to which all the other components are attached. It is similar to the skeleton of an animal.

A circuit is a complete path around which electricity can flow. It must include a source of electricity such as a battery. Our circuit will contain batteries, switches, wires and a motor. Turning the switch off will break the circuit and stop the motor which will stop the vehicle.

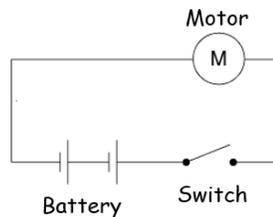
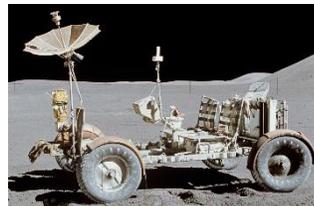
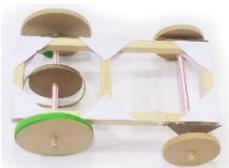
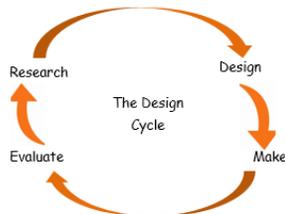
## Vocabulary

Words	Meaning
<b>Mechanism</b>	A device that changes movement
<b>Frame</b>	The main supporting structure
<b>Axle</b>	A bar that goes through the wheels, keeping them in place
<b>Pulley</b>	Used to pull heavy objects
<b>Circuit</b>	A complete path for electricity
<b>Battery</b>	A source of energy
<b>Conductor</b>	A material which allows electricity to pass through it
<b>Motor</b>	Converts electrical energy into movement
<b>Switch</b>	Something that changes the flow of an electrical circuit
<b>Subject Specific - DT</b>	
<b>Purpose</b>	<b>A reason or plan that guides your action</b>
<b>Research</b>	Investigating or studying a topic
<b>Design</b>	Using materials to plan a project
<b>Make</b>	Creating a project
<b>Evaluate</b>	Deciding if you have done something the best way and whether it can be improved
<b>Measure</b>	Finding the length of something

## Key Visuals



Ferenc Pavlics  
Inventor of Apollo  
Lunar Rover



Dorothy Vaughan



Katherine Johnson



Mary Jackson

## Books/associated reading:

Curiosity: The Story of a Mars Rover- Markus Motum

Hidden Figures- Margot Lee Shetterly

QR code – follow the link to learn more about space.

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**Subject/Conceptual knowledge/skills:**

French - speaking, reading, writing and grammar

**LEAPS:**

- I can take part in short conversations using sentences and familiar vocabulary.
- I can present to another person or group of people using sentences and authentic pronunciation, gesture and intonation to convey accurate meaning.
- I understand and can express simple opinions using familiar topics and vocabulary.
- I can read a variety of simple texts in different but authentic formats (e.g. stories, song lyrics (covering familiar topics), reading exercises with set questions, emails or letters from a partner school).
- I can write simple sentences and short paragraphs from memory or using supported written materials (e.g. using a word bank).
- I can check spellings with a dictionary.

**Core Knowledge and Key Vocabulary**

Quelle est la date aujourd'hui? -  
What is the date today?

Aujourd'hui c'est- Today it is...



**Subject/Conceptual knowledge/skills:**

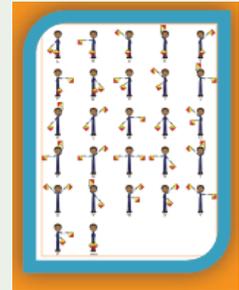
Computing/Icrypto

**LEAPS:**

- I know that messages can be sent and received secretly using encryption.
- I can understand decrypt signalling messages.
- I can decode data transmitted through Morse code.
- I can encode/decode messages using a simple shift cipher.
- I can use frequency analysis to decipher encrypted text.
- I know the importance of cryptography historically, including the Enigma Machine.

**Core Knowledge**

We use computers to send/receive sensitive information which can be intercepted and read if it isn't protected. A cipher is a secret message which needs a key to decode.



**Key Vocabulary**

Cryptography, Encrypt, Decrypt, Cipher, Key, Shift, Binary.

**Subject/Conceptual knowledge/skills:** RE

Christianity

Is the Christmas story true?

**LEAPS:**

- I can start to explain how 'true' could mean different things to different people, and how stories can be 'true' in different ways.
- I can start to explain the Christian belief that Jesus was the Incarnation of God
- I can start to express an opinion on whether the Christmas story is true and what this might mean to Christians.

**Core Knowledge.**

Christmas is an important time for Christians as it celebrates Jesus being born. Christians believe Jesus is God in human form. This is called incarnation.

**Key Vocabulary**

Christmas, Jesus, Mary, Joseph, Wise Men, Gifts, Incarnation, Eyewitness, Account, Truth.

**Subject/Conceptual knowledge/skills:** PSHE - SCARF

**LEAPS:**

- I can define some key qualities of friendship;
- I can describe ways of making a friendship last.
- I can explain why friendships sometimes end.
- I can demonstrate respectfulness in responding to others.
- I can respond appropriately to others.
- I can develop an understanding of discrimination and its injustice, and describe this using examples.
- I can empathise with people who have been, and currently are, subjected to injustice, including through racism.
- I can consider how discriminatory behaviour can be challenged.
- I can identify and describe the different groups that make up their school/wider community/other parts of the UK.
- I can describe the benefits of living in a diverse society;
- I can explain the importance of mutual respect for different faiths and beliefs and how we demonstrate this.
- I can understand that the information we see online, either text or images, is not always true or accurate.
- I can recognise that some people post things online about themselves that aren't true, sometimes this is so that people will like them.
- I can understand and explain the difference between sex, gender identity, gender expression and sexual orientation.
- I can identify the consequences of positive and negative behaviour on themselves and others.

**Core Knowledge.**

Friendship is having a good relationship with someone and showing them respect. A friend is someone we talk to and like to spend time with.

There are many different groups of people who live in our communities. This makes them diverse.

Discrimination is when a person is treated differently and negatively because of some aspect of their identity. It is against the law. It can include things like: race, religion, ethnicity, age, disability, sexuality or gender identity.

**Key Vocabulary**

Values, Bullying, Caring, Racism, Respect, Tolerance, Get together, Communication, Relationships

**Subject/Conceptual knowledge/skills:** PE, Gymnastics and Netball

**LEAPS:**

**Gymnastics**

- I can plan, perform and repeat a sequence of movement showing good control, technique, co-ordination and fluency.
- I can perform jumps, shapes and balances fluently and with control (Jumps: straight jump, tuck jump, jumping jack, star jump, straddle jump, pike jump, stag jump, straight jump, half-turn, straight jump, full-turn and cat leap)
- I can confidently show a range of balances, recognising the position of their centre of gravity and where it should be in relation to the base of the balance.
- I can apply combined skills accurately and appropriately, consistently showing precision, control and fluency.
- I can plan and demonstrate a sequence of movements on a piece of apparatus including balances, movements and turns.
- I can select ideas to compose specific sequences of movements, shapes and balances.
- I can demonstrate and provide feedback on how to stay safe in a range of environments.

**Netball**

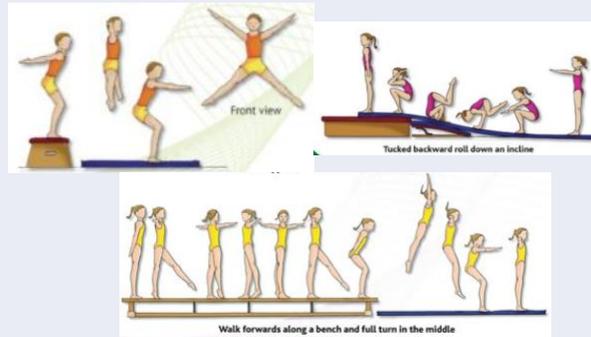
- I can vary skills, actions and ideas and link these in ways that suit a range of games.
- I can confidently demonstrate a range of ball skills and can link these together e.g. dribbling, bouncing, kicking etc.
- I can take part in a range of invasion/competitive games with a strong understanding of tactics and composition (see games overview doc.)
- I can accurately apply basic skills for attacking and defending.
- I can run, jump, throw and catch in isolation and combination.
- I can refine and adapt skills into technique.
- I can draw on my knowledge of strategies, tactics and composition when performing and evaluating.

**Core Knowledge**

**Gymnastics**

Gymnastics is a sport which involves doing exercises which need strength, flexibility, balance and control. This may include running, jumping, tumbling, flipping and balancing.

A sequence is two or more skills which are performed together to create a different combination skill.



**Netball**

Netball is a sport played in two teams of seven. It is like basketball except that bouncing the ball is not allowed. The player cannot step with the ball either, nor hold it for more than three seconds. The game proceeds by players throwing (passing) the ball to each other until one attempts to throw it through the hoop, known as a "shot".

**Key Vocabulary**

Gymnastics: Bridge, Handstand, Cartwheel, Box split, Choreographer, Fluency, Control, Balance, Gravity, Precision

Netball: Tactic, Technique, Cooperative physical activity Core movement, Strategy, Invasion game, Striking, Control, Fielding, Attacking, Defending, 7-positions: Goal Keeper (GK), Goal Defence (GD), Wing Defence (WD), Centre (C), Wing Attack (WA), Goal Attack (GA), Goal Shooter (GS)

**Subject/Conceptual knowledge/skills:**

Science

**LEAPS:**

- I can describe the movement of the Earth, and other planets, relative to the Sun in the solar system.
- I can describe the movement of the Moon relative to the Earth.
- I can describe the Sun, Earth and Moon and approximately spherical bodies.
- I can use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.
- I can explain day and night using models of the Sun and Earth.
- I know that the Sun is a star at the centre of the solar system.
- I know that the solar system has eight planets and can name them
- I know that the moon is a celestial body.

**Core Knowledge**

There are 8 planets in our Solar System (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune). Pluto is a dwarf planet. They all orbit the Sun, which is a star, and they all have moons.

The Sun, Earth and Moon are approximately spherical. The Earth orbits the Sun. The Moon orbits Earth. Earth rotates (spins) on its axis. It does a full rotation once in every 24 hours (a day). This makes it appear as the Sun moved through the sky but the Earth's rotation causes day and night. Different parts of the Earth experience daylight at different times. The Earth also rotates around the sun, which takes a little more than 365 days. This is what we would count as a year.

**Key Vocabulary**

Earth, Sun, Moon, spherical, solar system, rotates, star, orbit, planets

