





Curriculum | Medium Term Plan - Spring - Year five

Challenge Pack:	Space: Infinity	Challenge outcome:	How can we help people experience space virtually? Children will create a planetarium/exhibition to allow other children to gain a virtual experience and insight about the solar system.	NC Year: Length of term:	(7 & 6 weeks)
Summary:	This Challenge begins by delving into the pioneers of space exploration and locating key test sites across North America and Russia. The focus then shifts onto forces; children will be immersed into a two-week science project, investigating the forces which are present and can act upon objects. Following this, children will be given the opportunity to link their forces knowledge to design and test their very own rockets. After half term, the children will learn all about Space, discovering the planets, moons and stars before finally putting all of this knowledge into context by creating a planetarium exhibition.				
Key texts:	Fiction: See You in The Cosmos Cosmic by Frank Cottrell Laika the Astronaut Non-Fiction: How to Be a Space Explorer by LP Kids The Extraordinary Life of Neil Armstrong by Martin Howard Moonshot	Trips and visits:		Inspire parent sessions:	
		Science Units	Forces Earth and Space	PE: Music:	
 Physical Oracy (Voice, Body Language) For body language to become increasingly natural. To project their voice to a large audience		 Linguistic Oracy (Vocabulary, language, rhetorical techniques) To use an increasingly sophisticated range of sentence stems with accuracy.		 Cognitive Oracy (Content, Structure, clarifying and summarizing, self-regulation and Reasoning) To be able to draw upon knowledge of the world to support their own point of view and explore different perspectives. To identify when a discussion is going off topic and to be able to bring it back on track	
				 Social & Emotional Oracy (Working with others, Listening and responding, Confidence in speaking, Audience Awareness) Listening actively for extended periods of time. To speak with flair and passion.	

	Maths:	English:	NICER:
(1)	<p>Area of learning: Multiplication</p> <p>Knowledge of skills: Multiplying 2,3- and 4-digit numbers by a single digit number</p> <p>Skills Children use their knowledge of exchanging ten ones for one ten in addition and apply this to multiplication, including exchanging multiple groups of tens. They use place value counters to support their understanding. Include applying multiplication skills using the area model.</p> <p>Mental maths focus Doubling and halving</p>	<p>Purpose: Writing to entertain</p> <p>Text type: Character description- Create an Alex Petroski description to entertain the reader (forming the basis of building up to a narrative)</p> <p>Text:</p> <p>Knowledge and skills:</p> <ul style="list-style-type: none"> - Identify and use expanded noun phrases to create an image in the readers mind - Use figurative language to create an image and feelings in relation to the character and setting. - Use a wide range of punctuation accurately and consistently <p>Vocabulary: Space, cosmos, lifeforms, earth, planets, , Space station, moon, atmosphere, orbit, moon, atmosphere, orbit, Planet, satellite, sphere, solar system, eclipse, universe, moon</p>	<p>What is space infinity (Challenge Pack)?</p> <p>Understanding of what we will be learning about and why – what is our outcome?</p> <p>Lesson 1: Explore challenge pack: TASC Wheel/ Complete 'Explore the Challenge' page.</p> <p>Outcome</p> <p><u>Killer Questions</u> How have previous space pioneers contributed to current space missions?</p> <p>G3.1a- As Geographers WALT: identify the space pioneers and where they originated from <i>Outcome-</i> Children will plot space pioneers on a map</p> <p>(Give children carefully provided information packs containing the declarative knowledge on space pioneers)</p>

Area of learning: Multiplication and division

Knowledge of skills:

Multiply 2 digits by 2 then increase to 3 digits by 2 digits up to 4 digits by 2 digits.

Divide 2-digit numbers by a 1-digit number

Skills

Children build on previous steps to represent a three-digit number multiplied by a one-digit number with concrete manipulatives.

Children build on previous steps to represent a 4-digit number multiplied by a 1-digit number using concrete manipulatives.

Mental maths focus:

Mental multiplication calculations

Purpose: Writing to entertain

Text type: **Setting description- create a description for their Alein character** (linked with character description)

Text: See you in the cosmos

Knowledge and skills:

- Identify and use expanded noun phrases to create an image in the readers mind
- Use figurative language to create an image and feelings in relation to the character and setting.
- Use a wide range of punctuation accurately and consistently
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Vocabulary: Space, cosmos, lifeforms, earth, planets, , Space station, moon, atmosphere, orbit, moon, atmosphere, orbit, Planet, satellite, sphere, solar system, eclipse, universe, moon

Where are Russia and North America? Which cities were involved with space missions? (Children to identify using maps the location of Russia and North America including the cities involved with the space race.)

Killer Questions

Where in the world have space missions taken place?

What is the significance of the Prime meridian and Greenwich meantime?

G3.1a- As **Geographers** WALT: locate countries in North America so that we can recognise specific sites for space missions.

Outcome- Plot space mission sites on the map of North America

Science: Preparing for launch!

(Children will be given the opportunities to apply their scientific thinking to carry out a range of experiments involving forces.)

Killer Question

How do different forces work?

Why do astronauts float in space?

S3.2e -As Scientists WALT: explore and explain the effects of gravity on objects.

Outcome- Class complete a meteorite challenge

Area of learning: Division

Knowledge of skills:

Division by 1 digit, 2,3 and 4 numbers

Divide where the answer involves remainders.

Skills

Children build on their knowledge of dividing a 2-digit number by a 1-digit number from Year 3 by sharing into equal groups.

Children use examples where the tens and the ones are divisible by the divisor, e.g. 96 divided by 3 and 84 divided by 4. They then move on to calculations where they exchange between tens and ones.

Mental maths

Mental division calculations

Purpose: Writing to entertain

Text type: Narrative with a space theme – Using character/setting description to write a short chapter

Text:

Knowledge and skills:

- Use a wide range of punctuation accurately and consistently
- Recognise and use abstract nouns
- Identify and use nouns, pronouns, adjectives and determiners appropriately
- Identify and use verbs, adverbs, prepositions and conjunctions

Vocabulary: Space, g-force, rocket, comics, lifeforms, earth, planets, , Space station, moon, atmosphere, orbit, moon, atmosphere, orbit, Planet, satellite, sphere, solar system, moon

G3.1a- As **Geographers** WALT: locate countries in Europe (Russia) so that we can recognise specific sites for space missions.

Outcome- Plot space mission sites on the map of North America

G3.1a -As **Geographers** WALT: identify time zones across the globe so that we can identify their significance

(G3.1a \Explain the significance of the Prime/Greenwich Meridian and times zones(including day and night) - know how to use map)

Outcome- Children colour code countries showing time zones. Children explain differences between time zones involving Russia and North America.

S3.2f- -As Scientists WALT: identify the effects of air resistance on moving objects.

Outcome- Class complete a parachute experiment

Area of learning: Fractions

Skills

Children explore fractions in different representations, for example, fractions of shapes, quantities and fractions on a number line. They explore and recap the meaning of numerator and denominator, non-unit and unit fractions

Knowledge of skills:

Identifying fractions

Equivalent fractions

Fractions greater than 1

Improper fractions to mixed numbers

Mental maths

Mental division strategies

Key question

Busses hold 60 passengers, 125 passengers want to go

Purpose: Writing to entertain

Text type: Narrative with a space theme – Using character/setting description to write a short chapter

Text:

Knowledge and skills:

- Use a wide range of punctuation accurately and consistently
- Recognise and use abstract nouns
- Identify and use nouns, pronouns, adjectives and determiners appropriately
- Identify and use verbs, adverbs, prepositions and conjunctions

Vocabulary: Space, g-force, rocket, comics, earth, planets, , Space station, moon, atmosphere, orbit, moon, atmosphere, orbit, Planet, satellite, sphere, solar system, moon

Building a rocket.

(Based on children's forces knowledge and what they noticed at space centre they will be given the opportunity to design, build and test their very own rockets.)

Killer Questions

Why do you think certain rockets failed?

How can we create a working model of a rocket?

We will be making a powered rocket and the children will work through a process of design/make/test and refine.

We will be using bottle rocket challenge (explore opportunities for external workshop to come into school to create rockets, details to be updated.

D3.1a - **As Technicians** WALT: generate ideas and create a specification for our own rockets so that we make it.

Outcome- Children use blue hat to create design specification

D3.3a - **As Technicians** WALT: Use tools and equipment safely so that we can build our rockets.

Outcome – Create rockets

D3.4b - **As Technicians** WALT: test and evaluate our rockets so that we can propose new ideas.

Outcome – Children test and PMI their rockets

S3.2g -As Scientists WALT: identify the effect mechanisms, including levers have on exerting force. Outcome – Class complete a meteorite recovery

(5)	<p>Area of learning: Addition of fractions</p> <p>Skills Children build on their equivalent fraction knowledge to compare and order fractions less than 1 where the denominators are multiples of the same number. Children compare the fractions by finding a common denominator or a common numerator. They use bar models to support their understanding.</p> <p>Knowledge of skills: Order fractions Add fractions within 1 Add 3 or more fractions</p> <p>Mental maths Mentally convert mixed numbers to fractions and vice versa</p>	<p>Purpose: Writing to entertain Text type: poetry: Laika the astronaut (linked with reading skill of performance poetry) Knowledge and skills:</p> <ul style="list-style-type: none"> - Use commas - Identify and use verbs, adverbs, prepositions and conjunctions appropriately - Recognise and use varied sentence types <p>Vocabulary: Astronaut, space, g-force, rocket, comics, earth, planets, Space station, moon, atmosphere, orbit, moon,</p>	<p>Science: May the force be with you! (Children will be given the opportunities to apply their scientific thinking to carry out a range of experiments involving forces.)</p> <p><u>Killer Questions</u> What forces stop objects moving freely through the air? Why don't aero planes fall out of the sky because of this force?</p> <p>S3.2f- As Scientists WALT: Identify the effects of friction acting between moving surfaces. Outcome- Children conduct a bike challenge</p> <p>S3.2f- As Scientists WALT: Identify the effects of friction acting between moving surfaces. Outcome- Children conduct a path challenge</p> <p>B3.9- As British citizen WALT: identify how bullying can have a negative effect on wellbeing Outcome – Children create roll on the wall to show effects of bullying</p> <p>PSHE B3.18 I can identify changes in my body that happen in puberty (puberty talk)</p>
(6)	<p>Area of learning: Add and subtract fractions</p> <p>Skills Children recap their Year 4 understanding of adding and subtracting fractions with the same denominator. They use bar models to support understanding of adding and subtracting fractions.</p> <p>Knowledge of skills: Add and subtract fractions Subtract and add mixed number fractions</p> <p>Mental Maths Mental strategies for making 1 using fractions</p>	<p>Purpose: Writing to inform Text type: Newspaper article to inform the reader about a moon landing Text: Knowledge and skills:</p> <ul style="list-style-type: none"> - Use reported speech - Identify and begin to use relative clauses - Use a wide range of punctuation accurately and consistently - <p>Vocabulary: space, gravity, planets, solar system, astronaut, g-force, rocket, comics, earth, moon, atmosphere, orbit, atmosphere, orbit, satellite, sphere, solar system, moon</p>	<p>S3.2f- As Scientists WALT: Identify the effects of water resistance between moving surfaces. Outcome- Children conduct a boat challenge</p> <p><u>Killer Question</u> How can I make myself a healthier person through my actions? Why should I?</p> <p>B3.12- As British Citizens WALT: identify the impact of unhealthy eating and other behaviours on the human body Outcome – Children complete sorting activity and retrieve facts from a case study.</p>

Area of learning: Calculations of fractions of amounts

Skills

Children use their knowledge of finding unit fractions of a quantity, to find non-unit fractions of a quantity. They use concrete and pictorial representations to support their understanding. Children link bar modelling to the abstract method in order to understand why the method works.

Knowledge of skills:

Finding fractions of amounts
Using fractions as operators
Applying understanding of fractions in problem solving activities.

Mental maths

Mental strategies for multiplying and dividing whole numbers by fractions

Purpose: Writing to inform

Text type: Newspaper article to inform the reader about a moon landing –

Text:

Knowledge and skills:

- Use reported speech
- Identify and begin to use relative clauses
- Use a wide range of punctuation accurately and consistently

Vocabulary: space, gravity, planets, solar system, astronaut, g-force, rocket, comets, earth, moon, atmosphere, orbit, satellite, sphere, solar system, moon

Science What will we find in space?

(Children will be given the opportunity to explore space. They will generate their own killer questions, which will be explored through scientific questioning and experimentation.)

Killer Question:

What do you think the temperature would be in Pluto? Explain
When does the solar eclipse occur?

S3.1a - As Scientists WALT: develop scientific enquiry questions so that we can plan an investigation.

Outcome: Children use blue hat to plan an investigation

PSHE B3.2 I can describe how times of change can be difficult

PSHE B3.5 I can practice short self-care techniques (e.g. mindfulness, importance of rest, time spent with friends and family, benefits of hobbies and interests)

Area of learning: Decimals and decimal calculations

Skills

Children use place value counters and a place value grid to make numbers with up to two decimal places. They read and write decimal numbers and understand the value of each digit. They show their understanding of place value by partitioning decimal numbers in different ways.

Knowledge of skills:

Identify decimals up to 2 d.p.
Decimals converted to fractions
Understand 1000s
Thousands as decimals

Mental maths

Mental calculations (applying skills) in calculating fractions of amounts

Purpose: Writing to inform

Text type: Biography to inform the reader about Neil Armstrong

Knowledge and skills:

- Use dashes, commas, and brackets to indicate parenthesis
- use relative clauses
- Use a wide range of punctuation accurately and consistently
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Vocabulary: space, gravity, planets, solar system, astronaut, g-force, rocket, comics, earth, moon, atmosphere, orbit, atmosphere, orbit, satellite, sphere, solar system, moon

Building a planetarium!

(Children will explore sculptures. They will generate their own ideas for creating sculptures ready for our planetarium. Children will choose which medium to use and be able to explain why.)

Killer Question:

How are sculptures different to paintings?

Why would sculptures be better to create a virtual experience?

A3.4b -As Artists WALT: explore a range of sculptures so that we can use the techniques to plan for our own.

Outcome: Children observe images of sculptures and describe how certain techniques have been used

A3.4b -As Artists WALT: use a range of materials so that we can create our own sculptures of the planets.

Outcome: Children create their own sculptures (modrock)

A3.4a -As Artists WALT: use a range of materials so that we can create our own sculptures of the planets

. Outcome: Children create their own sculptures (modrock)

S3.2h -As Scientists WALT: Identify planets and their movement in relation to the sun.

Outcome: Children create and represent the solar system using practical resources (craft project)

(9)	<p>Area of learning: Decimals</p> <p>Skills Children develop their understanding of rounding to the nearest whole number and to the nearest tenth.</p> <p>Children order and compare numbers with up to three decimal places.</p> <p>Knowledge of skills: Rounding decimals Ordering and comparing decimals Understanding percentages</p> <p>Mental maths Multiplying dividing by 10, 100 and 1000</p>	<p>Purpose: Writing to inform: Writing to inform Text type: Biography to inform the reader about Neil Armstrong</p> <p>Text type:</p> <p>Knowledge and skills:</p> <ul style="list-style-type: none"> - Use dashes, commas, and brackets to indicate parenthesis - use relative clauses - Use a wide range of punctuation accurately and consistently - <p>Vocabulary: space, gravity, planets, solar system, astronaut, g-force, rocket, comics, earth, moon, atmosphere, orbit, atmosphere, orbit, satellite, sphere, solar system, moon</p>	<p>Preparing for exhibition. (Children will use ICT to produce resources for our planetarium exhibition. They will present key learning using floor books, sculptures, VR experiences iMovie.)</p> <p>C3.1c - As Digital Technicians WALT: combine photos and videos to create a multimedia video Outcome- Children use Doink and google expeditions to create a short video/animation about space</p> <p>C3.1c - As Digital Technicians WALT: combine photos and videos to create a multimedia video Outcome- Children use Doink and google expeditions to create a short video/animation about space</p> <p>C3.1d - As Digital Technicians WALT: manipulate sound/music to create a desired effect Outcome- Children will use their finalised clip and place it into iMovie to add sound/music</p> <p>S3.2h- As Scientists WALT: describe the movement of the planets in relation to the sun. Outcome: Children create and represent the solar system using practical resources (craft project)</p>
(10)	<p>Area of learning: Decimals and percentages</p> <p>Skills Children are introduced to 'per cent' for the first time and will understand that 'per cent' relates to 'number of parts per hundred'. They will explore this through different representations, which show different parts of a hundred. Children will use 'number of parts per hundred' alongside the % symbols</p> <p>Knowledge of skills: Percentages as fractions and decimals Real life percentage problems</p> <p>Mental maths Multiplying, dividing by 10, 100 and 1000</p>	<p>Purpose: Writing to inform Text type: diary entry</p> <p>Knowledge and skills:</p> <ul style="list-style-type: none"> - Identify and use nouns, pronouns, adjectives and determiners appropriately - Use reported speech - use relative clauses - Use a wide range of punctuation accurately and consistently - <p>Vocabulary: space, gravity, planets, solar system, astronaut, g-force, rocket, comics, earth, moon, atmosphere, orbit, atmosphere, orbit, satellite, sphere, solar system, moon</p>	<p>B3.8 - As British Citizens Walt: understand how a digital footprint works and the impact on sharing information online.</p> <p>A3.6 - As British Citizens WALT: understand importance of permission seeking and giving in different types of relationships</p> <p>Science: Unit Retrieval and evaluation – Forces and Earth and Space</p>

