Pinner Wood School

Year Group	5	Term	Autumn 2	Subject	Science	Topic	Space
						Key Question	What is our place in the solar system?
Prior Learning and other Curriculum Links	Year 2 – understand how shadows are formed when the light from a light source is blocked by a solid object. Understand how patterns are in the way that the size of shadows change.					**Skills Statements**	• Describe the movement of the Earth and other planets relative to the Sun in the solar system • Describe the movement of the moon relative to the earth • Describe the Sun, Earth and moon as approxamatiely spherical bodies • Use the idea of the Earths rotation to explain day and night and the apparent movemnet of the sun across the sky.
Fundamentals	• describe the movement of the Earth, and other planets, relative to the Sun in the solar system • describe the movement of the Moon relative to the Earth • describe the Sun, Earth and Moon as approximately spherical bodies • use the idea of the Earth's rotation to explain day and night and the					**Key Facts/Sticky Knowledge**	• Orbiting means to go around • The sun is a star • The planets orbit the sun • Our galaxy is called the Milky Way • Phases of the moon • The Sun, Earth and Moon are approximately spherical bodies. • The day is when the sun is directly shining on the earth – facing towards the sun

	apparent movement of the sun across the sky.		• Night is when earth is facing away from sun's light
Our Curriculum Journey	Children will begin by learning about the sun and how long it takes other planets to rotate around it. They learn our galaxy is called The Milky Way. The children then go on to explore what is a year, what is a year by exploring the length and positions of earths orbit around the sun. They will also conduct an experiment to help explain about the differences between night and day. The children will learn about different time zones and what makes up a year, exploring seasons. They will consolidate their learning by writing a letter to Tim Peake and out lining all their knowledge.		
Key Vocabulary (revisited)	Sun Planets Seasons Moon	**Key Vocabulary (new)**	Orbit Moon Solar system Lunar seasons

Pinner Wood Medium Term Planning – Science

<table>
<tr><td colspan="2">Subject:
Target Tracker Statement

• Describe the movement of the Earth and other planets relative to the Sun in the solar system
• Describe the movement of the moon relative to the earth
• Describe the Sun, Earth and moon as approxamatiely spherical bodies
• Use the idea of the Earths rotation to explain day and night and the apparent movemnet of the sun across the sky.</td><td>Topic and Key Question:

Space

What is our place in the solar system?</td></tr>
<tr><td colspan="2">Key Vocabulary (revisited)
Sun
Planets
Seasons
Moon</td><td>Key Vocabulary (new)

Orbit
Moon
Solar system
Lunar
seasons</td></tr>
<tr><td rowspan="3">Lesson Number: 1
Location: Class</td><td>Key Question:
What's in space?</td><td colspan="2">Learning objectives:
Describe the movement of the Earth, and other planets, relative to the Sun in the Solar System</td></tr>
<tr><td colspan="2">Introduction:
Ask chn what they think the next topic may be about.

Complete KWL Chart – self assessment</td><td rowspan="2">Resources

Science books

IWB Slides</td></tr>
<tr><td colspan="2">Main Teaching including differentiation:</td></tr>
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	Show children images on the IWB. Day and night. Dicusss what they can see and how they can know its daylight and night time. Go over the fact that they light in the sky comes from the sun. The moon does not have its own light. **Main Activity** Activities Activity 1: Children to sort statements into piles of true false and not sure. Working in pairs. Reason **Activity 2:** Children to draw a lavelled diagram of the solar system. They will use their notes to help them. HA to write a method as to how to remember the order of the planets. MA draw a labelled diagram of the solar system using notes to help. LA Be provided with resource sheet to help SEN: Be provided with the images in order. They are to label them up. **Challenge:** **Plenary:** Plenary Have a look at the first activity that you did.	**Activity sheets**

<table>
<tr><td></td><td colspan="2">Would you change any of the piles of paper that you have?</td><td></td></tr>
<tr><td colspan="4"></td></tr>
<tr><td rowspan="3">Lesson Number: 2
Location: Outside playground
SEESAW</td><td>Key Question: What is a year?</td><td colspan="2">Learning objectives:
Describe the movement of the Earth, and other planets, relative to the Sun in the Solar System</td></tr>
<tr><td colspan="2">Introduction
Recap from previous week. Chn to write down 5 facts learnt.
<u>Talk to the chn about orbits. What do they know about this word?</u></td><td rowspan="2">Resources

Science books

Science slides

Chalk

SEASAW app

Ipads</td></tr>
<tr><td colspan="2">Main Teaching including differentiation:
Go over the statements on the IWB. Get the childrens views on them. Discuss as a class.
Recap about the planets. Number there are and other various questions.
Watch video from BBC education.
Go over orbits again and emphasis that all of the planets have different orbits.
Chn to watch carefully the next 7 slides about the star in the sky.

<u>Activities</u>
Task 1: (Go to the playground) Children will be creating a giant orbit.
Choose 1 child to be the sun in the middle.</td></tr>
</table>

	Choose 8 other children to be the planets that will orbit the sun. Use chalk to mark off the orbits **Support:** Mixed ability for task 1 **Main Activity** **HA** With more information children draw a diagram of the solar system to explain the length of different planets' orbits. Ask the children to draw a diagram of the solar system to explain what a year means, how long it is and how astronomers calculated the number of days in a year. They could add information about the significance of the changing position of a star in the sky **MA** Children draw a diagram of the solar system to explain the length of different planets' orbits. Ask the children to draw a diagram of the solar system to explain what a year means, how long it is and how astronomers calculated the number of days in a year. They could add information about the significance of the changing position of a star in the sky **LA** Children draw a diagram to explain the length of the Earth's orbit. Ask the children to draw a diagram of the Earth's orbit to explain what a year means and how long it is. They could add information about how a star we see in the sky seems to move over **SEN:** Be given diagram and given information to write in the correct boxes	

<table>
<tr><td></td><td colspan="2">Challenge:

<u>Plenary:</u> Anagram game</td><td></td></tr>
<tr><td rowspan="2">Lesson Number: 3
Location: Class</td><td>Key Question: What is a day?</td><td colspan="2">Learning objectives:
Use the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky.</td></tr>
<tr><td colspan="2">Introduction: Revise and recap The Solar System questions.
Talk over and discuss the longest and shortest orbit. How is an orbit related to a year?

Main Teaching including differentiation:
Explain to the children that they will be looking at a set of photographs at different times of the day. They will make a note of how the sun moves in those photos and what this tells us about the length of the day and the movement of the sun.
Show the children about the sun and how shadows are formed at different times of the day. Talk to them about how the length of the shadow tells them about the position of the sun in the sky.
Demonstrate with a globe and a torch.
Watch video on you tube.

<u>Main Activity</u></td><td>Resources

Globe
Torch
Science books</td></tr>
</table>

	HA In books draw a diagram of the world globe and torch write a detailed account of what observations you can see, what did you notice and what happens when you spin the globe **MA** Chidren to label up where they think the sun will be at different parts of the day. Childrento use the information sheet to answer questions about the sun and shadows. **LA** Children to be given a word bank to help them write about the observations. **SEN:** Supported by T **Challenge:** To write down any additional information **Plenary:**	
Lesson Number: 4 **Location: Class**	**Key Question:** What time is it around the world?	**Learning objectives:** Use the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky.
	Introduction Talk about facts learnt from previous session. **Main Teaching including differentiation:** Talk to the children why they think we have day and night. Get them to think about the previous sessions and see if they can make a link. Show a clip on day and night online – go over what happens when the sun is facing the earth and facing away from it. Ask, does the sun really move around in the sky? Does it travel?	**Resources** Science books IWB Slides Worksheet 1 – time zones

	Explain that today they will be learning about the different time zone around the world. Show and explain how it is all linked up. **Main Activity** **HA** Complete sheet and find other countries that have different time zones and write them down. **MA** Children to complete worksheet 1 – what time is it around the world – answering questions on it. **LA** Children to complete worksheet 1 with support where needed. **SEN:** Children to complete worksheet 1 with word bank and support where needed. **Challenge: create a fact file and compare countries time zones** **Plenary:** Address any misconceptions		
Lesson Number: 5 **Location: Class**	**Key Question:** Why do we have seasons?	**Learning objectives:** To learn about the Earth's orbit around the sun. **Success Criteria:** **- I know how many days, weeks and months are in a year.** **- I can explain what "orbit" is.** **- I can understand how the seasons are caused by the Earth's orbit around the sun.**	
	Introduction What is a year?		

	Why are years important in our lives? How long is a year? What about a leap year? We divide up our year into days, weeks and months. **Main Teaching including differentiation:** What makes a year? • A year is split into 365 days, 52 weeks and 12 months. • The Earth orbits the sun once in a year. • Whilst circling the sun, the earth also spins on its axis (turning point through the center) 365 times. This makes the 365 days in a year. Share http://www.bbc.co.uk/education/clips/z6vfb9q *How did the people who made the first calendars know what a year was?* • You can't look up at the sky and see when the earth has travelled once around the sun. • They used the different times of the year to decide when a year had passed. • We call these different times of the year- **seasons.** Discuss what these seasons are called and what we associate with them.	

<table>
<tr><td></td><td colspan="2">Children to watch the following video and write down some important words they hear
http://www.bbc.co.uk/education/clips/zc82hyc

<u>Main Activity</u>
Mixed ability partners.
1. Go onto this website:
https://www.youtube.com/watch?v=iXY79qBxovE
2. Watch the clip but keep the sound off.
3. Write a script for the video explaining that the seasons are caused by the tilt of the Earth. Use the information in the sheets provided to help you.

<u>Plenary:</u>
Share scripts with rest of class</td><td></td></tr>
<tr><td rowspan="2">Lesson Number: 6
Location: Class</td><td>Key Question:
Why does the moon change shape?</td><td colspan="2">Learning objectives:
Describe the movement of the Moon relative to the Earth</td></tr>
<tr><td colspan="2">Introduction
What do chn already know about the Moon? Humans have set foot on it, it orbits the Earth as it orbits the Sun. Ask several chn to come to front and draw a picture of the Moon, how can it have so many different shapes? Ask chn to face back of the classroom and imagine they are looking up at the moon on a</td><td>Resources

Slides

Youtube videos</td></tr>
</table>

	dark night (switch off lights, suspend a ball from a string at back of room before session!). Remind chn that on the other side of Earth (the part now facing the Sun) its daytime, but where they are it's the middle of the night! In the first session they discovered that the Sun is a million times bigger than the Earth. Its rays spread far out into space and around the Earth, it is the sunlight reflecting from the surface of the Moon that makes it appear bright in the night sky! – it is not a source of light! **Main Teaching including differentiation:** Shine a bright torch onto ball at back of room, making it appear bright. Only half of the Moon is lit at any one time (just like the Earth!). Sometimes on Earth we don't get to see all the lit half of the Moon – we see segments of it lit and shaded! Tell chn that the lit segments of the Moon we can see at different times are called Phases, (see *session resources*) discuss them. Review what chn know about Moon's orbit? 28 days approx, 28 days to spin once – same side of Moon always faces us. Get in a spin by travelling through its orbit at Moon Orbit. Take a closer look at Moon's surface, it has features! Astronomers have named features of the Moon, take a look at them using Lunar map (*session resource*). Ask chn to locate features on the map using images of the Moon from the internet/books. The Moon's surface is pitted with craters, what caused them? To demonstrate place flour in a bowl with cocoa powder sprinkled on top (this makes demo clearer) and drop – *not throw* - small rocks onto surface – craters are formed. Huge meteors hitting surface of moon have created craters in the same	

<table>
<tr><td></td><td colspan="2">way! Tell chn men first landed on Moon in 1969 – watch and discuss video BBC History: Moon Landing.

<u>Main Activity</u>
HA draw the different phases and label
MA draw and label different phases
LA cut out the different phases and label
SEN: match the different phases to their phase
Challenge: Write a explanation of why the moon changes.
Plenary:
Discuss Lunar Eclipse. Tell chn that sometimes the Moon sits between the Sun and the Earth. How can something so small (in comparison to the Sun) block out its light? Place a grape on a cocktail stick. Close one eye and slowly bring the grape towards your open one. As it gets closer it fills more of your view until you can see nothing else. Take a look at the simulation at
http://www.bbc.co.uk/science/space/solarsystem/sun/solareclipse.shtml</td><td></td></tr>
<tr><td rowspan="2">Lesson Number: 7
Location: Class</td><td>Key Question:
KQ: Do you have what it takes to be the next Tim Peake?
(Over 2 lessons)

Outcome:
Letter to Tim Peake explaining your knowledge of space</td><td>Learning objectives:
•</td></tr>
<tr><td colspan="2">Introduction
Recap what we know about the solar system.</td><td>Resources</td></tr>
</table>

	Main Teaching including differentiation: Learn about Tim Peake and the life of an astonaunt. Why do people go into space- how does t help us back on Earth What do you remember from the Hubble IMAX? https://www.bing.com/videos/search?q=looking+through+the+hubble+telescope&&view=detail&mid=B88AECE786D8B55FBEFCB88AECE786D8B55FBEFC&&FORM=VRDGAR&ru=%2Fvideos%2Fsearch%3Fq%3Dlooking%2Bthrough%2Bthe%2Bhubble%2Btelescope%26FORM%3DHDRSC3 **<u>Main Activity</u>** **Children to write a letter to Tim Peake**	