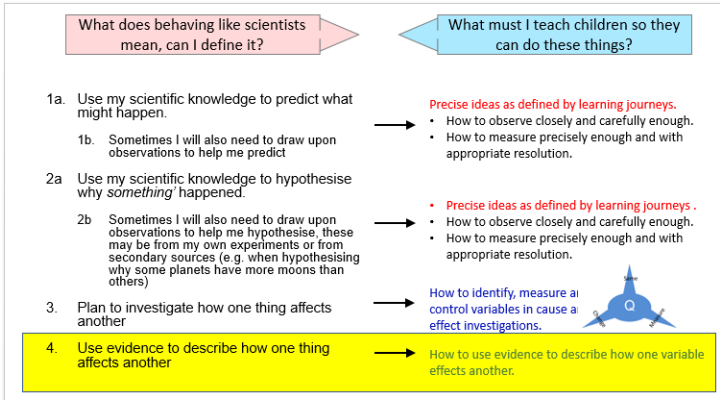
Learning Journey	Science	Earth & Space	Year 5 Spring 2 / Summer 1	

Building on prior learning	Theme overview	Preparing for future learning	Vocabulary
In KS1 children will have learned about the terms push, pull. They will have learned that forces change how things move.	Chapter 1: Where the Earth is in space. **Our Solar system** **What else is in the solar system** Chapter 2: Stars and other objects Chapter 3: Gravity and its effects	In KS3 children will learn about **Space physics** • gravity force, weight = mass x gravitational field strength (g), on Earth g=10 N/kg, • different on other planets and stars; gravity forces between Earth and Moon, and • between Earth and Sun (qualitative only) • our Sun as a star, other stars in our galaxy, other galaxies • the seasons and the Earth's tilt, day length at different times of year, in different hemispheres • the light year as a unit of astronomical distance	• Transparent, translucent, opaque, reflective, absorbent. • Angle if measuring how light reflects) • Nocturnal • Anatomy of eye vocabulary: pupil, retina, lens, iris.

NC coverage and HWJS skills development	Knowledge organisers	
National curriculum coverage for Science Pupils should be taught to: - 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 apparent movement of the sun across the sky	This contains the key knowledge that the children will be taught during the unit of work – this should match up with the knowledge organiser overview **Chapter 1: Where the Earth is in space** • The universe is vast and contains billions of stars. • The solar system is a collection of planets and moons orbiting our nearest star, the sun. It can be represented using a model.	This contains any key pictures or images that are used within the delivery of the unit

HWJS skills development

Details of the skills that will be taught within the unit. These should match up with the skills progression documentation



A Model of Skills Progression.

1. Pose problems that require the application of knowledge being taught.

2. Deconstruct the problem to define what a child must understand and be able to do to tackle the problem (including what they need to observe and measure), teach these skills and knowledge ***at that point.***

3. As children progress through the curriculum they will tackle problems using new ideas, and when the problem requires with closer observation and more precise measurement.

Good enough progression is being able to tackle these problems

Children gather evidence to describe the relationship between variables (cause and effect) by identifying what must be changed, what measured and what must be kept the same.

In Year 5 &6, using evidence to describe how one thing affects another is key. Children should be taught how to describe patterns and give a ***judgement*** on how sure they are. Key features of this are:

- A Solar system is a collection of planets, which orbit (a curved path) a star.
- There are huge number of stars in space and therefore a huge number of solar systems
- Our solar system consists of 8 planets, many of those planets have moons which orbit around them.
- Our solar system can be represented with a model (see diagram), but it isn't possible to draw it to scale.
- The planets and moons are rotating (spinning)
- The time it takes one planet to rotate is called a day. On Earth this is 24 hours
- The time it takes a planet to complete one orbit around its star is called a year. On Earth this is 356.25 days
- The solar system is with a massive collection of stars called the galaxy (called the Milky way)
- The Milky way is one of billions of galaxies in the Universe.

Chapter 2: Stars and other objects

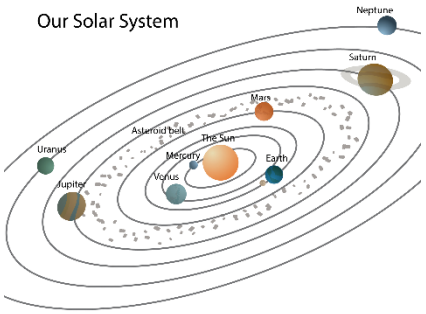
- Stars produce vast amounts of heat and light. All other objects are lumps of rock, metal or ice and can be seen because they reflect the light of stars.
  - Stars are huge balls of gas that produce vast amounts of light and heat.
  - Asteroids are lumps of rock that orbit a star (there are millions in between Mars and Jupiter)
  - Comets are objects that are made of Ice, which melts when they get closer to the sun leaving a tail.

Chapter 3: Gravity and its effects

•Gravity is a force of attraction between any two things that have mass and bigger masses exert bigger forces.

•Gravity works over a distance but gets weaker as the distance increases. Stars, planets and moons have so much mass they exert a large gravitational attraction on other things, including each other.

•Differences in gravity result in smaller mass objects like planets (or moons) orbiting larger mass objects like stars (or planets)



- All objects in the solar system are spinning as well as orbiting.
- The time it takes for an object to spin once is called a day
- The time it takes a planet to orbit the sun is called a year

• Recognise that conclusions may be uncertain due to difficulties controlling and measuring variables accurately. • That measurement always introduces some error. Understand that repeating experiments helps to identify what the true value is and that data points far from the mean are likely to be inaccurate and should be discounted. • Adapting experiments to produce more precise conclusions when the question requires it, especially when seeking to find maximum, minimum or specific values		

Connections / deepening understanding How is the understanding of this area deepened in other areas of the curriculum? What inks are there in the other subjects in the curriculum?	**RADE** Are the rights of the child relevant in this area of study - do they get referred to in the work?	**Assessment** By the end of the unit the children will be able to … Details of the objectives that they will have covered within this unit of work
D&T – Making models. (linked to energy and sustainability) English – Note making and report writing Geography – seasons, day & night, weather & climate Maths- simple graphs to measure force		• A Solar system is a collection of planets, which orbit (a curved path) a star. • Our solar system consists of 8 planets, many of those planets have moons which orbit around them. • Our solar system can be represented with a model but it isn't possible to draw it to scale. • The planets and moons are rotating (spinning) • The time it takes one planet to rotate is called a day. On Earth this is 24 hours • The time it takes a planet to complete one orbit around its star is called a year. On Earth this is 356.25 days • The solar system is with a massive collection of stars called the galaxy (called the Milky way) • The Milky way is one of billions of galaxies in the Universe. • Stars are huge balls of gas that produce vast amounts of light and heat. • Asteroids are lumps of rock that orbit a star (there are millions in between Mars and Jupiter) • Comets are objects that are made of Ice, which melts when they get closer to the sun leaving a tail. • Gravity is force of attraction between two objects with mass (a quantity of matter) • The bigger the mass the bigger force it exerts • Gravity works over distance but gets weaker as distance increases • Stars, planets, moons have a very large amount of mass. They exert a gravitational attraction on each other

		• Differences in gravity result in smaller mass objects orbiting around lager mass objects, e.g., planets around stars and moons around planets	
Assessment recording for the unit - checking the level of pitch of the work			
Key skill(s)/ knowledge to be assessed by the end of the unit	**Lower attaining**	**Middle attaining**	**Higher attaining**
Details of the key knowledge that the children will have at the end of the unit 1. *A Solar system is a collection of planets, which orbit (a curved path) a star.* 2. *Our solar system consists of 8 planets, many of those planets have moons which orbit around them.* 3. *The planets and moons are rotating (spinning)* 4. *Stars are huge balls of gas that produce vast amounts of light and heat.* 5. *Gravity works over distance but gets weaker as distance increases* 6. *Stars, planets, moons have a very large amount of mass. They exert a gravitational attraction on each other*	Planets orbit a star. Our Solar System has 8 planets. The children can name some of them including Earth and The Moon. That Earth is rotating. Stars are huge fire balls of gas that make light and heat. Our sun is a star. Stars and planets are very large and exert gravitational attraction on each other. The Earth's gravity holds the moon in orbit	A Solar system is a collection of planets, which orbit (a curved path) a star. Our Solar System has 8 planets. The children can name most of them including Earth and The Moon. That all planets in the solar system are rotating. The time it takes one planet to rotate is called a day. On Earth this is 24 hours Stars are huge fire balls of gas that make light and heat. Our sun is our nearest star. Stars and planets are very large and exert gravitational attraction on each other. The Earth's gravity holds the moon in orbit. Gravity works over distance but gets weaker as distance increases. Stars, planets, moons have a very large amount of mass. They exert a gravitational attraction on each other	A Solar system is a collection of planets, which orbit (a curved path) a star. Our Solar System has 8 planets. The children can name. They recognise that some planets have moons that are held in orbit by the gravitational pull of the host planet. That all planets in the solar system are rotating. The time it takes one planet to rotate is called a day. On Earth this is 24 hours but is longer or shorter on other planets. The time it takes a planet to complete one orbit around its star is called a year. A year on Earth is different to a year on other planets. Stars are huge fire balls of gas that make light and heat. Our sun is our nearest star. Stars and planets are very large and exert gravitational attraction on each other. Gravity works over distance but gets weaker as distance increases. Stars, planets, moons have a very large amount of mass. They exert a gravitational. Differences in gravity result in smaller mass objects orbiting around lager mass objects, e.g., planets around stars and moons around planets

NB: The assessments are completed for two reasons – to enable the class teacher and in turn the subject leader to evaluate the pitch of the learning within the unit in order to consider any necessary updates and for the class teacher to report to parents on the attainment of pupils in the end of year reports.