Daytime	• We have opened up the roof of our planetarium so that you can see the daytime sky. • Can we see any stars? We can see 1 star, the Sun. • It is the closest star to us and is 150 million km away. It is the only star in our Solar System. • As the Earth turns on its axis, the Sun appears to rise in the east, moving high into the sky and then setting in the west. • In the summer it appears higher in the sky, and in the winter it appears lower in the sky. • In 150 CE (AD), an Egyptian called Ptolemy wrote a book called the Almagest in which he stated the Earth was at the centre of the Universe and the planets, Moon and Sun orbited around it. This was called the geocentric model. • Although some ancient astronomers believed that the Earth orbited the Sun, this "heliocentric" view of the Solar System really gained traction with the publication of Nicoli Copernicus' work in 1543. • The other stars are still in the sky during the daytime, we just can't see them because their light is blocked out by the light of the Sun. Let's fast forward time to see the other stars.

Constellations	• There may be more stars than you are used to seeing, as we have removed the light pollution, which is light from cities, streetlights and cars blocking out the light from the stars. We have removed the atmosphere as well, which also blocks out the light from some of the stars. • People have been looking up to the stars for thousands of years and they have been making dot to dot pictures that we call constellations. • Look up to the stars and see if you can join any together to make any pictures, patterns or shapes.
	• There are 88 official constellations as recognised by the International Astronomical Union. • We can see about half of those from Leicester, although not all at the same time. • The 88 constellations map out the whole sky, making it easier for us to find things within the sky. • Each of the line drawings are meant to represent something different. • Can you work out what they are? Are they people, animals or maybe even monsters?
	• You can now see what those constellations are meant to represent. You can see that you have to use your imagination!
	• As 48 of the constellations are based on ancient Greek mythology, they have great stories behind them. • However, I do not have time to tell you all of the stories. Instead, I will give you the option of which constellation story to hear. • Your options are Ursa Major, Draco, Cassiopeia or Cygnus.
	Which constellation story would you like to hear about?

Ursa Major	• To find Ursa Major, we first look for a group of 7 stars that look a bit like a saucepan. This group of 7 stars is called the Plough, or the Big Dipper.
	• This is an example of what we call an asterism, which is a recognisable star pattern, but not one of the official constellations. • The Plough can be seen all year around from the UK. • One of these stars is called Dubhe, which means bear in Arabic. • You can use the Plough to find the rest of the constellation of the bear.
	• You can see the rest of the outline of the bear here.
	• According to the myth, Ursa Major wasn't always a bear. Originally, she was a beautiful princess named Calisto. • Zeus, the king of the Ancient Greek gods, fell in love with her. • This wasn't great as Zeus already had a wife! • Zeus' wife, Hera, decided she would turn poor Callisto into a bear as punishment. • Callisto had to run away, leaving everything behind, including her son Arcas. • Arcas grew up into a hunter, not knowing what had happened to his mum. • One day, while he was out hunting, he came across a great big bear that started running towards him. • You have probably realised that that bear was his mother, but he didn't know that, so he raised his bow and arrow and aimed straight for the bear's heart. He was about to kill his own mum! • Fortunately, Zeus was watching over the two of them and realised that he could not let this happen. However, he couldn't undo the magic of another god, so he did the next best thing – he turned Arcas into a bear as well. • As soon as Arcas was a bear, he recognised his mum and ran towards her, and they gave each other a great big bear hug. • Zeus was worried that they still weren't safe, so he picked them up by their tails and whirled them around and around his head until they landed in the sky.

	• You can see that as well as the great bear, we also have a little bear. • This constellation is called Ursa Minor, and it represents the bear that Arcas was transformed into. • You can find Ursa Minor by following the two pointer stars Merak [mih-rack] and Dubhe in a straight line to find the star at the end of Ursa Minor's tail. • You can then follow this around to find another saucepan shape. • Because of its similarity to the shape of the Plough/Big Dipper, it is sometimes called the little dipper. • The star at the end of the tail of Ursa Major is called Polaris or the North star.
	• You can see Polaris is above the direction of north.
	• As the Earth spins on its axis, the stars appear to move across the sky, but Polaris stays in the same place. • This is because it is directly above the Earth's north pole. • Because of this, and because of other recognisable star patterns, people have been able to use the stars to help navigate for hundreds of years.
	• Below the handle of the Plough, there's a constellation called Canes Venatici. • Within that constellation, there is an object called the Whirlpool galaxy.
	• A galaxy is a collection of millions or billions of stars and gas bound together by gravity. • The Whirlpool galaxy is a spiral galaxy and was the first one to be classed as such. • You can see it with binoculars on a clear night. • Distances in space are so vast that we measure distances in light years and that a light year is the distance light travels in one year. • The Whirlpool galaxy is about 31 million light years away from Earth and is also known as Messier 51a. • The yellow blob is another galaxy called M51b or NGC 5195 which is a dwarf galaxy.

Draco	• To find Draco it is easier to first find Ursa Major.
	• To find Ursa Major, we first look for a group of 7 stars that look a bit like a saucepan. This group of 7 stars is called the Plough, or the Big Dipper. • This is an example of what we call an asterism, which is a recognisable star pattern, but not one of the official constellations. • The Plough can be seen all year around from the UK.
	• You can use the Plough to find the rest of the constellation of the bear. • You can find Ursa Minor by following the two pointer stars Merak [mih-rack] and Dubhe in a straight line to find the star at the end of Ursa Minor's tail. • You can then follow this around to find another saucepan shape. • Because of its similarity to the shape of the Plough/Big Dipper, it is sometimes called the little dipper.
	• You can then see Draco is a line of stars between the two bears. • The dragon then folds itself next to Ursa Minor and then folds back on itself.
	• The constellation is associated with a dragon called Ladon. • Ladon lived in the garden of Zeus and Hera. Zeus was the king of the ancient Greek gods, and Hera was the queen. • In their garden, they had a magical tree that could grow golden apples. It was one of their wedding presents, so they got the dragon Ladon to live in their garden and guard the tree for them.
	• You may have heard of a hero called Hercules. • He was set 12 seemingly impossible tasks to prove his worth to the gods. • One of those tasks was to defeat a monster called the Hydra. • When Hercules defeated the Hydra, he dipped his arrows in the monster's blood. He did this because the Hydra's blood was poisonous. • Another of his tasks was to steal 3 of the golden apples from the garden.

	• He used his poisonous arrows to defeat Ladon. • Hera was sad about this and put a picture of the dragon in the sky. • However, the placement is unfortunate as he is next to Hercules.
	• Within the constellation of Draco, there is an object called the Cat's Eye Nebula. • Distances in space are so vast that we measure distances in light years and that light year is the distance light travels in one year. • The Cat's Eye Nebula is 3000 light years away from Earth. • A nebula is a large collection of gas and dust in interstellar space. • There are different kinds of nebula. Some of them are star forming regions, but this one is the remains of a star and is called a planetary nebula. • The white dot in the centre is the white dwarf star left over after the star's death. • The circles around it are layers of hot gas being blown off. • This is what our Sun will likely look like a the end of its life. • A star that is much bigger than our Sun will end its life even more dramatically, ending in a big explosion called a supernova and potentially resulting in a black hole.

Cassiopeia	• The constellation of Cassiopeia is visible all year round from the UK and can be found by looking for a W or an M shape in the sky.
	• Cassiopeia was the queen of ancient land, and she was very beautiful. • The problem was that she was also very vain. She went around telling everyone how beautiful she was. • One day, she came across a group of mermaids. Cassiopeia didn't hesitate to tell the mermaids how much more beautiful she was than them. This made the mermaids very upset, and they swam away in a flood of tears. • The mermaids' dad was Poseidon, the god of the sea, and he got very angry. He summoned a sea monster called Cetus to attack Cassiopeia's ships and sailors.
	• Cassiopeia had a husband called Cepheus, who I think looks like a house. • They both went to an oracle to ask how they could defeat the sea monster. • The oracle told them they had to sacrifice the thing that they loved most.
	• The thing they loved most was their daughter Andromeda. • Andromeda can be found by following the points of the M or W of Cassiopeia. • Poor Andromeda was chained up to the rocks and ready to be eaten by Cetus the Sea monster. • What we need now is a hero. Fortunately, Ancient Greece is full of heroes!
	• The hero in this story is called Perseus. • If Cassiopeia resembles a W, Perseus will be the group of stars below the left part of the zigzag. • Perseus is famous for defeating the gorgon Medusa, who had snakes for hair and could turn you into stone just by looking at you. He is carrying her head in the artwork. • After defeating Medusa, Perseus gained a flying horse named Pegasus. • Pegasus is a square in the sky next to Andromeda.

	• As Perseus was flying home on Pegasus, he saw Andromeda chained to the rocks below, about to be eaten by the monster. • Perseus pulled the head of Medusa out of the bag and used this to turn Cetus to stone. • He then landed on the beach and freed Andromeda. • Him and Andromeda fell in love and got married and everyone lived happily ever after, apart from the sea monster… • You may notice there is a faint smudge in the constellation of Andromeda. This is a galaxy.
	• Galaxies, like the Andromeda Galaxy you can see here, are huge groups of typically hundreds of billions of stars. • The Andromeda galaxy is the furthest object you can see with the naked eye. • Even 1000 years ago, people could see that there was something strange in the Andromeda constellation, though they weren't sure what it was. • Distances in space are so vast that we measure distances in light years. One light year is the distance light travels in one year. • The Andromeda Galaxy is 2.5 million light years away. • The Andromeda Galaxy is exerting a strong gravitational pull on the Milky Way. Scientists think the two galaxies could merge in 4-5 billion years, making a new galaxy called Milkdromeda.

Cygnus	• We're currently facing towards the North.
	• I'm going to spin the dome around towards the East so that you can see the constellations a little more clearly. • This may make you feel a bit uncomfortable, if it does, close your eyes for a few seconds and that feeling should pass. • To find Cygnus we look for a group of stars that make up a cross. This is an asterism called the Northern Cross
	• One story based in Greek mythology told of two close friends, Cygnus and Phaeton, who were always competing. • One day, they each challenged the other to a race across the sky, around the Sun, and back to Earth. • In an effort to gain the advantage, they both cut too closely to the Sun and their chariots were burned up. • They both fell to the Earth. • Cygnus saw Phaeton fall into the river. • Cygnus repeatedly dove into the river to find Phaeton, but could not find him. • While he sat grieving on the bank of the river, Cygnus begged for Zeus to help him. Zeus replied that if he gave Cygnus the body of a swan, he would be able to dive deeply enough. However, if Cygnus did take on the body of a swan, he would also be giving up his immortality and would only live as long as a swan would normally live. • Cygnus readily agreed to this. He was transformed into a swan and rescued Phaeton. • In honour of this great unselfish act, Zeus placed Cygnus' image (that of a swan) into the night sky. • It appears to be "swimming across" the Milky Way.
	• The brightest star in Cygnus, Deneb [deh-neb] is at one point of another asterism called the Summer Triangle. • The other points are in two other constellations.

	• One star is called Altair, and it is the brightest star in the constellation Aquila (the eagle). • The final star is called Vega, and it is the brightest star in the constellation Lyra (the lyre/harp).
	• In the constellation of Lyra, there is a deep sky object called the Ring Nebula. • This was discovered in 1779 by Charles Messier. It is sometimes known as M57 or NGC 6720. • This is a planetary nebula, one of the final stages in the life of a lower mass star. • The white dot in the centre is the white dwarf left over after the star's death. • The circles around it are layers of gas being blown off. • It is 2570 light years from Earth. • The inner blue-green region is caused by ionised oxygen, whereas the outer red region is caused by hydrogen.

	• Looking into space is one of humanity's oldest pastimes. And the night sky above our heads is almost identical to the night sky studied by our ancestors. • However, while the stars around us haven't changed much, our own abilities have. We have developed our understanding and the methods we use to peer into the darkness. Nowadays, we're not just limited to looking into space; we can go there. • This is one of the points where you might feel a little bit uncomfortable. If you do, please just close your eyes for a few seconds and that feeling should pass. • Let's head into space. • Space is actually only 100km up, which means where you are now is closer to space than the seaside.
Earth	• The Earth is the 3rd planet away from the Sun. • Like all of the planets in the Solar System, it orbits around the Sun, and this takes 365 and a quarter days to complete the orbit. We call this 1 year. • Whilst it is doing this, it is also spinning on its axis which takes 24 hours. This is what gives us night and day. • The Earth is tilted on its axis at 23.5°, which is what causes the different seasons. • Planet Earth is special because it is where we live. • It is in something called the Habitable Zone, which is also known as the Goldilocks Zone, because it is not too hot, not too cold, it is just right. • It is just right for liquid water. On Earth wherever we find life we find liquid water. • When we look out at other planets, we look to see if we can see evidence of liquid water to give us an idea if there is life out there. • On the nightside of our planet, the twinkling lights of human activity stand out. We can spot bright lights representing big cities, and we can trace coastlines. • As we move around to the dayside, the presence of humans seems to disappear. The lights give way to nature. We can see the oceans

	and deserts, the forests and icy regions. Earth is the only place we know of that has life on it.
	• We have been sending artificial satellites into space since 1957. • Sputnik 1 was the first satellite to go into space. • We now have over 10 000 active satellites orbiting around the Earth. • We have sped up time, and each white dot represents an active satellite. • Satellites are objects that orbit a larger object in space. • You can have natural and artificial satellites. • Gravity keeps natural and artificial satellites in orbit. • Artificial satellites can be used for many things such as weather, communications, Earth observations, navigation and to study space. • As we fly away from the Earth, you will notice an orange circle. This represents the orbit of the Moon. • A moon is a celestial object that orbits a planet. The Earth has 1 moon. • Most astronauts these days go to something called the ISS, which is an artificial satellite.

Optional ISS	• We have been sending humans into space since 1961, with Yuri Gagarin being the first. • Since then, about 700 people have gone to space. • We have had a permanent human presence in space since November 2000 onboard the International Space Station.
	• The ISS about the size of an American football pitch, or 13 double decker buses lined up end to end. • Nearly 300 astronauts have visited the ISS from over 20 countries. • It is a large floating science laboratory that provides a unique environment for the astronauts to perform experiments. • Over 3000 experiments have been carried out on the ISS, investigating topics like understanding the human body in space, growing plants in space and even how fire behaves. • Astronauts can also study the Earth from their unique view point. • It orbits the Earth every 90 minutes, meaning you get 16 sunrises and 16 sunsets every 24 hours. • There are usually 7 people on board. • Professional astronauts have to undergo years of training. • To counteract the effect of microgravity on their bodies, astronauts have to do 2 hours of exercise every day to stop their muscles and bones deteriorating. • Their food is usually, dehydrated, tinned or vacuum sealed.
	• We're now going to fly further away from the Earth.
Rocky Objects	• In our Solar System we have 8 planets. • 4 rocky/terrestrial planets and 4 giant planets. • We're going to visit a rocky object.
	Which rocky object would you like to visit?

Mercury	• Mercury only takes 88 days to orbit around the Sun. This means it appears to move quickly across the sky. Mercury is named after the Roman messenger god, because people believed it was delivering messages to the other planets.
	• Although it has such a short year, a day on Mercury lasts for 59 Earth days.
	• Mercury is the closest planet to the Sun, and it is also the smallest planet in our Solar System. It is 2.6 times smaller than the Earth, with a diameter of approximately 4 900 km. It is only a little bit bigger than our Moon.
	• Mercury is the second densest planet in our Solar System, after the Earth.
	• Mercury can be seen in the sky without a telescope but is harder to spot than the other planets that are visible to the naked eye.
	• With its heavily cratered surface, Mercury looks similar to the surface of the Earth's moon. These craters are formed by collisions with meteoroids and comets.
	• Mercury has the most extreme temperature changes of any planet, with the daytime temperature averaging 430 °C and the nighttime temperature getting down to -180 °C.
	• Three spacecraft have visited Mercury.
	  ○ Mariner 10 performed 3 flybys of the planet in 1974 and 1975.
	  ○ Then the MESSENGER mission launched in 2004 and orbited around Mercury between 2011 and 2015, until there was a controlled impact landing of MESSENGER on the surface of Mercury, creating a new crater on the planet. Its primary goal was to study the geology, magnetic field and chemical composition of the planet.
	  ○ In 2018 a new mission called BepiColombo launched. So far it has performed 6 flybys of Mercury and is due to go into orbit of the planet at the end of 2026. This mission is particularly exciting for us here in Leicester as one of the instruments on board was developed by a Europe-wide group of scientists, including ones at the University of Leicester.

Venus	• Venus is the second planet away from the Sun.
	• It is slightly smaller than Earth.
	• Venus is named after the Roman goddess of love and beauty.
	• It is the hottest planet in the Solar System, with an average surface temperature of 464 °C. This immense heat is caused by a very thick atmosphere. The view we have of the planet here is actually of its atmosphere.
	• The atmosphere is mainly made of carbon dioxide, a greenhouse gas that is very good at trapping in heat. We sometimes call this the "runaway greenhouse effect."
	• The atmosphere is about 90 times heavier than Earth's. This means anything that we have sent to the surface has eventually been crushed by that atmosphere.
	• The surface of Venus is covered in volcanoes and carved out by lava flows. To see the rocky surface below the atmosphere, we need to view the planet using a different kind of light. Most images of Venus' surface were collected using RADAR imaging.
	• Venus has the longest day of any planet in the Solar System, at 243 Earth days. Its day is actually longer than year, which is 225 Earth days.
	• Venus is the third brightest object in the sky. The brightest is the Sun, the second brightest is the Moon and then Venus is the third brightest.
	• There have been quite a few space-firsts happening at Venus
	  ○ In 1962, Mariner 2 performed the first flyby of another planet at Venus.
	  ○ In 1967, Venera 4 performed the first successful atmospheric entry on another planet.
	  ○ In 1970, Venera 7 was the first spacecraft to have a soft landing on another planet, it transmitted some data.
	  ○ In 1972, Venera 8 became the first fully successful landing on another planet.
	  ○ In 1974, Mariner 10 became the first spacecraft to perform flybys of multiple planets.

	○ In 1975, Venera 9 sent back the first images from the surface of another planet. ○ In 1982, Venera 13 sent back the first sound recordings of another planet. ○ There are no currently operational missions at Venus. The most recently operational was Akatsuki, which was a Japanese orbiter launched in 2010. It entered into orbit around Venus in 2015. Contact was lost with the probe in April 2024, and the mission was officially terminated in April 2025.

Moon	• The Moon takes 27.3 days to orbit the Earth. • The Moon, like the Earth and the Sun, is roughly spherical • The Moon does not give off its own light, but it reflects the light from the Sun. • The Moon appears to change shape in the sky throughout each month. This is because the part of the Moon's surface that is lit up by the Sun changes as the Moon orbits the Earth. We call these different "shapes" the phases of the Moon. It takes 29.5 days to go through these phases. • The darker regions of the Moon are what we call the lunar maria, from the Latin word for sea. This is because ancient astronomers thought that they might be oceans. However, they are actually basalt rock from cooled lava flows.
	• It's been a long time since humans have been to the Moon, but we are planning to change that… • NASA are currently running the Artemis programme, a series of missions with the goal to get humans back on the Moon for the first time in 50 years • The image on the left shows the launch of Artemis I, from November 2022. This was an uncrewed mission to test out the new rocket, the SLS (Space Launch System) • The image on the right shows the crew of Artemis II: Reid Wiseman, Victor Glover, Christina Koch and Jeremy Hansen. ○ This mission launched 1st April 2026, and flew the crew further away from the Earth than any humans have travelled before.
	• We're now going to fly further away

Mars	• Mars is the 4th planet from the Sun. • It is the second smallest planet in the Solar System. • It is named after the Roman god of war. • It has two moons called Phobos and Deimos. • The moons are characters linked to the god of war in mythology.
	• Because of its red colour, many people think that Mars must be hot, however it has an average surface temperature of -65 °C. • The red colour is actually caused by iron oxide, which is the scientific name for rust. This is how the planet got its name, as ancient people through it represented a drop of blood in the sky. • Mars is home to the largest volcano in the Solar System, called Olympus Mons, which is nearly 3 times taller than Mount Everest. • It also has a huge canyon called Valles Mariners, which is the width of the United States and is 8km deep. • There is frozen water at the north and south poles of Mars, but scientists think in the early days of Mars' history it may have had liquid water. If there was liquid water then that means that there could potentially have been life.

Generic TNS script

- Many missions have been sent to Mars, including satellites, landers and rovers.
- There are 7 active satellites orbiting Mars.
- There have been 6 successful landers.
- There have been 6 successful rovers, 2 of which are still active.
- There has been 1 helicopter drone.
- The rovers are able to move around on the surface, take pictures and analyse rock samples to help us further understand Mars.
- Sojourner was the first rover on Mars and it landed in 1997. Its mission lasted for 83 days.
- In 2004, two rovers went to Mars, Spirit and Opportunity. Although planned to last for 90 days, Spirit lasted until 2010 and Opportunity lasted until 2018.
- Curiosity (left image) landed in 2012 and is still operational.
- 2 rovers landed in 2021, Zhurong and Perseverance (right image). Perseverance has a drill onboard which is able to drill down into the surface and collect rock samples. The helicopter drone, Ingenuity, went to Mars with Perseverance. It could fly around and get a bird's eye view of the surface, helping Perseverance to navigate.

Gas	• Now we've visited a rocky object, let's visit a giant planet.
	Which giant planet would you like to visit?
Jupiter	• Jupiter is the largest planet in the Solar System. It is about 1000 times bigger than Earth. • It is named after the Roman king of the gods. Quite a fitting name for the king of the planets! • It has a storm on it that has been going for hundreds of years called the Great Red Spot. • Jupiter is a gas giant and is mainly made of hydrogen and helium, the same materials that make up the Sun. • Scientists believe that Jupiter is the oldest planet in the Solar System. Since it's the largest planet, it is thought that it began forming earlier, giving it more time to collect up a lot of the gas leftover after the Sun's formation.
	• This image of Jupiter was taken by the James Webb Space Telescope. By looking at the planet using infrared light, we can see its auroras and faint rings.

Generic TNS script

- Jupiter was the first planet other than our own to have moons discovered around it. They were discovered in 1610 by an Italian astronomer named Galileo Galilei.
- The discovery of these moons helped scientists to realise the planets orbited around the Sun and not the Earth.
- Those moons are called Io, Europa, Ganymede and Callisto.
- Io is the most volcanic place in the Solar Syster.
- Ganymede is the largest moon in the Solar System, larger even than planet Mercury.
- Callisto is the most cratered place in the Solar System.
- Europa is the smoothest place in the Solar System. Europa is so smooth because the surface of it is covered in ice. Beneath its icy surface, scientists believe there may be a liquid ocean containing twice as much water as the oceans on planet Earth. This means that Europa is a place scientists are looking to see if it could support life.
- While Galileo discovered just these 4 moons, we now know the planet has at least 115 moons.

Saturn	• Saturn is the second largest planet in the Solar System and is what we call a gas giant. • It is mainly made of hydrogen and helium. • It is the only planet in our Solar System that would float on water if we had a bath big enough. • Saturn is very famous for its beautiful rings, however it is not the only planet that has rings. All of the giant planets have rings, but Saturn's are the most extensive. • Saturn's rings are mainly made of ice which makes them very reflective. • Scientists believe that they are formed from pieces of comets, asteroids or broken up moons. • The size of the material in the rings varies from bits of dust to boulders about the size of a house. • Although they extend 282 000 km from the planet, the rings themselves are quite thin, only between 10m and 30m thick. To put that in perspective, the planetarium we are sat in is 18m wide! • Since the rings are so thin, occasionally from our view point on Earth they seem to disappear.
	• Saturn is named after the Roman god of farming, which is fitting as it has quite the flock. • It has the largest number of moons in the Solar System. • As of April 2026, it has 292 known moons.

Uranus	• Uranus was the first planet to be discovered using a telescope. • It was discovered in 1781 by William Herschel. • He wanted to name it 'George's Star,' in honour of King George the 3rd. • People who didn't live in England were not very happy with the idea that a planet was going to be named after an English king. • Instead, it was named Uranus after the Greek god of the sky. • Uranus has 29 known moons; they are named after Shakespeare and Alexander Pope characters. • William Herschel initially thought that it was a comet, but it was confirmed as a planet in 1783 by astronomer Johann Bode. • Uranus is an ice giant. • It is mainly made up of water, methane and ammonia. • The methane gives Uranus its colour.
	• Uranus is sometimes described as a lazy planet as it rolls around on its side. • It is tilted at 98 degrees. • This tilt is believed to be caused by a collision with an Earth-sized object in the early Solar System. • The 13 rings and 29 moons orbit up and over the planet rather than side-to- side.
Neptune	• Neptune is the furthest planet from the Sun, more than 30 times further than Earth. • Because it is so far away, we don't know that much about Neptune. • Its existence was predicted using maths when scientists looked at the orbit of Uranus and saw a "wobble". It was then discovered in 1846. • It is named after the Roman god of the sea. • Neptune is tilted at 28 degrees, which is a similar tilt to that of the Earth and Mars. This means it experiences seasons like we do on Earth, but the difference is each season lasts for about 40 years due to its long orbital period. • Neptune has 16 known moons.

	• Neptune has at least 5 rings. • Neptune is an ice giant, mainly made up of water, methane and ammonia.
	• This image of Neptune was taken by the James Webb Space Telescope. By looking at the planet using infrared light, we can see its rings clearly. The bright patches in the planet's southern hemisphere represent high-altitude methane-ice clouds.

Finale	• We have mentioned that there are 8 planets in the Solar System. • But there are lots of other objects too.
	• There are 5 official dwarf planets: Ceres, Pluto, Haumea, Makemake and Eris. • Pluto was originally classed as a planet, but it was reclassified as dwarf planet in 2006.
	• There are also rocky objects called asteroids. • The main asteroid belt lies between Mars and Jupiter. • Asteroids are the rocky remains from the formation of the Solar System. • There are over 1 million asteroids in the Asteroid Belt.
	• There are also asteroids beyond Neptune in something called the Kuiper Belt. • As well as asteroids, there are also icy bodies called comets, which are also from the formation of the Solar System. They have a rocky central nucleus and then a frozen region around them made up of things we think of as gases here on Earth.
	• We can observe planets outside our Solar System, which we call exoplanets. • We have found over 5000 exoplanets using telescopes. • We can use telescopes like JWST to study their atmospheres.
	• Our Solar System is part of the Milky Way galaxy. It contains 100-400 billion stars. • The universe contains potentially 2 trillion other galaxies. • Other galaxies are moving away from us due to the expanding universe. • There is a supermassive black hole at the centre of the galaxy called Sagittarius A*.
	• The green dots represent other galaxies we have detected in sky surveys. • The hourglass shape is due to our own Milky Way blocking our view of the sky in those regions.