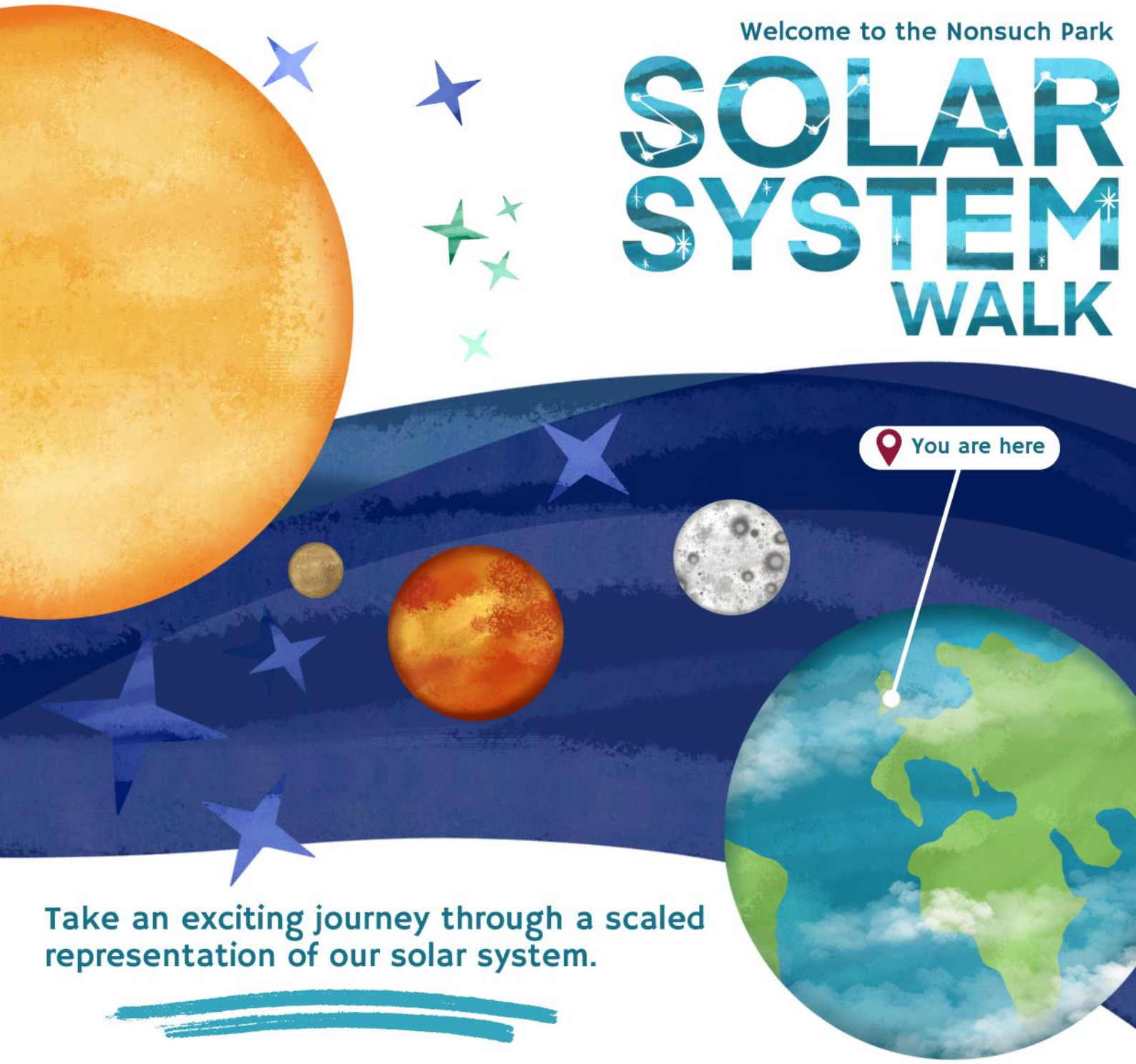
Welcome to the Nonsuch Park

SOLAR SYSTEM WALK



Take an exciting journey through a scaled representation of our solar system.

The Nonsuch Park Solar System Trail invites you on an engaging 1.3-kilometre walk, scaling down the vast distances between the planets to an astonishing 4.75 billion times smaller. Each planet is featured on a panel that offers exciting facts to spark your interest. This pack is a direct replica of those panels, making it ideal for classroom activities or group discussions before or after your visit.

For more detailed information and images, visit

ewellastronomy.org/solarwalk

Ewell Astronomical Society

YOUR FUND SURREY | SURREY COUNTY COUNCIL

Surrey County Council helped to fund this project via the Your Fund Surrey Small Community Projects fund

whistlestop ARTS

SOLAR SYSTEM WALK

THE SUN

FUN FACTS

1. **ENERGY BOOSTER:** Every second, the Sun loses about 4 million tonnes of mass. This mass is converted into energy, which we see as light and feel as heat.

2. **TWINKLE, TWINKLE, LITTLE STAR:** Our Sun is a relatively small star. If the largest known star (UY Scuti) was placed where the Sun is, its surface would extend beyond Jupiter's orbit.

3. **A STAR IS BORN:** The Sun was born about 4.5 billion years ago, and is thought to be about half way through its lifetime.

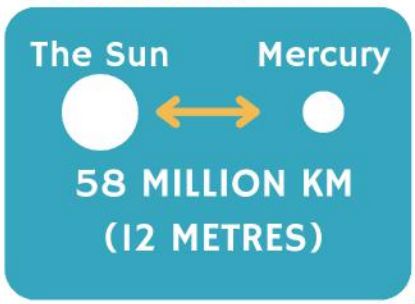
4. **I'M SPINNING AROUND:** The Sun's surface rotates at different speeds depending on latitude—about 25 days at the equator and around 33 days nearer the poles.

5. **FEELING HOT, HOT, HOT:** The Sun's surface is around 5,600°C, but its outer atmosphere, the corona, can be over 1 million°C.

DID YOU KNOW?

- Average Diameter: 1.4 million km (109 Earth diameters)
- Distance from the centre of the Milky Way galaxy: 26 light years (250,000 trillion km)
- Time it takes for the Sun's energy to reach earth: 8 minutes
- Core temperature 15,000,000°C

DISTANCES



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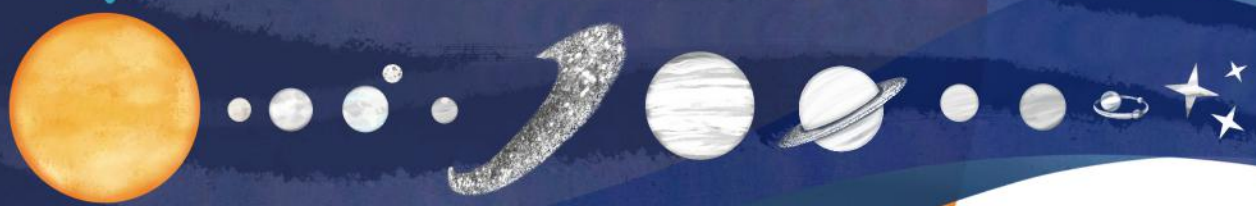

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SOLAR SYSTEM WALK

MERCURY

FUN FACTS

1. **INNERMOST PLANET:**
Mercury is the closest planet to the Sun, making it incredibly hot. Daytime temperatures can soar up to 427°C.

2. **SMALLEST PLANET:**
It's also the smallest planet in our solar system, even smaller than some moons. Mercury is only slightly larger than our Moon.

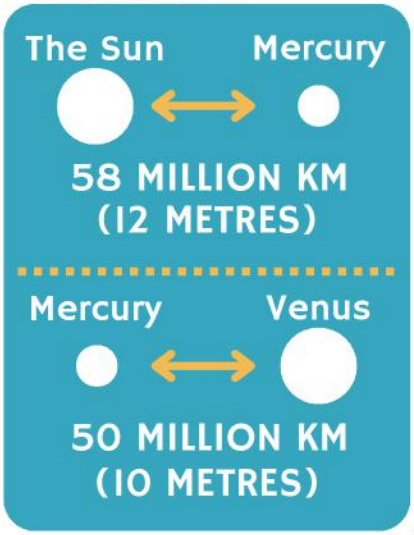
3. **NO ATMOSPHERE:**
Mercury has a very thin atmosphere, which means it can't hold heat. This causes wild temperature swings—from scorching hot during the day to freezing cold at night.

4. **OVER THE MOON!:**
Mercury has no moons or rings. It's too small and close to the Sun to hold onto them.

DID YOU KNOW?

- Average Diameter: 4,880 km (0.4 Earth diameters)
- Mass: 0.06 Earth masses
- Distance from the Sun: 58 million km (0.39 Earth distances)
- Year: 88 Earth days
- Day: 59 Earth days

DISTANCES



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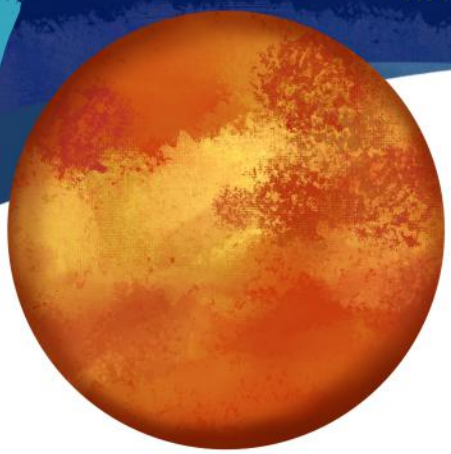
VENUS



FUN FACTS

1 **THICK ATMOSPHERE:**
It has a thick atmosphere composed mainly of carbon dioxide, which creates a strong greenhouse effect. This traps heat, making it incredibly inhospitable.

2 **HOTTEST PLANET:**
As a result of its thick atmosphere, surface temperatures of 475°C are hot enough to melt lead, and makes Venus even hotter than Mercury.

3 **RETROGRADE ROTATION:**
Venus has a unique rotation - it spins backwards. This means the Sun rises in the west and sets in the east, which is the opposite of what happens on Earth.

4 **DAY LONGER THAN A YEAR:**
A day on Venus (243 days) is longer than its year (225 days). It takes Venus more time to spin once than to orbit the Sun. No other planet is like this, making Venus unique.

DID YOU KNOW?

- Average Diameter: 12,100 km (0.95 Earth diameters)
- Mass: 0.82 Earth masses
- Distance from the Sun: 108 million km (0.72 Earth distances)
- Year: 225 Earth days
- Day: 243 Earth days

DISTANCES

Mercury ⟷ Venus
50 MILLION KM (10 METRES)

Venus ⟷ Earth
42 MILLION KM (9 METRES)

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EARTH

FUN FACTS

1 **ONLY PLANET WITH LIFE:**
Earth is the only known planet in our solar system that supports life. It's the perfect distance from the Sun that provides the right conditions for living beings.

2 **WATER WORLD:**
About 71% of Earth's surface is covered in water, making it a true blue planet.

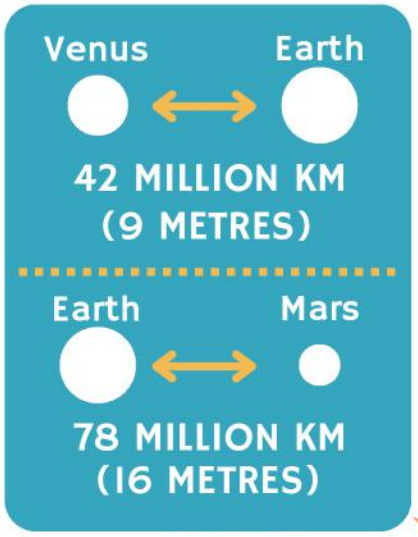
3 **PROTECTIVE SHIELD:**
Earth's atmosphere is rich in oxygen which is essential for most living creatures. The atmosphere and Earth's magnetic field also protect us from harmful radiation from the Sun.

4 **WHAT'S IN A NAME?:**
The Earth is the only planet not named after ancient mythology. Its name comes from a Germanic word meaning 'ground or 'soil'.

DID YOU KNOW?

- Average Diameter: 12,742 km (1 Earth diameter)
- Mass: 6 billion trillion tonnes
- Distance from the Sun: 150 million km (1 Earth distance)
- Year: 365.25 Earth days
- Day: 24 Earth hours

DISTANCES



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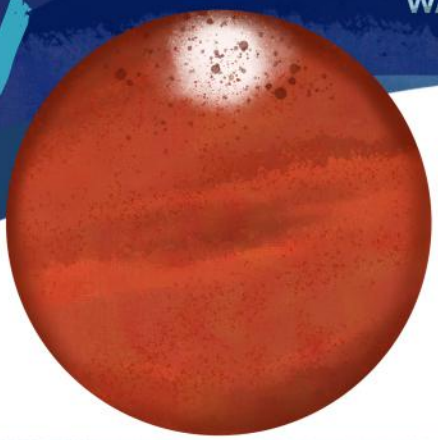
MARS



FUN FACTS

1 **THE RED PLANET:**
Mars is often called the 'Red Planet' because of its reddish appearance, which is caused by iron oxide (rust) on its surface.

2 **LARGEST VOLCANO:**
Mars is home to Olympus Mons, the largest volcano in the solar system. It stands about 22 km high—nearly three times the height of Mount Everest.

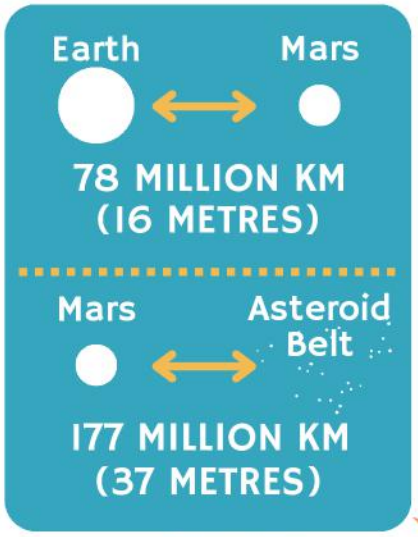
3 **THIN ATMOSPHERE:**
This means it experiences extreme temperature fluctuations, from a pleasant 20°C in the daytime to a freezing 150°C below zero at night time.

4 **WATER EVIDENCE:**
Scientists have discovered evidence of ancient rivers and lakes on Mars, suggesting that the planet may have once had liquid water, potentially even supporting life.

DID YOU KNOW?

- Average Diameter: 6,780 km (0.53 Earth diameters)
- Mass: 0.11 Earth masses
- Distance from the Sun: 228 million km (1.52 Earth distances)
- Year: 687 Earth days
- Day: 24.6 Earth hours

DISTANCES



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THE ASTEROID BELT

SOLAR SYSTEM WALK

FUN FACTS

1 **THE COSMIC HIGHWAY:**
The Asteroid Belt lies between Mars and Jupiter, filled with millions of rocky bodies orbiting the Sun.

2 **VARYING SIZES:**
It has asteroids ranging from tiny pebbles to massive objects like dwarf planet Ceres.

3 **A REMNANT OF FORMATION:**
This region is leftover material from the early solar system that never formed into a planet.

4 **HEAVY WEIGHT BELT:**
The asteroid belt is called that because it's a big ring of many space rocks between Mars and Jupiter. The word 'belt' means a band of objects orbiting the Sun in that area.

DID YOU KNOW?

Mass: The total mass of the belt is about 0.04% of the Earth's mass, one-third due to Ceres.

Average Diameter: Diameters vary widely - with Ceres, being the largest, at 952 km across.

Distance from the Sun: Between about 315 million km and 495 million km.

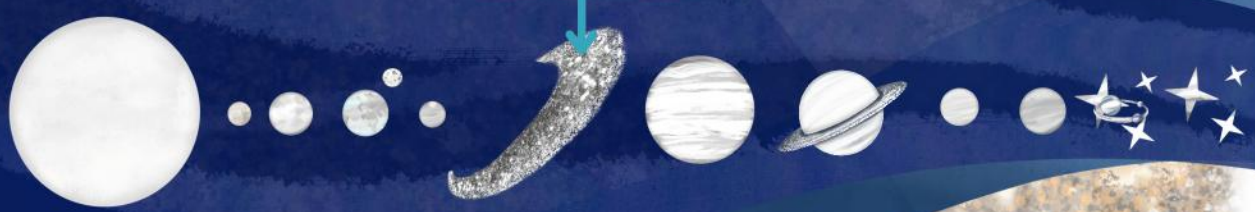
Year: Objects in the belt take around 3 to 6 years to orbit the Sun.

Day: The rotation period varies among asteroids; Ceres, for example, has a rotation period of about 9 hours.

DISTANCES

Mars ⟷ Asteroid Belt
177 MILLION KM (37 METRES)

Asteroid Belt ⟷ Jupiter
375 MILLION KM (79 METRES)



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JUPITER

FUN FACTS

1. **THE GIANT OF THE SOLAR SYSTEM:** Jupiter is the largest planet in the solar system, with a diameter more than 11 times that of Earth. It's a gas giant made mostly of hydrogen and helium.

2. **FASTEST ROTATING PLANET:** A day on Jupiter is just about 10 hours long.

3. **GREAT RED SPOT:** Jupiter features the Great Red Spot, a massive storm larger than Earth that has been raging for over 350 years.

4. **SPACE KING:** Jupiter is named after the king of gods in Roman mythology, although interestingly the Romans would have been unaware at the time that Jupiter was by far the largest planet.

DID YOU KNOW?

- Average Diameter: 139,820 km (11 Earth diameters)
- Mass: 318 Earth masses
- Distance from the Sun: 778 million km (5.2 Earth distances)
- Year: 11.9 Earth years
- Day: 9.9 Earth hours

DISTANCES

Asteroid Belt ⟷ Jupiter

375 MILLION KM (79 METRES)

Jupiter ⟷ Saturn

645 MILLION KM (136 METRES)

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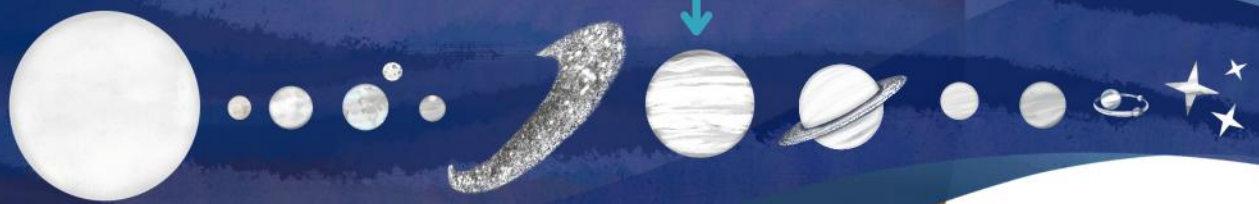

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SATURN

FUN FACTS

1 **THE RINGED WONDER:**
Saturn is famous for its stunning rings, composed of ice and rock particles. These rings can stretch over 280,000 km wide, but are only tens of metres thick.

2 **MANY MOONS:**
Saturn has over 250 known moons, with Titan being the largest. Titan is bigger than the planet Mercury and has lakes of liquid methane.

3 **GAS GIANT:**
Saturn is a gas giant, primarily composed of hydrogen and helium, and it lacks a solid surface, unlike Earth. It is so light that it could float in water.

4 **SPINNING FLAT OUT:**
A day on Saturn lasts only 10.7 hours. It spins so fast that it is flattened at the poles – the diameter at the equator is nearly 12,000 km longer than the diameter measured through the poles.

DID YOU KNOW?

- Average Diameter: 116,000 km (9.5 Earth diameters)
- Mass: 95 Earth masses
- Distance from the Sun: 1.4 billion km (10 Earth distances)
- Year: 29 Earth years
- Day: 11 Earth hours

DISTANCES

Jupiter ⟷ Saturn
645 MILLION KM (136 METRES)

Saturn ⟷ Uranus
1,455 MILLION KM (306 METRES)

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URANUS

FUN FACTS

1. **THE TILTED PLANET:**
Uranus is known for its extreme tilt. It rotates on its side, with an axial tilt of about 98 degrees. This means its poles are almost in the plane of its orbit unlike all other planets.

2. **ICE GIANT:**
Uranus is classified as an ice giant, composed mostly of water, ammonia, and methane ice. This gives it a beautiful blue colour.

3. **FAINT RINGS:**
Uranus has a system of faint rings made of ice and rock particles. They are much less prominent than Saturn's rings but are still fascinating.

4. **COLD TEMPERATURES:**
Uranus is the coldest planet in our solar system, with temperatures dropping to around -224°C.

DID YOU KNOW?

- Average Diameter: 51,000 km (4 Earth diameters)
- Mass: 14 Earth masses
- Distance from the Sun: 2.9 billion km (19 Earth distances)
- Year: 84 Earth years
- Day: 17.2 Earth hours

DISTANCES

Saturn ⟷ Uranus

1,455 MILLION KM (306 METRES)

Uranus ⟷ Neptune

1,620 MILLION KM (336 METRES)

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SOLAR SYSTEM WALK

NEPTUNE

FUN FACTS

1. **THE FARTHEST PLANET:**
Neptune is the farthest known planet from the Sun, over 4.5 billion kilometres away.

2. **WINDY WORLD:**
Neptune has the strongest winds in the solar system, reaching speeds of over 1,900 kilometres per hour. That's faster than the speed of sound!

3. **DEEP BLUE COLOUR:**
Its stunning blue colour comes from the presence of methane in its atmosphere, which absorbs red light and reflects blue.

4. **DYNAMIC STORMS:**
Neptune features large storm systems as big as the Earth that can last for many years, and manifest themselves as dark spots on the surface.

DID YOU KNOW?

- Average Diameter: 49,000 km (3.9 Earth diameters)
- Mass: 17 Earth masses
- Distance from the Sun: 4.5 billion km (30 Earth distances)
- Year: 165 Earth years
- Day: 16 Earth hours

DISTANCES

Uranus ⟷ Neptune

1,620 MILLION KM (336 METRES)

Neptune ⟷ Pluto + the Kuiper Belt

1,500 MILLION KM (321 METRES)

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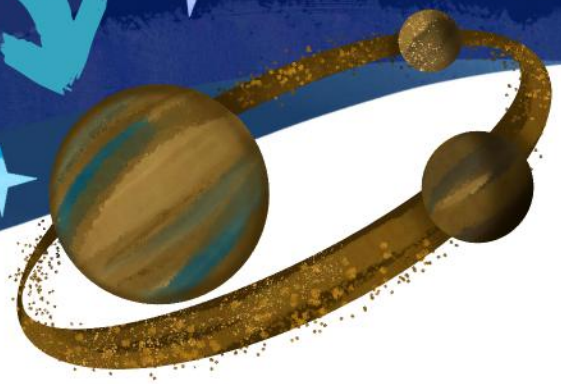
PLUTO AND THE KUIPER BELT



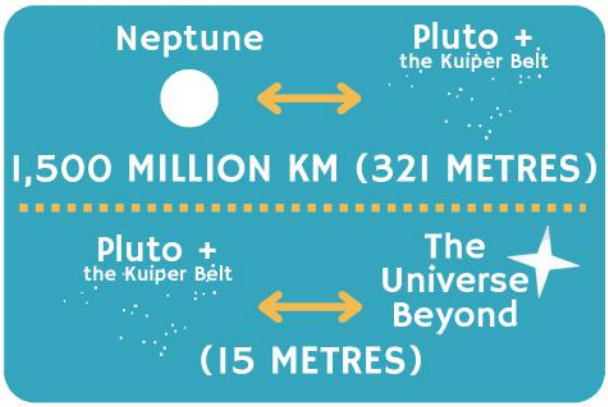
FUN FACTS

1. **A GROUP OF DWARF PLANETS:**
The Kuiper Belt is a region of rocky and icy bodies similar to the asteroid belt, but contains at least 5 dwarf planets, the most well-known of which is Pluto.

2. **ICE AND ROCK:**
Pluto is made mainly of ice and rock. Pluto has 5 moons, with the largest, Charon, about half the size of Pluto.

3. **WHAT'S IN A NAME?:**
Pluto is named after the Roman god of the underworld, and suggested as a name by the 11-year-old English girl Venitia Burney.

DISTANCES



all about the Kuiper Belt

The Kuiper Belt, like the asteroid belt, is made up of millions of icy rocky bodies.

Extends from roughly 4.5 billion km to 8.3 billion km from the Sun

Mass: The total mass of all the objects in the Kuiper belt is estimated to be around 10% of the mass of the Earth

Year: Objects take between 200 to 500 Earth years to complete an orbit of the sun

DID YOU KNOW?

Average Diameter: 2,400 km (0.19 Earth diameters)

Mass: 0.002 Earth masses

Distance from the Sun: 5.9 billion km (39.4 Earth distances)

Year: 248 Earth years

Day: 6.4 Earth days

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THE UNIVERSE BEYOND

SOLAR SYSTEM WALK

FUN FACTS

1. **IT'S BIG!:**
The universe contains billions of galaxies, each with billions of stars and planetary systems.

2. **EXPANDING UNIVERSE:**
Since the Big Bang, the universe has been expanding for about 13.8 billion years.

3. **WE ARE MADE OF STARS:**
Nearly all atoms, such as the oxygen we breathe and the gold in our jewellery, were created inside stars and ejected into space when these stars died.

4. **BLACK HOLES:**
Most galaxies, including our own, have massive black holes at their centre. These objects are so dense that not even light can escape their gravity.

5. **DON'T PANIC!:**
Our galaxy is on a collision course with the Andromeda galaxy – but this won't happen for about another 4 billion years.

DID YOU KNOW?

Number of stars in our galaxy: Over 100 billion stars, and the largest galaxy is thought to have 100 trillion stars.

Diameter of the observable universe: 93 billion light years (one light year is about 9.5 trillion kilometres)

Distance to nearest major galaxy: The Andromeda galaxy is about 2.5 million light-years away–equivalent to 5 billion km on the scale of this walk.

DISTANCES

Pluto + the Kuiper Belt ⟷ The Universe Beyond

(15 METRES)

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