My space passport

Bea's complete solar-system adventure

My name: _____

Can you find the little clay fish on this page?

Watch, sing and explore with Bea. After each song, tick its box and tell someone one thing you discovered.

Grown-ups: each world below links to its NASA fact page.

☐ Mercury



A year lasts about 88 Earth days.

☐ Venus



The hottest planet.

☐ Earth



Our home has one Moon.

☐ Mars



Rust makes it look red.

☐ Jupiter



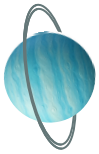
The biggest planet.

☐ Saturn



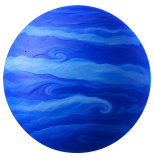
Rings made of separate pieces.

☐ Uranus



Spins almost on its side.

☐ Neptune



Winds faster than 2,000 km/h.

☐ Pluto



A dwarf planet with five moons.

Eight planets + dwarf planet Pluto = nine worlds in your passport.

Facts: NASA | science.nasa.gov/solar-system/solar-system-facts/

Story artwork; pictures and diagrams are not to scale.

My space passport: your mission

Use a pencil or crayons. You can tell an answer instead of writing it.

Collect your discoveries

Which world would you like to learn more about? Draw it below. Add Bea in her spaceship and one real fact you remember.

One fact I learned: _____

Read together: Become the space guide

Pick a world from your passport. Tell someone one real fact and one pretend moment from Bea's adventure. Then ask them a question. You can revisit a song whenever you want; you do not have to finish the whole journey at once.

Bea's three clues

Write a world for each clue.

1. I am the biggest planet. _____
2. I am our home. _____
3. I am a dwarf planet with five moons. _____

For grown-ups: 1. Jupiter. 2. Earth. 3. Pluto. Other drawing answers will vary. Encourage children to say which parts are real and which are pretend.

Facts: NASA | science.nasa.gov/solar-system/solar-system-facts/

Story artwork; pictures and diagrams are not to scale.

Eight planets

Eight Planets Round the Sun



One Sun. Eight planets.

The Sun is our star. The planets follow paths around it called orbits.



From nearest to farthest from the Sun



1. Mercury



2. Venus



3. Earth



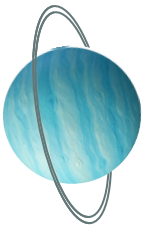
4. Mars



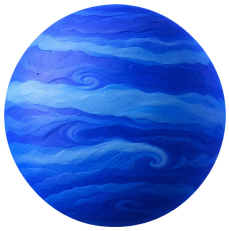
5. Jupiter



6. Saturn



7. Uranus



8. Neptune

Rocky worlds

Mercury, Venus, Earth and Mars

Gas giants

Jupiter and Saturn

Ice giants

Uranus and Neptune

Pluto is a dwarf planet. It is still part of our solar system!

Bea asks: Which planet is our home?

○ Mars ○ Earth ○ Jupiter

Can you find the little clay fish on this page?

Eight planets: your mission

Use a pencil or crayons. You can tell an answer instead of writing it.

Make a planet parade

Say the names and point. If you can write, fill the four gaps. Choose from: Venus, Mars, Saturn, Neptune.



1. **Mercury**



2. _____



3. **Earth**



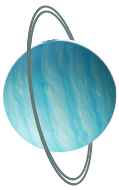
4. _____



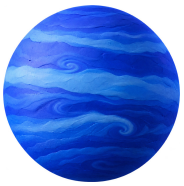
5. **Jupiter**



6. _____



7. **Uranus**



8. _____

Start nearest the Sun. Finish at Neptune.

Read together: Why do planets keep going round?

Gravity pulls the planets towards the Sun. The planets are also moving forwards. Together, that motion and the Sun's pull keep them travelling along their orbits. An orbit is a path, not a rail in space.

Ready for a bigger challenge?

Now cover the names. Say all eight planets in order from the Sun. Which is smallest? Which is biggest?

For grown-ups: Earth. Order: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune. Home: Earth. Smallest: Mercury. Biggest: Jupiter.

Mercury

Mercury, It's Your Birthday



88

Earth days in one Mercury year



A little world with a speedy year.

First in line

Mercury is the closest planet to the Sun.

Small but speedy

It is the smallest of the eight planets. One orbit takes about 88 Earth days.

A rocky face

Many craters were made when space rocks hit Mercury.

No moon buddy

Mercury has no moons. It has no rings either.

CRATER A bowl-shaped hollow. An impact can make one.

Bea asks

Where is a year shorter?

○ On Earth ○ On Mercury

Can you find the little clay fish on this page?

Facts: NASA | science.nasa.gov/mercury/facts/

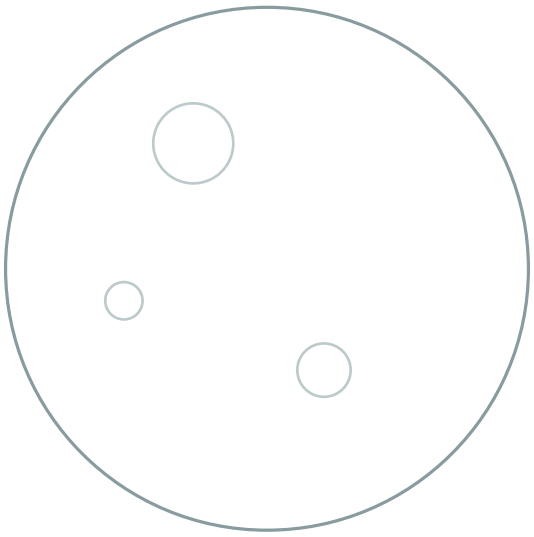
Story artwork; pictures and diagrams are not to scale.

Mercury: your mission

Use a pencil or crayons. You can tell an answer instead of writing it.

Draw Mercury's rocky face

Add big and small craters inside the circle. Then draw a party hat beside your planet for Bea's pretend party.



Read together: A birthday after every orbit

Bea celebrates when Mercury finishes a trip around the Sun. That takes about 88 Earth days. The party hat and talking planet are pretend. A year means one orbit; a spin is a different movement. Act out both with your hands.

Birthday maths

One Mercury year is about 88 Earth days. About how many Earth days pass in TWO Mercury years?

88 + 88 = _____ Earth days

For grown-ups: On Mercury. About 176 Earth days. An orbit makes a year; a spin is a different movement. The party hat is part of the story.

Facts: NASA | science.nasa.gov/mercury/facts/

Story artwork; pictures and diagrams are not to scale.

Venus

Venus Is the Hottest World We'll Meet



2

second planet from the Sun



Clouds outside. Trapped heat inside.

The hottest planet

Venus is hotter than Mercury, even though Mercury is closer to the Sun.

A blanket of gas

Its thick atmosphere traps heat. It is gas, not a cloth blanket.

Hidden below

Thick clouds hide the rocky landscape underneath.

Earth-sized neighbour

Venus is nearly as wide as Earth, but much hotter. It has no moons.

ATMOSPHERE A layer of gases around a world.

Bea asks

What really wraps around Venus?

- ○ A woolly blanket
- ○ A thick atmosphere

Can you find the little clay fish on this page?

Facts: NASA | science.nasa.gov/venus/venus-facts/

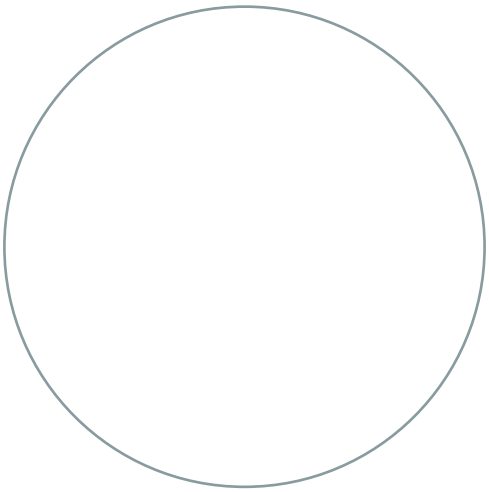
Story artwork; pictures and diagrams are not to scale.

Venus: your mission

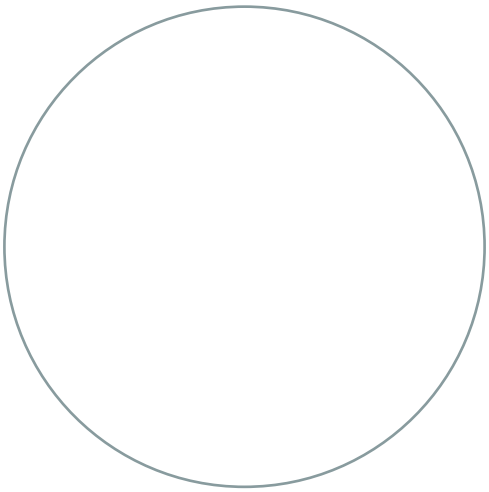
Use a pencil or crayons. You can tell an answer instead of writing it.

Peek beneath the clouds

In the first circle, draw a cloudy Venus. In the second, imagine its rocky ground hidden below.



Outside: cloudy



Under the clouds: rocky

Read together: A blanket made of gas?

The blanket in the song helps us imagine trapped heat. Venus does not wear clothes! Its thick atmosphere holds heat in, even at night. Mercury is closer to the Sun, but Venus is hotter. Explain that surprise to Bea.

Can you explain the surprise?

Circle the hottest planet: Mercury / Venus

Finish the thought: Venus stays so hot because its thick atmosphere

_____.

For grown-ups: A thick atmosphere. Venus. Its atmosphere traps heat. The clouds are not ordinary Earth rain clouds. Cool spaceships in the song are make-believe.

Facts: NASA | science.nasa.gov/venus/venus-facts/

Story artwork; pictures and diagrams are not to scale.

Earth

Earth Carries Every House and Tree



1

Moon travels around Earth



Our home travels with us, even at bedtime.

Our blue home

Earth has oceans, land and living things. It is third from the Sun.

Day and night

As Earth turns, our side faces the Sun for day and turns away for night.

A year-long journey

Earth takes about 365 days to go around the Sun.

Your bed comes too

Your house, toys and teddy all travel with Earth. You do not need a rocket!

ROTATE To spin around. Earth turns once in about 24 hours.

Bea asks

What travels with Earth while you sleep?

○ Only the ocean ○ Your house and bed too

Can you find the little clay fish on this page?

Facts: NASA | science.nasa.gov/earth/facts/

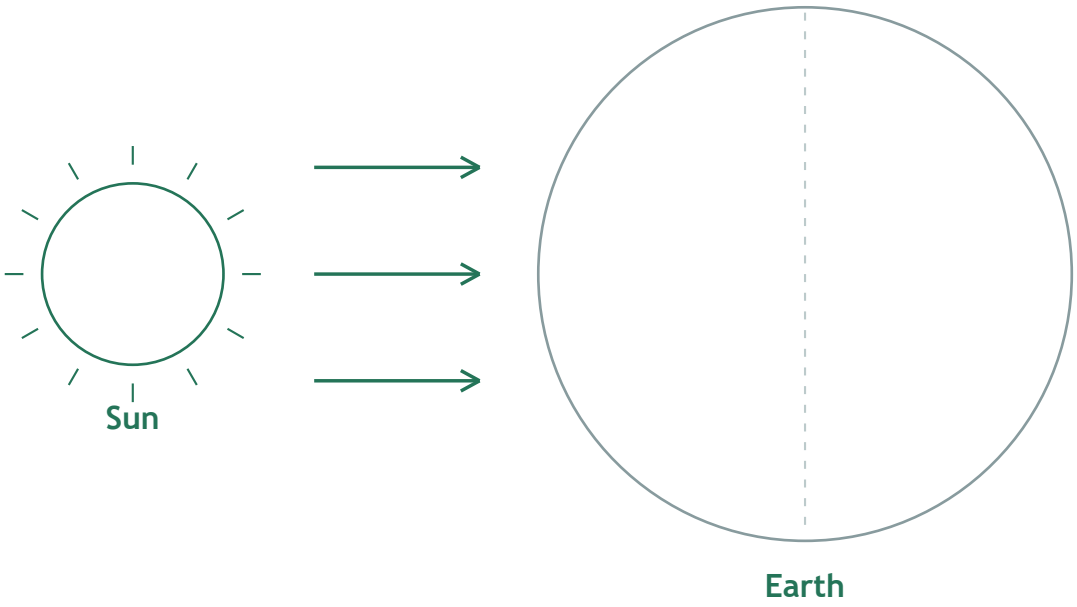
Story artwork; pictures and diagrams are not to scale.

Earth: your mission

Use a pencil or crayons. You can tell an answer instead of writing it.

Day on one side, night on the other

The arrows show sunlight. Colour the half facing the Sun yellow. Shade the other half for night.



Read together: Try day and night together

Use a ball for Earth and a torch for the Sun. Keep the torch still and turn the ball slowly. Point to a pretend house: when is it in daylight? Our Moon has no light of its own; it reflects sunlight.

Two different movements

Draw a line to match each movement to what it makes.

Earth spins	a year
Earth goes around the Sun	day and night

For grown-ups: Your house and bed too. Spinning makes day and night; orbiting makes a year. The side facing the Sun is daytime. An Earth year is about 365.25 days.

Mars

Mars Rover



2

moons: Phobos and Deimos



Roll, look closely, and send a picture home.

Why so red?

Rusty iron minerals in the rocks and dust give Mars its reddish colour.

Robot explorers

Rovers are robots that explore the ground. Their pictures help us learn about Mars.

A giant volcano

Olympus Mons is the largest volcano in our solar system.

Two little moons

Phobos and Deimos are small and lumpy. They are not shaped like perfect balls.

ROVER A robot vehicle that explores the surface of another world.

Bea asks

What makes Mars look red?

○ Rusty minerals ○ Red paint

Can you find the little clay fish on this page?

Facts: NASA | science.nasa.gov/mars/facts/

Story artwork; pictures and diagrams are not to scale.

Mars: your mission

Use a pencil or crayons. You can tell an answer instead of writing it.

One, two, three: send pictures!

Pretend you are the rover. Draw three discoveries to send home: a rock, a landscape, and the two moons.

1	2	3
A rock	The landscape	Two moons

Read together: Look like a rover scientist

A rover uses cameras and instruments to explore. Look closely at an ordinary rock: describe its colour, shape and texture without guessing what is inside. On Mars, a red colour does not mean warmth; it is a cold world.

Make a scientist's note

Pick one of your pictures. Write one thing you notice and one question you would ask.

I notice: _____

I wonder: _____

For grown-ups: Rusty minerals. Open-ended drawings and observations. The moons should be two uneven shapes, not copies of Earth's Moon. Rust explains Mars' red colour.

Facts: NASA | science.nasa.gov/mars/facts/

Story artwork; pictures and diagrams are not to scale.

Jupiter

Jupiter, a Giant of Gas



10

hours or so for one full spin



Big stripes and one enormous storm.

The biggest

Jupiter is the largest planet in our solar system.

A giant of gas

It has no solid surface where Bea could land for a picnic.

Cloudy stripes

The bands we see are clouds, moving around the planet.

A stormy spot

The Great Red Spot is a huge, long-lasting storm.

GAS GIANT — A huge planet made mostly of gas and liquid, without a solid outer surface.

Bea asks

Can Bea land for a picnic on Jupiter?

○ Yes, on the clouds ○ No solid ground

Can you find the little clay fish on this page?

Facts: NASA | science.nasa.gov/jupiter/jupiter-facts/

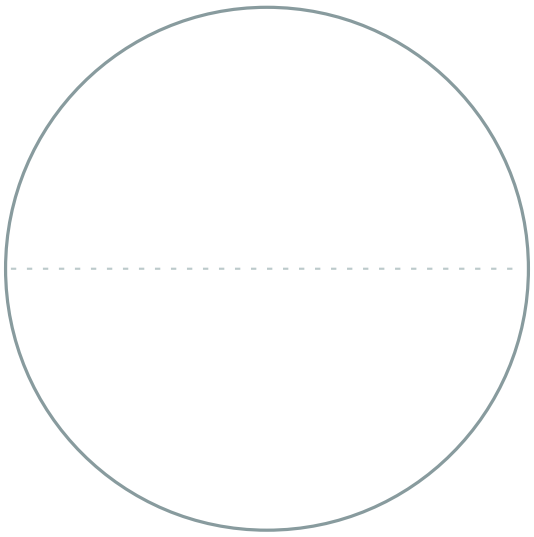
Story artwork; pictures and diagrams are not to scale.

Jupiter: your mission

Use a pencil or crayons. You can tell an answer instead of writing it.

Make a stormy planet

Draw cloud bands across the circle. Add one oval storm below the middle. Colour it rusty red or orange.



Read together: More than a giant balloon

Jupiter has no solid outer surface for a picnic. Deep inside, enormous pressure turns gases into liquids. It is not an empty balloon that a rocket could safely fly through. Bea keeps her lunchbox in her pretend spaceship.

A speedy spin

Jupiter takes about 10 hours to spin once. About how long would TWO spins take?

10 + 10 = _____ hours

For grown-ups: No solid ground. About 20 hours. Jupiter has no solid outer surface for a picnic. The Great Red Spot is a storm in its clouds.

Facts: NASA | science.nasa.gov/jupiter/jupiter-facts/

Story artwork; pictures and diagrams are not to scale.

Saturn

Saturn's Rings Go Spinning Round



30

almost 30 Earth years for one orbit



Look closer: those rings are full of pieces!

A ringed giant

Saturn is a gas giant with bright, wide rings.

Many separate pieces

Its rings contain mostly ice, with rocky material and dust.

Each piece travels

Ring particles orbit Saturn. The rings are not one solid skating rink.

A long year

One trip around the Sun takes almost 30 Earth years.

PARTICLE A small piece of something, such as ice or dust.

Bea asks

Could Bea skate on the rings?

○ One smooth rink ○ No, separate pieces

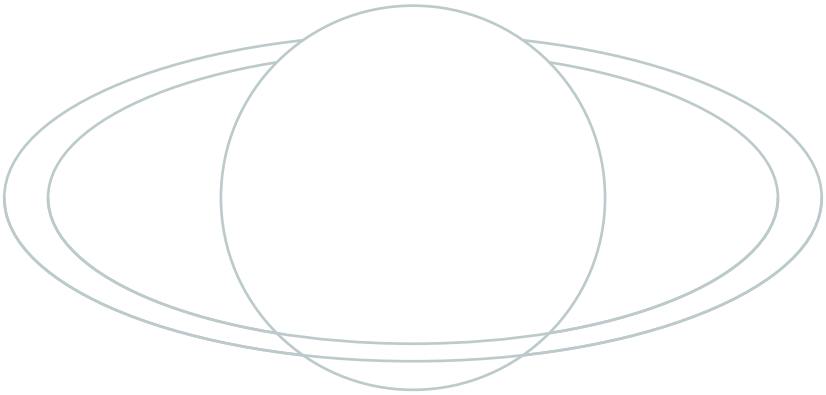
Can you find the little clay fish on this page?

Saturn: your mission

Use a pencil or crayons. You can tell an answer instead of writing it.

Turn a ring into tiny pieces

Fill the ring band with little dots for icy pieces. Leave gaps between them. Keep the planet itself clear.



Show lots of separate pieces in the ring band.

Read together: Look closer at the rings

From far away, many separate pieces can look like one band. Make a ring from tiny torn paper pieces, leaving gaps. Saturn is not the only ringed planet: Jupiter, Uranus and Neptune have rings too.

Bea's skating puzzle

Tick the true sentence.

[ ] Saturn's rings are one solid floor.

[ ] Separate pieces move around Saturn.

Explain your choice to someone.

For grown-ups: No, separate pieces. Separate pieces move around Saturn. There are gaps, and the pieces are moving. One Saturn year is about 29.4 Earth years.

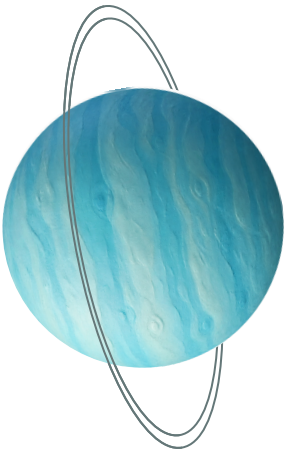
Uranus

Uranus Spins Tipped on His Side



84

Earth years for one orbit



A sideways spin and delicate rings.

A sideways spinner

Uranus is tilted so far over that it spins almost on its side.

Pale blue-green

Methane gas in its atmosphere helps give it its colour.

Very faint rings

Uranus has thin, dark rings. They are much harder to see than Saturn's.

A slow trip

One orbit of the Sun takes about 84 Earth years.

AXIS An imaginary line through a spinning world's centre.

Bea asks

How does Uranus spin?

○ Almost on its side ○ It never spins

Can you find the little clay fish on this page?

Facts: NASA | science.nasa.gov/uranus/facts/

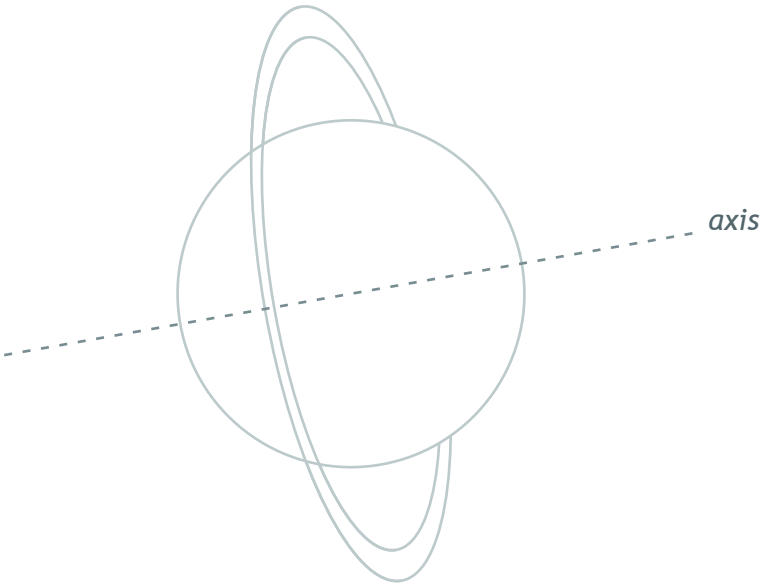
Story artwork; pictures and diagrams are not to scale.

Uranus: your mission

Use a pencil or crayons. You can tell an answer instead of writing it.

Draw a sideways world

The dashed line is the spin axis. Colour Uranus blue-green and trace the thin ring lines with a light touch.



Read together: A tilted ice giant

Uranus keeps its tilted spin axis pointing roughly the same way as it travels around the Sun. Its rings lie around its equator, so they are tilted too. An ice giant has hot, dense fluid deep inside; it is not an icy floor.

Count a very long year

Bea draws one star for every Earth year in Uranus' orbit. She has drawn 80 stars. How many more make 84?

80 + _____ = 84

For grown-ups: Almost on its side. 4 more stars. The drawing is a simplified view, not an exact model. Uranus is an ice giant, not a solid ball of ice.

Facts: NASA | science.nasa.gov/uranus/facts/

Story artwork; pictures and diagrams are not to scale.

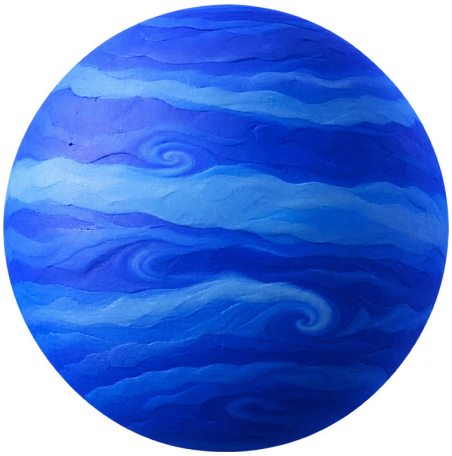
Neptune

Neptune, the Windiest World



165

Earth years for one orbit



Bea's forecast: hold on to your hat!

The farthest planet

Neptune is the farthest of the eight planets from the Sun.

Wild winds

Winds in its atmosphere can race at more than 2,000 kilometres per hour.

A cold blue world

Neptune is an ice giant. It has no solid surface for Bea to stand on.

A very long year

It takes about 165 Earth years to complete one orbit.

FORECAST A prediction of what the weather may be like.

Bea asks

What blows away in Bea's weather show?

○ Her hat ○ Her shoes

Can you find the little clay fish on this page?

Facts: NASA | science.nasa.gov/neptune/neptune-facts/

Story artwork; pictures and diagrams are not to scale.

Neptune: your mission

Use a pencil or crayons. You can tell an answer instead of writing it.

Make Bea's weather report

Draw windy clouds, a hat and arrows showing the wind. Tell your forecast to someone in your best weather-presenter voice.

NEPTUNE WEATHER

Read together: Make a tiny wind

Wind is moving gas. Gently blow a scrap of paper across a table, then draw an arrow showing its direction. Bea's fan and flying notes are story props. Neptune has no solid surface to walk on, and its real winds are much stronger.

Which trip takes longer?

Uranus takes about 84 Earth years to orbit the Sun. Neptune takes about 165. Which takes longer?

Extra challenge: 165 - 84 = _____ more Earth years.

For grown-ups: Her hat. Neptune takes longer, by about 81 Earth years. The fan and flying hat are story props; Bea is not standing on Neptune.

Facts: NASA | science.nasa.gov/neptune/neptune-facts/

Story artwork; pictures and diagrams are not to scale.

Pluto

Pluto, You're the One We Missed



5

known moons around Pluto



A little world worth remembering.

A dwarf planet

Pluto orbits our Sun. It belongs to a group called dwarf planets, separate from the eight planets.

Smaller than our Moon

Pluto is smaller than the Moon we see from Earth.

Five moon friends

Charon is the biggest of Pluto's five moons.

An icy heart

A bright region looks like a heart. Pluto also has mountains made of water ice.

DWARF PLANET — A nearly round world orbiting the Sun that has not cleared other objects from its orbital neighbourhood.

Bea asks

Does Pluto still belong to our solar system?

○ Yes, as a dwarf planet ○ No

Can you find the little clay fish on this page?

Facts: NASA | science.nasa.gov/dwarf-planets/pluto/facts/

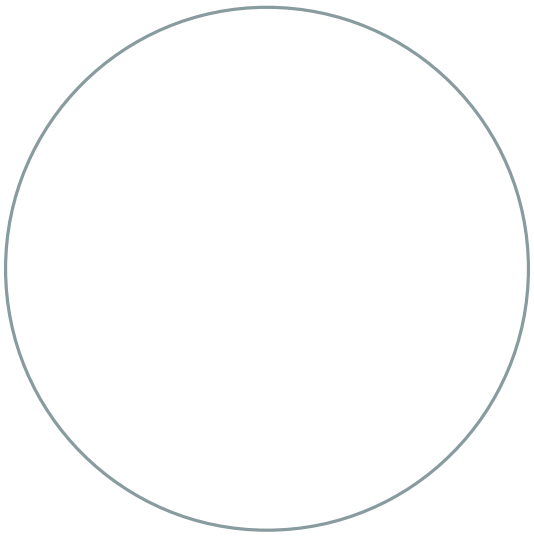
Story artwork; pictures and diagrams are not to scale.

Pluto: your mission

Use a pencil or crayons. You can tell an answer instead of writing it.

A postcard for Pluto

Draw a heart-shaped patch on Pluto. Add five small moon shapes around it, making one bigger than the others.



Pluto

Read together: A different group, still our neighbour

Astronomers put Pluto in the dwarf-planet group. It has not disappeared! The solar system has more worlds than the eight planets. Bea's paper heart is pretend, but Pluto really has a bright, heart-shaped region.

Meet all five moons

Their names are Charon, Nix, Hydra, Kerberos and Styx. Circle the biggest moon's name. If you have drawn three moons, how many more make five?

For grown-ups: Yes, as a dwarf planet. Charon is the biggest moon. Add 2 more to make 5. The moon sizes and spacing in your drawing can be pretend.

Facts: NASA | science.nasa.gov/dwarf-planets/pluto/facts/

Story artwork; pictures and diagrams are not to scale.