

## Planet Nine Primary Resource

This Science primary resource contains fascinating information about Planet Nine, the undiscovered planet that Astronomers believe lies in the farthest reaches of our solar system. What evidence is there to suggest Planet Nine exists? How far away from Earth do astronomers think it is? How big is Planet Nine likely to be?

Pupils will learn about the scientific reasoning behind this hypothetical planet and the research underway to find out more.

The teaching resource can be used in study group tasks and discussions about space and our solar system. It can be used as a printed handout for each pupil to review and annotate, or for display on the interactive whiteboard for class discussion.


### Activity:

Ask pupils to imagine that they are astronomers on an exciting space mission when they discover Planet Nine! Using the primary resource together with their imagination, get them to write a fun, fictional account of what the planet is *really* like. Is it different to what scientists had previously thought and, if so, how?

Encourage the children to describe the planet in detail and include colourful illustrations of their amazing discovery. What does Planet Nine look like? How big is it? What's the temperature/weather like? Is there unexpected life on Planet Nine...?

# The search for PLANET NINE

Is a NEPTUNE-sized world hidden in our solar system?

 **Way out in the farthest reaches of the solar system, an undiscovered planet orbits through space.**

The mysterious world is gigantic – almost four times the size of Earth. And it's so far away that it takes up to **20,000 years** to orbit the Sun.

This planet *isn't* science fiction.

Astronomers think it really exists. They've dubbed it **Planet Nine**, and they're searching the skies to find it *right now!*

## FAR OUT

When most people think of our **solar system**, they think of its **eight planets** and our star, the **Sun**. But not astronomer **Mike Brown**. Mike, from the **California Institute of Technology**, is interested in the region of space *beyond* these eight planets. "There's this huge part of the solar system that we're only just beginning to learn about," he says.

Beyond Neptune is an area known as the **Kuiper (KY-pur) Belt**, which scientists used to think was empty. But it turns out the Kuiper Belt is actually home to **icy, rocky objects, billions of comets** and a few **dwarf planets** (objects too small to be considered planets) such as **Pluto**.

While he was observing the belt in 2014, Mike and his research partner, **Konstantin Batygin**, saw something strange – the **orbits** of many of the smaller objects in the Kuiper Belt were **aligned**. Weirder still, they never came closer to the Sun than **Neptune** – it was as if **something was pulling them away**. But what?

## STRANGE SPACE

Mike and Konstantin spent over a year trying to figure out the objects' odd behaviour. They discussed several potential answers – but only one seemed to work. "We were convinced another planet was out there," Mike says.

To find out if they were right, the pair created a **computer model** illustrating the objects. Then they added an imaginary planet into the model. The model showed that the planet's **gravity** would **pull** on these icy objects, making them move in exactly the way they had moved in space. The model also gave the scientists an idea of the planet's size. Because of its **strong gravitational pull**, Mike and Konstantin worked out that the planet would be roughly

the size of Neptune. Like Neptune, it would likely be made of **gas** and the temperature there would be an icy **minus 226°C**. Brrr!

"It's hard to believe that we could miss something as big as Neptune!" Mike says. But the planet is really far away, about **90 billion kilometres** from Earth and only a little light would hit it. Only **two telescopes** in the world are powerful enough to search vast areas of the sky for it efficiently – and until now, they haven't been looking for the planet.

## THE HUNT IS ON

Mike and Konstantin are convinced that their evidence proves that Planet Nine is hidden somewhere beyond the Kuiper Belt. But Mike predicts the search will take at least a few years.

Soon future telescopes will let us peer even farther into space. And when we do, Mike thinks we may discover that Planet Nine isn't the only thing out there. "Planet Nine is the planet for my generation," he says. "But Planet Ten? That's what tomorrow's astronomers – kids growing up today – will look for." Cool!

## OUR NEW SOLAR SYSTEM?

Scientists aren't sure of Planet Nine's exact location, but they think it might lurk in the outer edges of our solar system, somewhere beyond Neptune...

