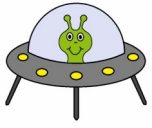


Space and Aliens

Planets in the solar system

W/C: 18th May 2020



During this week, you will consolidate your knowledge of the solar system which we looked at before we broke up. You will sketch your own perception of a chosen planet before completing a Science experiment towards the end of the week.

Subject: Science

Activity Outcome: You will complete a quiz to consolidate your learning.

Explain: We have previously looked at the solar system in Science as part of our space unit (which you were very enthusiastic with)! However, I know it's been a while since then and so we need to recap the important facts about the planets in our solar system and key terminology. At the end, you will be given a quiz to complete to test your knowledge.

Subject: Art

Activity Outcome: You will collect information/research artists' and NASA's perception of the existing planets. Using this, and your own thoughts, you will sketch a planet of your choice. You will need to think carefully about your background and you will need to consider any additional materials you could use to enhance your ideas (does your planet look rough or smooth? How could you show this)?

Explain: On page 5, there are images of the planets in our solar system from NASA. You will need to decide which planet you wish to sketch and carry out research into this planet. Think about the size, colours, smoothness/texture etc.

Subject: Science

Activity Outcome: You will plan your own experiment to test water resistance.

Explain: We have previously explored air resistance and carried out experiments and explored results regarding this. Today, you will use your prior knowledge (and some new knowledge too) to plan your own experiment to test water resistance and predict what you think will happen and why.

Subject: Science

Activity Outcome: Carry out your own water resistance experiment and write a conclusion to record your findings.

Explain: Today, you're going to conduct the experiment that you had planned yesterday. On page 9, there is a table attached which is how we would encourage you to record your results (you could draw this in your green books and complete it). Once you have completed your experiment and recorded your results, you will need to write your conclusion (there are question prompts too).

What can you remember about the Sun, Moon and Earth?

- The Sun is an incredibly large star.
- The Sun is very far away from Earth.
- The Moon is a small natural satellite and is much smaller than the Sun.
- The Moon is close to Earth (much closer than the Sun is).
- The Sun and Moon look a similar size because the Sun is much bigger but much farther away. The moon is much smaller but it is closer.
- The Earth, Sun and Moon are all roughly spherically shaped (they're spheres).

What can you remember about our solar system? How many planets are there? What are the planets called?

- The solar system that we live in is a collection of bodies that are bound together by the gravity of the Sun.
- The gravitational pull of the Sun is incredibly strong. As a result of this, the Sun is able to keep everything as one solar system. The bigger the object, the more gravitational pull it has and the Sun is massive (plus it's the biggest body in solar system) so it has most gravitational pull.
- The eight planets and five dwarf planets (13 bodies) of our solar system orbit the Sun (orbit means go around it).
- The eight planets in order of distance from the Sun are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.
- The eight planets and five dwarf planets (13 bodies) of our solar system also rotate on their own axis (they turn around).
- Moons orbit around planets. They rotate too.
- Our moon orbits the Earth.



Why do we have day and night?

- Currently, the Earth is rotating. The Sun rotates but does NOT orbit, it stays in one location.
- We get day and night because the Earth spins (or rotates) on an imaginary line called its axis and different parts of the planet are facing towards the Sun or away from it.
- It takes 24 hours for the world to turn all the way around, and we call this a day. Over a year, the length of the daytime in the part of the Earth where you live changes. Days are longer in the summer and shorter in the winter.
- At any moment, half of the world is in daytime and half is in night time.

Quiz time – if you have access to Kahoot you can find the quiz here or alternatively, the questions are below with the answers at the bottom for you to check once you have answered ALL of the questions J

<https://create.kahoot.it/share/the-solar-system/be3b2e0c-fa2a-4e6b-8b3f-9c352a9b874e>

How long does it take the Earth to orbit the Sun?

- 24 hours
- 52 weeks
- 365 days
- Two years

Which planet is furthest away from the sun?

- Mercury
- Venus
- Neptune
- Saturn

What is the Sun?

- A comet
- A star
- A planet
- An asteroid

Which is the largest planet in our solar system?

- Earth
- Mars
- Venus
- Jupiter

What is the 5th planet away from the Sun?

- Saturn
- Earth
- Jupiter
- Venus

How many dwarf planets are there?

- Three
- Four
- Five
- Six

What is the moon?

A star

A planet

A comet

A natural satellite

The Sun orbits. Is this true or false?

Challenge: Can you create a mnemonic to help you remember the order of the planets.

E.g. My Very Educated Mother Just Served Us Noodles.

Answers:

1. 365 days

2. Neptune

3. A star

4. Jupiter

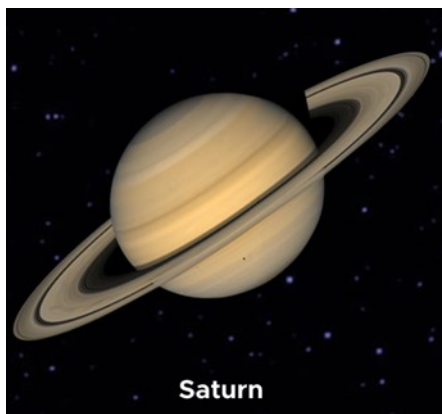
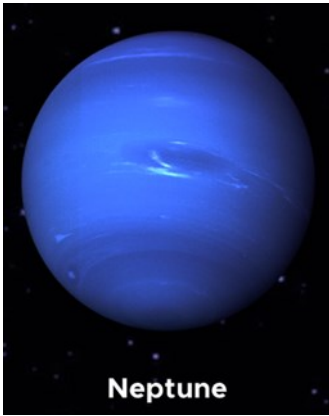
5. Jupiter

6. Five

7. A natural satellite

8. False

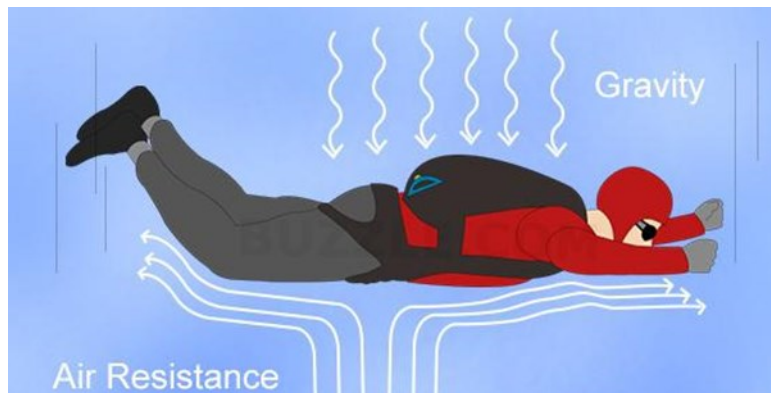
Your task: Choose one of the eight planets that you want to carry out more research about before sketching. You will need to think carefully about the background (solar system) – how are you going to show your colours? Will there be any other textures or patterns? Once you have sketched your perception of your chosen planet, we would like you to carefully select and add materials to your design to enhance your ideas further. This could be to show different patterns or textures.



You may remember back before Easter when we investigated forces when we were looking at space. Particularly we looked at air resistance.

What is air resistance?

The force that slows down objects as they fall through the air.



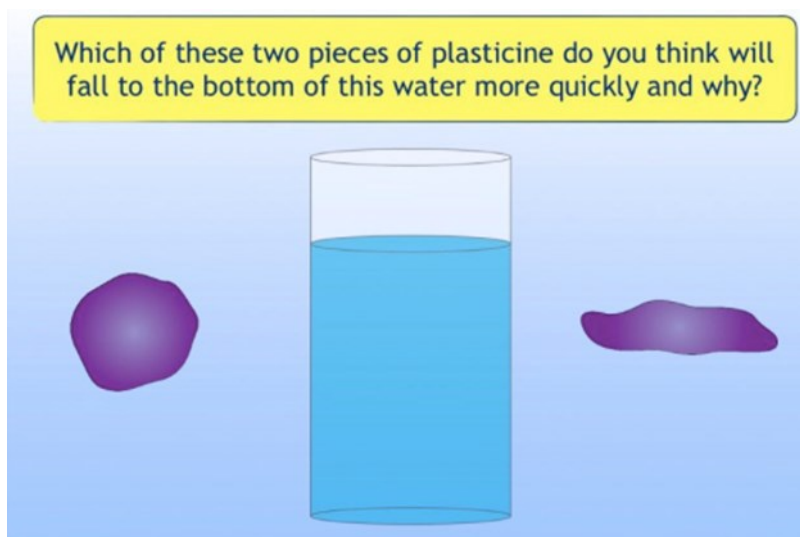
As you can see from the picture, the man is being pulled to the ground by gravity but air resistance is slowing this down.

Do you remember what we found out with air resistance in school?

It is not the weight of an object that pulls an object to the ground quicker. It is its surface area. The more surface area an object has the slower it will be pulled to the ground.

But, how do you think this works in water?

Below is a similar experiment to the one that we did in class. The object on the left has a smaller amount of surface area than that one on the right. So if it was dropped in the water, the one on the right would fall quicker. Is this any different in water though?



After you have had a think and discussed this with your family, we would like you to plan your own experiment to test whether your theory is correct. In today's lesson, you are only going to plan your experiment. For your experiment you will need:

- **Water**
- **Large container (ideally transparent)**
- **Timer (phone or stopwatch)**
- **Range of different sized objects (try and use ones that are the same weight) consider coins, stones etc.**

It is important that object you use sinks. If you want to further your learning today, Why does an object float? You would of done this in previous years.

If you haven't got this equipment try and be flexible for what you can use.

On the next page is a plan for your experiment. I have left you space to write/draw in each box your ideas.

Hypothesis (Prediction)

Method of experiment

Diagram

Controlled variables (what will be kept the same throughout the test)

Independent variable (the one thing that we need to change throughout the test)

Today you're going to conduct the experiment that you had planned yesterday.

Object	Water resistance (time taken to hit bottom of contain-

Conclusion

What did you find out?

Is it what you predicted?

Is it the same as air resistance?

Was your experiment a fair test?

Below is a video to explain the experiment you have done. At 1 minute of the video, it shows you what happens in water.

<https://www.bbc.co.uk/bitesize/topics/zsxxsbk/articles/zxw6gdm>