

# Visit Trail

Key Stage 2/3



## Forces in the Universe

Name:

Date:



Look in the **Into Space** gallery

Find the “Living without up or down” board

---

### Question 1

Write down three things you might find hard to do in space.

(Remember there is no gravity to pull things down)

Eating

Sleeping

Going to the toilet





## Question 2

**What happens when astronauts play tug of war in space?**

(Hint use the touch screen in micro gravity part of the gallery to help you)

The two teams would clash because they can't plant their feet firmly on the ground

---

## Question 3

**Is this the same or different to what would happen on Earth?**

Different

## Question 4

**What affect does weightlessness have on astronaut's legs in space?**

(Find the display titled the effects of weightlessness and circle the correct answer)

The bones waste away  
as they have nothing  
to support

The bones in the legs  
expand making you taller

The bones become  
much stronger



## Question 5

How is the way astronauts exercise in space different to how we do on earth?

The astronauts have to be strapped into equipment

Why?

In Space you are in a microgravity environment, so you are not working against gravity in the same way as you do on Earth. The straps and harness are there to mimic your body weight

## Question 6

How does a rocket use forces to take off?

Rockets use the idea of Newton's third law: every action has an equal and opposite reaction. Hot gases are forced downwards which pushes the rocket upwards





# Question 7

Can you label the arrows with the forces acting on the rocket?

*Use some of the words in the boxes to help you.*

gravity

up

thrust

twist

friction

force

down

magnetic

turn

air-resistance

Gravity

Friction

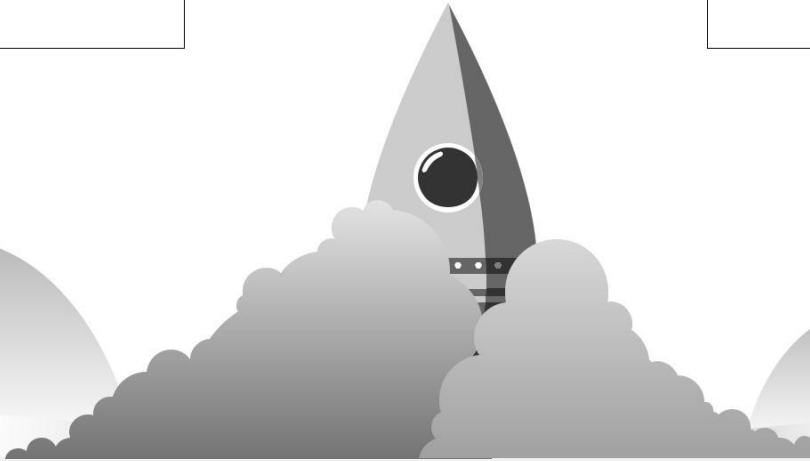
Force

Air resistance



Thrust

Force



# Question 8

*Have you tried the water rockets in the rocket tower yet?*

**What forces are acting on them?**

See above



# Question 9

Why did the early Venera probes on Venus get crushed?

Venera 4,5 and 6 ended when intense atmospheric pressure crushed the probes far above the ground

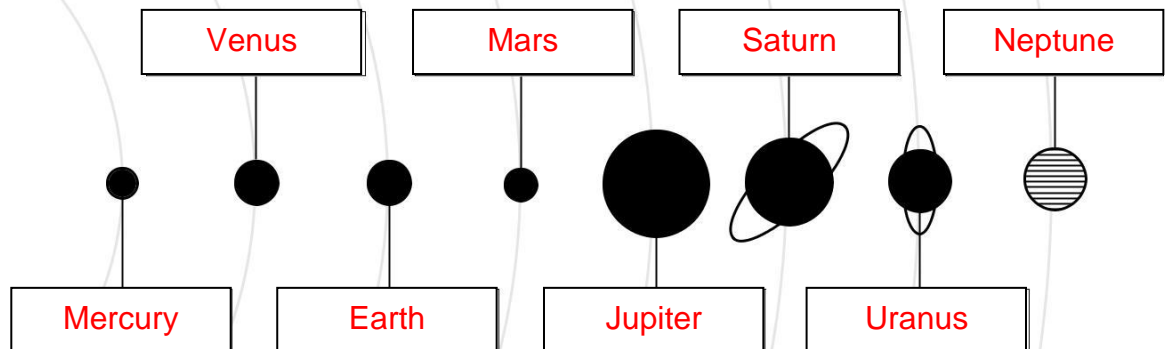
# Question 10

Can you find Saturn in a bath tub?  
Why is it here?

It is floating because it is less dense than water

# Question 11

Can you label the planets below?





# Question 12

Look in the planets gallery to find out more facts about each planet and their gravity to fill in the table below (*circle your answer, Look at the baked bean exhibit for gravity information.*)

Planet	Gravity compared to Earth			How many moons?				
Mercury	Lighter	Heavier	Same	0	1	2	3	More
Venus	Lighter	Heavier	Same	0	1	2	3	More
Earth	Lighter	Heavier	Same	0	1	2	3	More
Mars	Lighter	Heavier	Same	0	1	2	3	More
Jupiter	Lighter	Heavier	Same	0	1	2	3	More
Saturn	Lighter	Heavier	Same	0	1	2	3	More
Uranus	Lighter	Heavier	Same	0	1	2	3	More
Neptune	Lighter	Heavier	Same	0	1	2	3	More



# Question 13

*Use the gravity well.*

How many times can you get the ball to go around the well?

# Question 14

What do you notice about the speed of the ball?