Solve the Cube

Learning Outcomes in Focus

Contextual strand: E&S 3

Students should be able to interpret data to compare the Earth with other planets and moons in the solar system, with respect to properties including mass, gravity, size, and composition

INTERPRET: Use knowledge and understanding to recognise trends and draw conclusions from given information.

Nature of science: NoS 1

1. Students should be able to **appreciate** how scientists work and how scientific ideas are modified over time.

Learning Intentions

Students will learn to:

1. Recognise trends or patterns in the data in order to learn about how the Earth compares to other planets.
2. Understand a little bit about how scientists work.

Prior Learning

Students should have some familiarity with the different planets in our solar system.

Teacher Information

There are 3 different worksheets for you to use and therefore different options for carrying out this activity

1. Worksheet A – learning is focused on comparing earth to other planets
2. Worksheet B – learning is focused on how scientists work
3. Worksheet C – merges both learning intentions together into 1 activity

Possible Extension Activity

- Get students to calculate the volume of the planets using the diameter and volume of a sphere formula. Then, using the calculated volumes and density data from the table, ask students to calculate the ***mass*** of the planets.
- Use the Planetarium Solar System Pack from www.armaghplanet.com – ask students to compare ***composition*** and ***gravity*** of the different planets and to discuss their suitability for human life. (http://www.armaghplanet.com/pdf/solar_system_pk.pdf)

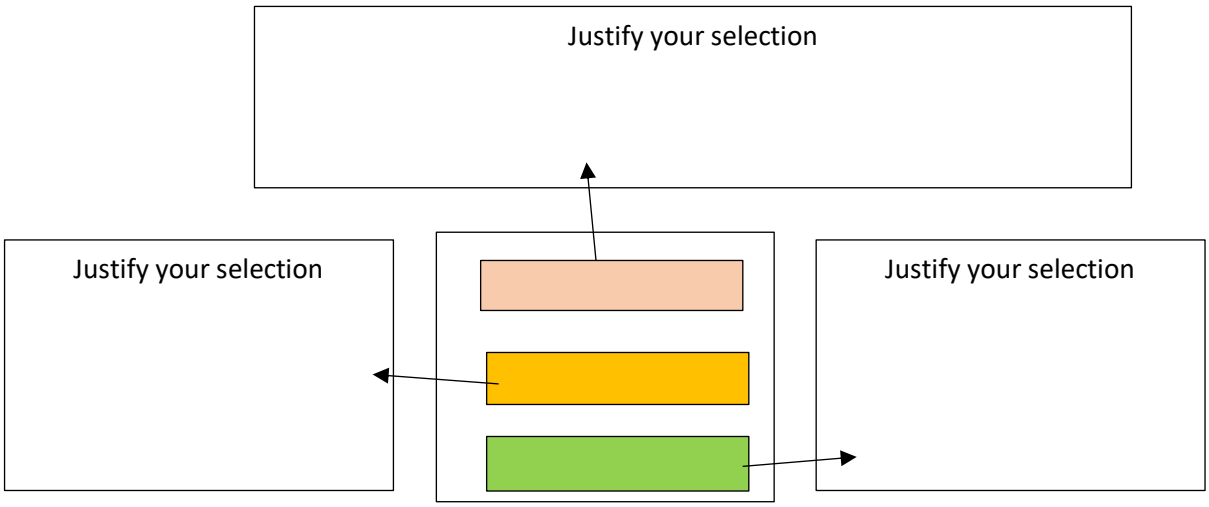
Solve the cube (A)

To solve the cube, you will have **to recognise trends or patterns in the data in order to learn about how the Earth compares to other planets.**

Your task is to decide what is written on the bottom of the cube. You may NOT touch the cube or leave your seat.

Instructions

1. Discuss what you know about how the Earth compares to other planets.
2. As a group you need to predict what is written on the bottom of the cube. To solve the cube, you need to refer to the data sheet provided to help you see patterns.
3. In the space provided show what you predict will be on the bottom of the cube and explain your reasoning



4. During this activity you were looking for trends in data in order **to compare the Earth to other planets**. Write down 3 things you have learned in the space below.

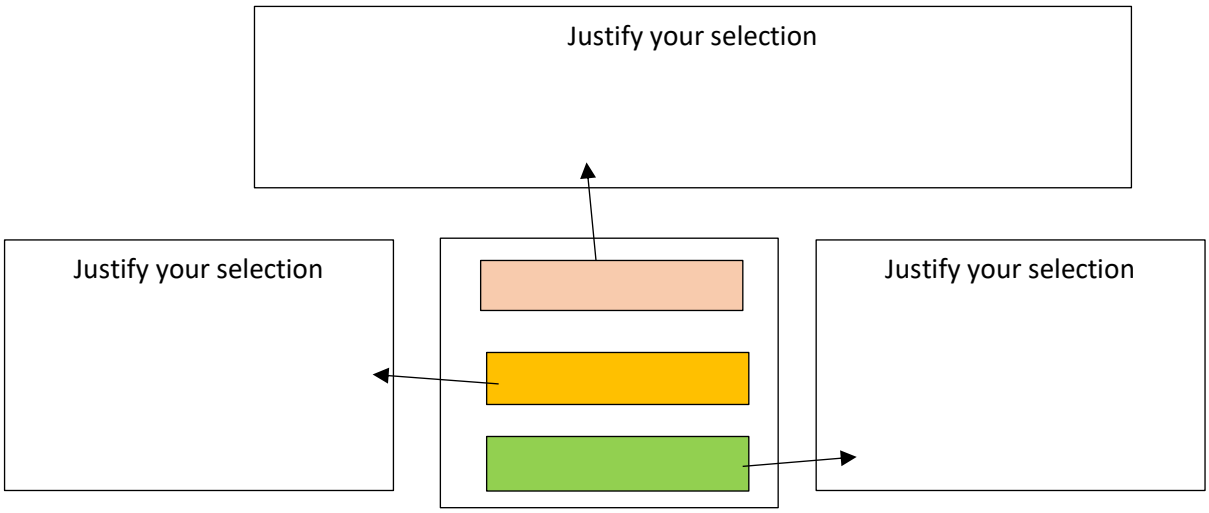
Solve the cube (B)

By doing this task you should come to **understand a little bit about how scientists work.**

To solve the cube, you must work like a group of scientists to predict what is written on the bottom of the cube. You may NOT touch the cube or leave your seat.

Instructions

1. Discuss what you know about how scientists work.
2. As a group you need to predict what is written on the bottom of the cube. To solve the cube, you need to refer to the data sheet provided to help you see patterns.
3. In the space provided show what you predict will be on the bottom of the cube and explain your reasoning



4. By doing this activity you were experiencing **how a scientist works**. Write down 3 things you have learned in the space below.

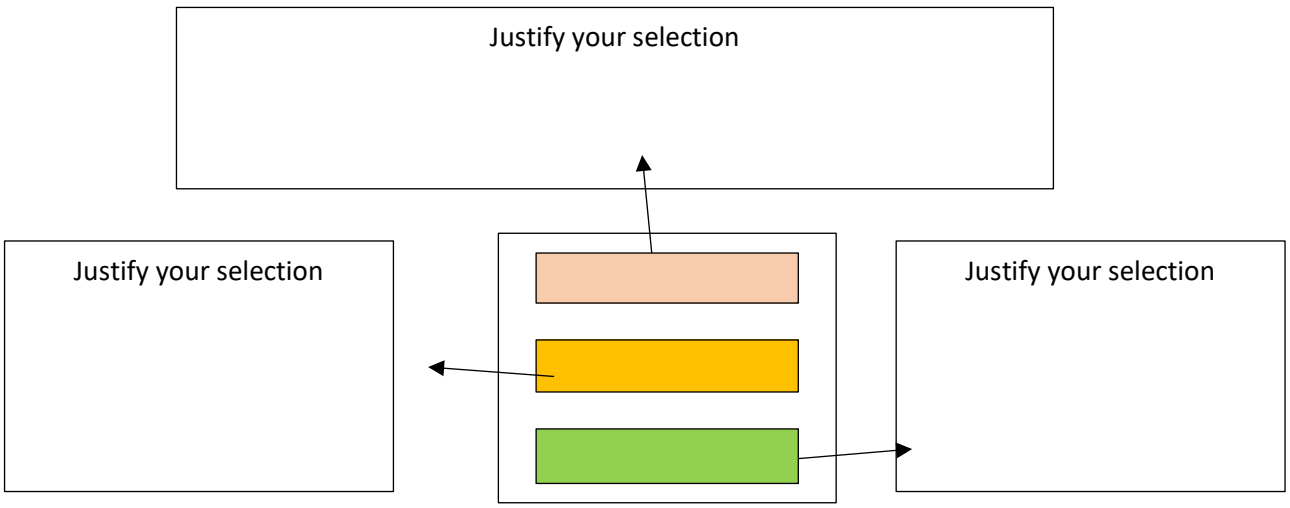
Solve the cube (C)

To solve the cube, you will have **to recognise trends or patterns in the data in order to learn about how the Earth compares to other planets.**

By doing this task you should also come to **understand a little bit about how scientists work.** You must work like a group of scientists to predict what is written on the bottom of the cube. You may NOT touch the cube or leave your seat.

Instructions

1. Discuss what you know about how scientists work.
2. Discuss what you know about how the Earth compares to other planets.
3. As a group you need to predict what is written on the bottom of the cube. To solve the cube, you need to refer to the data sheet provided to help you see patterns.
4. In the space provided show what you predict will be on the bottom of the cube and explain your reasoning



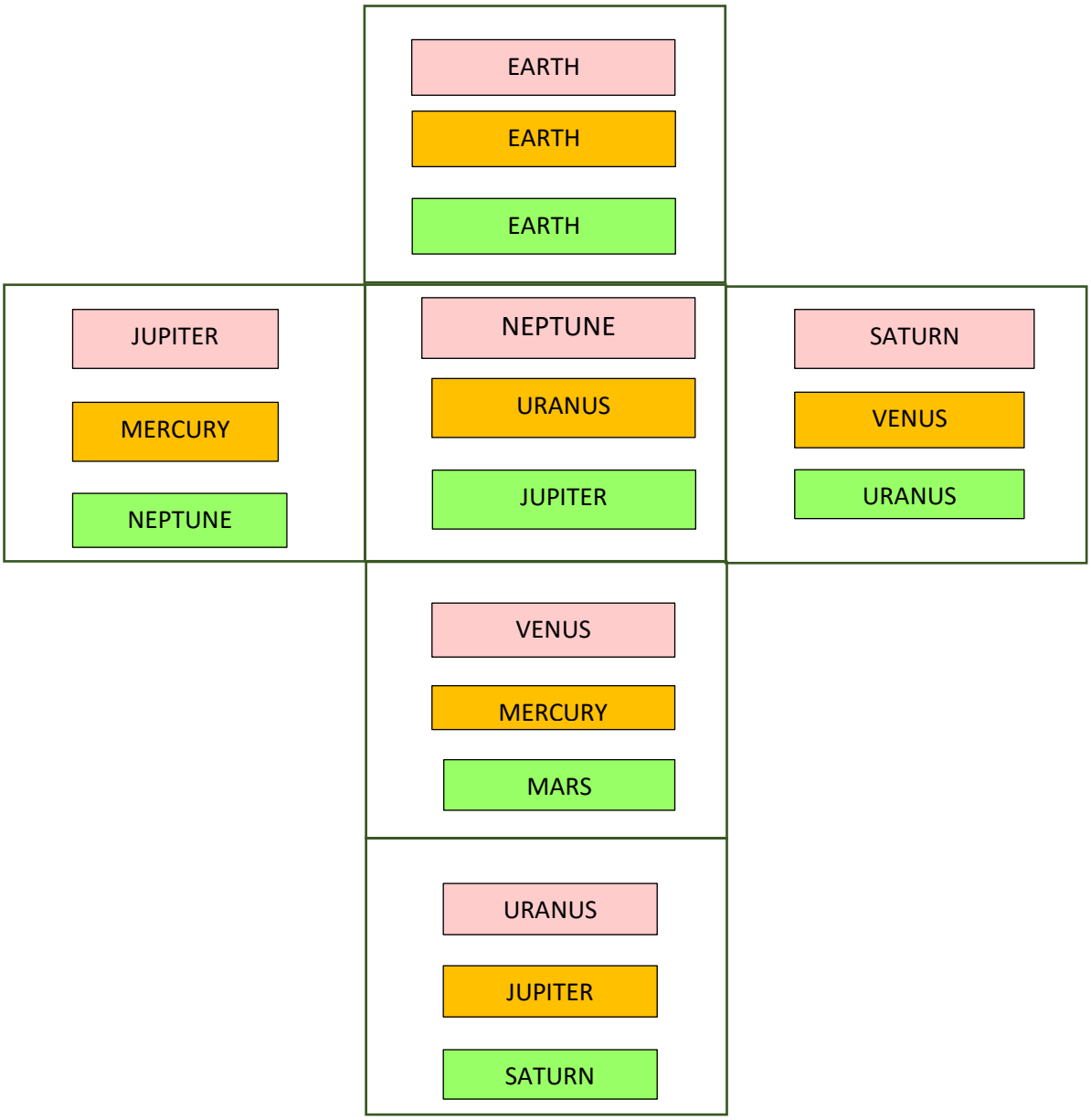
5. By doing this activity you were experiencing **how a scientist works**. Write down 3 things you have learned in the space below.

5. During this activity you were looking for trends in data in order **to compare the Earth to other planets**. Write down 3 things you have learned in the space below.

An tSraith Shóisearach do Mhúinteoirí

Junior CYCLE for teachers

Solve the Cube Template



An tSraith Shóisearach do Mhúinteoirí

JuniorCYCLE for teachers

Some data on the planets in our solar system

	Diameter (Km)	Density (Kgm^{-3})	Rotation period (hours)
Mercury	4879	5427	1407.6
Venus	12,104	5243	-5832.5
Earth	12,756	5514	23.9
Mars	6792	3933	24.6
Jupiter	142,984	1326	9.9
Saturn	120,536	687	10.7
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