

Composition of the Earth

This resource accompanies the infographic poster **The Earth's structure** in *Education in Chemistry* which can be viewed at: <https://rsc.li/3tU4lwq>

Learning objectives

- 1 Identify and label the layers of the Earth.
- 2 State the properties of each layer of the Earth.
- 3 Deduce the most abundant elements and their proportion in each layer from incomplete information.

Introduction

Use this resource as a Directed Activity Related to Text (DART) alongside the infographic poster and fact sheet available at the link above.

How to use this resource

The resource comes in three parts:

- Information cards for learners to add properties and statistics to, relating to the different layers of the Earth.
- A diagram with blank spaces where learners can cut out and glue their completed cards into the appropriate space.
- A set of pie charts for learners to complete.

Learners can find the information through their own independent research or by looking at the RSC *Education in Chemistry* infographic poster and fact sheet in class.

Scaffolding

Three versions of the student sheet are provided. The unscaffolded worksheet, indicated by three stars in the header, contains blank information cards and no prompts. It also contains a template for learners to draw their own pie charts.

The fully scaffolded and partially scaffolded worksheets both include partially completed information cards and labels in a table at the bottom of the page. The fully scaffolded worksheet contains the names of all the elements so learners only need to add the data. The pie charts are pre-segmented on both scaffolded sheets with some data included on the fully scaffolded version.

Answers: the composition of the Earth

Continental crust

State	Solid
Thickness	10-70 km
Temperature	0-70°C

Composition

Element	Proportion
Oxygen	46%
Silicon	28%
Aluminium	8.3%
Iron	5.6%
Calcium	4.2%

Notes

The brittle outer layer of the Earth, beneath the land.

Oceanic crust

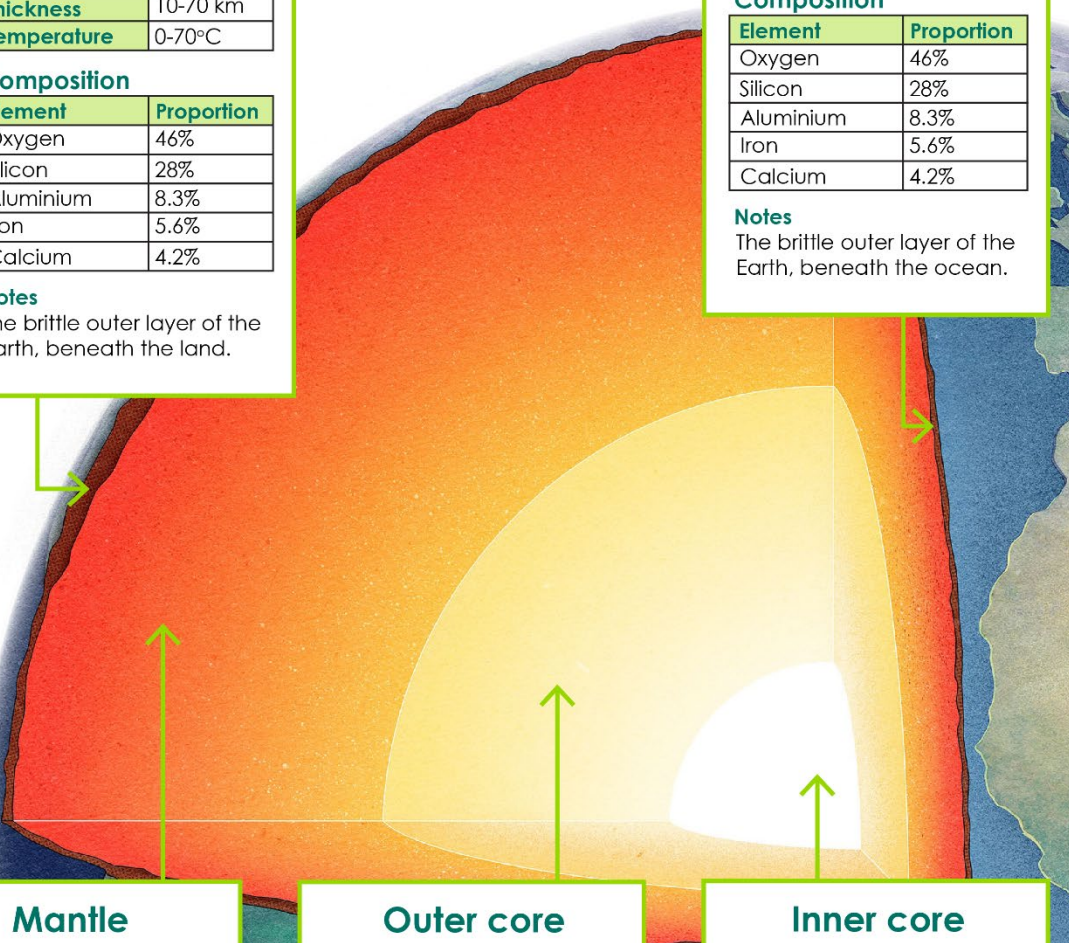
State	Solid
Thickness	5-10 km
Temperature	0-70°C

Composition

Element	Proportion
Oxygen	46%
Silicon	28%
Aluminium	8.3%
Iron	5.6%
Calcium	4.2%

Notes

The brittle outer layer of the Earth, beneath the ocean.



Mantle

State	Mostly solid
Thickness	2900 km
Temperature	1400-3000°C

Composition

Element	Proportion
Oxygen	44%
Magnesium	22%
Silicon	21%
Iron	6.3%

Notes

Convection currents in the upper mantle drive plate tectonics.

Outer core

State	Liquid
Thickness	2200 km
Temperature	4000-6000°C

Composition

Element	Proportion
Iron	89%
Nickel	5.8%
Sulphur	4.5%

Notes

Responsible for the Earth's magnetic field.

Inner core

State	Solid
Thickness	1220 km
Temperature	5000-6000°C

Composition

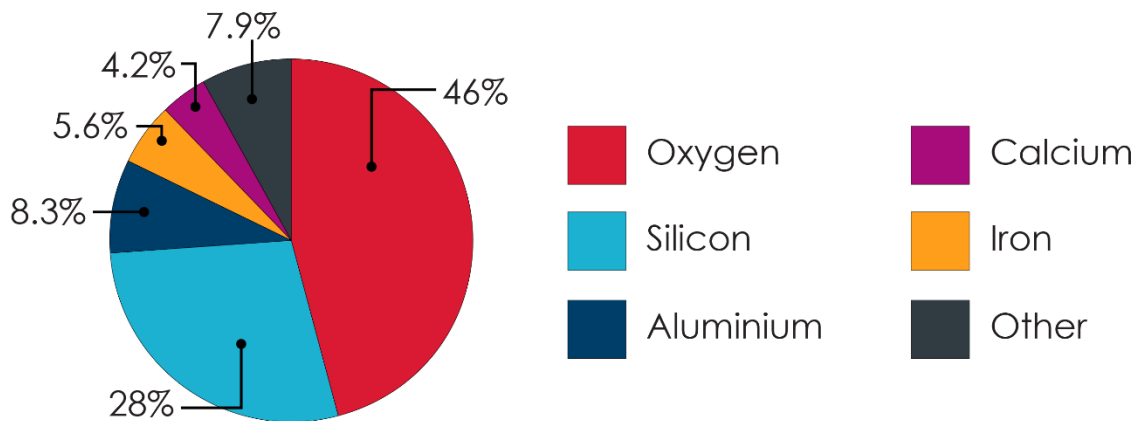
Element	Proportion
Iron	89%
Nickel	5.8%
Sulphur	4.5%

Notes

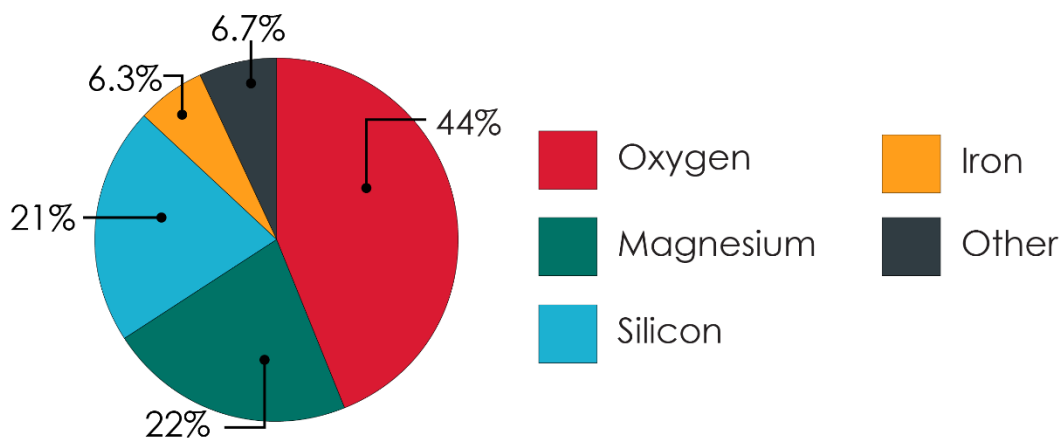
Although at a temperature above the melting point of iron, the inner core is solid.

Answers: the most abundant elements in the Earth

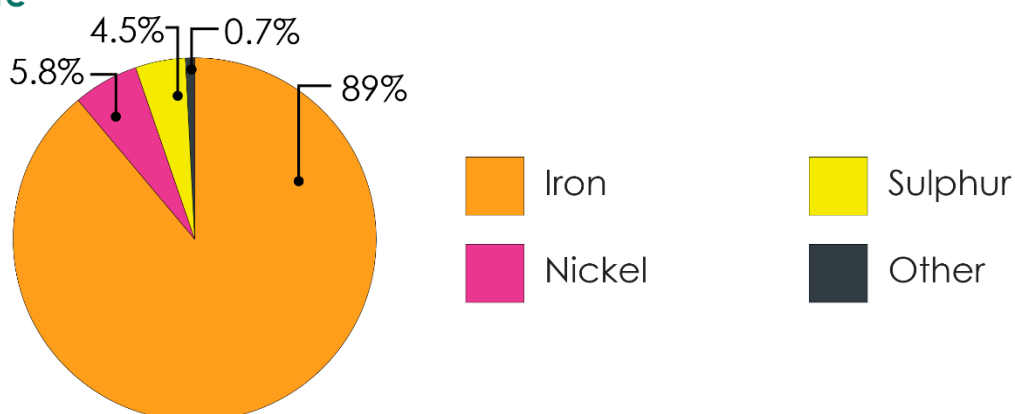
Crust



Mantle



Core



Printer friendly answers: the most abundant elements in the Earth

