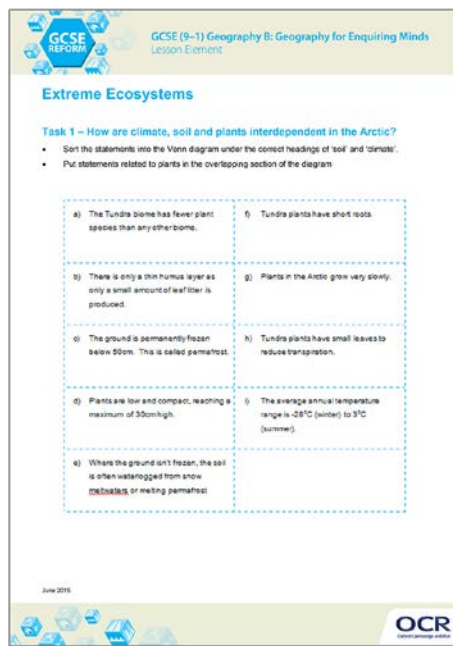


Extreme Ecosystems



Instructions and answers for teachers

These instructions should accompany the OCR resource ‘Extreme Ecosystems’ activity which supports OCR GCSE (9–1) Geography B (Geography for Enquiring Minds)



The Activity:

This activity comprises of 6 tasks.

Associated materials:

‘Extreme Ecosystems’ Lesson Element learner activity sheet.



This resource is an exemplar of the types of materials that will be provided to assist in the teaching of the new qualifications being developed for first teaching in 2016. It can be used to teach existing qualifications but may be updated in the future to reflect changes in the new qualifications. Please check the OCR website for updates and additional resources being released. We would welcome your feedback so please get in touch.





Key information

This activity is designed to cover elements of the specification as follows:

4.3 a What is it like in Antarctica and the Arctic?

The activity is based on the Arctic and assumes that students will have already covered the geographical location of the Arctic/Tundra biome and the distinctive characteristics of the climate here. To address common students misconceptions, students should know/understand:

- That the Arctic is essentially an ocean surrounded by land
- That much of the ice is sea ice – some of which is permanently frozen and some that retreats in spring and summer, so the total amount of ice is variable through the year
- That melting sea ice does not cause sea level rise (think of an ice cube in a glass of water) – it is melting land ice that causes variation in sea volume

Useful reading for teachers in preparation for this lesson can be found here:

<http://www.greenpeace.org/international/en/publications/Campaign-reports/Climate-Reports/Climate-Change-Impacts-on-Arctic-Wildlife/>

<http://www.mnh.si.edu/arctic/index.html> (Arctic wildlife)

<http://reindeerherding.org/herders/sami-norway/>

Exploring the arctic Ecosystem:

Students should be able to:

- Identify the characteristics of Arctic (Tundra) flora and fauna
- Begin to understand the interdependence of climate, soil, water, plants, animals and human activity in the Arctic

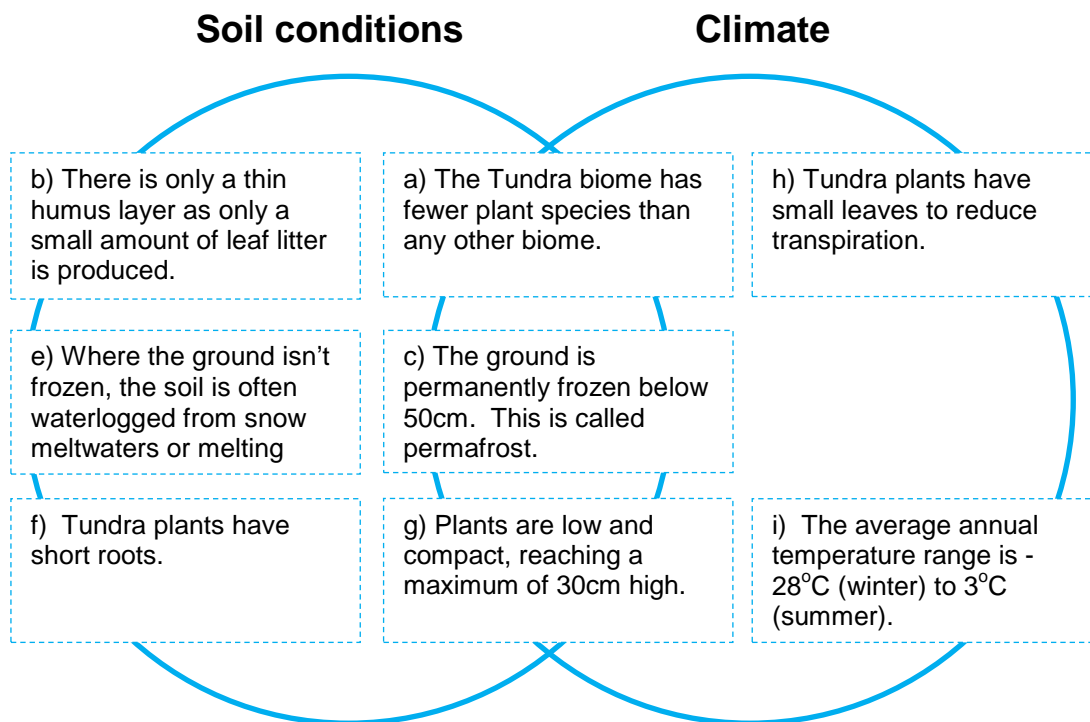


Task 1 – How are the climate, soil and plants interdependent in the Arctic Tundra?

Teacher guidance:

Give out the statements in the table and a copy of the Venn diagram. Ask students to sort the statements into the Venn diagram using the letters. The purpose of this activity is to introduce some basic facts and to highlight the interconnectedness between Arctic climate, soils and plants.

Answers:



Task 2 – Summarising Arctic Flora

Ask students to look again at the statements in the table. Using this information, students must write a summary of the characteristics of Arctic Flora. The summary must be exactly 50 words! Students will need to choose carefully what to include and edit their sentences to make the summary **exactly** 50 words. This activity will encourage students to identify key information and to present it concisely.

Task 3 – What lives in the Tundra biome?

Give out the table of Tundra-dwellers. Ask students how they could group or classify these Tundra-dwellers. Encourage students to come up with their own set of categories, and then review as a class. Students could use dictionaries/ encyclopaedias/ internet to identify some of the things in the table.

Categories could include: plant/ animal/ land/ sea or marine/ birds/ fish/ invertebrates. Colour code as appropriate.

How are all of the Tundra-dwellers in the table connected? Can students make any links between them? Students could cut out the table and re-arrange to create a food web or simply join with pencil lines to create one. The idea here is to see to what extent all of these creatures are interconnected. Teacher-led feedback to summarize food webs/ interconnectedness

Stretch and challenge: there are some gaps in the grid. Students could add to these gaps e.g. wolves, Moose, Bowhead whale, Narwhal, Ptarmigan; then classify the additions they have made.

Task 4 – Making connections

Ask students to watch the short clip from Frozen Planet 'bottom of the food chain'.

<http://www.bbc.co.uk/nature/life/Malacostraca#p00l7sgp>

It is about krill in the **Southern Ocean**, however this species is also of vital importance in the Arctic.

Ask students to answer the following:

- What do krill look like?
- What do krill eat?
- What do krill thrive from?
- What happens to algae as ice melts?
- Who depends on krill?

Task 5 – Tundra-dwellers

Give students the additional Tundra-dwellers (Sami, Inuit and Koryak). Ask them to consider how they may link with/affect the ecosystem web that they produced in Activity 3. Students should add these indigenous people to their food web and make appropriate links.

Task 6 – Summarising Arctic Flora and Fauna

Ask students to produce a 'Tweet' (maximum 140 characters) summarising what they have learnt about the flora and fauna of the Arctic. Whole-class feedback to review learning. Top 5 tweets could be recorded in the classroom as a summary of the lesson. This is an 'extreme' example of concise writing!



GCSE (9–1) Geography B (Geography for Enquiring Minds)

Lesson Element



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