UK Critical Minerals Intelligence Centre

CRITICAL MINERALS

KS3 lesson 2 pupil workbook: critical minerals

Name _____

British Geological Survey

Department for Business & Trade

Critical minerals

Introduction

‘If it can’t be grown, it has to be mined!’

Explain what you think this statement means.

Activity 1: the life cycle of a mobile phone

Part 1

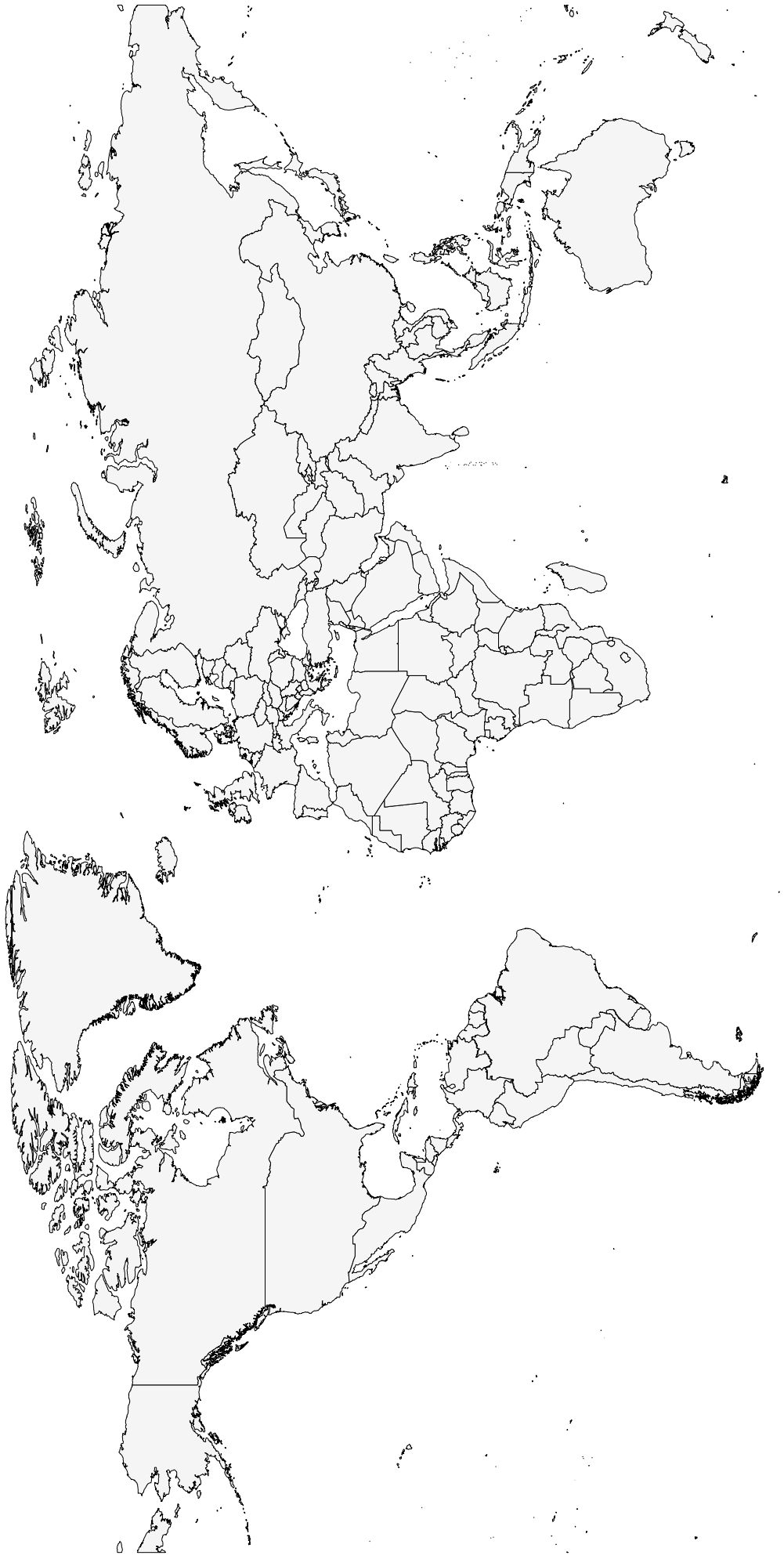
Mobile phones contain minerals including critical ones, along with plastics and ceramics. Some of the minerals include:

- copper (chalcopyrite; malachite; azurite)
- iron (magnetite; limonite)
- zinc (sphalerite)
- aluminum (bauxite)
- lead (galena)
- tin (cassiterite)

Below are the countries that provide mobile phone parts for a Nokia mobile phone.

- Austria
- Brazil
- China
- Czechia
- Denmark
- Estonia
- Finland
- France
- Germany
- Hungary
- Ireland
- Israel
- Japan
- Malaysia
- Mexico
- Morocco
- Netherlands
- Philippines
- Portugal
- Singapore
- Slovakia
- South Korea
- Spain
- Sweden
- Switzerland
- Taiwan
- Thailand
- UK
- USA

Using an atlas or the internet, label these countries on your map of the world. Tip: it may be easier to draw a straight line to each country and add your labels around the map.



Describe the pattern of distribution. What implications might this pattern have on our carbon footprint, climate change and future supplies?

Part 2

Watch the video about mining and the life cycle of a mobile phone and answer the questions.

Name some of the raw materials extracted for use in mobile phones.

What are some of the wider implications of mining for raw materials?

Consider the use of energy throughout the extraction, processing and manufacturing processes. What effect may this have on the production of greenhouse gases and climate change?

Name some materials that are used for packaging. Can any of these materials be recycled?

What is the average replacement time for mobile phones in the USA? In what ways can we extend the lives of our mobile phones?

What are the problems with the disposal of mobile phones in landfill? Why should we recycle our old mobile phones? How could you dispose of an old mobile phone in a responsible way?

How can former quarries and mines be used to recycle the land in a responsible and environmentally friendly way?

Part 3

Sort the labels into the correct positions on the diagram below to show the main stages in the life cycle of a mobile phone.

Labels:

- manufacturing, packaging and transportation
- exploration
- end of life (disposal/recycling/restoration of mined area)
- mining
- use
- processing

Activity 2: careers in the geosciences

Geoscience is the study of the planet and how various geological process have influenced how the planet looks or works. Geoscientists try to understand these processes and relate them to our human built environment.

In pairs, sort the labels and photographs to match each job description to the correct picture. Check your answers with your teacher then complete the table

Job	One interesting point or fact about the job

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Homework/extension

Research a geoscience-related job, make a few notes and present back to the class (one to two minutes each) the following lesson. Try to choose either:

- a job you think would be interesting and would like to do
- something you think is a different or a unique career

Notes on your chosen geoscience job.