

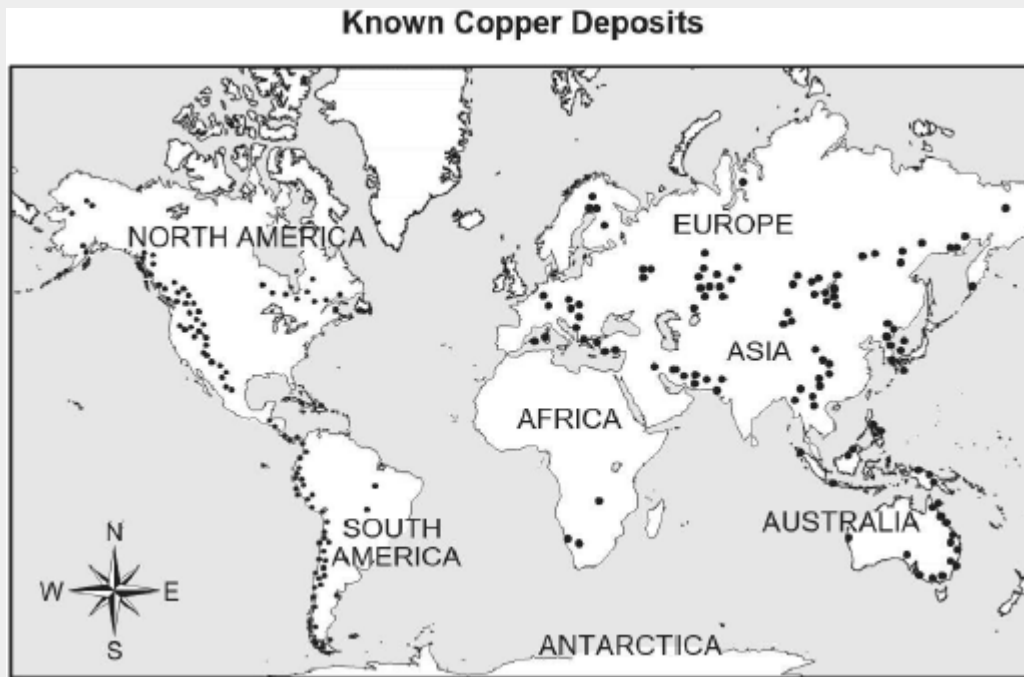
2023–2024 Gr8 Science Benchmark Unit 2

Question 1.

The number of active cell phones in the world is greater than the number of people, which is over 7.3 billion. Cell phones contain many valuable metals such as copper, silver, gold, palladium, and platinum. These metals are found in rocks called metal ores. Most metal ores formed long ago by the actions of volcanoes and hydrothermal vents. Which of the following is not true about how the use of cell phones affects the future of valuable metals on Earth.

- A. If the number of cell phones continues to grow, making cell phones may deplete some of Earth's metal resources.
- B. If more cell phones are made, metals will need to be recycled in order to keep up with demand.
- C. The greater the demand for valuable metals, the more difficult it will become to find enough.
- D. The greater the demand for valuable metals, the less expensive they will become.

The map shows known copper deposits around the world.



Question 2.

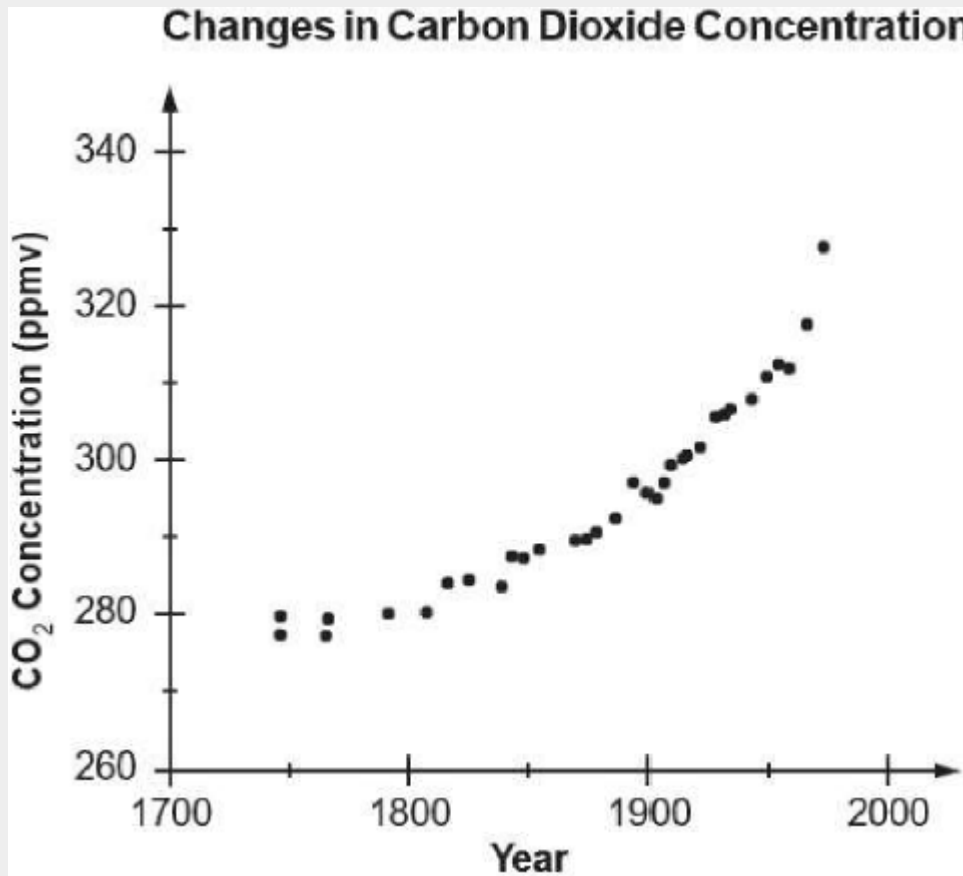
Worldwide, both the demand and the resulting production of copper have increased dramatically in the last 25 years. Copper is widely used in many ways, such as generating and transmitting electricity, constructing buildings and vehicles, and in many industrial applications. Two-thirds of copper ore mined today is found in igneous intrusions. Another one-fourth of copper ore is found in sedimentary rocks. Roughly one-third of all copper used today is recycled.

- a. Based on the map, describe the pattern of world copper deposits.

- b. Explain why copper is recycled.

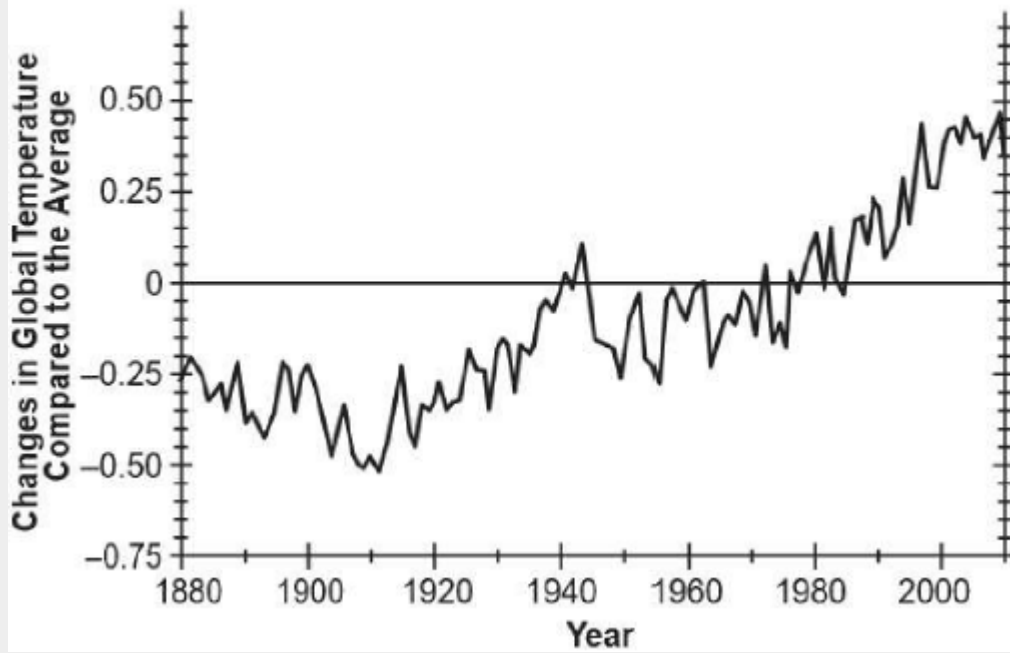
- c. Predict what will happen to the demand and supply of copper by the year 2100. Provide support for your answer.

The first graph shows changes in carbon dioxide (CO₂) in the atmosphere from 1740 to 1980.



The second graph shows the changes above or below average temperatures from 1880 to 2010.

**Changes in Global Temperature
Compared to the Average, 1880–2000**



Question 3.

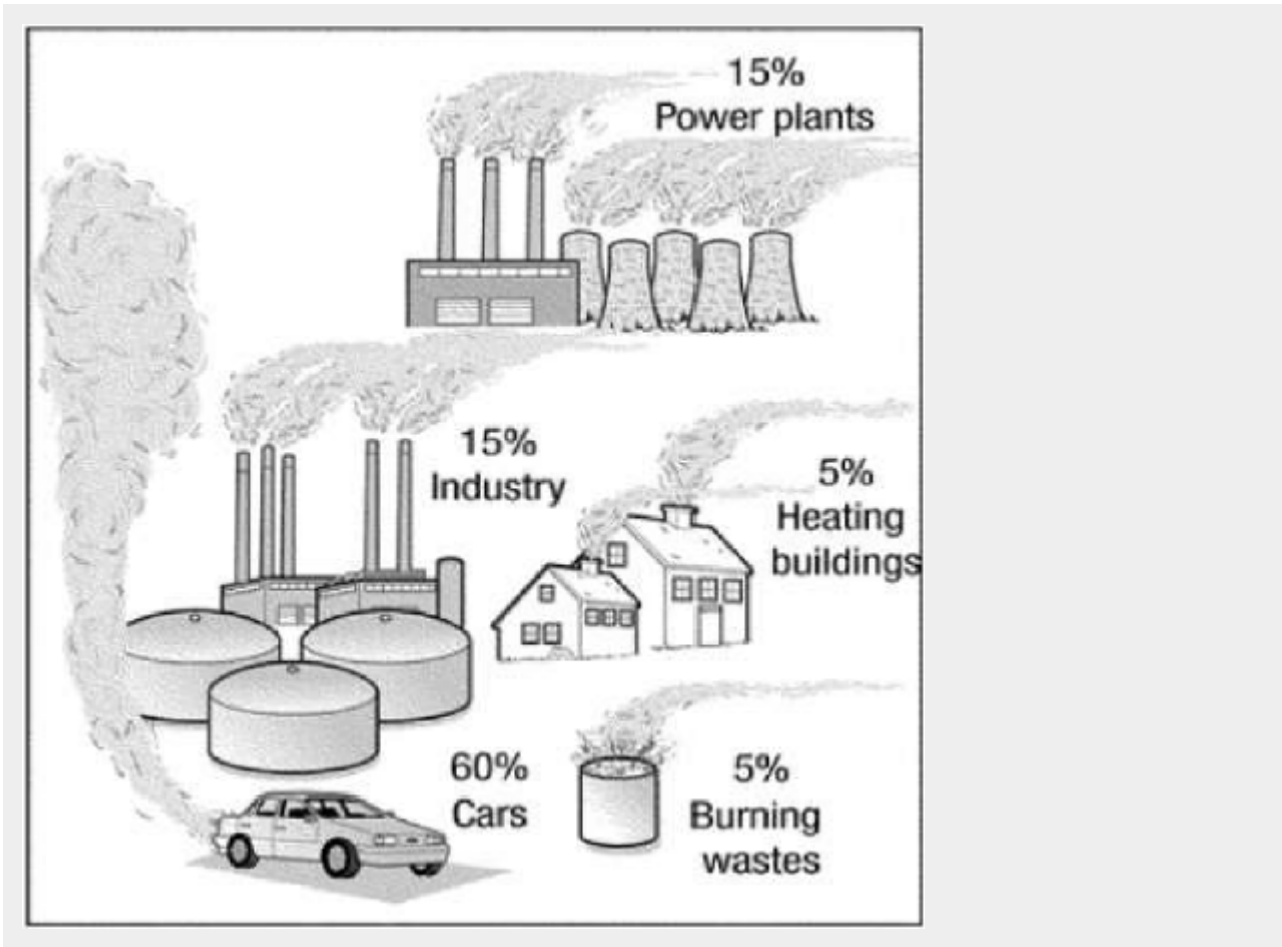
Based on these two graphs, a student claims that humans are causing global temperature change. Which question, when answered, would support the student's claim?

- A. How much CO₂ is produced by burning fossil fuels every year?
- B. Is the Greenhouse Effect increasing the amount of CO₂ in the atmosphere?
- C. Do atmospheric temperatures change before or after changes occur in CO₂ levels?
- D. What is the relationship between the amount of CO₂ produced by volcanoes and atmospheric temperatures?

Question 4.

The Great Pacific Garbage Patch is a large area of floating trash in the Pacific Ocean that is caused, in part, by ocean currents. Which is a step people can take to minimize its effect on Earth's water?

- A. use satellites to measure its size
- B. measure ocean currents to predict where it will go
- C. design new and better ways to recycle
- D. work harder to prevent oil spills.



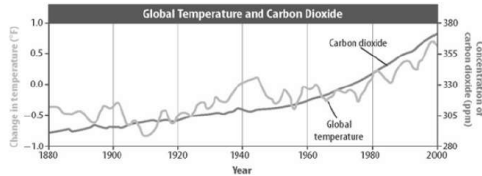
Question 5.

The graphic shows where air pollution begins in a local community. Which would be the most effective way to reduce air pollution in this community?

- A. pass a law that states people cannot burn wastes
- B. help people to heat their homes more efficiently
- C. make traveling by bicycle easier and safer
- D. invent a way to trap particulate matter from industry

Question 6.

Examine the graph. What do the data show about the change in global temperature?



- A. global temperature has decreased over time, and carbon dioxide levels have quickly increased
- B. global temperature has varied over time, and carbon dioxide levels have decreased
- C. global temperature and carbon dioxide levels have slowly increased over time
- D. global temperature has quickly increased, and carbon dioxide level have slowly increased

Question 7.

Concerns have been raised about whether food resources will be sufficient to feed the increasing human population on Earth.

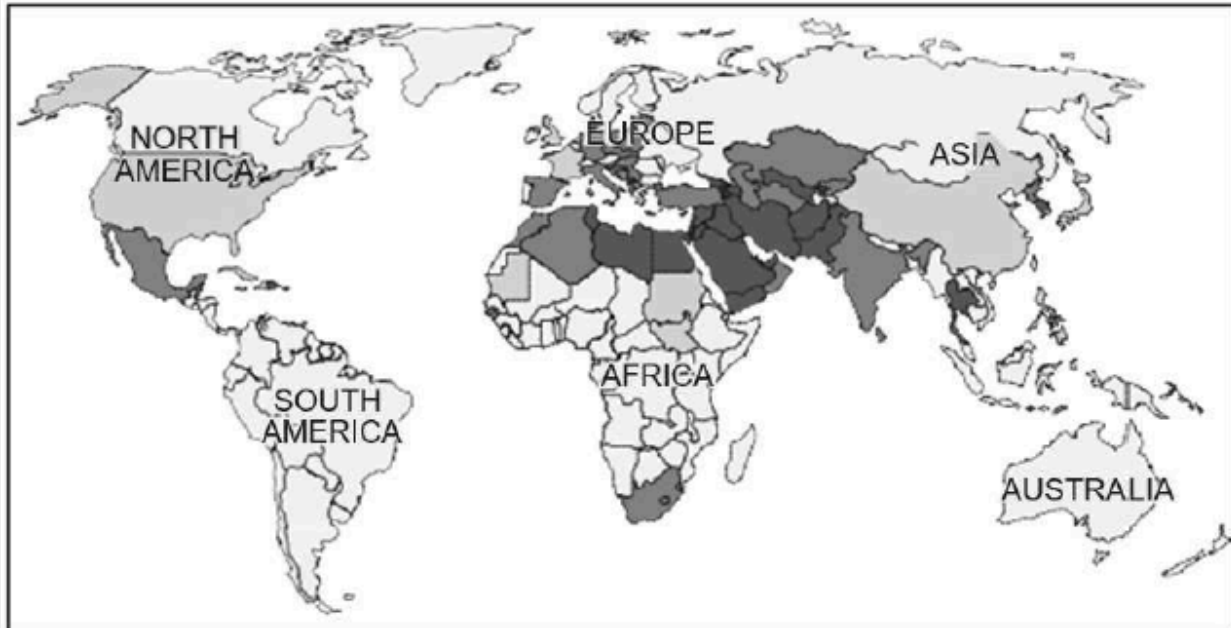
According to the Population Reference Bureau, food shortages have not yet become an issue because with "the development of fertilizers, pesticides, and more efficient farming techniques, crop yields per acre have increased and the amount of land under cultivation has expanded."

Although these developments have allowed food production to keep pace with population growth, what negative environmental impact could result from their use?

- A. Excess use of water for farming will lead to flooding in many areas.
- B. An overproduction of food will result in too much waste for landfills to handle.
- C. The overuse of chemicals will lead to polluted runoff draining into lakes and rivers.
- D. Constant use of farm land will result in it being protected from erosion.

The map shows the percentages of available freshwater that humans withdrew from groundwater or surface water in 1995. In that year, the human population worldwide was 5.7 billion. By 2025, the human population is expected to reach 8 billion.

Levels of Freshwater Withdrawal, 1995



Key

Water withdrawal as percentage of total available

- represents more than 40%
- represents 40% to 20%
- represents 20% to 10%
- represents less than 10%

Question 8.

Suppose the map is updated after 2025. Which prediction about how the map will change is **best** supported by the data?

- A. South America and Australia will withdraw more than 40% of their available freshwater, changing their areas on the map to the darkest shade of gray.
- B. Europe, Asia, and North America will withdraw 20 to 40% of their available freshwater, changing their areas of the map to a darker shade of gray.
- C. All countries will reduce their freshwater needs, which means areas marked with dark shades of gray will change to the lightest shade of gray.
- D. Freshwater needs will be met in other ways, which means the darkest shade of gray will no longer appear in any areas of the map.

Question 9.

Petroleum is a fossil fuel used to make plastic. Which idea would **best** reduce the environmental impact of plastics and fossil fuels at the same time?

- A. pack goods to be shipped in plastic containers
- B. find inexpensive ways to use vegetable oil for fuel
- C. design a car completely made from recycled plastic
- D. convert plastic bags into fuel for cars, trucks, and planes

Question 10.

Urbanization is caused by an increase in population. Which describes an effect of urbanization on land?

- A. More land will be available for farming.
- B. More land will be used to build houses.
- C. More land will be used to grow trees.
- D. More land will be available for animal habitat.

Question 11.

Which describes a way that people can minimize their impact on air pollution?

- A. decrease burning of oil and coal
- B. invent ways to remove particulate matter from the air
- C. decrease the size of the ozone layer
- D. invent ways to treat asthma

Question 13.

Why do we need to find an alternative to fossil fuels?

- A. They decrease the effects of global warming.
- B. They decrease the greenhouse effect.
- C. They increase biodiversity.
- D. They increase particulate matter in the air.

Question 12.

Climate change causes the ice in polar regions to melt. Which describes an effect of polar ice melting?

- A. global warming increases
- B. sea levels rise
- C. greenhouse gas emissions rise
- D. Earth surface temperatures decrease

Question 14.

Diversity among members of a species is important because diversity

- A. ensures high levels of competition.
- B. increases the available ecosystem resources.
- C. ensures the variety of reproductive methods for a species.
- D. increases the chances of survival under changing conditions.

Question 15.

Which of these adaptations is **LEAST** important for human survival?

- A. having thumbs
- B. eye color
- C. walking upright
- D. developing language