

Study & Master

Support Pack | Grade 12

CAPS

Life Sciences

Practice exercises: Environmental studies

This support pack for the **Environmental studies** strand in the **Life Sciences Grade 12 CAPS curriculum** provides practice exercises. All exercises have the answers provided.

Learners can work through these individually at home or these could form the basis of a catch-up class or online lesson. You have permission to print or photocopy this document or distribute it electronically via email or WhatsApp.

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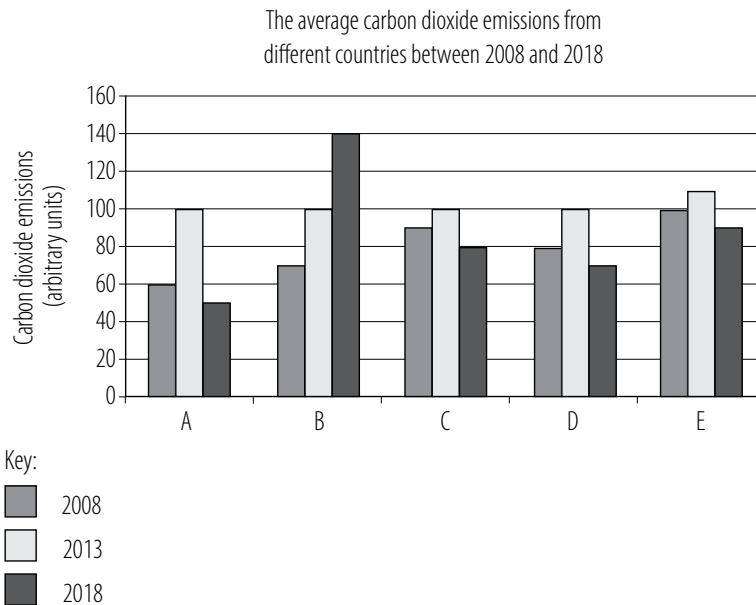
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WORKSHEET 3: ENVIRONMENTAL STUDIES

HUMAN IMPACT ON THE ENVIRONMENT

1. Study the bar graph below and answer the questions that follow.



- 1.1 By how much did the level of carbon dioxide emissions in Country D decrease between 2013 and 2018?
- 1.2 Compare the general pattern of carbon dioxide emissions of Country B with that of the other countries. Find one similarity and one difference.
- 1.3 Which country had the lowest level of carbon dioxide emissions in 2018?
- 1.4 Suggest TWO possible reasons for your answer to 1.3.
2. The table below shows the results of an investigation carried out by learners at five different places (A, B, C, D and E) along a river.

Number of organisms in different water conditions					
River organisms	Condition of river water				
	A	B	C	D	E
	Very clean	Clean	Fairly clean	Dirty	Very dirty
Green algae	Scarce	Moderate	Many	Abundant	Abundant
Fish	Many	Scarce	Absent	Absent	Absent
Water weeds	Scarce	Many	Many	Many	Scarce

- 2.1 State the hypothesis that the learners set out to investigate.
- 2.2 Describe the relationship between the number of green algae and the condition of the river water.
- 2.3 Give a reason for the relationship indicated in question 2.2.
- 2.4 Write down the letters only of the places in the river where trout were found.
- 2.5 Why were trout only found in the places named in question 2.4?
3. Read the following passage on natural pesticides and answer the questions that follow.

The use of neem leaves to control insect pests in vegetables

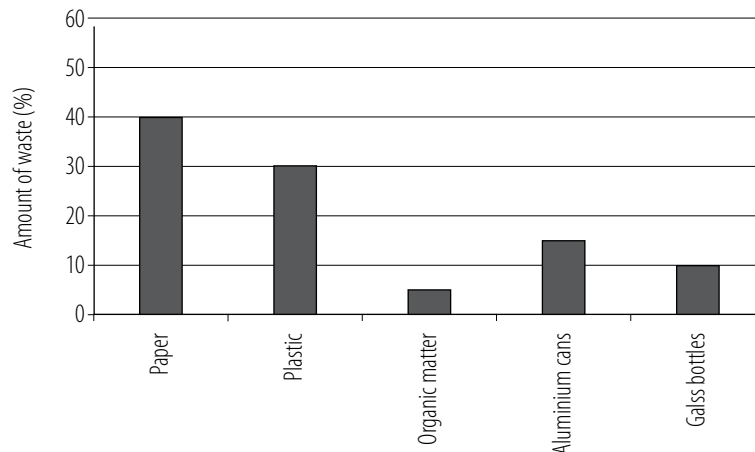
Insects are a hindrance to farmers. Insect chemical pesticides are often too expensive and most have negative side effects. In Tanzania farmers are now making use of a natural pesticide that is locally available at nearly no cost. The leaves of the neem tree (*Azadiracta indica*) are crushed and the liquid is brushed onto plants three times a week. The remains of the crushed neem leaves can be spread on the soil to increase fertility.

- 3.1 State three advantages of using neem leaves instead of chemical pesticides.
 - 3.2 State two possible disadvantages of using neem leaves.
 - 3.3 Describe two strategies that the South African government can use to encourage the use of local plants and animals in the control of pests.
4. Read the following passage on natural pesticides and answer the questions that follow.

Abalone

Abalone, a type of shellfish commonly known as perlemoen, is found on rocks near the sea. Since it is thought to improve sexual ability, especially by people in countries where abalone does not naturally occur, it is sold at very high prices. Because of this, it is being collected by poachers in large numbers.

- 4.1 Describe two consequences of perlemoen exploitation.
 - 4.2 Suggest two ways in which the population of perlemoen can be managed.
5. The graph below shows the percentages of various types of waste found on school grounds.



- 5.1 Draw a table to illustrate the percentages of waste shown in the graph above.
- 5.2 The school wants to manage the large amount of waste generated on a daily basis. They decide to recycle the waste.
 - a) Define 'recycling'.
 - b) Give two reasons why the recycling of waste is advantageous.

MEMORANDUM FOR WORKSHEET 3

- 1.1 30 arbitrary units
 - 1.2
 - In all countries there is an increase in the level of carbon dioxide emissions from 2008 to 2018.
 - In Country B there was an increase in the level of carbon dioxide emissions from 2013 to 2018 whereas in all of the other countries there was a decrease in the same period.
 - 1.3 Country A
 - 1.4
 - Using renewable sources of energy such as wind and solar energy.
 - Implementing programmes to save energy/hybrid cars/ improved public transport.
 - Improving technology to reduce pollution.

 - 2.1 The number of river organisms/green algae/water weeds/fish depends/does not depend on the condition/pollution level of the river. OR River organisms/green algae/water weeds/fish increase/decrease in number as water becomes cleaner/dirtier.
 - 2.2 The number of green algae increases as pollution of the water increases. OR The number of green algae decreases as pollution of the water decreases.
 - 2.3 More carbon dioxide/nutrients/eutrophication present in dirty water promotes photosynthesis which provides more energy for reproduction of algae. OR No/fewer fish/consumers in dirty water to feed on the green algae.
 - 2.4 A and B
 - 2.5 Clean and very clean water has fewer pathogens/pollutants that can kill the fish/cause diseases. OR Clean and very clean water have fewer algae and water-weeds therefore more oxygen for the fish. OR Particles/pollutants in dirty water clog gills.

 - 3.1
 - Neem leaves are cheaper than chemical pesticides.
 - Using neem leaves prevents any side effects that chemical pesticides cause/not toxic to the environment.
 - Neem leaves are easy to use.
 - 3.2
 - Brushing plants three times a week is labour intensive.
 - The neem trees could be exploited/over-used.
 - 3.3
 - The government can fund research into the use of the indigenous knowledge which could benefit the population.
 - Disseminate information to everyone so that usage of chemical pesticides is reduced or stopped.
 - Increase tax/price of chemicals pesticides so that environmentally-friendly resources are used.

 - 4.1
 - Perlemoen could be in danger of becoming extinct/ endangered.
 - Disturbing the food chain/web so that other organisms are also affected.
 - 4.2 Any two:
 - Limit number caught.
 - Only licensed fishermen allowed to catch perlemoen.
 - Heavy penalties/fines for those who contravene regulations.
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- Stipulate minimum size of perlemoen that can be caught to minimise the impact on the population.
- Patrol all those beaches where perlemoen is found to ensure compliance with regulations.

5.1 Percentages/amount of types of waste on the school grounds.

Type of waste	Percentages (%)
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- 5.2 a) The process by which waste materials are treated in such a way that they can be used again/reused.
- b)
- To avoid over-exploitation of the limited natural resources.
 - To save/raise money/create jobs.
 - To reduce the amount of waste material/cleaner environment.
 - Less energy used/ reduce carbon footprint.
 - Fewer landfill sites.