Exercise walk-through

3.6
Option: Food and health

International Baccalaureate · IB Diploma · Geography · SL

Geophysical hazards

- The Earth's surface is broken into **tectonic plates** that move a few centimetres a year.
- Most volcanoes and earthquakes happen at **plate margins** :
- **Hazard risk** grows with three things: how strong and frequent the hazard is, how many people and buildings are in its path (**exposure**), and how easily they are harmed (**vulnerability**).
- Poverty, weak buildings and poor warning systems raise **vulnerability**.

$$\text{risk} = \text{hazard} \times \text{exposure} \times \text{vulnerability}$$

Food and health

- **Food security** means that all people can get enough safe and healthy food at all times.
- A **famine** often happens not because there is no food, but because people cannot afford or reach it.
- The economist Amartya Sen argued that in the Bengal **famine** of 1943 food was available, but prices rose far faster than the wages of the poor.
- This links to the "access" pillar of **food security** in topic 02.

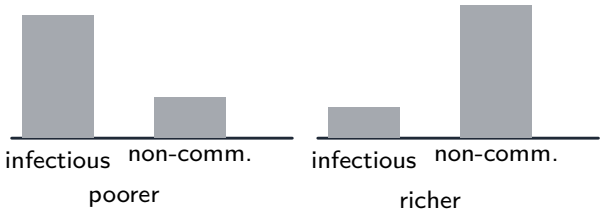
Fieldwork: geographic inquiry and sampling

- The fieldwork report is worth 25% at SL and 20% at HL.
- It is a report of up to 2,500 words, marked out of 25, on **primary data** that you collect yourself in the field.
- You cannot measure everything, so you take a sample:
- **Worked example.** Question: *Does the number of pedestrians fall with distance from the central square?* **Hypothesis**: pedestrian numbers fall as distance increases.

$$r_s = 1 - \frac{6\sum d^2}{n(n^2-1)} = 1 - \frac{6 \times 158}{8 \times 63} = 1 - \frac{948}{504} \approx -0.88$$

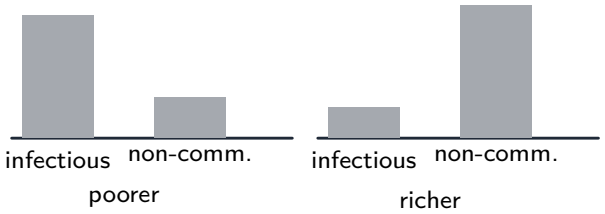
Exercise 2.1

2.1 Define the **epidemiological transition**. [2]



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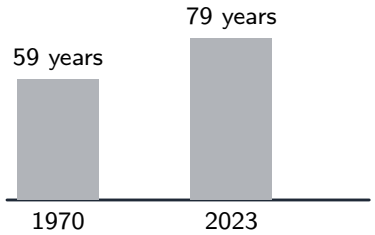


2.1

the change in the main causes of death as a country develops: from infectious diseases to non-communicable diseases such as heart disease and cancer, while life expectancy rises

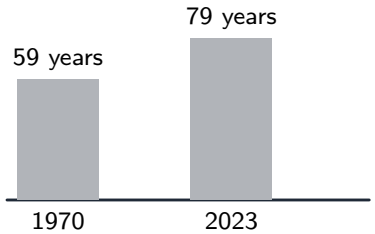
Exercise 2.2

2.2 China's life expectancy rose from about 59 years in 1970 to about 79 years in 2023. Calculate the percentage increase, and give **one** reason for it. [3]



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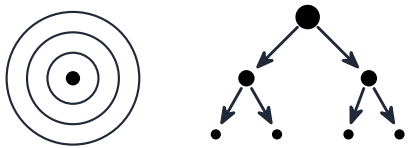


2.2

$\frac{79-59}{59} \times 100 \approx$ **34** %; any one: clean water and sanitation / vaccines / better health care / more and better food

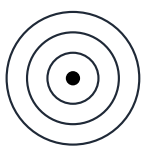
Exercise 2.3

2.3 Distinguish between **contagious** and **hierarchical** diffusion of a disease. [2]

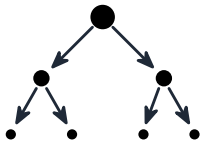


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contagious



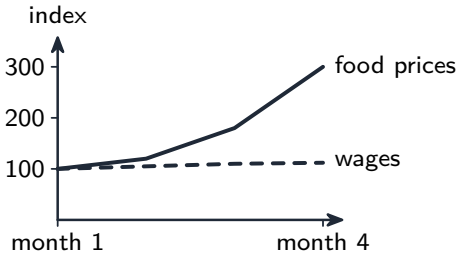
hierarchical

2.3

contagious: the disease spreads from person to person to nearby places, like ripples; hierarchical: it spreads down an urban hierarchy, from large cities to smaller towns, often along transport links

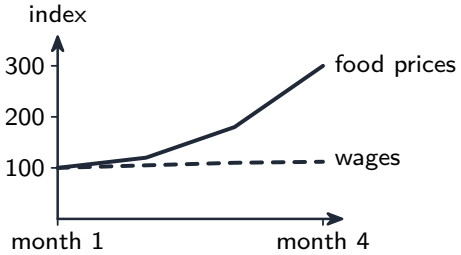
Exercise 2.4

2.4 Explain why a famine can happen even when there is enough food in a country. [3]



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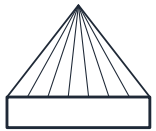


2.4

food may be available, but poor people cannot afford it if prices rise faster than their wages (access); e.g. Sen on the Bengal famine of 1943; food may not reach people because of poor roads, conflict or hoarding

Exercise 2.5

2.5 Explain **two** strategies used to reduce deaths from malaria. [4]



bed net



mosquito

standing water

Exercise 2.5

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2.5

any two, explained: insecticide-treated bed nets stop mosquitoes biting at night and kill them; indoor spraying with insecticide kills mosquitoes resting in homes; draining standing water removes places where mosquitoes breed; quick testing and medicine cure people before they become seriously ill; vaccines for young children lower severe illness and deaths

Exercise 3.1 (a)

3.1 *(Paper 1 style.)* The graph shows causes of death in a middle-income country (illustrative data).

(a) Describe the changes in causes of death from 1990 to 2020. Use data. [2]

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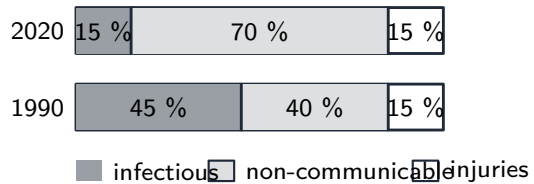
(a) Describe the changes in causes of death from 1990 to 2020. Use data. [2]

(a) infectious diseases fell from 45 % to 15 % of deaths; non-communicable diseases rose from 40 % to 70 %, while injuries stayed at 15 %

Exercise 3.1 (b)

3.1 *(Paper 1 style.)* The graph shows causes of death in a middle-income country (illustrative data).

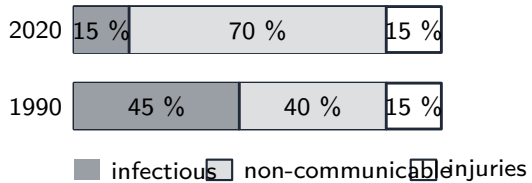
(b) Explain **two** reasons why deaths from non-communicable diseases have increased. [4]



Exercise 3.1 (b)

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(b) Explain **two** reasons why deaths from non-communicable diseases have increased. [4]



(b) any two, explained: people live longer, and heart disease and cancer are more common in old age; diets with more sugar, fat and processed food raise obesity and diabetes; less physical work in cities, more cars; smoking and air pollution; fewer people die young of infectious diseases, so a larger share of deaths come from NCDs

Exercise 3.2

3.2 Evaluate the strategies used to increase food production. [10]

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3.2

Mark with the markbands: [9-10] focused on the command term, detailed and accurate knowledge, well-developed explanation, specific named examples (places, dates, numbers), balanced evaluation and a supported conclusion; [7-8] mostly focused, good knowledge and examples, some evaluation; [5-6] relevant knowledge and examples, explanation partly developed, little evaluation; [3-4] general knowledge, few examples, mostly description; [1-2] little that is relevant. Points that may be included: Green Revolution: high-yield seeds, fertilizer and irrigation raised grain output faster than population from

the 1960s; but it needed much water and fertilizer, causing falling water tables and polluted rivers; richer farmers gained most; poor farmers often went into debt; GM crops: Bt cotton in India is widely grown, uses less pesticide and gives higher yields; but seeds are costly and some consumers and countries oppose GM food; irrigation lets dry areas grow food, but can make soils salty; aquaculture gives protein, but can pollute water and destroy mangroves; producing more food does not end hunger if people cannot afford it (Sen); conclusion: these strategies have greatly raised food production, but they are sustainable only if they protect water and soil and help poor farmers too