Options and fieldwork

IB DP Geography optional themes (Paper 1) and the fieldwork internal assessment

Options and fieldwork

SL studies two options, HL three, and everyone writes a fieldwork report.

- The options are examined in Paper 1.
- The fieldwork report is the **internal assessment**.

How Paper 1 works

> Each option: 10 marks of structured questions, then one essay from two for 10.

- SL: two options in 1 hour 30. HL: three in 2 hours 15.
- Command terms: examine, discuss, evaluate, to what extent.

Specific detail earns marks

Earns little

"Floods are bad for people."

Earns credit

"The 2021 Zhengzhou flood killed 380 people, including 14 trapped in a metro train."

Where the rain goes

Surface runoff reaches the river fast; water through soil and rock arrives slowly.

- A **drainage basin** is the land a river and its tributaries drain.
- Rain is stored, or moves to the river.

The storm hydrograph

> The same storm: the urban river peaks sooner and higher.

- **Discharge**: the volume of water passing a point each second.
- **Lag time**: from **peak** rainfall to peak discharge.

Fast and slow basins

Shorter lag, higher peak

Cities: concrete, roofs, drains.

Steep slopes; saturated soil.

A small, round basin.

Longer lag, lower peak

Forests.

Gentle slopes.

Water soaks into soil and rock.

Hard and soft flood management

	Hard	**Soft**
examples	dams, embankments	trees, wetlands, sponge cities
strength	protects a large area	cheaper; works with nature
weakness	costly; moves the flood	slower; may fail in a big flood

The Three Gorges Dam

Gains

Stores flood water.

About 22.5 GW of electricity.

Large ships reach Chongqing.

Costs

About 1.3 million people moved.

Traps sediment that once built land downstream.

Waves erode and deposit

Hydraulic action and **abrasion** erode; weaker waves build beaches and spits.

- Erosion where waves have energy.
- Deposition where they lose it.

Headlands and bays

> Soft rock erodes into bays; hard rock is left as headlands.

- Caves, arches and stacks form at headlands.
- A crack becomes a cave, an arch, then a stack.

Longshore drift

> Sand zigzags along the coast in the direction of the main wind.

- Swash runs up the beach at an angle; backwash runs straight down.
- Defences in one place affect the next.

Coastal strategies

Strategy	Problem
sea wall	costly; the beach in front erodes
groyne	the coast further along erodes faster
beach nourishment	must be repeated every few years
mangrove planting	needs warm, sheltered coasts and time
managed realignment	farmland and some homes are lost

Holderness: two choices

Mappleton, 1991: hold the line

Groynes protected the village.

Cliffs to the south then eroded faster.

Medmerry, 2013: realign

Defences moved inland.

A new salt marsh protects homes and birds.

Cold and dry extremes

Cold

Ice carves U-shaped valleys.

It leaves piles of rock: moraines.

Hot and dry

Wind builds dunes.

Rare flash floods cut steep wadis.

Opportunity or challenge?

Opportunities

Minerals, tourism, solar energy, scientific research.

Challenges

Cold or heat, little water, poor access, a fragile environment.

A railway on permafrost

> Heat from the track could melt the frozen ground, so engineers carried heat away.

- The Qinghai-Tibet Railway opened in 2006.
- Tourists and trade, but pressure on environment and culture.

Plate margins

Margin	Movement	Hazards	Example
constructive	apart	gentle volcanoes	Iceland
destructive	one sinks	explosive; tsunamis	Japan
conservative	slide past	earthquakes	California

Hazard risk

> Risk = hazard × **exposure** × **vulnerability**.

- Poverty, weak buildings and poor warnings raise vulnerability.
- The same hazard can bring very different losses.

Haiti and Tōhoku

> The weaker earthquake killed more: **vulnerability** decided the toll.

- Tōhoku released about 1,000 times more energy.
- Yet Haiti lost far more lives.

Butler's model

> Growth slows near the **carrying capacity**; then rejuvenation or decline.

- Exploration, involvement, development, consolidation, stagnation.
- Carrying capacity: the visitors a place can take.

Venice and overtourism

> Do a few euros change behaviour, or only raise money?

- Fewer than 50,000 residents in the historic centre.
- **Overtourism** raises rents and pushes residents out.

Famine is a failure of access

> Food was available; the poor could not afford it.

- Amartya Sen on the Bengal **famine** of 1943.
- The "access" pillar from topic 02.

The epidemiological transition

China: life expectancy from about 59 in 1970 to about 79 in 2023.

- Infectious diseases fall; people live longer.
- Cheap high-calorie food and less physical work raise **obesity**.

Rings and sectors

> Burgess draws rings round the centre; Hoyt draws sectors along routes.

- Shenzhen: a small border town in 1980; about 17.6 million in 2020.
- Test the models against a real city.

Urban stress and regeneration

Stress

Housing shortages, congestion, air pollution, waste.

Responses

Public transport, new housing, regeneration.

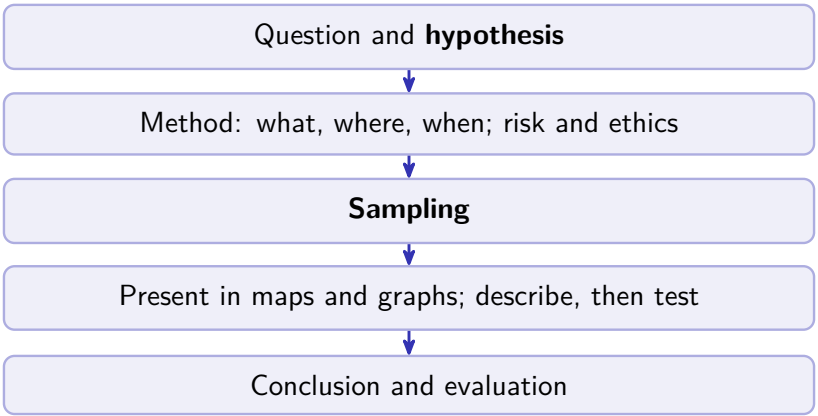
But rents can rise and push poorer residents out.

The fieldwork report

> Up to 2,500 words: 25% of the grade at SL, 20% at HL.

- **Primary data** you collect yourself in the field.
- Marked out of 25.

The inquiry, step by step



Three ways to sample

Sampling	How	Weakness
random	random numbers pick points	may miss small areas
systematic	every 100 m, or every tenth	may match a pattern
stratified	in proportion to zones	must know the zones

Pedestrians and distance

Counts every 100 m from the square: **systematic sampling**.

- **Hypothesis**: pedestrian numbers fall as distance increases.
- **Null hypothesis**: no relationship.

Spearman's rank

1. **Ranks** n $= 8$ sites; $\Sigma d^2 = 158$
2. **Calculate** rs $= 1 - (6 \times 158) \div (8 \times 63) \approx -0.88$
3. **Test** 0.88 is above 0.738 at the 5% level: reject the null

Decision

Significant: numbers fall with distance, but shops may be the cause.

Chi-squared and evaluation

Chi-squared

A result of 5.2 is above 3.84.

The two variables are not independent.

Evaluate the method

One street, one morning, one count per site.

Better: more streets, times and repeat counts.

The six criteria

Analysis is 10 of the 25 marks.

- Written analysis carries the most marks.
- Formal requirements are easy marks to keep.

Check yourself

