GCSE GEOGRAPHY

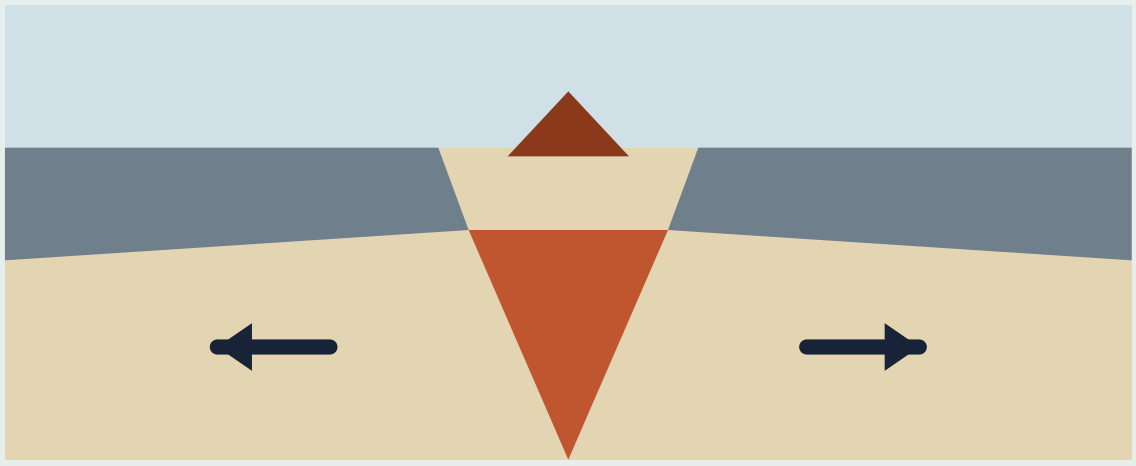
Plate boundaries

Four types. What the plates are doing decides everything else that happens there.

Constructive

plates move apart

Mid-Atlantic Ridge · Iceland

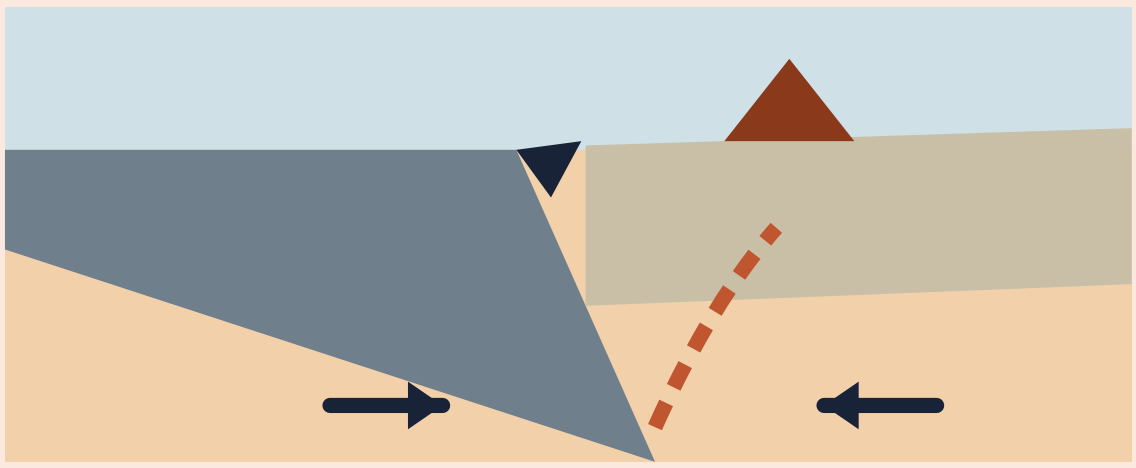


- Magma rises into the gap and cools as new crust.
- Shallow, low-magnitude earthquakes.
- Gentle shield volcanoes, runny lava.

Destructive

oceanic plate sinks under continental

Nazca plate beneath South America

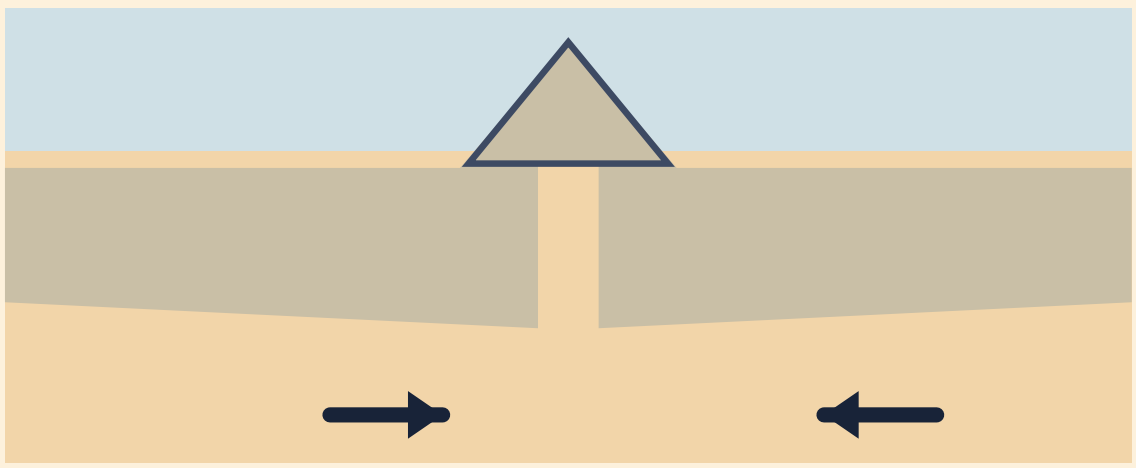


- The denser oceanic plate subducts and melts.
- Deep ocean trench, fold mountains behind it.
- Violent earthquakes and explosive composite volcanoes.

Collision

two continental plates meet

Himalayas · India into Eurasia

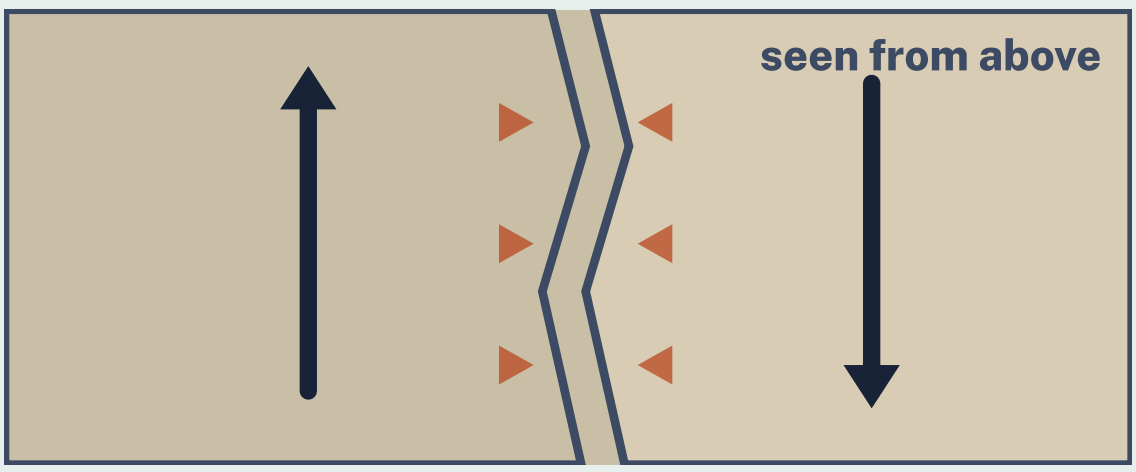


- Neither plate is dense enough to sink.
- The crust buckles upwards into fold mountains.
- Powerful earthquakes — but no volcanoes.

Conservative

plates slide past each other

San Andreas Fault · California



- No crust is made and none is destroyed.
- Pressure builds until the plates jolt free.
- Earthquakes only — no volcanoes.

WHAT MOVES THEM IN THE FIRST PLACE

Convection in the mantle

Heat from the core makes mantle rock rise, spread and sink in slow cells, dragging the plate resting on top of it.

Ridge push

New crust at a constructive boundary is hot and high. As it cools it thickens and slides down off the ridge under its own weight.

Slab pull

A subducting plate is cold and dense, and hauls the rest of the plate behind it. This is the strongest of the three.

Standard subject content. The selection, the wording and every diagram on this sheet are ours — no map extract, no photograph and no diagram taken from anywhere else. Oceanic crust is drawn thin and dark, continental thick and pale — the density difference is why only one of them subducts.

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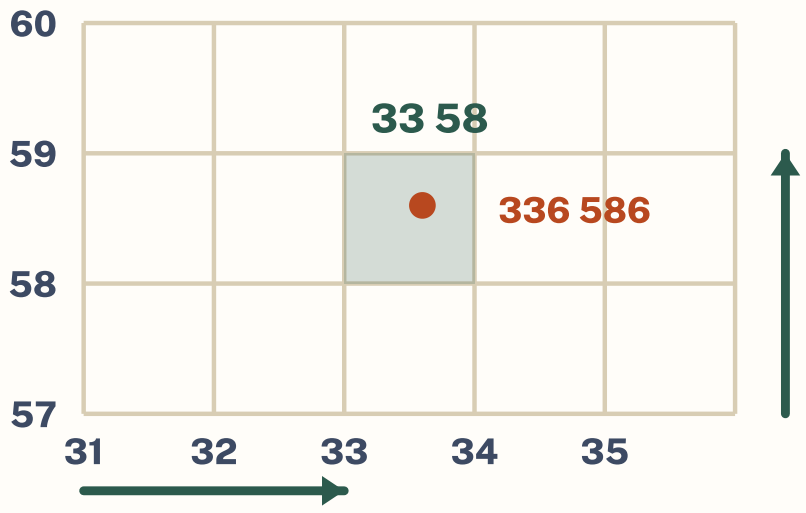
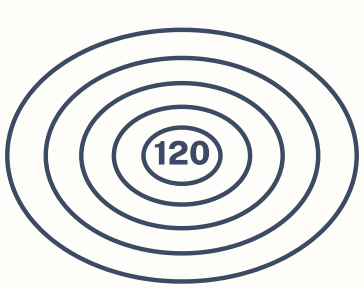
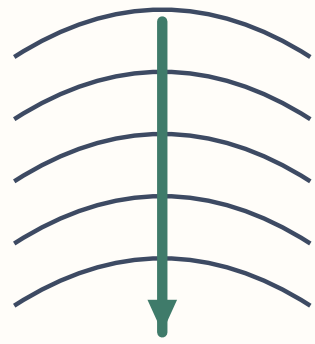
Map skills

References, contours, bearings and distance. Four things worth marks on any paper that take ten minutes to fix.





A hill
rings closing inwards



A valley
the V points upstream

Four-figure grid reference

Two digits across, two digits up. It names a whole 1 km square.

Along the corridor, then up the stairs. Eastings before northings, every time.

Six-figure grid reference

Split each square into tenths and add one digit to each pair. It names a 100 m square.

The extra digit goes straight after the pair it belongs to — not on the end.

Contour lines

Every line joins points at the same height. The height difference from one line to the next is the contour interval.

Close together means steep. Far apart means gentle. A V pointing uphill is a valley with a river in it.

Scale

On a 1:25,000 map, 4 cm is 1 km. On a 1:50,000 map, 2 cm is 1 km.

Measure with the edge of a page, then lay it against the scale bar.

Bearings

The angle clockwise from north, written with three digits — 045°, not 45°. Measure from where you are to where you are going, never the other way round.

East is 090°, south 180°, west 270°. Put the protractor centre on your start point with 0° pointing to grid north.

Measuring a distance

Straight line: lay a ruler on it and read the scale. A road or river: mark a paper edge in short straight sections along the bend, then measure the whole marked edge at once.

A winding route is always longer than the straight line between its ends. Estimating one from the other loses the mark.

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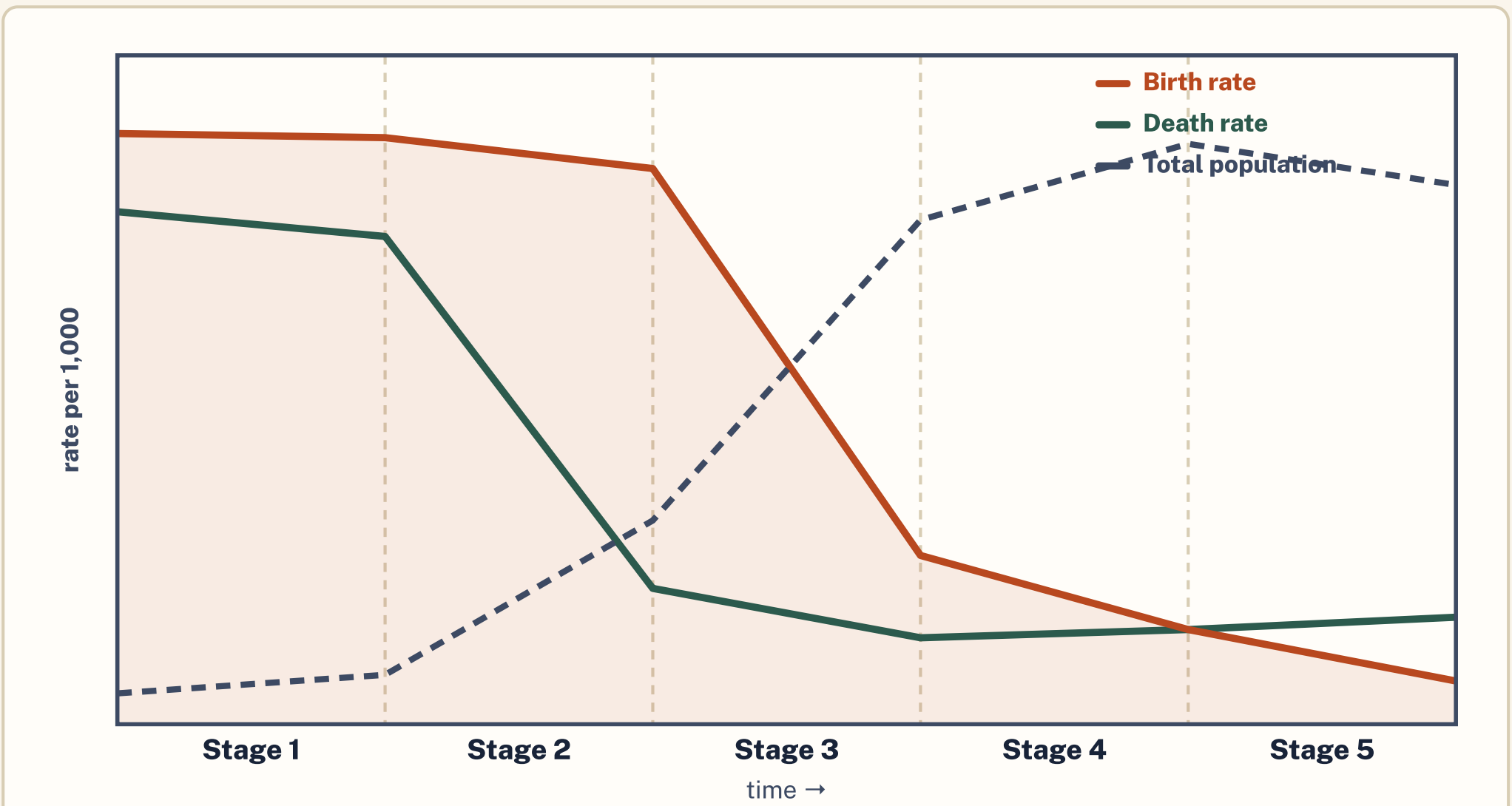
The Demographic Transition Model

Five stages. The gap between the two lines is the population change — that gap is the whole model.



Birth rate
Live births per 1,000 people per year.

Death rate
Deaths per 1,000 people per year.

Natural increase
Birth rate minus death rate. It says nothing about migration.

Life expectancy
The average number of years a person born now is expected to live.

1

High fluctuating

Birth rate high. Death rate high.

Population stays low and unsteady. Disease and poor food supply.

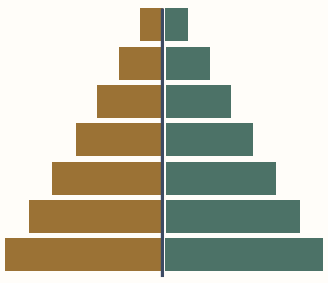
wide base, very short

2

Early expanding

Birth rate high. Death rate falls sharply.

Population grows fast. Clean water, better food, basic medicine.



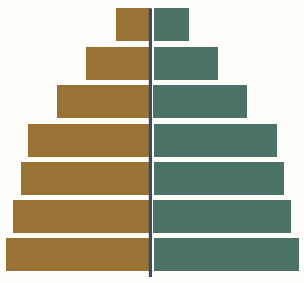
wide base, taller

3

Late expanding

Birth rate falls. Death rate low.

Growth slows. Contraception, women in work, children cost more.



base pulling in

4

Low fluctuating

Birth rate low. Death rate low.

Population high and steady. Most of Europe sits here.

column, not a pyramid

5

Decline

Birth rate below death rate.

Population falls and ages. Japan and parts of Europe.

narrower at the bottom

Standard subject content. The selection, the wording and every diagram on this sheet are ours — no map extract, no photograph and no diagram taken from anywhere else. The model describes what has happened in many countries; it is not a rule that every country must follow, and saying so is worth marks.

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Weathering, erosion, transport, deposition

The same four processes run rivers, coasts and glaciers. Learn them once.

Weathering — Breaking rock where it stands

Freeze–thaw
Water fills a crack, freezes, expands and prises the rock apart.

Chemical
Slightly acidic rainwater dissolves rock — limestone especially.

Biological
Roots widen cracks; animals burrow into weak rock.

Erosion — Wearing rock away and carrying it off

Hydraulic action
Water forces air into cracks; the pressure blows the rock apart.

Abrasion
Loose rock is thrown against the bed or the cliff and scrapes it.

Attrition
Rocks knock into each other and get smaller, rounder and smoother.

Solution
Rock is dissolved and carried away in the water.

Transportation — Moving the load downstream or along the coast

Traction
Boulders roll along the bed.

Saltation
Pebbles bounce along in a series of hops.

Suspension
Fine sediment is carried within the water itself.

Solution
Dissolved minerals travel invisibly.

Mass movement — Whole sections of slope moving at once

Rockfall
Fragments break off a cliff face and fall to the base.

Slumping
Saturated material rotates downwards along a curved surface.

Sliding
A block of material moves down the slope in one piece.

Deposition — Dropping the load when energy runs out

Where it happens
Inside a meander bend, at a river mouth, in the sheltered water behind a spit.

Why it happens
Less gradient, less volume, less speed — or the water meets something that slows it.

Standard subject content. The selection, the wording and every diagram on this sheet are ours — no map extract, no photograph and no diagram taken from anywhere else. Weathering breaks rock where it stands; erosion breaks it and carries it away. Using one word for the other is the most common mistake in the topic.

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The enquiry process

Six steps, in this order. Fieldwork questions follow the same order as the fieldwork did.

1

Ask a question

A geographical question with a place in it, narrow enough to answer.

> “Does beach material get rounder along the spit at ___?” — not “what is erosion?”

2

Plan the method

Where you sample, how often, and with what. Decide before you leave.

> Say why you chose those sites. A method with no reason behind it cannot be evaluated later.

3

Collect the data

Primary is what you measure yourself. Secondary is what somebody else already collected.

> Record the conditions too — tide, weather, time of day. They explain your anomalies.

4

Present it

The right graph for the data, not the prettiest one.

> Located bars on a map beat a bar chart on its own, because they show where as well as how much.

5

Analyse it

Describe the pattern, quote your own figures, then explain it.

> Name the anomaly and suggest why. An analysis with no anomaly in it usually means you stopped looking.

6

Conclude and evaluate

Answer the question you asked. Then say what would change if you did it again.

> Evaluate the method, not your mood. Sample size, timing, equipment, human error.

Every step has to connect to the one before it. A conclusion that does not answer the question you asked in step one has come loose from the enquiry.

This sequence is ours, written to match how a piece of fieldwork actually runs. The examples are ours too.