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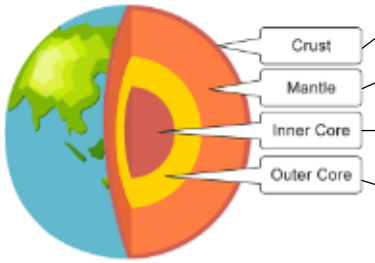
KS3 Knowledge Organiser - Tectonics

Knowledge Check 1 Content

Knowledge Check 2 Content

Composite Volcano	Tall, steep-sided volcano with thick lava flows
Constructive Margin	Where plates move apart
Continental Drift	The movement of The plates over millions of years
Convection Currents	Movement within the Earth's mantle due to heat from the core
Crust	The surface layer covering our planet
Destructive Margin	Where oceanic and continental plates move towards each other
Distribution	Where something is located
Lava	Magma which has erupted onto The Earth's surface
Magma	Hot, liquid rock stored underground.
Mantle	Layer of the Earth under the crust
Plate Margin	Where two or more plates meet
Ring of Fire	A line of volcanoes around the Pacific Ocean
Shield Volcano	A short, wide volcano with runny lava flows
Subduction	Where one plate sinks under another
Tectonic Plates	Huge pieces of the Earth's crust
Viscous	Thick/sticky consistency
Volcano	An opening in The Earth's crust through which lava, ash and gases escape

What are the layers of the Earth?



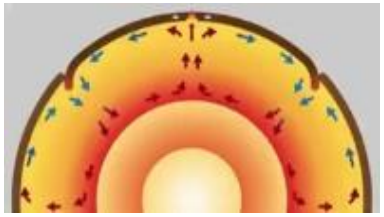
- Thinnest layer (5-70km thick); solid rock
- Thickest layer (2,900km thick); semi-molten rock; 2 layers
- Temperature of the sun (>5,700℃); solid; nickel & iron
- Temperature 4,000 -5,700℃); liquid; nickel & iron

What is Continental Drift?

Theory by Alfred Wegener that the continents move

What evidence is there?

Continents fitting together, similar plants, fossils and rocks across different continents



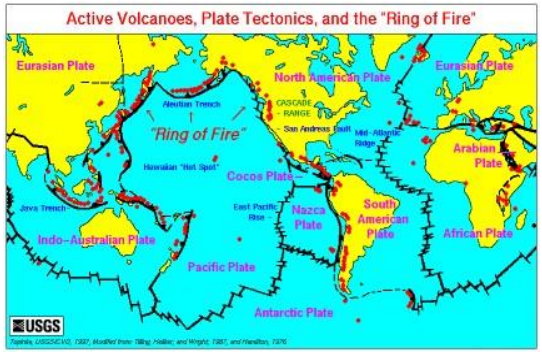
Why do the plates move?

Convection Currents

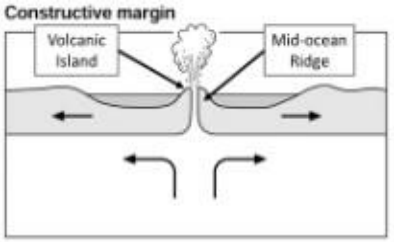
1. Heat from the core causes the mantle to rise to the surface
2. Rising magma **pushes** plates **apart**
3. Sinking magma **pulls** the crust down into the mantle (**subduction**)

How are volcanoes distributed?

- Mostly along plate margins
- In linear patterns
- 70% are around the 'Ring of Fire'
- Large clusters in Iceland, Japan and south-east Asia



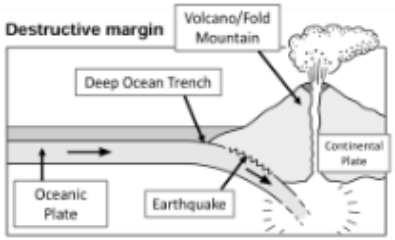
What are the characteristics of constructive margins and shield volcanoes?



1. Plates move **apart**
2. Magma rises to fill the gap
3. Lava cools to form new sea floor creating a ridge
4. Layers build to form a volcanic island

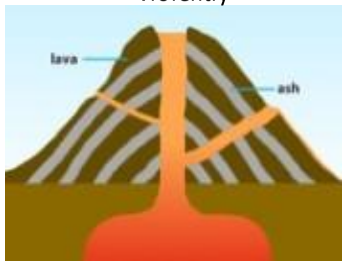
- Gently-sloping sides
- Formed by layers of lava
- Eruptions frequent & gentle
- Fluid lava
- E.g. Kilauea and Mauna Loa, Hawaii

What are the characteristics of destructive margins and composite volcanoes?



1. Move **together**
2. Denser oceanic plate **subducts**
3. Friction causes earthquakes
4. Oceanic plate melts creating viscous magma
5. Volcano erupts violently

- Steep-sided
- Formed by layers of ash and lava
- Eruptions are explosive
- Lava is viscous
- E.g. Mt. St. Helens, USA & Mt. Pinatubo, Indonesia



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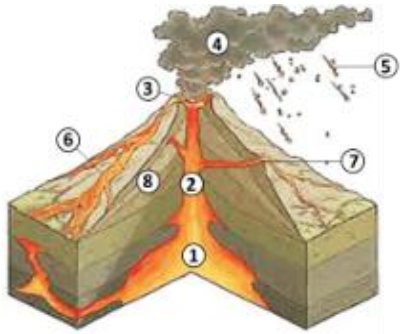
Knowledge Check 3 Content

Knowledge Check 4 Content

KS3 Knowledge Organiser - Volcanoes

Active Volcano	Has erupted recently
Ash Cloud	Microscopicbits of rock blown out of the top of a volcano
Crater	Circularopening at the top of the volcano
Dormant Volcano	Has not erupted recently, but may erupt again
Extinct Volcano	Won't erupt again
Fertile Land	Land that has lots of nutrients
Geothermal Energy	Using the Earth's heat to generate energy
Hazard Mapping	Highlighting areas of high risk during an eruption
Lahar	Mudflow of volcanic debris and water
Magma Chamber	Large underground pool of molten rock
Main Vent	Tube which magma travels to the surface
Mitigate	Make something that's bad, less severe, serious or painful
Monitoring	Watching volcanoes to detect warning signs of an eruption
Primary Impact	Something caused directly by the eruption
PyroclasticFlow	A cloud of hot gas and rock which flows down the mountainside
Risk	A situation involving danger
Secondary Impact	Knock-on impacts caused by the primary impact
Volcanic Explosivity Index (VEI)	Measures how explosive an eruption is

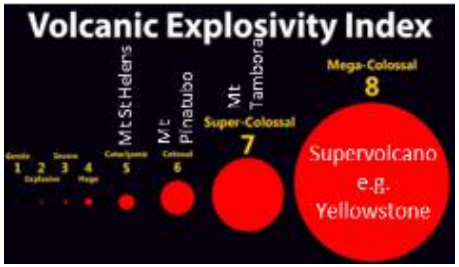
What is the structure of a volcano?



No.	Feature
1	Magma Chamber
2	Main Vent
3	Crater
4	Ash Cloud
5	Volcanic Bombs
6	Lava Flow
7	Secondary Vent
8	Layers of ash and lava

How are eruptions classified?

- Measures how explosive an eruption is on a scale of **0-8**
- Each level is **10 times** more explosive than the previous



What are the primary & secondary Impacts of an eruption?

	Primary Impact	Secondary Impact
Ash Cloud	Damage crops	Food shortages
	Shut down airports	Companies lose money
Pyroclastic Flow	Flatten forests	Damages animal habitats
	Bury villages	People forced to move away
Lahar	Destroys bridges	Help is delayed arriving
	Sweeps away houses	Homelessness

Eruption Example - Mt Pinatubo, Philippines (1991)

Info
- Composite volcano
- Destructive plate margin
- VEI 6

Primary Impacts
- Ash cloud blocked out the sun
- 1.2m lost homes
- 800km² of farmland lost

Secondary Impacts
- Lowered global temperatures by 0.5℃
- Diseases spread in aid camps
- Farmers lost jobs

Why Live Near Volcanoes?

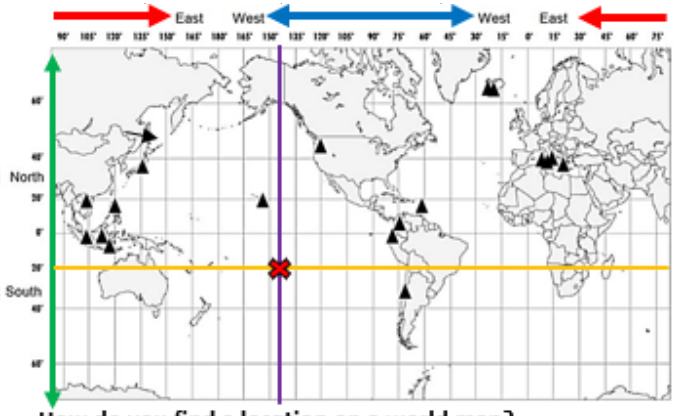
- Geothermal energy is clean (no CO_2) and cheap
- Fertile soils increase crop yields
- Exporting valuable minerals increases economy
- Tourism increases jobs in hotels, bars, restaurants etc.


Geothermal energy

Fertile land


Mining


Tourism



How do you find a location on a world map?.

Step 1. Find how far **north or south** the location is. Once located, draw a straight horizontal line across the map.

Step 2. Find how far **east or west** the location is. When the point is located, draw a straight line vertically down the map.

Step 3. where the lines intersect, that is the point you are looking for.

Example: Locate point **21s 143w.** The example above shows the lines drawn and where they intersect.

Knowledge Check 1 Content

Knowledge Check 2 Content

KS3 Knowledge Organiser - Rivers

Key Vocabulary:

Collision Boundary	When two continental plates move into each other.
Monsoon	A sudden change from a dry season to a wet season.
Plateau	A flat, high altitude area.
NEE	Newly Emerging Economy

What India's physical features?

Bodies of water	Indian Ocean, Bay of Bengal, Arabian Sea
Mountains and plateaus	Western and Eastern Ghats, Himalayas, Deccan Plateau
Rivers	Ganges, Brahmaputra
Deserts	Thar Desert

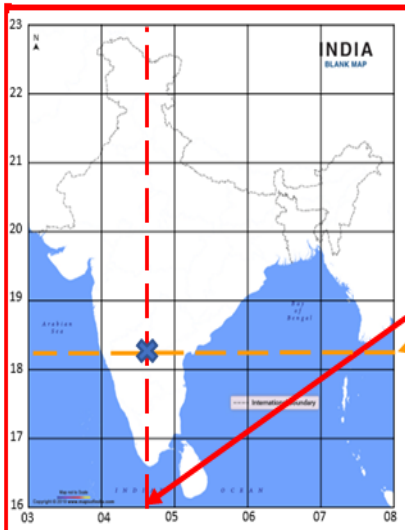
How developed is India?

India is a **NEE.**
Development indicators:
GNI per Capita: $7100
Birth Rate: 17 per 1000
Life Expectancy: 69
Adult Literacy 76%
Infant Mortality: 28

Where is India?

India is located in:

- The northern hemisphere
- South Asia
- To the south of China
- To the east of Pakistan
- On the Indian Ocean



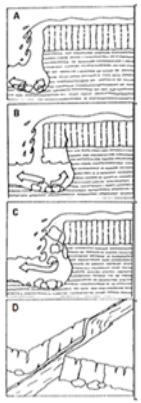
How do 6 figure grid references work e.g. 046183

Find the eastings first: 046183

Then the Northings 046183

The point you need to find is where the lines cross.

How does a waterfall form?



1. Falling water boulders loosen and wear away the softer rock.

2. The hard rock above is undercut as erosion of the soft rock continues.

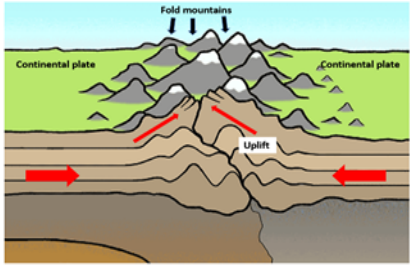
3. The hard rock collapses into the plunge pool.

4. Erosion continues and the waterfall leaving a gorge behind.

How did the Himalayas form?

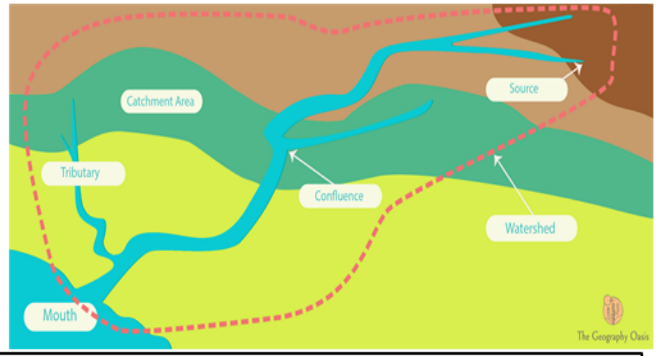
Collision Boundary

- **200Ma** - India was located off the coast of Australia.(70Ma)
- **70Ma** - India moved north towards Asia.



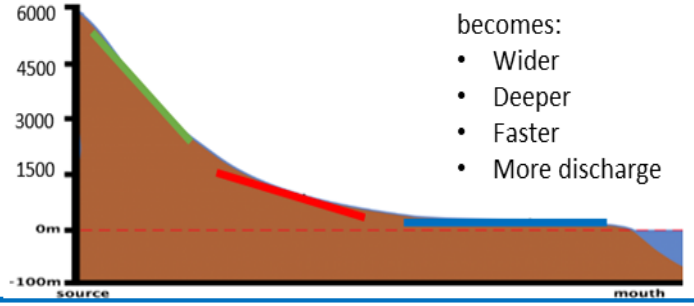
- **50Ma** - The Tethys sea between the continents closed.
- **40Ma** – the sea floor buckled upwards which created fold mountains.

Features of a drainage basin



Input- Water entering the system/area e.g. **Precipitation**
Output- Water leaving the system/area e.g. **Evaporation**

How does a river change from its source to mouth?



As a river flows from source to mouth it becomes:

- Wider
- Deeper
- Faster
- More discharge

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Knowledge Check 3 Content

Post knowledge checks

KS3 Knowledge Organiser - Rivers

Key Vocabulary:

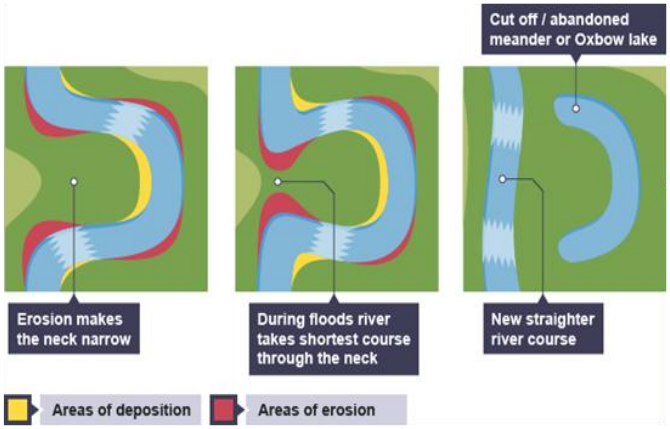
Abrasion	Material scrapes the bottom of the river channel.
Attrition	Sediment particles knock each other and break down.
Confluence	The point at which two rivers meet.
Deposition	When a river puts down what it is carrying.
Discharge	The amount of water flowing in a river.
Drainage Basin	The area from which a river gets its water.
Erosion	Wearing away of the land.
Gorge	Steep cliffs either side of a river valley.
Hydraulic Action	Water forces air into crack in rocks.
Landform	A natural feature of the land.
Meander	A bend in a river.
Mouth	The end of a river where it meets the sea.
Plunge Pool	The deep pool below a waterfall.
Sediment	Material carried by a river.
Source	The start of a river.
Tributary	A smaller river that joins the main channel.
Watershed	The boundary between two drainage basins.

Why do monsoons happen?

The monsoon occurs in summer (June-September) and is characterised by extremely heavy rain.

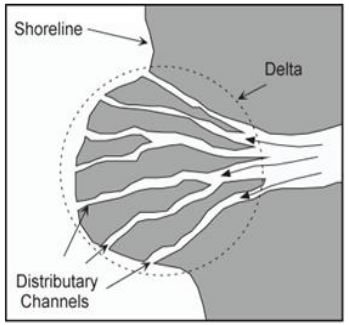
The sun heats up the land of India faster than the sea → Warm air above the land of India rises. → Wet air from over the ocean rushes into the vacuum.

Condensation caused by the Himalayas creates lots of rain. → The land cools down in October and reverses the Monsoon.



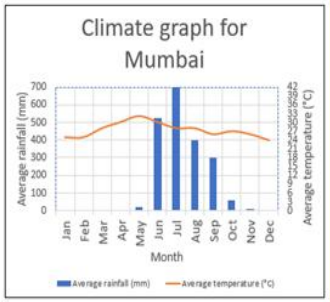
How do deltas form in the lower course?

- Deltas form when rivers approach their mouth.
- Water slows down as it flows into the ocean
- This causes deposition
- The deltaic lobe forms and sticks out to sea as sediment collects over time



What is a monsoon climate?

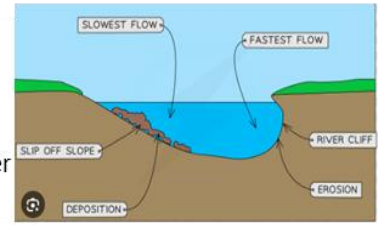
- Monsoons start in summer.
- They have extremely high rainfall and very high temperatures.
- In October the monsoon reverses.



How do meanders change over time into Ox-Bow lakes?

In a meander:

- **Outside bend** – fast water erodes the bank.
- **Inside bend** – slow water deposits sediment



What are the causes of flooding in India

Human
- Blocked drains
- Deforestation
- Squatter settlements

Physical
- Glacial melt
- Monsoon
- Tectonic activity

What are the impacts of flooding in India

Social:

Flood water is filthy → spreads diseases.

Mosquitos breed in flood water → malaria spreads

Slum houses are destroyed → leaving people homeless.

Economic:

No compensation for loss of property → leaving families unable to afford a house

Small slum industries are destroyed → leaving people jobless.

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KS3 Knowledge Organiser - Population

Knowledge Check 1 Content

Knowledge Check 2 Content

Key Vocabulary

Birth Rate: The number of people born per year per 1000 people
Death Rate: The number of people who die per 1000/year.
Densely Populated: lots of people living in an area
Demographics: The study of populations.
Migration: When someone moves from one location to another
Natural Increase: When the birth rate is higher than the death rate resulting in population growth.
Population distribution: how a population is spread over an area.
Population growth rate: The difference between the birth rate and death rate
Rural: Relating to the countryside
Sparsely Populated: few people living in an area

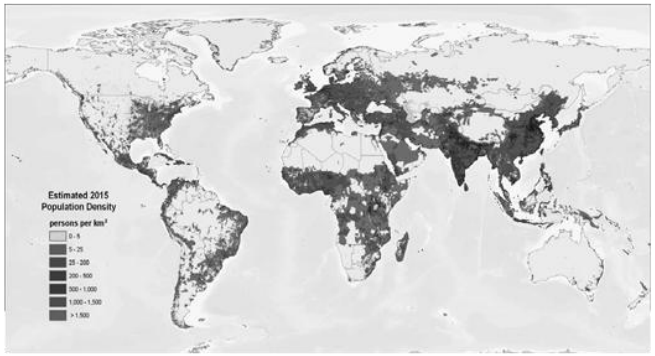
How do you calculate population growth?

BIRTH RATE = The number of babies born per 1000 people.

DEATH RATE = The number of people who die per 1000 people.

POPULATION GROWTH RATE = The difference between the birth rate and death rate (how quickly the population grows)

How is the population of the world distributed?



- Global population is unevenly distributed.
- Very high latitudes of the planet and Oceania are sparsely populated
- South and east Asia, Europe and western North America are densely populated.
- Asia is the most populous continent.
- India and China are the most populous countries.

Continent	% population
Asia	59.4
Africa	17.9
Europe	9.5
North America	7.6
South America	5.6
Oceania	0.6

What is needed for a densely populated area?

Access to water, flat land, favourable climate, resources needed to sustain a population, economic opportunities.

Why might an area be sparsely populated?

The land is mountainous, the climate is too hot or cold, extreme weather events are common, too isolated, lack of jobs.

What affects birth and death rates?

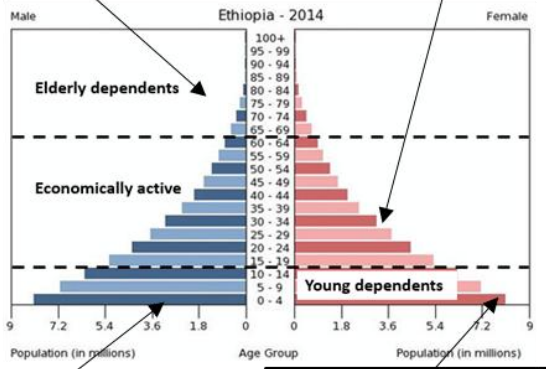
Increase Birth Rate	Decrease Birth Rate
Children work	Education
High infant mortality	Birth control
Early marriage	Expensive childcare

Increase Death Rate	Decrease Death Rate
War	Medicine
Food shortages	Clean Water
Disease	Old age pension

What are the different parts of a population pyramid?

Small number of elderly dependents = low life expectancy

Drop off between age groups = high death rate



Wide base = high birth rate

Drop off between first 2 age groups = high infant mortality

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KS3 Knowledge Organiser - Population

Knowledge Check 2 Content

Knowledge Check 3 Content

Key Vocabulary

Contraception: Use of artificial methods to prevent pregnancy.

Economically Active: People of working age (15-65) in a population

Elderly Dependents: People over the age of 65 in a population.

Megacity: A city with over 10 million people.

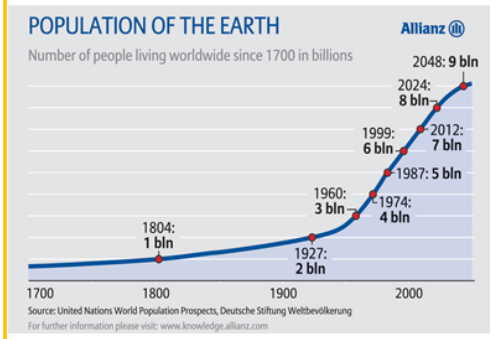
Sanitation: Access to clean water and sewage disposal.

Squatter Settlement: An area of poorly built illegal houses

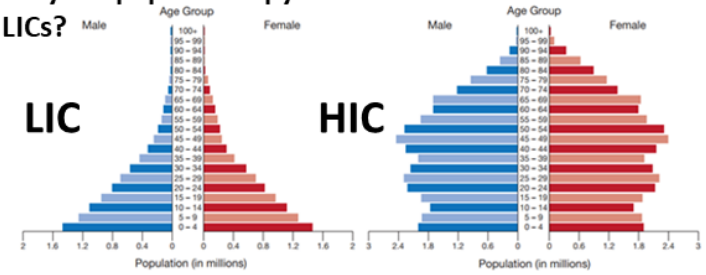
Sterilisation: Removing someone's ability to have children

Young dependents: People under the age of 15 in a population.

How has Earth's population grown over time?



Why are population pyramids different for HICs and LICs?



A wide base means a country has a high bith rate. Drop off between each age group shows a high death rate. A narrow top shows the life expectancy is low.	HICs tend to have a large proportion of economically active. The wide middle gets narrower as ages decrease showing a decreasing birth rate. The wider top shows a larger number of elderly dependents.

What are the opportunities and challenges of megacities?

Opportunities	Challenges
• Better paid jobs • Expendable income • Better social life • Better access to water, internet, electricity. • More access to education	• Air/water/noise pollution • Traffic • Slums • Loneliness • Lack of available housing • Crime

Why has global population increased so rapidly?

- Modern medicine – Many diseases can be cured and are vaccinated against e.g. measles.
- Better food production – higher yields of food mean fewer people die from hunger and food costs less.

What are the challenges of squatter settlements?

Water is dirty and there is little sanitation. → Leading to the spread of diseases like Cholera.

Houses are packed together and poorly built. → Fire spreads quickly through squatter settlemtents.

High levels of poverty → Living conditions are poor and people don't have access to services.

Where do squatter settlements grow?

- **Low value land**
- **Near rivers/waterways**
- **Near main roads**
- **Often on the outskirts of cities**

How did Kerala control its rapidly growing population?

Improve education	People are educated about the benefits of having small families.
Give every family the same size plot of land.	The land was big enough to grow enough food for 4 people.
Free contraception	Lowers birth rate.
Reduce infant mortality	Families need to have fewer children if they are more likely to survive.
Paid maternity leave for the first 2 children only.	Families are discouraged from having more than 2 children.

Did it work?

- Kerala now has an annual growth rate of just 1.2%.
- More girls in Kerala go to university than boys.
- Higher adult literacy (98%) and life expectancy (73) than the rest of India

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