

GRADE 9

ANSWERS TO KNOWLEDGE TESTS AND REVISION POINTS

STRAND 4: NATURAL AND HISTORIC BUILT ENVIRONMENTS

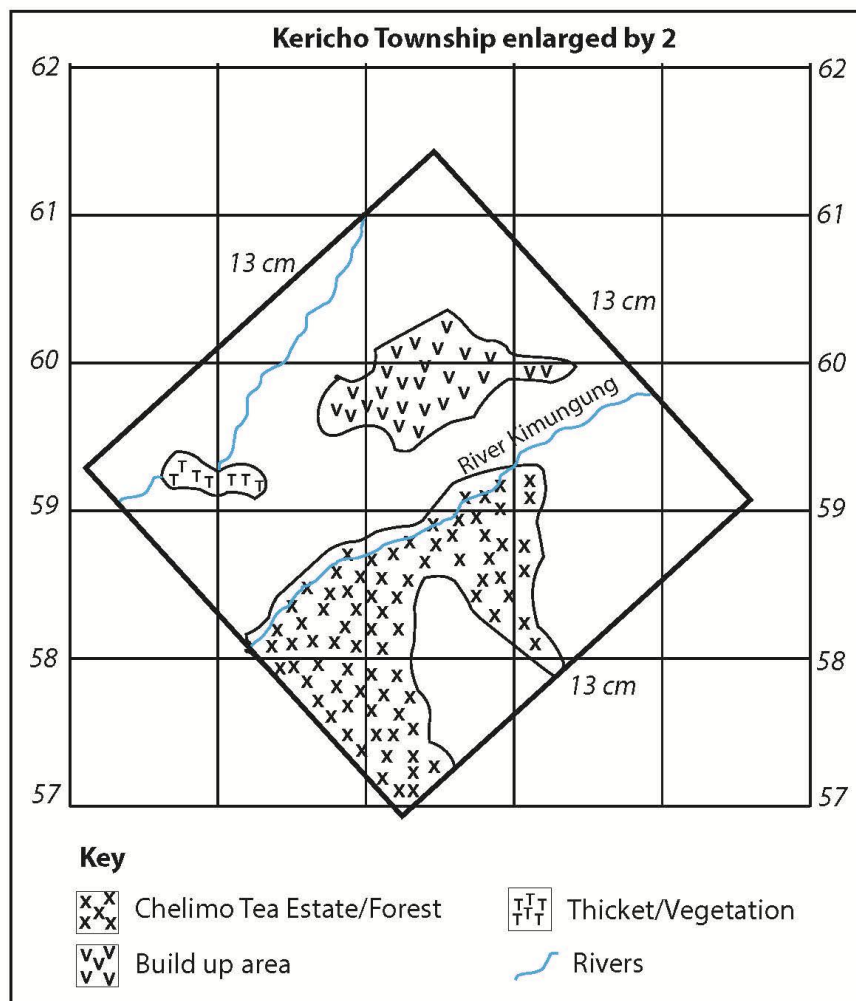
Sub strand 4.1: Topographical maps

Knowledge test

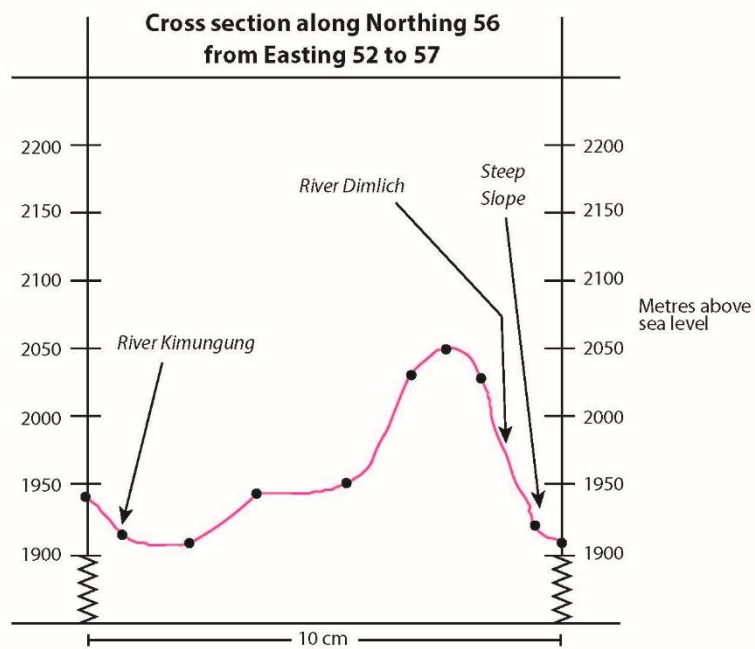
1. They occupy less space on the map. This leaves room for other features to be shown
2. Sh (shop), Ch (church), Sch(school), CtH (Court house) Tg (Telegraph) CHQ. (county headquarter)
3. Settlement
4. Tourism
5. a) Size of the enlarged frame = 4 cm by 12 cm.
b) Scale of the new map=1:100 000

Revision point

1.
Crop farming evidence is Chelimo Tea Estate.
Processing evidence is the factory
Evidence for social services: health is the hospital; education is the school and college; entertainment is the club and racetrack; provision of electricity is the power station.
2. The social services provided in the area are necessary because of the high population evidenced by the many labour lines. The population works in the tea estates. The social services include health, education in several schools and colleges, entertainment in the club and racetrack and provision of electricity in the power station which is transmitted through the power lines shown on the map.
- 3.



4.



5.– They help planners and engineers to select optimal routes for roads, railways, pipelines and dams while minimising land excavation costs

- They help adventurers and field researchers plan for navigation
- They help scientists identify flood-prone areas and explore other environmental hazards
- They help assess land suitability for agriculture, forestry, mining and urban expansion based on gradient and water accessibility
- They are used by military and security operations in mapping high ground and visibility lines
- They are used in teaching map skills to learners

Sub strand 4.2: Internal land forming processes

Knowledge test

1. Shear forces
2. Fold mountains
3. Side A will develop a normal fault while Side B will develop a reverse fault
4. a) Tensional force
b) The feature is a rift valley. The middle block forms the floor of the rift valley. The blocks on either side of the central block form the shoulders of the rift valley.
5.
a) Compressional force
b) The feature is a block mountain

Revision point

1.
a) A block of land that sinks due to faulting.
b) Throw is the depth of the slope between the upthrow and the downthrow.
c) A fault line is the crack or fissure that runs on the ground and is formed by tensional or compressional forces.
2. (a) Escarpment- This is the steep slope separating the downthrow and an upthrow.
(b) Block mountain -It is formed when tensional or compressional forces cause the formation of two parallel faults on the earth's surface. The large block of land between the faults is forced to rise above the ground to form the block mountain.
3. (a) Compression-This force pushes the middle block to a lower level
(b) Tension- This force pulls away the two land masses on either side of the central block, leaving the central block to sink.

4. Horizontal earth movements cause the crustal rocks to either stretch, shorten or shear while vertical earth movements cause either upwarping or downwarping.

5. a) Continental drift theory

b) Pangaea

c) Panthalassa.

d) Laurasia

e) Gondwanaland.

f) Tethys

6.

- Vertical faulting across a river forms a waterfall.

- Rivers may flow into the rift valley and collect in a depression to form a lake.

- Uplifting of land across a river may cause a river to reverse its direction of flow.

Sub strand 4.3: Multipurpose River projects in Africa

Knowledge test

1. – To generate hydroelectric power for industrial, commercial and domestic use across Kenya

- To supply water for irrigation in arid and semi-arid areas along the basin
- To regulate seasonal flooding on the river during the rainy seasons in downstream areas such as Garissa and Tana River counties
- To store water during wet seasons for use during dry spells
- To create secondary economic activities around the rich reservoirs.

2. - The River Tana Scheme, commonly known as the Seven Forks Scheme, consists of a cascade of five major operational dams along the river, not just one.

3. - The Sagana River forms the primary upper headwater tributary of the Tana River, originating from Mount Kenya and the Aberdares.

- Sagana Falls provided a natural drop height, making it one of the earliest sites where small-scale hydroelectric power generation was pioneered in Kenya
- Early successful energy generation at Sagana Falls proved that the upper Tana basin had the hydrological potential required to build larger multi-purpose dam projects downstream

4. The Aswan High Dam is the physical concrete structure built across the Nile River while Lake Nasser is the massive artificial reservoir or lake created behind the dam as a direct result of holding back the river's water. Lake Nasser acts as the storage vessel that allows the Aswan High Dam to maintain steady water levels for continuous power generation and year-round irrigation.

5. - To store seasonal floodwaters so Egypt could practice continuous year-round multi-cropping in the desert instead of relying on unpredictable annual flooding.
- To prevent catastrophic annual flooding of the Nile Delta.
- To store water in Lake Nasser that would be used during dry seasons.
- To provide hydroelectric energy used to drive Egypt's industrialisation and power national infrastructure.

Revision point

1. - The river has high water volume throughout the year
- The presence of a steep gradient and natural waterfalls provided suitable sites for the generation of hydroelectric power.
- Frequent floods along the lower River Tana basin created the need to construct the dams to control flooding and regulate the flow of water.

The government wanted to promote irrigation farming in the dry areas of eastern Kenya where crops often failed because of unreliable rainfall.

- Rapid industrial growth in towns such as Thika and Nairobi increased the demand for reliable and cheap electricity.
- The need to reduce overdependence on imported fuel encouraged Kenya to invest in hydro-electric power generation from the River Tana.
- The availability of financial and technical assistance from international organisations and foreign countries.

2. - Development of fishing activities.

- They promote tourism thus earning the country foreign exchange.
- Growth and expansion of industries providing employment opportunities to people.
- Water collected in the reservoirs is also used for irrigation.
- It controls seasonal flooding along the rivers.
- It stimulates the growth of towns and infrastructure development.

3. - Soil accumulating at the bottom of dams reduces water storage capacity and damages turbines. Humans contribute to this through deforestation, overgrazing and poor farming practices upstream

- Large land areas submerged by reservoirs force communities to relocate.
- Stagnant reservoir water creates breeding grounds for mosquitoes which cause malaria and snails which cause bilharzia.
- Erratic rainfall leads to fluctuating water levels, lowering power production.

4.

Challenges	Solutions
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Silt gets trapped behind the dam in Lake Nasser, forcing downstream farmers to use expensive chemical fertilisers.	Adopt sustainable organic soil management, crop rotation and controlled dredging to distribute nutrient-rich sediment.
Lake Nasser's location in a hot desert led to massive water evaporation losses.	Cover targeted channels with floating solar panels to shade water while simultaneously generating solar energy.
Coastal erosion in the Nile Delta	Build artificial sea walls and mangrove restoration barriers along the Mediterranean coast.
Continuous year-round irrigation without proper drainage causes salt to accumulate in the topsoil.	Construct modern subsurface drainage systems and practice drip irrigation to flush out excess salts.
Heavy silt deposition reduces the lifespan and storage capacity of the reservoir.	Implement soil conservation and afforestation along the upper Nile basin in upstream nations.

5. - Kenya should construct larger strategic reservoirs to store water reserves, protecting the country against recurring multi-season droughts.

- Kenya can expand large-scale irrigation downstream of power dams rather than using dams solely for electricity.
- Kenya must enforce strict upstream reforestation and soil conservation policies around Mount Kenya and the Aberdares.
- Kenya must install efficient drainage networks in irrigation schemes alongside dam projects to avoid soil salinisation over time.

Sub strand 4.4: Management and conservation of the environment

Knowledge test

1. – Farmers to embrace the use of organic and compost manure
- Farmers to practise crop rotation of cereal crops with legumes to naturally replenish nitrogen in the soil
- Farmers to plant grass strips along field borders and near water bodies to prevent soil erosion and chemical fertilisers from washing into local rivers.
2. – Art evokes emotions in people
- Performing arts and plays entertain while illustrating the real-life consequences of environmental degradation thus encouraging people to adopt green habits
- Exhibitions featuring sculpture made from plastic waste demonstrate that garbage has value thus encouraging proper waste disposal and recycling practices.
3. - Intercrop trees directly with crops so households can gain food and fuel while the trees protect topsoil and store carbon.
- Conserve local forests, hills and riverine areas to generate revenue through guided tours
- Establish strict community guidelines and rotation schedules for harvesting trees, giving ecosystems time to regenerate naturally
- Provide financial incentives or community development funds to local groups that actively protect key water catchments or plant indigenous forests.
4. – Introduce commercial agroforestry where people plant valuable fast-growing trees
- Train community members to use alternative methods of fuel
- Train farmers on alternative enterprises such as beekeeping and poultry farming
- Organise community barazas to show how deforestation reduces local rainfall, lowers crop yields and dries up water wells.

Revision point

1. – It causes overreliance on natural resources for survival
- Farmers may lack funds to afford conservation techniques such as terracing and drip irrigation kits, leading to soil exhaustion and erosion
- Vulnerable families prioritise immediate daily survival over long-term environmental protection.
2. a) Forest fires and poor waste disposal
 - b) Forest fires may end up destroying the natural habitats for wildlife as well as disrupting the ecosystem. Poor waste disposal makes the land look ugly and may attract pests, rodents and insects that cause diseases.
 - c) - Creating awareness among people on the need to take care of the environment
 - Promote widespread afforestation and reforestation

- Create policies that protect the environment from pollution
- Have designated places for disposing of waste in the community
- 3. - Declining soil fertility and erratic weather patterns reduce crop harvests thus causing food insecurity.
- It leads to poverty as many people who rely on agriculture for survival may lack alternatives.
- It leads to the loss of living creatures that depended on the soil, water and air being depleted.
- Loss of the tourism industry as loss of biodiversity and increased water pollution can be a turnoff for most tourists.
- It causes atmospheric changes as weather patterns become unpredictable.
- It leads to the depletion of natural resources.
- It can cause health problems, such as respiratory issues, to those living in an area with high air pollution.
- It leads to depletion of the ozone layer that protects us against direct sun rays.
- It can result in global warming
- 4. - Deploy trained forest rangers to monitor protected forest reserves
- Penalise illegal logging, charcoal burning or land encroachment
- Establish community-run indigenous tree nurseries
- Promote clean energy alternatives such as the use of biogas and fuel-efficient stoves to reduce overreliance on charcoal and wood
- Involve the local communities in co-managing forest reserves
- 5. – Economic strain as high costs are incurred when restoring degraded land
- Displacement of people due to climatic hazards like drought and floods
- Increased competition for resources which leads to conflicts
- Pollution of air, soil and water leads to respiratory illnesses, cancers and waterborne diseases
- 6. Water and plastic waste
- 7. - Using artworks on strategic surfaces to educate the community on the need to protect the environment.
- Using technology to monitor human activities that lead to environmental degradation.
- Using a drone to disperse seeds to rapidly degraded forest areas.
- Transforming agricultural wastes into biogas or materials that can be used for building.
- 8. Refer to answers on 7 above.

Sub strand 4.5: World heritage sites in Africa

Knowledge test

1. a) Ethiopia
b) Seychelles
c) Tanzania
d) Border between Zambia and Zimbabwe
2. – Robben Island served as a political prison during the anti-apartheid struggle, holding leaders like Nelson Mandela. It is a symbol of democracy. Victoria Falls attracts tourists, earning the country foreign exchange.
3. - Conduct regular ground and aerial surveillance to stop illegal hunting
- Implement controlled burning to prevent destructive wildfires
- Clear invasive plant species that choke natural grasslands, ensuring healthy grazing for migratory herds.
- Enforce strict off-road driving bans and speed limits to prevent soil erosion and disturbance to wildlife.
- Work with neighbouring village conservancies to reduce human-wildlife conflict and share tourism benefits.
4. – Enhance physical security of the heritage by installing fencing, surveillance systems and hiring trained guards
- Place clearly labelled recycling bins and ban the use of plastic waste
- Enforce heavy fines for littering
- Limit daily visitors and establish designated walking paths to reduce physical wear and tear
- Involve the local youth and elders in site management
5. – To earn foreign income through tourism
- Sites create employment opportunities for guides, artisans and the hospitality industry
- Sites preserve national history and oral traditions
- Natural sites protect endangered species from harm
- Global recognition fosters international cooperation, joint research and global pride

Revision point

1. – The government enacts laws protecting heritage sites, funds infrastructure and provides security
- The community protects the site daily, reports illegal activities and passes down the cultural heritage to coming generations
2. – Enforce strict environmental laws
- Buy eco-friendly infrastructure
- Establish surrounding buffer zones where heavy industrial development, mining, and uncontrolled construction are strictly banned.

- Use signage, digital apps and school field trips to educate visitors on site rules before they enter.
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- 3. Organising regular rubbish collection and tree-planting drives around the heritage site.
- Report any illegal activities
- Preserve indigenous knowledge systems through storytelling and sharing
- Making and selling eco-friendly crafts made from sustainable, local materials rather than exploiting natural site resources.
- 4. a) Rock-Hewn Churches of Lalibela in Ethiopia
 - b) They provide tangible evidence of architectural innovation, trade relationships and religious history in Africa.
- They are major international tourist destinations that bring revenue to local businesses and host communities.
 - b) They showcase unique engineering and artistic achievements that cannot be recreated today.
- 5. - They challenge non-African historical narratives by proving Africa had sophisticated, permanent civilisations independently.
- Robben Island represents the global triumph of human dignity, equality and democracy over institutional racism
- 6. Refer to the answers on (f)
- 7. - Providing security and regular cleaning of sites helps to protect fragile heritage environments from damage and pollution.
- Breeding plants and animals to prevent their extinction and maintain biodiversity.
- Reconstructing and repairing old structures to prevent them from collapsing.
- Implementing strict policies on littering and poaching to protect both the environment and wildlife.
- Controlling human settlement and construction activities to reduce environmental pressure.
- Managing water resources and promoting climate adaptation to reduce the effects of drought.
- 8. - Individual participation in clean-up exercises keeps sites visually appealing
- It fosters civic ownership

- It reduces maintenance costs as volunteer work reduces the financial burden on local authorities and site custodians

9. - Heritage sites act as physical evidence of historical events, protecting oral traditions from fading over time.

- Sites preserve ancient traditional practices
- Promoting cultural diversity
- Fostering national unity and identity

-10. - Ban non-biodegradable plastics and harmful chemicals nearby.

- Install solar-powered waste management systems.

- Install perimeter fencing, security lighting and CCTV coverage.

- Keep high-value artefacts in secure, climate-controlled digital displays.

- Conduct regular structural maintenance and chemical stabilisation.

Allow civil society organisations (CSOs), religious bodies, youth delegates and independent media free access to observe drafting committee sessions and debate proceedings.