EXAM READY GEOGRAPHY

Exam Ready Geography

GRADE 11

Study Guide, Worked Examples and Practice Tests for the Grade 11 Examination



- ✓ 8 units with clear key ideas, worked examples and “Watch out!” boxes
- ✓ 212 worked examples and 424+ practice questions at three levels
- ✓ 160 unit-quiz questions and 3 full mock exams (80 MCQ each)
- ✓ Diagnostic test · Key Facts Sheet · Top 20 Mistakes · teacher notes

Follows the units and order of the Ethiopian Grade 11 Geography textbook

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Exam Ready Geography

Grade 11 · Study Guide, Worked Examples and Practice Tests

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This is an independent study guide. It follows the units and order of the Ethiopian Grade 11 Geography student textbook, but it is not published or endorsed by the Ministry of Education. All explanations, examples and questions are original. Keep your textbook and your teacher's notes beside this book.

The answers were calculated and checked before printing, but no book is free of errors. If you find a mistake or disagree with an answer, please tell the author on Telegram (@Ermias_Wedaje) and it will be reviewed for the next edition.

How to Use This Book

Each unit follows the same pattern, so you always know where to look.

Key ideas
The rules and facts of the section, short and clear.

Worked examples
Step-by-step solutions. Cover the solution and try first.

⚠ Watch out!
The mistakes students make most often, and the right way.

Practice
Level 1 Basic · Level 2 Standard · Level 3 Challenge.

Unit quiz
20 multiple-choice questions in the style of the national examination.

For the Teacher
Timing, starters, misconceptions, activities and assessment.

For students

- Begin with the Diagnostic Test. It shows which units need the most work.
- Read the key ideas, then study each example with the solution covered.
- Do Level 1 and Level 2 practice for every section; try Level 3 when you are ready.
- Take each quiz in 30 minutes, mark it, and redo every question you got wrong.
- In the last weeks, learn the Key Facts Sheet and the Top 20 Mistakes page, and sit the three mock exams. Their answer keys show which unit each question comes from.

For teachers

- Each unit follows the textbook sections, so the book can sit beside your lessons.
- The “For the Teacher” page gives timing, starters, misconceptions and activities.
- The quizzes and mock exams can be used as class tests; every answer has a short reason.

For parents

- Ask your child to explain one worked example to you each day. Teaching is the best way to learn.
- Look at the quiz score after each unit, and celebrate progress, not only high marks.

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Diagnostic Test · Where Should I Start?

16 questions · 15 minutes. Take this test before you start the book. There are two questions on each unit. Your score only shows you where to spend your time.

1. The Big Bang is estimated to have occurred about
   A. 65 million years ago
   B. 4.5 billion years ago
   C. 10 to 20 billion years ago
   D. 514 million years ago

2. The supercontinent Rodinia existed about
   A. 4.5 billion years ago
   B. 750 million years ago
   C. 255 million years ago
   D. 65 million years ago

3. A classification based on observed temperature and rainfall data is
   A. empirical
   B. genetic
   C. mythical
   D. Greek

4. The Köppen climate system was first published in
   A. 1990
   B. 1961
   C. 1900
   D. 1800

5. Which is NOT a function of land named in the unit?
   A. Production
   B. Cultural asset
   C. Waste disposal
   D. Military function

6. A renewable resource is depleted when
   A. it rains
   B. it is protected
   C. it is planted
   D. use is greater than regeneration

7. Which is NOT a process of population change?
   A. Urbanisation
   B. Migration
   C. Fertility
   D. Mortality

8. The world population in 2019 was about
   A. 5 billion
   B. 7.7 billion
   C. 10.7 billion
   D. 2.7 billion

9. Economic growth is mainly an increase in
   A. rainfall
   B. life expectancy only
   C. literacy only
   D. GDP

10. HDI values lie between
    A. 1 and 10
    B. -1 and 1
    C. 0 and 1
    D. 0 and 100

11. Habitat fragmentation is
    A. increased rainfall
    B. a type of farming
    C. growth of a forest
    D. the breaking of a habitat into isolated patches

12. Agricultural intensification means
    A. more output per unit of input
    B. abandoning farms
    C. less output
    D. only grazing

13. A group sharing food and shelter, not necessarily related, is a
    A. family
    B. village
    C. clan
    D. household

Unit 1 · Formation of the Continents

By the end of this unit you will be able to:

- describe the Big Bang view of the origin of the Universe and the Earth
- describe how the supercontinents formed and broke apart
- distinguish relative and absolute dating and use half-lives
- use the geological timescale and describe the geological eras
- compare the sizes and locations of the continents and oceans
- describe how the positions of the continents and oceans have changed

Before you start — check yourself. (a) How old is the Earth? (b) Name the supercontinent that existed about 250 Ma. (c) How many continents and oceans are there today? (d) What is a half-life?
Answers: (a) about 4.5 billion years (b) Pangaea (c) 7 continents and 5 oceans (d) time for half of a parent isotope to decay

Key words: Big Bang · Pangaea · continental drift · geological timescale · half-life · relative age · absolute age · era · Precambrian · plate tectonics

How this unit is examined

Question types that appear again and again in Ethiopian model examinations:

- Origin of the Earth and the continents
- Relative and absolute age of rocks
- The geological timescale and eras
- Continents and oceans today
- Changing positions of continents and oceans

1.1 Origin of the Earth and the Continents

Key ideas

- **Big Bang theory** (the most widely supported): the Universe began **10–20 billion years ago** from an abrupt explosion of a very small, extremely dense and hot volume of matter. Stars, the Sun, planets, meteors, asteroids and comets formed by collision, cooling and gravity. The **Earth formed about 4.5 billion years ago** from gas and dust around the Sun.
- **The first rocks** solidified about **4600–3900 Ma** (Ma = million years ago). Land masses gathered into an early supercontinent, **Rodinia** (about **750 Ma**).
- **Later stages: Gondwana** formed around the South Pole by the late Cambrian (514 Ma); four major continents existed by 458 Ma (Gondwana, Baltica, Siberia, Laurasia); Laurasia collided with Baltica and closed the **Iapetus Sea** (425 Ma); **Pangaea** came into being about **255–210 Ma**.
- **Break-up:** Pangaea started to break apart about **210–180 Ma** (Triassic) and split into **Laurasia** (north) and **Gondwanaland** (south) about 160 Ma. **India** separated from Gondwana (about 140 Ma) and collided with Eurasia, forming the **Himalayas**. **Australia** separated from Antarctica about 100 Ma. The continents reached their present positions in the Quaternary.
- **Continental drift** is the moving apart of continents, started by **sea-floor spreading at mid-ocean ridges**. It makes the **Atlantic wider**, the **Pacific narrower**, the Mediterranean narrower and the Himalayas higher.

Example 1.1 — Order

Put in order: Pangaea, Rodinia, Gondwana (late Cambrian), India–Eurasia collision.

Solution. Rodinia (750 Ma) → Gondwana (514 Ma) → Pangaea (255–210 Ma) → India–Eurasia collision (after separation about 140 Ma).

Example 1.2 — Effects of drift

State two effects of continental drift on the oceans.

Solution. The **Atlantic Ocean becomes wider** and the **Pacific Ocean becomes narrower**.

Example 1.3 — Exam Booster · Supercontinents

Name the two giant landmasses into which Pangaea divided.

Solution. Laurasia (north) and **Gondwanaland** (south).

Example 1.4 — Exam Booster · Himalayas

Explain how the Himalayas were formed.

Solution. The Indian landmass moved north after leaving Gondwana and **collided with Eurasia**, folding the crust upward.

⚠ Watch out!

× Wrong	✓ Right
Pangaea formed after the Pleistocene.	Pangaea formed about 255–210 Ma and broke up from about 210–180 Ma.
The Earth is 4.5 million years old.	The Earth is about 4.5 billion years old.
Continents have never moved.	They drift because of plate movement.

Practice 1.1

Level 1 — Basic

1. Name the most widely supported theory of the Universe's origin.
2. What does Pangaea mean?
3. Name the two supercontinents after Pangaea split.

Level 2 — Standard

4. When did the Earth form?
5. Which landmass collided with Eurasia to form the Himalayas?
6. What is continental drift?

Level 3 — Challenge

7. Describe the break-up of Pangaea.
8. Explain the effect of drift on the Atlantic and Pacific.

1.2 Relative and Absolute Age of Rocks

Key ideas

- **Relative age** puts events in **order** (older or younger) without giving a date; it is mainly applied to **sedimentary rocks**. **Three principles: original horizontality** (sediments are laid horizontally), **superposition** (in an undisturbed sequence the **upper layer is younger**) and **cross-cutting relationships** (a rock that cuts another is **younger** than the rock it cuts).
- **Absolute age** is the **numerical age** of rocks, found from the **radioactive decay of isotopes**: unstable **parent** atoms change into stable **daughter** atoms (e.g. $^{40}K \rightarrow {}^{40}Ar$; $^{14}C \rightarrow {}^{14}N$; $^{238}U \rightarrow {}^{206}Pb$).
- **Half-life** = time for **half** of the parent atoms to change into daughter atoms. After 1 half-life 50% parent remains, after 2 half-lives 25%, after 3 half-lives 12.5%. **Age = number of half-lives × half-life.**
- **Half-lives:** ^{238}U 4.5 billion years; ^{87}Rb 48.8 billion; ^{40}K 1.25 billion; ^{235}U 704 million; **^{14}C 5 730 years** (used for young remains).
- **Fossils** (index fossils such as trilobites, ammonites) are also used to date sedimentary rocks.

Unit 2 · Climate Classification and Climate Regions of Our World

By the end of this unit you will be able to:

- list the criteria used to classify climates
- classify a climate using the Köppen system and its formulas
- describe the world climate regions
- explain the factors that influence world climate regions
- describe the traditional climate zones of Ethiopia

Before you start — check yourself. (a) Name the letter for the tropical climate in Köppen. (b) What is the coldest-month temperature limit of the tropical climate? (c) Name the five traditional climate zones of Ethiopia. (d) Convert 64.4 °F to °C.
Answers: (a) A (b) all months above 18 °C (c) Bereha, Kolla, Woina Dega, Dega, Wurch (d) 18 °C

Key words: climate classification · Köppen · empirical · genetic · tropical · steppe · continentality · insolation · Woina Dega · Wurch

How this unit is examined

Question types that appear again and again in Ethiopian model examinations:

- Criteria for climate classification
- Köppen's major climate types
- Köppen subdivisions and formulas
- World climate regions
- Factors influencing world climate regions
- Traditional climate zones of Ethiopia

Unit 3 · Natural Resources and Conflicts over Resources

By the end of this unit you will be able to:

- explain the importance of land as a natural resource and its functions
- classify natural resources and identify those under human pressure
- describe transboundary rivers and regional cooperation over them
- compare the water potential and use of Ethiopia, Sudan and Egypt
- explain the causes, consequences and resolution of resource conflicts

Before you start — check yourself. (a) Name the four functions of land given in the unit. (b) Is a forest renewable or non-renewable? (c) How many riparian countries share the Nile? (d) Name one method of resolving a resource conflict peacefully.
Answers: (a) production, waste disposal, economic asset, cultural asset (b) renewable (c) 11 (d) negotiation, arbitration or dialogue

Key words: land · renewable · non-renewable · common-pool resource · transboundary river · riparian · Nile Basin Initiative · resource conflict · arbitration · negotiation

How this unit is examined

Question types that appear again and again in Ethiopian model examinations:

- Land as a resource and its management
- Classification of resources
- Soil, water and forest under pressure
- Transboundary rivers
- Regional cooperation over shared rivers
- Water in Ethiopia, Sudan and Egypt
- Conflicts over resources

Unit 5 · Geography and Economic Development

By the end of this unit you will be able to:

- distinguish economic growth from economic development and explain HDI
- contrast geographic determinism and possibilism
- explain the location theories of von Thünen, Weber and Christaller
- explain how climate extremes lead to poverty traps
- explain the disadvantages of landlocked countries and the state of intra-African trade

Before you start — check yourself. (a) What does HDI stand for? (b) State the main difference between growth and development. (c) Name the German theorist of agricultural land use. (d) Is Ethiopia landlocked? *Answers: (a) Human Development Index (b) growth is the rise in GDP; development also improves well-being (health, education, living standard) (c) Johann Heinrich von Thünen (d) yes*

Key words: economic growth · economic development · HDI · geographic determinism · possibilism · locational rent · material index · central place · poverty trap · landlocked

How this unit is examined

Question types that appear again and again in Ethiopian model examinations:

- Growth, development and the geographic debate
- Von Thünen's agricultural land-use model
- Weber's least-cost industrial location
- Christaller's central place theory
- Climate extremes and poverty
- Landlocked countries
- Intra-African trade

Unit 7 · Geographic Issues and Concerns

By the end of this unit you will be able to:

- explain how family size, income and education are linked
- compare Malthusian and anti-Malthusian views of population
- calculate unemployment rate and economic dependency ratio
- explain land degradation, desertification, drought and famine
- explain the causes and effects of deforestation and the digital divide

Before you start — check yourself. (a) Name the scholar who said population grows geometrically and food arithmetically. (b) Define desertification. (c) Give one proximate cause of deforestation. (d) What does ICT stand for?
Answers: (a) Thomas Malthus (b) land degradation in dry, arid, semi-arid and dry sub-humid areas (c) clearing land for farms, fuel-wood, logging (any one) (d) information and communication technology

Key words: household · family · Malthus · Boserup · unemployment · underemployment · desertification · drought · famine · digital divide

How this unit is examined

Question types that appear again and again in Ethiopian model examinations:

- Family size, education and income
- Population and economic growth
- Unemployment and underemployment
- Land degradation and desertification
- Drought and famine
- Deforestation
- The digital divide

Mock Examination 1

80 multiple-choice questions · 90 minutes · one mark each. A calculator is allowed for the calculation questions. Circle one answer. Mark with the answer key at the back and use the unit number to see where to revise.

1. The Big Bang is estimated to have occurred about
   A. 65 million years ago
   B. 4.5 billion years ago
   C. 10 to 20 billion years ago
   D. 514 million years ago

2. Earth formed about
   A. 10 billion years ago
   B. 250 million years ago
   C. 4.5 billion years ago
   D. 514 million years ago

3. The supercontinent that existed about 255 to 210 million years ago was
   A. Rodinia
   B. Laurasia
   C. Gondwana
   D. Pangaea

4. The supercontinent Rodinia existed about
   A. 4.5 billion years ago
   B. 750 million years ago
   C. 255 million years ago
   D. 65 million years ago

5. Which southern landmass formed after Pangaea broke apart?
   A. Eurasia
   B. Gondwana
   C. Rodinia
   D. Panthalassa

6. The single huge ocean around Pangaea was
   A. Arctic
   B. Tethys only
   C. Panthalassa
   D. Atlantic

7. The Himalayas formed when the Indian plate
   A. collided with Eurasia
   B. split Africa
   C. moved away from Eurasia
   D. sank into the ocean

8. Continental drift was proposed by
   A. Charles Darwin
   B. Walter Christaller
   C. Alfred Wegener
   D. Isaac Newton

9. Relative age of rocks is decided by
   A. their colour only
   B. their taste
   C. their price
   D. their order in layers

10. In undisturbed layers the oldest rock is usually at the
    A. top
    B. bottom
    C. edge only
    D. middle

11. A classification based on observed temperature and rainfall data is
    A. empirical
    B. genetic
    C. mythical
    D. Greek

12. A classification based on the causes of climate such as air masses is
    A. Trewartha
    B. genetic
    C. empirical
    D. Köppen

13. The ancient Greek zones were
    A. Humid, Dry and Cold
    B. Tropical, Dry and Polar
    C. A, B and C
    D. Torrid, Temperate and Frigid

14. The Köppen climate system was first published in
    A. 1990
    B. 1961
    C. 1900
    D. 1800