Grade Descriptions for Cambridge International AS Level Environmental Management 8291

What are grade descriptions?

Grade descriptions describe the level of performance typically demonstrated by candidates achieving the different grades awarded for a qualification. For Cambridge International AS Levels, they describe performance at three levels – grades 'E', 'C' and 'A'.

Grade descriptions sit alongside other key documents that illustrate examination standards, including:

- the syllabus, which presents what students should be taught over a course of study and explains how this is assessed
- the specimen assessment materials, which exemplify the structure of the assessment and the kinds of tasks that candidates complete
- grade thresholds, which show the total mark required to achieve a grade.

Grade descriptions are produced with a wide range of audiences in mind. For teachers, they support lesson planning and curriculum development, while students may gain useful insights into what is required to achieve a high grade and what candidate performance at lower grades typically looks like. For university admissions staff and employers, and those less familiar with Cambridge, they paint a picture of typical performance at different grades.

Cambridge publishes grade descriptions for a qualification once examinations have taken place for the first time, and we review them when a qualification is substantially revised. They are developed by highly experienced examiners who understand performance standards in the subject area and have studied samples of candidate work.

How do I use this resource?

Grade descriptions are presented as a grid with content areas at the start of each row and the different grades at the top of each column.

The content areas group together various aspects of the syllabus – they reflect topics, assessment objectives, key concepts, syllabus aims and components. The way they are organised is specific to each subject.

For each content area, there is a descriptor for each grade. Reading across the row from left to right, the descriptors represent increasing levels of performance, with each grade descriptor building on, and including, the last.

Each column represents overall performance at a particular grade. Reading down the column from top to bottom, the descriptors capture the range of knowledge, understanding and skills that a candidate comfortably achieving the grade is likely to demonstrate.

Cambridge produces grade descriptions to support teaching and learning and the interpretation of candidate scores and grades. We do not use them to set grade thresholds. As such, they cannot be used to challenge the grade awarded to any individual candidate.

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Grade descriptions

Area of knowledge, understanding and skills	Typical performance at grade E	Typical performance at grade C	Typical performance at grade A
Managing human population	Students describe changes to the size of human populations. This could also include reasons for these changes. They describe population density and distribution from data. They list impacts of an ageing population and strategies for managing a changing population.	Students explain the factors that influence population density and distribution. They calculate population density from data. They describe impacts of an ageing population and strategies for managing a changing population. This could include an evaluation of some of these strategies and recall of some examples.	Students explain changes in population size and composition. They calculate dependency ratios and suggest reasons for differences between population structures in HICs and LICs. They relate the impacts of an ageing population on different countries given data. They evaluate strategies for managing a changing population using specific relevant examples of these strategies in their evaluations.
Managing ecosystems and biodiversity	Students recall terminology for describing ecosystems. This could include an understanding of biodiversity and trophic levels. They recognise desert, forest, grassland and tundra biomes. They distinguish between ecological pyramids based on numbers, biomass and energy, They list benefits of conserving biodiversity and general impacts of human activity on ecosystems. They list strategies for managing	Students define terms for describing ecosystems. This could include native species and invasive species. They describe energy transfers between trophic levels. They list the stages in succession. They draw ecological pyramids based on numbers, biomass and energy. They describe strategies for conserving biodiversity and managing impacts of human activity on ecosystems. They link strategies to tropical rainforests and Antarctica. This could	Students define ecosystem productivity and net and gross primary productivity. They discuss the efficiency of energy transfers between trophic levels. They describe characteristics of biomes and stages in succession. They interpret ecological pyramids based on numbers, biomass and energy. They evaluate strategies for managing the conservation of biodiversity and the impacts of human activity on ecosystems using specific

Area of knowledge, understanding and skills	Typical performance at grade E	Typical performance at grade C	Typical performance at grade A
	these impacts. This could include recall of the Antarctic Treaty. They use quadrat data to investigate biodiversity and estimate abundance.	also include an evaluation of some of these strategies. They calculate population size of species using the Lincoln index and estimate biodiversity using the Simpson's index. They use scales to estimate abundance. This may include use of the ACFOR scale.	relevant examples of these strategies in their evaluations. They interpret data from the Lincoln index and Simpson's index.
Managing resources and water supplies	Students define the terms food security, water security and energy security. They classify energy resources as renewable and non-renewable. They recall impacts of resource insecurity. They list strategies for managing resource insecurity. They recall methods of waste management. This may include impacts of waste disposal.	Students describe reasons for resource insecurity. They describe impacts of future energy insecurity on a HIC or a LIC. They describe strategies for managing resource insecurity. This could also include an evaluation of some of these strategies and recall of some examples. They may be able to give impacts on specific regions affected by water insecurity. They describe strategies of waste management and their impacts. This could also include an evaluation of some of these strategies and recall of some examples.	Students explain the reasons for resource insecurity in specific examples using given data. They compare and contrast future energy insecurity on a HIC and LIC. They evaluate strategies for managing resource insecurity using specific relevant examples of these strategies and examples of regions using these strategies in their evaluations. They evaluate strategies of waste management. They use specific relevant examples of these strategies in their evaluations.
Managing the atmosphere and climate change	Students recall types of acid deposition. They recall impacts of acid deposition and photochemical smog.	Students describe the formation of acid deposition. They relate impacts of acid deposition and photochemical smog to given examples.	Students define acid deposition and photochemical smog. They clearly differentiate between climate change and ozone depletion.

Area of knowledge, understanding and skills	Typical performance at grade E	Typical performance at grade C	Typical performance at grade A
	They list strategies for managing air pollution. They state that ozone depletion occurs. This may include an understanding that depletion is greatest over Antarctica. They list greenhouse gas examples. They recall that global warming increases the Earth's temperature. They list impacts of climate change. They list strategies for managing climate change. This could include geo-engineering strategies.	They describe strategies for managing air pollution. They outline the stages in the ozone destruction hypothesis of Rowland-Molina. They describe the impacts of ozone depletion. They recall sources of greenhouse gases and recognise that greenhouse gases lead to global warming. They describe difficulties in monitoring and accurately predicting climate change. They describe the impacts of climate change. They describe strategies for managing climate change. This could also include an evaluation of some of these strategies.	They relate strategies for managing air pollution to acid deposition and photochemical smog. They evaluate strategies for managing ozone depletion using specific relevant examples of these strategies in their evaluations. They explain how the enhanced greenhouse effect occurs and how this is different from the natural greenhouse effect. They evaluate strategies for managing climate change using specific relevant examples of these strategies and examples of regions using these strategies in their evaluations.
Investigation skills	Students understand that the relationship between two factors can be predicted and tested by practical investigations. They understand the term hypothesis. They give one or two of the steps involved when describing how to set up an investigation. They list one or two limitations in investigations.	Students formulate hypotheses based on observations or data in familiar contexts. They give the majority of the steps needed in an investigation. They can usually identify the dependent and independent variables. Investigations may include a reference to repeats. They describe limitations in investigations and data.	Students formulate hypotheses based on observations or data in unfamiliar contexts. They describe stages in an investigation in a logical order. They clearly describe how to take measurements. They include reasons for repeating measurements. They evaluate limitations in investigations and data and suggest improvements.

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Data collection	Students list data collection techniques for estimating the population of species. This may include quadrats, pitfall traps, sweep nets, beating trays, kick sampling, light traps and capture-mark-recapture. They list data collection methods that use technology. This may include geospatial systems and satellites, radio tracking, computer modelling and crowd sourcing. They understand that water turbidity can be measured. They use questionnaires and interviews to gather data. They distinguish between random and systematic sampling strategies.	Students describe data collection techniques for estimating the population of species and measuring water turbidity. This may include general benefits and limitations of these techniques. They interpret data from questionnaires and interviews. They describe how to carry out random and systematic sampling strategies. They use the term bias when describing sampling strategies.	Students select suitable data collection techniques for estimating the population of species and measuring water turbidity in unfamiliar contexts. They outline issues associated with big data. They use the terms precision and reliability when describing sampling strategies.
Information handling and analysis, and presentation of data	Students present data in a graphical format such as bar charts and line graphs. They construct tables with headings. They perform straightforward calculations. This may include determining a range, calculating a mean and a percentage. They identify simple patterns and trends in overall data with straightforward graphical and tabular data. They can identify outliers in data.	Students use sensible linear scales for graphs. These graphs include labelled axes which may include units. They may plot a pie chart and complete a key. Table headings include units. They complete calculations such as calculating a percentage change. They round numbers. They identify detailed patterns and trends in data provided. This could include identifying a negative correlation. They suggest valid conclusions from data. They can identify anomalous results.	Students plot pie charts in sector order. They complete complex calculations using data from graphs, charts and tables. They determine ratios. They understand the difference between significant figures and decimal places. They identify patterns and trends from a range of different types and complexities of data. They explain reasons for patterns and trends in data and make well-considered conclusions from data. They can discuss reasons for anomalous data.

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Making judgements and reaching conclusions	Students give a few general points to questions that assess their ability to make a judgement on environmental management issues. Some of this knowledge may relate to the context provided. They give descriptive responses and tend to repeat data or information provided without including analysis. They make limited or no conclusions or evaluations. Some of these may be relevant to the data or information provided. They use irrelevant examples or provide no examples to support arguments.	Students give descriptions or explanations to questions that assess their ability to make a judgement on environmental management issues. They make partially supported judgements using qualitative or quantitative information. They make relevant conclusions. Evaluations tend to be one-sided. They use examples to support parts of their arguments.	Students give detailed responses to questions that assess their ability to make a judgement on environmental management issues. They make reasoned judgements based on qualitative or quantitative information provided in unfamiliar contexts. They give balanced conclusions that are based on qualitative and quantitative information. Reasoned evaluations include an appreciation of benefits and limitations and give a balanced argument. They use relevant examples to fully support their arguments.