The Literacy and Numeracy Test for Initial Teacher Education Students: Skills and Content Guide

Introduction to this guide

This guide is a summary of the information contained in the Assessment Framework of the Literacy and Numeracy Test for Initial Teacher Education Students (hereafter referred to as 'the Test'). It outlines the typical skills students are required to demonstrate and the content of the Test.

Further detailed information about the skills and content in the Test can be found in the Assessment Framework and the Described proficiency scales. Example items are available in the Practice materials.

Assessment purpose

The Test aims to assess aspects of the literacy and numeracy proficiency of students in initial teacher education programs in Australia, to support the requirement that graduates of initial teacher education programs demonstrate literacy and numeracy skills as per Standard 3.5 of the *Accreditation of Initial Teacher Education Programs in Australia: Standards and Procedures*. This outcome is associated with an expectation that the personal literacy and numeracy skills of students graduating from initial teacher education courses be in the top 30% of the Australian population.

Definitions of personal literacy and numeracy used in the Test

Personal literacy, for the purpose of the Test, is defined as:

> *understanding, evaluating, using and shaping written texts to participate in an education community, to achieve one's goals, and to develop one's knowledge and potential as a teacher.*

Personal numeracy, for the purpose of the Test, is defined as:

> *interpreting and communicating important non-technical mathematical information, and using such information to solve relevant real-world problems to participate in an education community, to achieve one's goals, and to develop one's knowledge and potential as a teacher.*

'Personal' is used to mark a distinction from pedagogically-focused literacy and numeracy. The Test is designed to cover the core skills that all teachers need rather than the subject knowledge required for teaching.

Relationship to the Australian Core Skills Framework

The pre-eminent description of adult literacy and numeracy in Australia is the Australian Core Skills Framework (ACSF) (Commonwealth of Australia, 2012). The Australian Government released the ACSF in 2008 as a multi-purpose framework that is used to support teaching and learning, as well as benchmarking adult learners against levels. Because of its status and visibility in Australian adult education, the content of the Test is referenced against the ACSF.

Benchmark test

The Test is designed to ascertain whether candidates have achieved the required standard. The standard was determined both qualitatively, by expert judgement, and quantitatively, using psychometric equating procedures against the achievement of the Australian adult population in the

Programme for the International Assessment of Adult Competencies (PIAAC). The standard is set so that it is equivalent to the achievement of an Australian adult at or above the 70th percentile (or in other words, achievement in the top 30% of Australia adults). Accordingly, the greatest proportion of test questions are located around the test standard, with 80% of the questions targeting levels 3 and 4 of the ACSF, and the remaining 20% targeting levels 2 and 5. Test questions above the standard are included to discriminate whether candidates are "At or above the test standard" (Band 2) or "Clearly above the test standard" (Band 3). The Described proficiency scales describe each Band and give example items. Test questions below the standard are included to describe what candidates below the standard can do.

Skills set in context

The Test assesses personal literacy and numeracy skills in contemporary Australian contexts. For this reason, the Test assesses the ability of candidates to *interpret* and *apply* their literacy and numeracy skills. With each refreshment of the test questions, new and up-to-date passages, scenarios and data representations are incorporated as contexts. These texts are reviewed by a national expert group to ensure they are fair, accessible and appropriate. There are three context categories as shown in Table 1.

Table 1: Target proportions of literacy and numeracy items in each context

Context	Literacy proportion of test	Numeracy proportion of test
Personal and community	30%	50%
Schools and teaching	40%	35%
Further education and professional learning	30%	15%

The *personal and community* context is concerned with everyday, domestic and local scenarios that are related to education, childhood and adolescence. For literacy, the texts that fit this context are written for a broad, general audience, but focus on content likely to be of interest to teachers, such as that relating to children and youth. Narrative texts, for example, might be biographical or fictional accounts of education and growing up. Numeracy contexts in this category are situations where it is required to interpret mathematical information and representations written for a broad, general audience but which are relevant to education. They include situations that teachers are likely to come across as part of their everyday life that require the application of important mathematical skills to solve relevant real-world problems.

The *schools and teaching* context is concerned with the day-to-day professional working life of a teacher in a school. This context is focused on the individual school and concerns general teaching work rather than specialist subject skills. The literacy texts that fit this context are written for or used by teachers, and cover any general texts that teachers might reasonably be expected to read or use as part of their everyday work, whether in the classroom, as part of the staff team or as a member of the school community. Contexts for numeracy in this category are any general, school-based situations where teachers might reasonably need to interpret mathematical information or representations about schools, teachers or students, or apply important mathematical skills in order to operate effectively and professionally as a teacher in a school community. In this sense, the concept of 'numeracy across the curriculum' is relevant.

The *further education and professional learning* context is concerned with broadly-focused educational issues beyond the immediate school workplace. Issues might be considered at a regional, state, national or international level, and from a wide range of perspectives. This context is concerned with overarching issues about education. The texts used for the literacy assessment that fit this context are written for an audience of teachers and educational professionals – though they might also be of interest to the general reader, and as such would not require a specialist vocabulary or professional knowledge unique to teachers. Texts might include theoretical, socio-cultural, political, historical and scientific perspectives on teaching and learning that teachers might be expected to read as part of their training and on-going professional development. Contexts for numeracy are education-related, with a broader focus than an individual school, including the interpretation and use of comparative data, statistics and graphical representations about education and schooling.

Skills and content assessed

The Test assesses the ability to interpret and apply the following skills and content in real-world contexts.

Literacy

The literacy assessment comprises both Reading units and Technical Skills of Writing (TSW) units. Every reading unit comprises a reading text and a number of items (questions or short tasks) that test a candidate's understanding of the text. TSW units generally comprise a small number of items linked by a scenario or context.

Reading

Reading texts

Texts in the reading assessment vary with regard to format, length, topic and complexity.

Text format

Text format refers to whether a reading text is *continuous*, *non-continuous*, or a mixture of both. In general, a continuous text is one where sentences are organised into paragraphs, like an essay, article or novel. A non-continuous text is one where information is organised in a graphic or diagram, such as lists, tables, infographics, graphs, maps or forms. Some reading texts contain both continuous and non-continuous parts and these are *mixed* texts; for example, part of a report that includes a graph.

Text length

Texts used in the reading assessment range in length from around 100 words to around 900 words. Each reading test will contain a variety of shorter and longer texts. Longer texts are generally associated with more items and shorter texts with fewer items. So, the amount of reading per test item is broadly consistent.

Topics

Texts for the reading test are selected to have broad appeal, and to cover diverse topics, points of view and life experiences. Material is selected to have broad appeal, but tends to be related to teaching, school, childhood or other topics that are likely to be relevant to teachers. Not all information in the texts will be familiar to students, and this is intentional. A goal of reading is to gain new knowledge and understanding; therefore, an assessment of reading literacy legitimately measures, in part, whether learning from a text is occurring.

Complexity

Texts differ in difficulty due to a variety of factors such as linguistic styles or organisational structures, or how familiar a reader is with the content. Also, it is not always the case that items on a difficult text are difficult, or that items on a simple text are simple. The interaction of item difficulty and text complexity is itself complex. This is important in a reading test because it allows a variety of questions to be developed to target varying levels of difficulty.

When selecting texts of varying complexity, test developers use the ACSF definitions of context and text complexity as a guide. A more detailed description of the range of complexity in items is given in Table 2.

Table 2: ACSF definitions of context and text complexity, Levels 2 to 5

Level	Context	Text Complexity
2 Below standard	Familiar and predictable contexts Limited range of contexts	Single familiar texts with clear purpose Familiar vocabulary
3 Below and around standard	Range of familiar contexts Some less familiar contexts Some specialisation in familiar/known contexts	Routine texts May include some unfamiliar elements, embedded information and abstraction Includes some specialised vocabulary
4 Around standard	Range of contexts including some that are unfamiliar and unpredictable Some specialisation in less familiar/known contexts	Complex texts Embedded information Includes specialised vocabulary Includes abstraction and symbolism
5 Above standard	Broad range of contexts Adaptability within and across contexts Specialisation in one or more contexts	Highly complex texts Highly embedded information Highly specialised language and symbolism

Reading processes

Reading processes are the skills or cognitive processes that readers employ to make meaning from texts. There are three categories of skills and cognitive processes in the Test and each category is referred to as a reading process. Every item targets one reading process. The three reading processes are *access and identify*, *integrate and interpret*, and *evaluate and reflect.*

Items that target a reading process will not all be of a similar difficulty level. There are, for example, easy *access and identify* items and there are also hard items that target the same process. The descriptions in Table 3 provide guidance about and typical examples of the range of complexity within each reading process that candidates will encounter in the Test. The table also indicates the intended proportion of items in the Test that target each process.

Table 3: Reading described scale, by complexity of process

Level of complexity	Access and identify (40%)	Integrate and interpret (45%)	Evaluate and reflect (15%)
Low	Locate one or more pieces of information, each of which may need to meet multiple criteria. Deal with some competing information.	Identify the main idea in a text, understand relationships, form or apply simple categories, or construe meaning within a limited part of the text when the information is not prominent and low-level inferences are required.	Make a comparison or connections between the text and outside knowledge, or explain a feature of the text by drawing on personal experience or attitudes.
Low-Medium	Locate several pieces of information, each of which may need to meet multiple criteria. Combine pieces of information within a text. Deal with competing information.	Integrate several parts of a text in order to identify the main idea, understand a relationship or construe the meaning of a word or phrase. Compare, contrast or categorise taking many criteria into account. Deal with competing information.	Make connections or comparisons, give explanations, or evaluate a feature of a text. Demonstrate a detailed understanding of the text in relation to familiar, everyday knowledge, or draw on less common knowledge.
Medium	Locate several pieces of embedded information, each of which may need to meet multiple criteria, in a text with unfamiliar context or form. Possibly combine verbal and graphical information. Deal with extensive and/or prominent competing information.	Use text-based inferences to understand and apply categories in an unfamiliar context, and to construe the meaning of a section of text by taking into account the text as a whole. Deal with ambiguities and ideas that are negatively worded.	Use formal or public knowledge to hypothesise about or critically evaluate a text. Show accurate understanding of long or complex texts.
Medium-High	Locate and possibly combine multiple pieces of deeply embedded information, some of which may be outside the main body of the text. Deal with strongly distracting competing information.	Demonstrate a full and detailed understanding of a text. Construe the meaning of nuanced language. Apply criteria to examples scattered through a text, using high level inference. Generate categories to describe relationships between parts of a text. Deal with ideas that are contrary to expectations.	Hypothesise about a text, drawing on specialised knowledge, and on deep understanding of long or complex texts that contain ideas contrary to expectations. Critically analyse and evaluate potential or real inconsistencies, either within the text or between the text and ideas outside the text.
High	Combine multiple pieces of independent information, from different parts of a mixed text, in an accurate and precise sequence, working in an unfamiliar context.	Make multiple inferences, comparisons and contrasts that are both detailed and precise. Demonstrate a full and detailed understanding of the whole text or specific sections. May involve integrating information from more than one text. Deal with unfamiliar abstract ideas, in the presence of prominent competing information. Generate abstract categories for interpretations.	Hypothesise about or critically evaluate a complex text on an unfamiliar topic, taking into account multiple criteria or perspectives, and applying sophisticated understandings from beyond the text. Generate categories for evaluating text features in terms of appropriateness for an audience.

Technical skills of writing

The TSW units in the literacy assessment focus on four technical skills of writing, which are a subset of the ACSF focus areas of writing that are both relevant to and able to be assessed in the Test. The items that test these skills either are multiple choice or require candidates to type a single word. In Tables 4 to 7, the four assessed technical skills of writing are illustrated with a selection of relevant performance features from the ACSF at levels 2 to 5. Not all performance features from the ACSF are relevant or applicable to the Test.

Table 4: Technical Skills of Writing, ACSF Level 2

Syntax and grammar (including punctuation) 25%	**Spelling 25%**	**Word usage 25%**	**Text organisation 25%**
• Uses basic punctuation, e.g. capital letters, full stops and commas	• Attempts spelling by using familiar letter patterns, including phonic letter patterns, common stems, suffixes and prefixes	• Extends key vocabulary to include personal details of self, family and relevant others, most aspects of everyday life and other vocabulary of personal significance	• Begins to review writing, incorporating teacher/mentor comments into the drafting process • Begins to sequence writing with some attention to organising principles of time and importance

ACSF Level 2: Below standard, 5% of test questions

- 2.05 Conveys intended meaning on familiar topics for a limited range of purposes and audiences
- 2.06 Produces familiar text types using simple vocabulary, grammatical structures and conventions

Table 5: Technical Skills of Writing, ACSF Level 3

Syntax and grammar (including punctuation) 25%	**Spelling 25%**	**Word usage 25%**	**Text organisation 25%**
• Uses punctuation as an aid to understanding, e.g. capitalisation, full stops, commas, apostrophes, question marks and quotation marks	• Attempts to spell unfamiliar words, using a range of strategies, including phonic and visual letter patterns, syllabification and word origin	• Draws on a vocabulary which is sufficiently broad so that a relevant word is usually available • Uses vocabulary with increasing precision to show how words carry particular shades of meaning	• Sequences writing to produce cohesive text • Uses layout consistent with text type

ACSF Level 3: Below and around standard, 35% of test questions

- 3.05 Communicates relationships between ideas and information in a style appropriate to audience and purpose
- 3.06 Selects vocabulary, grammatical structures and conventions appropriate to the text

Table 6: Technical Skills of Writing, ACSF Level 4

Syntax and grammar (including punctuation) 25%	Spelling 25%	Word usage 25%	Text organisation 25%
• Has some control over modality, using modal verbs and other modification devices • Uses punctuation accurately and effectively to convey a range of meanings, e.g. emotions or intentions	• Accurately spells frequently used words, including relevant technical terms and specialised vocabulary	• Selects vocabulary to create shades of meaning in chosen fields of knowledge or in particular contexts	• Displays logical organisational structure in writing through the use of coherently linked paragraphs

ACSF Level 4: Around standard, 45% of test questions

- 4.05 Communicates complex relationships between ideas and information, matching style of writing to purpose and audience
- 4.06 Displays knowledge of structure and layout employing broad vocabulary, grammatical structure and conventions appropriate to text

Table 7: Technical Skills of Writing, ACSF Level 5

Syntax and grammar (including punctuation) 25%	Spelling 25%	Word usage 25%	Text organisation 25%
• Uses grammatical structures accurately and effectively • Uses all features of punctuation, font and layout effectively, e.g. semi-colons, brackets and italics • Avoids overuse and/or misuse of punctuation	• Spells with a high degree of accuracy using the patterns and rules that are characteristic of English spelling, or by taking measures to check accuracy and make corrections	• Understands and uses broad vocabulary, including idioms, colloquialisms and cultural references as appropriate • Understands and uses appropriate specialised vocabulary in a variety of situations, e.g. explanations, descriptions or arguments	• Uses clear, logical organisational structures in writing • Uses and experiments with a broad range of structures and features

ACSF Level 5: Above standard, 15% of test questions

- 5.05 Generates complex written texts, demonstrating control over a broad range of writing styles and purposes
- 5.06 Demonstrates sophisticated writing skills by selecting appropriate conventions and stylistic devices to express precise meaning

Numeracy

Personal numeracy for teaching is about using important, everyday mathematics to make sense of the world, and applying this mathematics in a meaningful context for a social purpose related to education. It involves drawing on an understanding of the context in deciding how to use mathematics, extracting the mathematical information from the context, and choosing the appropriate mathematics in order to solve real-world problems that teachers are likely to come across in their daily and professional lives. It includes knowing how to use everyday technologies such as calculators, but also includes performing some basic calculations unaided by technology.

Calculator skills

An online basic calculator is available for Section 1 of the numeracy test (52 questions). For more information about how the calculator works go to functionality of the calculator.

Calculator-not-available skills

For Section 2 of the numeracy test (13 questions) the online calculator is not available and calculators are not permitted for this section of the Test. However blank scratch paper is available on which written calculations may be performed. These questions typically use common numbers, fractions and percentages. Problems to be solved in Section 2 typically have a small number of steps and require only familiar and routine operations. In order to maintain a real-world focus, the assessment of numeracy includes a selection of real-world numeracy contexts and makes use of real-world data and information wherever possible. A focus on the active aspect of numeracy is achieved by giving most weight to items that require students to use their numeracy skills; that is, to apply mathematics to solve appropriate real-world problems.

Numeracy processes

While the emphasis in the Test is on using mathematics to solve problems, in keeping with modern assessment design and a broader view of numeracy, the assessment framework includes two additional processes, namely *Identifying mathematical information and meaning in activities and texts* and *Interpreting, evaluating, communicating and representing mathematics.*

The definitions of the numeracy processes are:

Identifying mathematical information and meaning in activities and texts relates to a person's ability to identify and extract the mathematics embedded in a contextualised task. The explicitness and complexity of the mathematical information embedded in the text determine the complexity of this process.

Using and applying mathematical knowledge and problem solving processes relates explicitly to doing the mathematics and includes estimating, and using a range of mathematical skills, methods, strategies and tools.

Interpreting, evaluating, communicating and representing mathematics relates to the ability to interpret, evaluate, communicate and represent the mathematics embedded in a situation. This includes use of common mathematical symbolism, notation and conventions, and representations such as graphs and tables that are evident in real-world contexts.

The following table shows the proportions of items allocated to each process in the Test.

Table 8: Numeracy processes

Process	Proportion
Identifying mathematical information and meaning in activities and texts	15–25%
Using and applying mathematical knowledge and problem solving processes	50–60%
Interpreting, evaluating, communicating and representing mathematics	20–30%

Numeracy content

The definition of numeracy for the Test refers to 'non-technical' mathematics. This term has been used to distinguish between the common, typical real-world uses of mathematics that are represented under the notion of numeracy and those mathematical operations and procedures that are typically reserved for the specific study of mathematics. For example, being able to read given Cartesian points on a parabola representing a real-world value (such as representing average maximum daily temperatures over a period of a year) would be seen as non-technical content, but suggesting an equation that could represent the parabola (such as a quadratic equation) would represent technical content and be out-of-scope of the Test.

Similarly, substituting values into a given equation to calculate the area of a simple shape would be seen as non-technical, but using the Pythagorean Theorem to solve the side length of a triangle would be seen as technical content. The following table shows the mathematical content areas regarded as in-scope of the numeracy assessment in the Test according to the three content areas. While the list is not exhaustive, it aims to give a useful impression of the content that is considered appropriate for the assessment.

Table 9: Numeracy content

Numeracy area	Example content
Number and algebra	Number and algebra; proportional reasoning; ratio; fractions (including score conversions); percentages (including weighted percentages across assignments); decimals; scientific notation; money; budgeting; interest calculations; basic operations; simple formulae; calculation of GST
Measurement and geometry	Time; timetabling and scheduling (e.g. parent–teacher interviews, timetables across multiple campuses); knowledge about space and shape, symmetry and similarity relevant to common 2D and 3D shapes; quantities, including areas and volumes; use of given relevant routine formulae; conversion of metric units; use of maps and plans, scales, bearings
Statistics and probability	Interpreting mathematical information such as graphs; statistics and data (including NAPLAN data); comparing data sets or statistics; statistics and sampling, including bias; distributions; data and interpretation validity; reliability; box plots – matching data to displays; actual against predicted scores; assigning a grade based on a raw score; interpreting/calculating an ATAR; drawing conclusions about student achievement based on data

Tables 10 to 13 provide more detail on the structure and design of the numeracy test, in particular the relationship with the Australian Core Skills Framework.

Table 10: Numeracy content, ACSF Level 2

Number and algebra (45%)	**Measurement and geometry (25%)**	**Statistics and probability (30%)**
• Identifies and uses whole numbers, including numbers into the 1000s, money and simple everyday fractions, decimals and percentages, e.g. 1/4, 1/10, 50% or 0.25 • Performs a limited range of familiar and predictable calculations with the four operations (+,–, x, ÷) with division and multiplication related to small whole number values • Begins to understand the order of the four arithmetical operations	• Orders and groups shapes and measurements, explaining any simple relationships or patterns, e.g. four-sided shapes or quantities from smallest to largest • Identifies, draws and describes common 2D shapes and some common 3D shapes, e.g. sphere, cube or cylinder • Measures and estimates length, mass, capacity, volume, time and temperature, using simple instruments graduated in familiar units, e.g. cm, m, ml, °C or hours/min/sec • Uses knowledge of direction and location (e.g. N, S, E, W or clockwise), including simple coordinates to read familiar and simple maps, street directories or plans	• Orders, where appropriate, and uses familiar data to relate to simple charts and tables based on provided scales and axes with gradations of 1s, 5s or 10s

ACSF Level 2: Below standard, 10% of test questions

- 2.09 Identifies and comprehends relevant mathematical information in familiar activities or texts
- 2.10 Selects and uses appropriate familiar mathematical problem solving strategies to solve problems in familiar contexts
- 2.11 Uses informal and some formal written mathematical language and representations to communicate mathematically

Table 11: Numeracy content, ACSF Level 3

Number and algebra (45%)	Measurement and geometry (25%)	Statistics and probability (30%)
• Calculates with whole numbers and everyday or routine fractions, decimals and percentages, and where appropriate converts between equivalent forms (includes dividing by small whole numbers only, with division by decimal values and long division worked out on a calculator; calculations with simple fractions to be multiplication of whole number values only, e.g. 20% or 1/5 of $250 • Uses and applies order of arithmetical operations to solve multi-step calculations • Uses and applies rates in familiar or routine situations, e.g. km/hr, $/kg or $/m	• Applies knowledge of properties of 2D and 3D shapes to describe everyday objects, including constructing common 3D shapes • Measures, estimates and calculates length, perimeter, mass, capacity/volume, time, temperature and simple area (for rectangular areas only, using A = L x W, or estimates area of a non-rectangular shape by counting squares) • Identifies and estimates common angles, e.g. as a rotation with a full turn = 360° and recognition of right angles as 90° • Converts between routine metric units by applying understanding of common prefixes, e.g. milli, centi or kilo • Uses distance, direction, coordinates, simple scales, labels, symbols and keys to read and use everyday maps and plans	• Organises familiar data and interprets tables, graphs and charts with simple and familiar or routine scales and axes • Describes, compares and interprets the likelihood of everyday chance events (e.g. rolling a six on a dice or the chance of rain) using qualitative terms such as certain, likely, impossible and relates these to everyday or routine fractions, decimals or percentage

ACSF Level 3: Below and around standard, 40% of test questions

- 3.09 Selects and interprets mathematical information that may be partly embedded in a range of familiar, and some less familiar, tasks and texts
- 3.10 Selects from and uses a variety of developing mathematical and problem solving strategies in a range of familiar and some less familiar contexts
- 3.11 Uses a combination of both informal and formal written mathematical language and representations to communicate mathematically

Table 12: Numeracy content, ACSF Level 4

Number and algebra (45%)	Measurement and geometry (25%)	Statistics and probability (30%)
• Uses and applies relevant ratio, rates and proportions, e.g. scales on maps and plans, in the mixing of chemicals or ingredients, or calculating magnification factors • Calculates with fractions, decimals and percentages and flexibly uses equivalent forms; calculates with relevant positive and negative numbers; and uses numbers expressed as roots and powers, e.g. $2^3 = 8$, $\sqrt{4} = 2$ or $3.6 \times 10^3 = 3{,}600$ • Develops, interprets and uses routine formulae and algebraic representations and conventions that describe relationships between variables in relevant contexts, e.g. in sport, when considering the cost of repairs, in calculating routine area and volume, or in using workplace formulae	• Uses knowledge about space and shape, including angle properties, symmetry and similarity to describe relevant common 2D and 3D shapes, such as compound shapes • Estimates, accurately measures and calculates quantities, including areas and volumes, using relevant routine formulae • Converts within the metric system and between metric and other relevant non-metric units • Uses, calculates and interprets information based on maps and plans, including scales, bearings, travel distances, speeds and times, and time zones	• Represents, summarises and interprets a range of statistical data appropriately, e.g. in tables, spreadsheets, graphs, plots, measures of central tendency (mean, median, mode) and simple measures of spread • Uses knowledge about chance and probability to estimate and interpret the outcomes of common chance events in both numerical and qualitative terms

ACSF Level 4: Around standard, 40% of test questions

- 4.09 Extracts and evaluates the mathematical information embedded in a range of tasks and texts
- 4.10 Selects from, and applies, an expanding range of mathematical and problem solving strategies in a range of contexts
- 4.11 Uses a range of informal and formal written mathematical language and symbols to communicate mathematically

Table 13: Numeracy content, ACSF Level 5

Number and algebra (45%)	Measurement and geometry (25%)	Statistics and probability (30%)
• Calculates with rational numbers • Uses and solves a range of equations using a variety of algebraic techniques • Applies graphical techniques to analyse and solve algebraic relationships and equations	• Uses and applies knowledge about space and shape, including angle properties, symmetry and similarity to describe 2D and 3D shapes and scale plans and drawings • Estimates, accurately measures and calculates quantities, including for complex areas and volumes using measurement formulae • Converts between a range of metric and non-metric units	• Organises and analyses data, including grouped data, using measures of central tendency, percentiles and measures of spread, and interprets and draws conclusions about trends and data reliability • Uses and applies knowledge about probability to a range of relevant contexts (e.g. sporting events), calculates theoretical probabilities and uses tree diagrams to investigate the probability of outcomes in simple multiple event trials

ACSF Level 5: Above standard, 10% of test questions

- 5.09 Analyses and synthesises highly embedded mathematical information in a broad range of tasks and texts
- 5.10 Selects from, and flexibly applies, a wide range of highly developed mathematical and problem solving strategies and techniques in a broad range of contexts
- 5.11 Uses a wide range of mainly formal, and some informal, written mathematical language and representations to communicate mathematically