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SDG 4.1.1 MINIMUM PROFICIENCY LEVELS

Definition and blueprint for assessment

20 January 2025

SDG 4.1.1 Minimum Proficiency Levels. Definition and blueprint for assessment.

UNESCO Institute for Statistics and Australian Council for Educational Research.

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Abbreviations and acronyms

ACER	Australian Council for Educational Research
EDSC	Education Data and Statistics Commission
GAML	Global Alliance to Monitor Learning
GEM	Global Education Monitoring
GPF	Global Proficiency Framework
MPL	Minimum Proficiency Level
UNESCO	United Nations Educational, Scientific and Cultural Organization
SDG	Sustainable development Goal
TCG	Technical Cooperation Group, renamed in 2024 to Education Data and Statistics Commission
UIS	UNESCO Institute for Statistics

UIS reporting requirements

The blueprints for assessments presented in this document are consistent with the UIS reporting requirements specified in *criterion 1 – Alignment to the MPL and construct validity* as per the *GAML/EDSC criteria for use of an assessment to report on SDG 4.1.1, Version 4, 9 December 2024*.

MPL terminology

In line with the Global Proficiency Frameworks (GPFs), reading and mathematics are referred to as 'learning areas', which are then broken down into 'domains', 'constructs', 'subconstructs' and 'descriptors' that provide increasingly detailed specifications and elaborations of the skills, knowledge and understanding expected.

- The **learning areas** are reading and mathematics.
- The **domains** are the major content-based concepts for reading and mathematics respectively.
- The **constructs** are overarching threads of skills, knowledge and understanding that run through each of the domains.
- The **subconstructs** are general skill classifications within a construct.
- The **descriptors** specify the target skill and degree of difficulty for each subconstruct skill at each educational stage (Grades 2, 5 and 8).

Acknowledgements

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The following ACER researchers contributed to this document: Prue Anderson, Andrew Mannion, Ursula Schwantner, Maurice Walker, Colin Watson and Toby Simmer.

1. Introduction

Sustainable Development Goal (SDG) 4 aims to ensure that, by 2030, "all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes." The primary indicator 4.1.1 concerns the proficiency of girls and boys in two learning areas (reading and mathematics) at three stages of education: at the end of lower primary, at the end of primary, and at the end of lower secondary. The indicator reads as follows:

> *SDG indicator 4.1.1: Proportion of children and young people: (a) in Grades 2/3; (b) at the end of primary; and (c) at the end of lower secondary achieving at least a minimum proficiency level [MPL] in (i) reading and (ii) mathematics, by sex.*

Large-scale learning assessments are essential tools to capture data on learning outcomes and to provide system-level evidence on education quality and equity. In the context of SDG 4, it is important that these data can also be used to monitor countries' progress with achieving this goal – by reporting on SDG indicator 4.1.1 – the proportion of learners achieving at least a minimum proficiency level (MPL) in reading and mathematics at three stages of education.

While the number of countries implementing large-scale learning assessments has increased substantially over the past two decades, these vary substantially in the assessed target population, learning areas, domains and constructs. In light of this, the UIS is supporting Ministries of Education, assessment agencies and organisations, education donors, partners and other stakeholders to use various national, regional and international large-scale assessments to report against SDG indicator 4.1.1. The UIS has specified a set of 7 key reporting criteria, each containing a set of technical requirements that assessments must meet to be eligible to report against SDG 4.1.1[1]:

- Criterion 1 – Alignment to the MPL and construct validity
- Criterion 2 – Item content and quality (evidence of qualitative and quantitative item review and field trial)
- Criterion 3 – Population coverage and sampling
- Criterion 4 – Assessment administration and data custodianship
- Criterion 5 – Reliability
- Criterion 6 – Benchmark-based linking to the MPL
- Criterion 7 – Maintaining standards over time

[1] GAML/EDSC criteria for use of an assessment to report on SDG 4.1.1 – referred to as 'UIS reporting criteria' in this document.

1.1 Purpose of this document

*This document has been created to support the application of **reporting criterion 1 – Alignment to the MPL and construct validity**, by providing a clear definition of the MPLs and a blueprint for each educational stage – a) at the end of lower primary (Grades 2/3), b) at the end of primary, and c) at the end of lower secondary.*

There are two assessment-related purposes for this document:

1) To define the MPLs and to describe and illustrate the skills that are expected at the three educational stages of end of lower primary (MPLa for SDG 4.1.1a), end of primary (MPLb for SDG 4.1.1b) and end of lower secondary (MPLc for SDG 4.1.1c).
2) To provide a blueprint for assessments measuring the proportion of children and young people attaining the MPLs in line with the GPF and the UIS reporting criteria[2].

The definitions and blueprints of the MPLs are intended as the official documentation to be used by the UIS and by respective stakeholders in the SDG 4 monitoring process, to establish alignment of an assessment with the UIS reporting criteria to be eligible for reporting on SDG indicator 4.1.1.

As such this document brings together the following key reference documents:

- The Global Proficiency Frameworks (GPF) for reading and mathematics[3] are the reference documents for the definition of the MPLs for the three educational stages (SDG 4.1.1a: MPLa, SDG 4.1.1b: MPLb, SDG 4.1.1c: MPLc).
- The MPLs unpacked[4] document is the main reference document for the MPL blueprint. References are made to the GPFs and the UIS reporting criteria to support reporting against SDG indicator 4.1.1.

This document may evolve over time alongside the UIS reporting criteria.

1.2 Defining the MPLs

To define the MPLs, a single MPL is presented for reading and for mathematics for each of the three educational stages referred to in SDG 4.1.1 (MPLa, MPLb, MPLc). These three stages are most closely

[2] GAML/EDSC criteria for use of an assessment to report on SDG 4.1.1 – referred to as 'UIS reporting criteria' in this document.

[3] UNESCO Institute for Statistics (2020a). Global Proficiency Framework for Reading. Global Proficiency Framework for Reading (unesco.org); UNESCO Institute for Statistics (2020b). Global Proficiency Framework for Mathematics. Microsoft Word - Math GPF_03112021.docx (unesco.org)

[4] WG_GAML_4_MPLs-Unpacked_ACER.pdf. The 'MPLs unpacked' document was initially developed in 2019 as a contribution by the GEM Centre in support of the UIS-led Global Alliance for the Monitoring of Learning (GAML). The original version was revised in August 2021 to incorporate changes suggested by ACER at the sixth meeting of GAML and approved by UIS later that year. It has been further revised in 2022 in light of its use in the International Standard Setting Exercise (February–March 2022) of the GEM Centre. This blueprint reiterates the latest agreed updates to the MPLs unpacked.

aligned with the GPF description of a skill that 'meets global minimum proficiency' for Grades 2, 5 and 8, which accords with the UIS reporting criteria.

The skills expected at each educational stage are provided as summaries as well as detailing the relevant skill specifications from the GPF. Having a single MPL for each educational stage clarifies the situation where multiple Grades are the potential target of each MPL because of variation in educational systems, practices and conditions across the globe.

The MPLs for reading and mathematics are elaborated in four ways:

1. **Nutshell statements** provide a general definition and overview of the skills expected at each educational stage.
2. **Expanded statements** highlight the key skills expected at each educational stage.
3. **Skill specifications** outline the scope and difficulty of the skills expected at each educational stage as defined in the GPF constructs, subconstructs, descriptors and examples of 'meets global minimum proficiency' at Grades 2, 5 and 8 in accordance with UIS Reporting Criterion 1.
4. **Sample items** give a more concrete sense of the target skills and degree of difficulty required for each educational stage.

1.2.1 Terminology

In line with the GPFs, reading and mathematics are referred to as 'learning areas', which are then broken down into 'domains', 'constructs', 'subconstructs' and 'descriptors' that provide increasingly detailed specifications and elaborations of the skills, knowledge and understanding expected.

- The **learning areas** are reading and mathematics.
- The **domains** are the major content-based concepts for reading and mathematics respectively.
- The **constructs** are overarching threads of skills, knowledge and understanding that run through each of the domains.
- The **subconstructs** are general skill classifications within a construct.
- The **descriptors** specify the target skill and degree of difficulty for each subconstruct skill at each educational stage (Grades 2, 5 and 8).

The learning areas, domains, constructs and subconstructs apply (generally) across a continuum of learning to all the MPLs. The descriptors are stage-specific descriptions of each subconstruct skill. Table 1 and Table 2 show how these terms are applied in reading and mathematics from broadest to most granular. Each table shows the number, but not the wording, of the subconstructs to indicate the increasing specificity of skills. The Grade-based descriptors reflect the increasing difficulty of the subconstruct skills as the Grades progress. The wording of the subconstructs and the relevant Grade descriptors are detailed in section 2 Reading, and section 3 Mathematics.

The terms used in **reading** are set out in Table 1.

Table 1: Terminology for the hierarchy of reading classifications representing the MPLs

Learning area	Domains	Constructs	Subconstructs + grade-based descriptors
Reading	D: Decoding	D1: Precision D2: Fluency	D1.1, D1.2 D2.1
	R: Reading comprehension	R1: Retrieve information R2: Interpret information R3: Reflect on information	R1.1 to R1.3 R2.1 to R2.3 R3.1 to R3.4
	C: Listening comprehension[5]	C1: Retrieve information at the word level C2: Retrieve information at the sentence or text level C3: Interpret information at the sentence or text level	C1.1, C1.2 C2.1, C3.1

Table 1 shows that the *learning area* of reading has three *domains* (decoding, reading comprehension and listening comprehension). Within each domain there are several *constructs* (for example, decoding has the constructs of precision and fluency).

The domain terms and constructs used here match those used in the GPFs except 'Listening comprehension'. In the GPF, this domain is referred to as 'Comprehension of Spoken or Signed Language' – hence it is coded with a 'C'. Listening comprehension is the domain term used in the UIS reporting criteria so that term is also used here while retaining the GPF coding of 'C'.

The terms used in **mathematics** are set out in Table 2.

[5] This domain is called 'comprehension of spoken or signed language' in the GPF for reading.

Table 2: Terminology for the hierarchy of mathematics classifications representing the MPLs

Learning area	Domains	Constructs	Subconstructs + grade-based descriptors
Mathematics	N: Number and operations	N1: Whole numbers N2: Fractions N3: Decimals N4: Integers N5: Exponents and roots N6: Operations across number	N1.1 to N1.4 N2.1 to N2.3 N3.1 to N3.4 N4.1 to N4.3 N5.1, N5.2 N6.1
	M: Measurement	M1: Length, weight, capacity, volume, area and perimeter M2: Time M3: Currency	M1.1, M1.2 M2.1, M2.2 M3.1
	G: Geometry	G1: Properties of shapes and figures G2: Spatial visualizations G3: Position and direction	G1.1 G2.1 G3.1
	S: Statistics and probability	S1: Data management S2: Chance and probability	S1.1, S1.2 S2.1, S2.2
	A: Algebra	A1: Patterns A2: Expressions A3: Relations and functions	A1.1 A2.1 A3.1 to A3.4

The *learning area* of mathematics has five *domains* (number and operations; measurement; geometry; statistics and probability; and algebra). Within each domain there are several *constructs* (for example, algebra has the constructs of patterns, expressions and relations and functions) each with associated subconstructs and grade descriptors.

1.2.2 Relationship of the MPL definitions with the GPF descriptors

The GPF is the reference document for the definition of the MPLs for reading and mathematics for the three educational stages (MPLa, MPLb, MPLc).

The GPF differentiates skill development in reading and mathematics over 9 grades (Grade 1 through to Grade 9) and then differentiates three different levels of skill, ('partially meets', 'meets' and 'exceeds') within each Grade. This means that the GPF skill descriptors are often highly specific and constrained to indicate the fine-grained differences in the levels of skill across 9 different Grades as well as within each Grade. The GPF descriptors generally include some examples of the skill, given in italics, that indicate how the descriptor might be targeted but are not intended to be definitive.

The GPF descriptors should be interpreted as providing clear guidance about the target skill and difficulty level rather than as rigid rules. The summary definitions of the MPLs provided in this document show how to interpret the GPF descriptors in a way that provides appropriate flexibility in the kinds of items that can target these skills while staying true to the intention of each skill descriptor. The sample items in the Appendices of this document, which include sample items from the GPF, play an important role in further illustrating how the intent of each descriptor might be met.

1.2.3 Difference in MPLs for reading and mathematics

Skills develop differently in reading and in mathematics. This difference is built into the GPF and reflected in the UIS reporting criteria.

The reading domains of decoding and listening comprehension are considered pre-cursor skills for reading that typically appear in young learners associated with early grades. The domains of decoding and listening comprehension are therefore limited to the end of lower primary and thus the reporting requirements for MPLa. Some basic reading comprehension (recognising the meaning of common Grade-level words and retrieving explicit information in a Grade-level continuous text by direct or close word matching), is also expected in learners at the end of lower primary. Reading MPLb and MPLc focus entirely on reading comprehension.

In mathematics, skills develop concurrently in all 5 domains (number and operations, measurement, geometry, statistics and probability, algebra). This is expressed in the definition of the mathematics MPLs that cover all 5 domains at MPLa, MPLb and MPLc. In alignment with this definition, the reporting requirements for mathematics differ from the reporting requirements for reading in terms of grade-specifications – emphasising the importance of all domains and subconstructs at each MPL for mathematics.

1.3 Providing a blueprint for the MPL

The MPL blueprint shows how to achieve the intended purpose of using an assessment to report against the MPLs for reading and mathematics. The MPL blueprint outlines the item specifications required to meet or exceed alignment of an assessment with one or more of the MPLs by meeting UIS reporting criterion 1: Alignment to the MPL and construct validity. Other essential technical criteria, such as the qualitative and quantitative quality assurance of items, scoring methods and administrative processes, along with many other considerations, are covered in the UIS reporting criteria 2 to 7, and are therefore not addressed in this blueprint.

The MPL blueprint includes:

- the learning area (reading or mathematics)
- the target MPL (a, b or c)
- the scope of the skills that must be targeted
- the range of difficulty required
- how many items are required and how they can be distributed across the specifications.

Blueprint examples are provided to present different ways for meeting the UIS reporting criteria.

1.3.1 UIS reporting criterion 1 and blueprint specifications

UIS reporting criterion 1 ‘Alignment to the MPL and construct validity’ provides the blueprint specifications for the use of an assessment to report against SDG 4.1.1. The scope of the learning areas of reading or mathematics are based on the concept of ‘construct validity’ which is defined in relation to the GPF:

- MPLa is most closely aligned to the description of ‘meets global minimum proficiency’ for Grade 2 in the GPF

- MPLb is most closely aligned to the description of ‘meets global minimum proficiency’ for Grade 5 in the GPF
- MPLc is most closely aligned to the description of ‘meets global minimum proficiency’ for Grade 8 in the GPF.

To reliably establish the proportion of learners meeting MPLa, MPLb or MPLc, an assessment should target the proficiency level descriptions for ‘meets global minimum proficiency’ for the respective educational stage. However, a broader range of skills described as ‘exceeds’ and ‘partially meets global minimum proficiency’ should be included to allow for the fine-grained nuances and minor distinctions between the proficiency level descriptions in the GPF (see section 1.2.2 Relationship of the MPL definitions with the GPF descriptors).

Assessing a broader range of skills is also necessary to cover for potential differences between the targeted item difficulty expressed in the GPF and the resulting item difficulty that is the empirically determined. Since the descriptions in the GPF are based on curriculum expectations, the expected difficulty of an item may vary from the observed item difficulty when established empirically (that is the location of an item on an assessment scale). A broader range of item difficulty within an assessment therefore improves targeting of the assessment to learner proficiency. This is important, as an assessment that is not well targeted may introduce floor and ceiling effects, where the MPL benchmark is either too high or too low for the population assessed, in turn distorting the proportion of learners meeting the MPL.

A broader range of skills also increases the use of an assessment beyond SDG 4 reporting, for example to gain evidence on important national curriculum expectations or regional benchmarks. This includes assessments initially designed for learners at grades other than grade 2, 5 and 8 as specified in the GPF, maximising participation in SDG 4 reporting.

The assessment blueprints provided are targeted to the proficiency level descriptions for ‘meets global minimum proficiency’ for the respective educational stage, while considering a broader range of skills to capture the nuances between the proficiency level descriptions for ‘exceeds’ and ‘partially meets global minimum proficiency’. By targeting most items in an assessment to the proficiency level descriptions for ‘meets’ and adding items that extend into ‘partially meets’ and ‘exceeds minimum proficiency’, a broader range of skills can be assessed without unduly affecting reliability of an assessment to report against the global benchmark.

Score points

To assess if an assessment has sufficient construct validity, UIS reporting criterion 1 specifies a minimum number of score points for each MPL. To determine the number of score points in an assessment, for dichotomous items, each item equals one score point. The number of score points in an assessment with dichotomous items therefore equals the number of items. However, occasionally items may use partial scoring, particularly at MPLc. For example, a comprehensive, or higher order response to an item may be worth 2 score points, and a simplistic, or partially correct response to the same item may be worth 1 score point. In the case of partial scoring there are fewer items than score points in the assessment. It is the score point count that matters for UIS reporting criterion 1.

As most items are likely to be dichotomous, for ease of use and understanding, this document generally refers to items rather than score points, except when quoting from the UIS reporting criteria. Where there is a reference to items, note that any items worth two or more score points in a blueprint should be counted by their score points.

Flexibility in applying the specifications

For each MPL, UIS reporting criterion 1 requires a minimum of 20 score points targeting the learning area or specific domains. A minimum portion of these score points must target specific constructs or subconstructs at the designated GPF grade. Once these minimum specifications are met, the remaining items can target any grades, constructs, or subconstructs within the designated learning area or domains.

For example, if a minimum of 10 items must target two subconstructs 'X' and 'Y' at a given grade level with no further constraints, there are many possible ways these 10 items might be allocated including:

- 5 items target X and 5 items target Y at the given grade level
- 6 items target X and 4 items target Y at the given grade level
- 2 items target X and 8 items target Y at the given grade level
- 9 items target X and 1 item targets Y at the given grade level

Any combination, providing there are a minimum of 10 items altogether at the given grade level and at least one item targets each subconstruct, would meet minimum UIS reporting requirements for these 10 items, even though some combinations are not well balanced. There may be good reasons for this. If stakeholders are only interested in one of the required subconstructs, then it makes sense to allocate as many of these 10 items as possible to this subconstruct and the minimum number of items to the subconstruct of little interest. There may also be practical considerations that limit the extent to which some subconstructs can be assessed.

In the above example, 10 of a minimum of 20 items had to be at a given grade level. There is considerable flexibility for meeting the UIS reporting requirements with the remaining 10 items. These can be distributed at any grade level providing the constructs and subconstructs are within the nominated domain(s) for that MPL. For example:

- All 10 remaining items target Grade 5
- 5 remaining items target Grade 4, and 5 items target Grade 6
- 2 items target each of Grades 2, 3, 4, 6 and 7
- 5 remaining items target Grade 3 and 5 items target Grade 4

The flexibility in grade choice for the remaining items allows the adaptation to different contexts. If it is thought that the majority of the target population would meet the MPL, then targeting the grade(s) above the MPL with the remaining items is a good idea to better understand what the population can do. The same holds true for a population that is expected to have a majority of children and young people below the MPL: targeting the grade(s) below the MPL with the remaining items is a good idea to better understand what the population can do.

However, in constructing the assessment, it is important to maximise information around the target MPL to improve measurement precision. As a result, it is preferrable to avoid including items that are much more or less difficult than the target MPL if the assessment only has the minimum of 20 items. Going beyond the minimum total item count gives more scope for including items that are well below, or well above the MPL.

1.3.2 Minimum and excellent standards: Sufficient items and coverage

The blueprint provides both a minimum set of specifications for each learning area, and an 'excellent' set of specifications (i.e. going beyond the minimum, for illustrative purposes), ensuring alignment with UIS reporting criterion 1 and targeting of assessments to the respective MPLs.

Excellence is supported by:

- Increasing the number of items above the minimum specifications to allow for some potential loss of mistargeted items to ensure the minimum specifications are met: UIS reporting criterion 1 requires a minimum of 20 items in a learning area that meet the domain, construct and subconstruct specifications at the designated GPF grade level. Following the minimum specifications is sufficient, but it does carry some risk that any mistargeted items that are too hard or too easy, or items that do not work statistically, may mean the quality of assessment is compromised in terms of reporting against an MPL.
- Good coverage of the domains, constructs and subconstructs, so that student achievement data reflects the scope of the learning area: UIS reporting criterion 1 specifies that at least 7 items per domain must be included in the assessment to report at the domain level. Including additional items that target specific domains, constructs or subconstructs increases the depth of understanding of student achievement. This may be particularly useful where stakeholders have identified a widespread gap or weakness in student achievement.
- Good coverage of the range of abilities, so that student achievement data provides information about the range and distribution of students' skills: Students have a wide range of ability in most educational contexts. Including additional items in the assessment that target skills which are *below, and well below, the targeted MPL* will identify the kinds of support students who do not achieve the MPL may need. Including additional items that target skills which are *above the targeted MPL* will identify the proportion of students who are ready to work towards the next MPL or beyond. For example, if many Grade 5 students can do Grade 2 measurement items only, then instruction needs to first focus on Grade 3 measurement skills and then Grade 4 measurement skills, filling these gaps in students' understanding of measurement before they will be ready to learn the Grade 5 measurement skills. Including additional measurement items of a range of difficulty will therefore support understanding of what students can do. This will help to inform the policies and practices required to improve the learning outcomes for these students.

Increasing the number of items in an assessment needs to be balanced against the length of the assessment and practical constraints.

1.3.3 Targeting 2 MPLs in the same assessment

For official reporting purposes of SDG 4.1.1a, b or c, the assessment must meet the UIS reporting criteria for each of the respective MPLs and be administered at the appropriate educational stage. This means that if the same assessment is intended to be used for official reporting of 2 MPLs, the assessment must meet the UIS reporting criterion for both MPLs and be administered at 2 educational stages.

For example, if the same assessment was used to report reading against MPLa (administered to end of lower primary) and MPLb (administered to the end of primary), that assessment must include a minimum of 10 items targeting Grade 2 and a minimum of 10 items targeting Grade 5 that each cover the required number of subconstructs at the respective grades. While an assessment that combines these items would technically meet the minimum requirement of 20 items specified in Criterion 1, it

may not sufficiently cover the range of skills learners may demonstrate at these levels (see section 1.3.1 UIS reporting criterion 1 and blueprint specifications). An assessment that is not well targeted to the learner's proficiency may introduce floor and ceiling effects, where an MPL benchmark is either too high or too low for the population assessed, in turn distorting the proportion of learners meeting the MPL. In a combined assessment of MPLa and MPLb, a minimum of 15 items that are targeted close to MPLa is recommended and a minimum of 15 items that are targeted close to MPLb. So, a combined assessment should have 30 items at a minimum.

A minimum combined assessment of 30 items would consist of 10 items targeting MPLa, 5 items targeting close to MPLa plus 10 items targeting MPLb and 5 items targeting close to MPLb. When the combined assessment is administered to students at the end of primary it meets the minimum requirement to report on MPLb while also allowing for country-level identification of the proportion of students at the end of primary who have achieved MPLa even if they have not yet reached MPLb. If the combined assessment is administered at the end of lower primary, it meets the minimum requirements to report on MPLa with 10 items also allowing for country-level identification of the proportion of students at the end of lower primary who already meet MPLb.

However, to best target 2 MPLs in a combined assessment, ideally the number of items would be maximised so that there are 20 items targeting MPLa and 20 items targeting MPLb (resulting in a 40-item test rather than a 20-item test). Increasing the number of items in an assessment to target each of the MPLs needs to be balanced against the length of the assessment and practical constraints.

Examples of a minimum and an excellent blueprint for a combined assessment for **reading** for MPLa and MPLb are shown in section 2.7.

Examples of a minimum and an excellent blueprint for a combined assessment for **mathematics** for MPLa and MPLb are shown in section 3.7.

2. Reading

2.1 Defining reading MPLa (end of lower primary)

The reading MPLa is defined here in a broad overview nutshell statement and an expanded statement that highlights key skills in the learning area of reading for Grade 2. The definition includes MPLa skill specifications with a summary of the skills required for each of the three reading domains as well as the construct and subconstruct definitions and the Grade 2 descriptors for 'meets global proficiency' from the GPF. Sample items for reading are provided in Appendix A.

2.1.1 Nutshell statement

Students accurately read aloud and understand written words from familiar contexts. They retrieve explicit information from very short texts. When listening to slightly longer texts, they make simple inferences.

2.1.2 Expanded statement

In a short simple text of one or two sentences, students independently read most words, including some unfamiliar words. They identify the meaning of familiar words, including when they have common morphological changes, and also some unfamiliar words. They retrieve explicit information from a single sentence. When listening to longer texts, and looking at the illustrations, students retrieve explicit information about main events, ideas or characters and use that information to draw simple inferences.

2.1.3 MPLa skill specifications

2.1.3.1 Decoding: Domain D

In summary, the decoding skills expected for MPLa are:

> In a short and simple connected text of one or two sentences, decode most words, including some unfamiliar words with familiar sound–symbol patterns (applies to alphabetic and alpha-syllabic languages only). Decoding skills can be demonstrated in a variety of ways, including through oral fluency.

These specifications are elaborated in Table 3 which shows the GPF domain of Decoding for Grade 2. This has two constructs of Precision and Fluency, each with their associated subconstructs and the Grade 2 descriptors for 'meets global proficiency'.

Table 3: GPF Grade 2 decoding construct, subconstructs and descriptors for 'meets'

Construct	Subconstructs	Grade 2 Descriptors for 'meets'
D.1: Precision	D1.1 Identify sound-symbol/fingerspelling or symbol/morpheme correspondence	D1.1.1_M If the Grade 2 curriculum introduces new symbols at the Grade 2-level, say or sign common Grade 2 level symbol-sound/fingerspelling and/or symbol-morpheme correspondences (*language- and country-specific).*
	D1.2: Decode isolated words	D1.2.1_M Accurately say or sign common, isolated Grade 2-level words *(language- and country specific).*
D:2 Fluency	D2.1 Say or sign a Grade-level continuous text at pace and with accuracy	D2.1.1_M Accurately say or sign a Grade 2-level continuous text with few errors *(e.g., no more than 10 percent of the words in the text).*

2.1.3.2 Reading comprehension: Domain R

In summary the reading comprehension skills expected for MPLa are:

> Identify the meaning of familiar words in a sentence.
>
> Locate most pieces of explicit information within a sentence when the information is prominent and there is no or limited competing information.

These specifications are elaborated in Table 4 which shows the GPF domain of reading comprehension for Grade 2. This has one construct only of retrieving information, with two associated subconstructs and their Grade 2 descriptors for meets global proficiency'.

Table 4: GPF Grade 2 reading comprehension construct, subconstructs and descriptors for 'meets'

Construct	Subconstructs	Grade 2 Descriptor for 'meets'
R1: Retrieving information	R1.1: Recognise the meaning of common Grade-level words	R1.1.1_M: Recognize the meaning of common Grade 2- level words *(e.g., match a given word to an illustration or synonym or provide a brief spoken/signed definition).*
	R1.2 Retrieve explicit information in a Grade-level continuous text by direct or close word matching	R1.2.1_M Retrieve a single piece of explicit information from a Grade 2-level continuous text by direct- or close-word matching when the information required is adjacent to the matched word and there is no competing information. This will generally be in response to a 'who', 'what', 'when,' or 'where' question *(e.g., using Grade 2 example text 1, the question is, 'What does Van draw?'*).

2.1.3.3 Listening comprehension: Domain C

In summary, the listening comprehension skills expected for MPLa are:

Retrieving information

In a longer text that is read aloud to them, identify key events, ideas and major characters.

Interpreting information

In a longer text that is read aloud to them, make simple inferences and identify the meaning of key words that may be unfamiliar.

These specifications are elaborated in Table 5 which shows the GPF domain of listening comprehension for Grade 2. This has three constructs of retrieve information at the word level, retrieve information at the sentence or text level and interpret information at the sentence or text level, each with their associated subconstructs and Grade 2 descriptors for 'meets global proficiency'.

Table 5: GPF Grade 2 listening comprehension construct, subconstructs and descriptors for 'meets'

Construct	Subconstructs	Grade 2 descriptors for 'meets'
C1: Retrieve information at the word level	C1.1: Comprehend spoken and signed language at the word or phrase level	C1.1.1_M: When listening to a common Grade 2-level word, match the word to an object or a picture (e.g.*, is able to point to the picture of the striped shirt when presented with four pictures*). Follow two-step spoken or signed instructions with common Grade 2-level words or detailed one-step instructions (*e.g., pick up the pencil, and give it to me; point to the picture of the girl with long hair who is running*).
	C1.2 Recognize the meaning of common Grade-level words in a short, Grade-level continuous text read to or signed for the learner	C1.2.1_M: When listening to a short Grade 2-level continuous text, identify the meaning of common words.
C2: Retrieve information at the sentence or text level	C2.1: Retrieve explicit information in a short Grade-level continuous text read to or signed for the learner	C2.1.1_M: When listening to a short Grade 2-level continuous text, retrieve explicit information by direct- or close-word matching or by simple synonymous-word matching when there is limited competing information. This will generally be in response to a 'who', 'what', 'when,' or 'where' question (*e.g., in a story about a child playing with some toys, asking the learner where an event happened when two locations are mentioned in the text; in a descriptive text about elephants, asking the learner what color a feature is when only two colors are mentioned in the text*).
C3: Interpret information at the sentence or text level	C3.1: Interpret information in a short Grade level continuous text read to or signed for the learner	C3.1.1_M: When listening to a short Grade 2-level continuous text, make simple inferences by connecting pieces of prominent, explicit information when there are multiple clues and limited competing information. his will generally be in response to a 'why' or 'how' question.

2.1.3.4 Sample items for MPLa

See Appendix A for the MPLa sample items for reading.

2.2 Reading MPLa blueprint

The UIS reporting criterion 1 for MPLa reading prescribes the scope of the skills that must be targeted, the level of difficulty required, the minimum number of items and how they must be distributed across the specifications. The essential reporting requirements are shown in Table 6[6].

Table 6: Essential reporting requirements for MPLa reading

Ref.	**Description of requirements** for MPLa reading
1.1a (R)	Minimum 20 score-points aligned to the GPF in reading
1.2a (R)	Minimum 10 score-points assessing the reading comprehension domain in the GPF Grade 2
1.3a (R)	The assessment must cover both reading comprehension subconstructs at Grade 2 in the GPF
1.4a (R)	The remaining items can be drawn from any of the domains (decoding, listening comprehension or reading comprehension)
1.7(a)	Differences between the language of instruction, home language, and language of assessment must be noted and implications considered for interpretation of the outcomes

At least 10 of the reading score-points must be targeted at reading comprehension and cover both the reading comprehension subconstructs at Grade 2 in the GPF. The other 10 required reading score-points can target any Grades and can also target any of the domains of decoding, listening comprehension and reading comprehension. If the assessment only has the minimum of 20 reading items, it is preferable if the remaining items target skills that are close to MPLa rather than being much more, or much less difficult.

Section 1.3 Providing a blueprint for the MPL, outlines some of the considerations in terms of the meeting or going beyond the minimum number of items required and the extent to which coverage of the subconstructs is balanced.

2.2.1 Minimum 10 items assessing reading comprehension

Of the minimum of 20 score points, 10 items (score points) must target the reading comprehension domain in the GPF at Grade 2. Retrieving is the only reading comprehension construct at Grade 2. The items must target both retrieving information subconstructs (R1.1 and R1.2) in any combination that adds up to 10 items.

- R1.1: recognising the meaning of common Grade 2 words
- R1.2: retrieving information in a Grade 2 text by direct or close word matching

[6] There are two non-essential requirements 1.5a(R) 'For timed fluency tasks, students should be given sufficient time to read to the end of the text, but fluency should be tracked within one minute' and 1.6a(R) 'For individually administered assessments, implementing a stop rule is recommended but it is also recommended to begin with easier items, potentially starting with a word list, to ensure the assessment is approachable'.

The items should target the Grade 2 skill descriptors for 'meets minimum global proficiency' for each subconstruct but may include items with Grade 2 skill descriptors for 'partially meets' and 'exceeds'. The 'meets' descriptors are provided in section 2.1 Defining reading MPLa.

Targeting the skill descriptors is also supported by the MPLa sample items for reading in Appendix A.

2.2.2 Remaining 10 items

The remaining 10 reading items (to achieve a minimum of 20) can target one or more of the three reading constructs (decoding, listening comprehension or reading comprehension) and any of the related subconstructs and descriptors at any grade.

Allocating some, or all, of the 10 remaining items to decoding and listening comprehension broadens the coverage of the learning area. This can help to inform effective interventions by identifying the extent to which students' low reading achievement might be related to their limited decoding skills or their limited oral language comprehension. Allocating some items to Grade 1 skills helps identify what low achieving students can do, and allocating some items to Grade 3 or Grade 4 skills helps identify what high achieving students can do.

The descriptors for each of these constructs and subconstructs at Grade 2 are shown in section 2.1 Defining reading MPLa. The GPF has the subconstruct descriptors and examples for other grades.

2.2.3 Blueprint examples

There are many different ways that items can be spread across the constructs and subconstructs to target the minimum requirements for MPLa. The options vary the balance in the coverage of reading. Some examples that all meet the minimum requirements are shown in Table 7.

Table 7: Blueprint examples of meeting the minimum MPLa requirements

Construct	Subconstruct	Blueprint 1	Blueprint 2	Blueprint 3
Retrieving Information	**R1.1**	5 items *All at Grade 2*	10 items *- 5 at Grade 2* *- 3 at Grade 1* *- 1 at Grade 3* *- 1 at Grade 4*	5 items *- 3 at Grade 2* *- 2 at Grade 1*
	R1.2	5 items *All at Grade 2*	10 items *- 3 at Grade 2* *- 3 at Grade 1* *- 2 at Grade 3* *- 2 at Grade 4*	10 items *- 7 at Grade 2* *- 1 at Grade 1* *- 2 at Grade 3*
Listening Comprehension	**C2.1**	2 items *-1 at Grade 1* *- 1 at Grade 2*		
	C2.2	2 items *-1 at Grade 1* *- 1 at Grade 2*		
	C2.3	1 item *-1 at Grade 2*		
Decoding	**D1.1**			
	D1.2	5 items *-2 at Grade 1* *-3 at Grade 2*		5 items *-2 at Grade 2* *-3 at Grade 3*
Total		**20 items**	**20 items**	**20 items**

Blueprint 1 has the minimum number of 10 retrieve items spread evenly across two subconstructs at Grade 2 plus 5 listening comprehension items and 5 decoding items giving good coverage to the learning area. The 10 listening comprehension and decoding items target Grades 1 and 2.

Blueprint 2 has 20 retrieve items spread across both subconstructs. 5 items in each subconstruct target Grade 2, with the remaining 5 items in each subconstruct targeting Grades 1, 3 or 4. There is no coverage of decoding or listening comprehension. This provides good skill coverage for retrieving by including some easier and harder items but does not give coverage across the whole of the reading learning area.

Blueprint 3 has 10 retrieve items spread across both subconstructs at Grade 2 (5 more than the minimum required) with the remaining 3 retrieve items at Grades 1 or 3, plus 5 decoding items targeting Grades 2 and 3.

An **excellent blueprint** exceeds the minimum requirements by including additional items. The number of additional items and domain, construct and subconstruct coverage depends on the purpose. Some possibilities that all meet and go beyond the minimum specifications are shown in Table 8.

Table 8: Blueprint examples of excellence in relation to the MPLa requirements

Construct	Subconstruct	Blueprint 4	Blueprint 5
Retrieving Information	**R1.1**	6 items - 6 *at Grade 2*	8 items *- 6 at Grade 2* *- 2 at Grade 1*
	R1.2	6 items - 6 *at Grade 2*	8 items *- 6 at Grade 2* *- 2 at Grade 1*
Listening Comprehension	**C2.1**	4 items *- 2 at Grade 2* -2 *at Grade 3*	4 items *- 2 at Grade 1* -2 *at Grade 2*
	C2.2	2 items - 1 *at Grade 1* -1 *at Grade 3*	4 items - 1 *at Grade 1* -3 *at Grade 2*
	C2.3	1 item *- 1 at Grade 2*	2 items *- 2 at Grade 2*
Decoding	**D1.1**		
	D1.2	6 items *- 3 at Grade 2* -2 *at Grade 3*	7 items *- 2 at Grade 1* *- 3 at Grade 2* -2 *at Grade 3*
Total		**25 items**	**33 items**

Blueprint 4: includes 25 items which is 5 more than the minimum of 20 items with 12 retrieve items all at Grade 2 evenly spread across both subconstructs. This allows for the loss of up to two retrieve items due to poor statistical performance while still meeting the minimum requirements (10 retrieve items covering two subconstructs). The blueprint includes 7 listening comprehension items and 6 decoding items which are at Grade 2 or adjacent grades in order to target the scope of the learning area of reading.

Blueprint 5: includes 33 items which is 13 more than the minimum of 20 with 16 retrieve items (with 6 at Grade 2 in each subconstruct and 2 items at Grade 1 or 3) plus 10 listening comprehension and 7 decoding items which can be at Grades 1, 2 or 3 to target the scope of the learning area of reading.

2.3 Defining reading MPLb (end of primary)

The reading MPLb is defined here in a broad overview nutshell statement and an expanded statement that highlights key skills in the learning area of reading for MPLb. The definition includes MPLb skill specifications with a summary of the skills required for only relevant reading domains of reading comprehension as well as the related construct and subconstruct definitions and the Grade 5 descriptors for 'meets global proficiency' from the GPF. Sample items for reading are provided in Appendix A.

Decoding skills are described in the GPF at Grade 5 but they are not required to meet MPLb. Listening comprehension is also not required to meet MPLb nor is it described in the GPF at Grade 5. Consequently, these skills are not included in the MPLb definition.

2.3.1 Nutshell statement

Students independently read simple, short narrative and expository texts. They retrieve explicitly stated information. They interpret and give some explanation about the main and secondary ideas in different types of texts and establish connections between main ideas in a text and their personal experiences.

2.3.2 Expanded statement

Students independently read short, simple narrative or expository texts with understanding. They use previously taught morphological (word-level) and contextual (sentence- or text-level) clues to understand the meaning of familiar and unfamiliar words and to distinguish between the meanings of closely related words. When reading silently or aloud, they locate explicit information in a paragraph. They use that information to make inferences about behaviours, events or feelings. They identify the main and some secondary ideas in a text if they are prominently stated and recognise common text types when the content and structure are obvious. They make basic connections between the text and their personal experience or knowledge.

2.3.3 MPLb skill specifications

2.3.3.1 Reading comprehension: Domain R

In summary the reading comprehension skills for each of the three constructs of retrieving information, interpreting information and reflect on information expected for MPLb are:

Retrieving information

Locate most pieces of explicit information when the information is prominent and found within a single paragraph containing limited competing information.

Interpreting information

Use morphological or contextual clues to identify the meaning of most unfamiliar words, familiar words used in unfamiliar ways, different shades of meaning of closely related words, synonyms or basic figurative language.

Establish the main idea of a text when it is prominent in the text.

Make simple inferences by relating two or more prominent pieces of explicitly stated information, when there is little or no competing information, in order to identify behaviours, feelings, events and factual information.

Reflect on information

Establish basic connections between the key ideas in a text and personal knowledge and experience.

Distinguish between text types (narrative and expository) and recognise some other common text types (for example, poetry, recipe, game instructions) when the content and structural clues are obvious.

These specifications are elaborated in Table 9 which shows the GPF domain of reading comprehension for Grade 5 with the three constructs of retrieving information, interpreting information and reflecting on information with the associated subconstructs and their Grade 5 descriptors for meets global proficiency'. Note some subconstructs have two or more descriptors.

Table 9: GPF Grade 5 reading comprehension construct, subconstructs and descriptors for 'meets'

Construct	Subconstructs	Grade 5 Descriptors for 'meets'
R1: Retrieving information	R1.1: Recognise the meaning of common Grade-level words	R1.1.1_M: Recognize the meaning of common Grade 5-level words *(e.g., match a given word to an illustration or synonym or provide a brief spoken/signed definition).*
	R1.2 Retrieve explicit information in a Grade-level continuous text by direct or close word matching	R1.2.1_M Retrieve a single piece of explicit information from a Grade 5-level continuous text by direct- or close-word matching when the information required is nearby but not adjacent to the matched word and there is limited competing information. R1.2.2_M Retrieve a single piece of explicit information from a Grade 5-level non-continuous text (e.g., simple diagrams and tables) by director close-word matching when the information required is not prominent and there is limited competing information.
	R1.3: Retrieve explicit information in a Grade-level text by synonymous word matching	R1.3.1_M Retrieve a single piece of explicit information from a Grade 5-level continuous text by synonymous word matching when the information required is not prominent and there is limited competing information. R1.3.2_M Retrieve a single piece of explicit information from a Grade 5-level non-continuous text (e.g., simple diagrams and tables) by synonymous word matching when the information required is not prominent and there is limited competing information.
R2: Interpreting Information	R2.1: Identify the meaning of unknown words and expressions in a Grade-level text	R2.1.1_M Identify the meaning of unknown words (including familiar words used in unfamiliar ways) in a Grade 5-level text when there are multiple clues (*e.g., use language-specific morphological clues or contextual clues to identify the meaning of unknown words)*

Construct	Subconstructs	Grade 5 Descriptors for 'meets'
		R2.1.2_M Identify the meaning of idiomatic or figurative expressions in a Grade 5-level text when there are multiple clues (e.g., use language specific semantic clues or contextual clues).
	R2.2: Make inferences in a Grade-level text	R2.2.1_M Make inferences in a Grade 5-level continuous text by relating two or more pieces of explicit and/or implicit information (e.g., causal relationship or comparisons) from a paragraph but not in consecutive sentences, when there is limited competing information. R2.2.2_M Make inferences in a Grade 5-level noncontinuous text (e.g., detailed diagrams, tables, and graphs) by relating two or more pieces of explicit and/or implicit information (e.g., causal relationship or comparisons) from two parts of the text when there is limited competing information. R2.2.3_M Identify the sequence of up to four prominent events/actions/steps in a Grade 5-level text. R2.2.4_M Identify a point of view (e.g., of a group, character, or the author) in a Grade 5-level text when there is limited competing information and when the point of view is prominent but not explicitly stated.
	R2.3: Identify the main and secondary ideas in a Grade-level text	R2.3.1_M Identify the main idea in a Grade 5-level text when it is not explicitly stated.
R3: Reflect on Information	R3.1: Identify the purpose and audience of a text	R3.1.1_M Identify the purpose of a Grade 5-level text when there are prominent clues and the purpose is not explicitly stated.
	R3.2: Evaluate a text with justification	R3.2.1_M Give an opinion (*when different perspectives are valid)* about a Grade 5-level text and use prominent evidence from the text to justify that opinion.

2.3.3.2 Sample items for MPLb

See Appendix A for the MPLb sample items for reading.

2.4 Reading MPLb blueprint

The UIS reporting Criterion 1 for MPLb reading prescribes the scope of the skills that must be targeted, the level of difficulty required, the minimum number of items and how they must be distributed across the specifications. The essential reporting requirements are shown in Table 10.

Table 10: Essential reporting requirements for MPLb reading

Ref.	**Description of requirements** for MPLb reading
1.1b (R)	Minimum 20 score-points assessing reading comprehension aligned to the GPF
1.2b (R)	As defined in the GPF, there should be a minimum of: • 5 score-points assessing the retrieve information construct at Grade 5 • 5 score-points assessing the interpret information construct at Grade 5
1.3b (R)	The assessment should also cover 4 of the 8 reading comprehension subconstructs at Grade 5 in the GPF

At least 10 of the reading comprehension score-points must be targeted at MPLb at GPF Grade 5 with 5 assessing retrieving information and 5 assessing interpreting information. These 10 score points must also cover 4 of the 8 reading subconstructs at Grade 5. The remaining 10 required score-points can target reading comprehension at any Grades. If the assessment only has the minimum of 20 reading items, it is preferable if the remaining items target skills that are close to MPLb rather than being much more, or much less difficult.

Section 1.3 Providing a blueprint for the MPL outlines some of the considerations in terms of the meeting or going beyond the minimum number of items required and the extent to which coverage of the subconstructs is balanced.

2.4.1 Minimum 10 items assessing reading comprehension

Of the minimum of 20 score points, at least 10 items (score points) must target the reading comprehension domain at Grade 5 in the GPF with 5 score points targeting retrieving information and 5 score points targeting interpreting information. They must also target 4 of the 8 reading subconstructs at Grade 5 and they should target the skill descriptors for 'meets minimum global proficiency' but may include items with Grade 5 skill descriptors for 'partially meets' and 'exceeds'. See section 2.3 Defining reading MPLb.

Targeting the descriptor skills is also supported by the MPLb sample items in Appendix A.

The minimum of 5 items that must target retrieving information (R1) at Grade 5 can target any of the retrieving information subconstructs (R1.1, R1.2, R1.3) and related descriptors in any proportion bearing in mind that 4 of the 8 subconstructs must be targeted.

Table 11 shows three possible examples of how the minimum specifications might be met for 5 retrieving information items (shown in red text). The table shows which of the available descriptors have been selected for each subconstruct in these examples to illustrate other options that might have been selected. The table also shows the total number of subconstructs targeted by the retrieve items.

Table 11: Examples of distribution of minimum of 5 retrieving information items at Grade 5

Retrieve subconstructs	**Example 1 at Grade 5**	**Example 2 at Grade 5**	**Example 3 at Grade 5**
R1.1: Recognise the meaning of common Grade-level words	R1.1.1_M – 1 item	R1.1.1_M	R1.1.1_M
R1.2 Retrieve explicit information in a Grade-level continuous text by direct or close word matching	R1.2.1_M – 1 item R1.2.2_M –1 item	R1.2.1_M – 2 items R1.2.2_M	R1.2.1_M R1.2.2_M
R1.3: Retrieve explicit information in a Grade-level text by synonymous word matching	R1.3.1_M – 1 item R1.3.2_M – 1 item	R1.3.1_M R1.3.2_M – 3 items	R1.3.1_M – 3 items R1.3.2_M –2 items
Total	**5 items**	**5 items**	**5 items**
Targeting of retrieve items	*3 retrieve subconstructs*	*2 retrieve subconstructs*	*1 retrieve subconstruct*

The minimum of 5 items that must target the construct of interpreting information (R2) at Grade 5 can target one or more of the sub-constructs (R2.1, R2.2, R2.3) and related descriptors in any proportion providing that overall coverage of 4 out of the 8 subconstructs at Grade 5 is met for the minimum of 10 items. It is essential to consider the targeting of the 5 retrieving items and the implications this has for the number of interpreting subconstructs that must be targeted to achieve minimum coverage.

Table 12 shows three possible examples of how the minimum specifications might be met for 5 interpreting information items (shown in red text) together with the retrieving information examples given in Table 11 to ensure that 4 out of the 8 subconstructs are targeted with the minimum of 10 items altogether.

The table shows which of the available descriptors have been selected for each subconstruct in these examples to illustrate other options that might have been selected.

Table 12: Examples of distribution of minimum of 5 interpreting information items at Grade 5

Interpreting information subconstructs	**Example 1 at Grade 5**	**Example 2 at Grade 5**	**Example 3 at Grade 5**
Implications of retrieve targeting for each example	*3 retrieve subconstructs* *1 interpreting subconstruct required*	*2 retrieve subconstructs* *2 interpreting subconstructs required*	*1 retrieve subconstruct* *3 interpreting subconstructs required*
R2.1: Identify the meaning of unknown words and expressions in a Grade-level text	R2.1.1_M R2.1.2_M	R2.1.1_M R2.1.2_M	R2.1.1_M R2.1.2_M – 2 items
R2.2: Make inferences in a Grade-level text	R2.2.1_M – 1 item R2.2.2_M –1 item R2.2.3_M –1 item R2.2.4_M –2 items	R2.2.1_M – 3 items R2.2.2_M R2.2.3_M R2.2.4_M	R2.2.1_M – 2 items R2.2.2_M R2.2.3_M R2.2.4_M
R2.3: Identify the main and secondary ideas in a Grade-level text	R2.3.1_M	R2.3.1_M – 2 items	R2.3.1_M – 1 item
Total	**5 items**	**5 items**	**5 items**

2.4.2 Remaining 10 items

The remaining 10 reading comprehension items (minimum of 20) can target one or more of the three subconstructs (retrieving, interpreting or reflecting) and any of the related descriptors at, any Grades. The relevant subconstructs are:

Retrieving information

- R1.1: Recognise the meaning of common Grade-level words
- R1.2 Retrieve explicit information in a Grade-level continuous text by direct or close word matching
- R1.3: Retrieve explicit information in a Grade-level text by synonymous word matching

Interpreting information

- R2.1: Identify the meaning of unknown words and expressions in a Grade-level text
- R2.2: Make inferences in a Grade-level text
- R2.3: Identify the main and secondary ideas in a Grade-level text

Reflect on Information

- R3.1: Identify the purpose and audience of a text
- R3.2: Evaluate a text with justification

Reflecting on information is not included in the minimum requirements for MPLb. Allocating some of the 10 remaining items to reflecting on information broadens the coverage of the reading learning area.

Distributing some of the remaining items across the range of 8 reading comprehension subconstructs skills helps to inform effective interventions by identifying students' strengths and any gaps.

Allocating some of the remaining items to Grade 3 or 4 skills helps identify what low achieving students can do, and allocating some items to Grade 5 or 6 skills helps identify what high achieving students can do.

The descriptors for each of the reading comprehension subconstructs at Grade 5 are shown in section 2.3 Defining reading MPLb. The GPF has the descriptors and examples for other Grades.

2.4.3 Blueprint examples

There are many different ways that 20 items can be spread across the reading comprehension constructs and subconstructs to target the minimum requirements for MPLb. The options vary the balance in the coverage of reading. Some possible examples with 20 items that all meet, or exceed the minimum specifications are shown in Table 13.

Table 13: Blueprint examples of meeting the minimum MPLb requirements

Construct	Subconstruct	Blueprint 1	Blueprint 2	Blueprint 3
Retrieving Information	R1.1	3 items *- 3 at Grade 5*	3 items *- 1 at Grade 4* *- 1 at Grade 5* *- 1 at Grade 6*	2 items *- 2 at Grade 5*
	R1.2	5 items *- 5 at Grade 5*	6 items *- 2 at Grade 4* *- 2 at Grade 5* *- 2 at Grade 6*	3 items *- 2 at Grade 5* *- 1 at Grade 6*
	R1.3		2 items *- 2 at Grade 4*	3 items *- 1 at Grade 5* *- 1 at Grade 6* *- 1 at Grade 7*
Interpret Information	R2.1		4 items *- 1 at Grade 4* *- 2 at Grade 5* *- 1 at Grade 6*	2 items *- 1 at Grade 5* *- 1 at Grade 6*
	R2.2	7 items *- 7 at Grade 5*	3 items *- 1 at Grade 4* *- 2 at Grade 5*	5 items *- 3 at Grade 5* *- 1 at Grade 6* *- 1 at Grade 7*
	R2.3	4 items *- 4 at Grade 5*	2 items *- 1 at Grade 4* *- 1 at Grade 5*	2 items *- 1 at Grade 5* *- 1 at Grade 6*
Reflect on information	R3.1	1 item *- 1 at Grade 5*		2 items *- 1 at Grade 5* *- 1 at Grade 6*
	R3.2			1 item *- 1 at Grade 6*
Total		**20 items**	**20 items**	**20 items**

Blueprint 1 shows 20 items all targeting Grade 5 distributed across 5 of the 8 reading comprehension subconstructs at Grade 5 (1 more than minimum subconstruct distribution). There are 8 retrieve items (3 more than the minimum of 5 at Grade 5) and 11 interpreting items (6 more than the minimum of 5 at Grade 5). There is one item targeting reflect on information. Three of the subconstructs are not targeted.

Blueprint 2 shows 20 items distributed across 6 of the 8 reading comprehension subconstructs at Grade 8 (1 more than minimum subconstruct distribution) all of which are retrieving or interpreting. There are 5 retrieve items at Grade 5 (minimum) and 5 interpret items at Grade 5 (minimum). There are no items for reflect on information (not a minimum requirement). The 10 remaining items target Grades 4, 5 and 6.

Blueprint 3 shows 20 items distributed across all 8 of the reading subconstructs (4 more than minimum subconstruct distribution) with 8 retrieving (with minimum of 5 at Grade 5) and 9 interpreting items (with minimum of 5 at Grade 5). The remaining items include 3 reflect items and mostly target Grade 6 with 2 items targeting Grade 7.

An **excellent blueprint** exceeds the minimum requirements by including additional items and improving coverage of the domain. The number of additional items and the reading comprehension subconstruct coverage depends on the purpose. Some possibilities are shown in Table 14. For simplicity, these items are all at Grade 5. Providing the specifications for the minimum of 10 items are met in full, the minimum of 10 remaining items could also have been distributed across other Grades.

Table 14: Blueprint examples of excellence in relation to the MPLb requirement

Construct	Subconstruct	Blueprint 4 All at Grade 5	Blueprint 5 All at Grade 5
Retrieving Information	**R1.1**	1 item	3 items
	R1.2	4 items	5 items
	R1.3	5 items	5 items
Interpret Information	**R2.1**	2 items	3 items
	R2.2	7 items	5 items
	R2.3	4 items	5 items
Reflect on information	**R3.1**	1 item	2 items
	R3.2	I item	2 items
Total		**25 items**	**30 items**

Blueprint 4: goes beyond the minimum specifications for Grade 5 by including 10 Retrieving Information items (minimum is 5) and 13 Interpreting Information items (minimum is 5) plus 2 items for Reflect on Information covering all 8 of the reading comprehension subconstructs (minimum is 4 subconstructs).

Blueprint 5: goes beyond the minimum specifications for Grade 5 by including 13 Retrieving Information items (minimum is 5) and 13 Interpreting Information items (minimum is 5) as well as 4 Reflect on Information items that together cover all of the reading comprehension subconstructs. Alternatively, if a minimum of 20 items target Grade 5 this would support a precise measure of MPLb, meaning the 10 additional items could target skills well above, or well below, the MPLb if desired.

2.5 Defining reading MPLc (end of lower secondary)

2.5.1 Nutshell statement

Students retrieve and connect multiple pieces of related information across sections of texts to understand key ideas. They make straightforward inferences when there is some competing information. They reflect and draw conclusions in a variety of text types.

2.5.2 Expanded statement

In a range of continuous and non-continuous texts, including narrative, expository, descriptive, argumentative, instructional, and transactional texts, students locate multiple pieces of information across a text, including information in paratextual elements. They make straightforward inferences by drawing on prominent explicit and implicit information to summarise key ideas, and select evidence to support an interpretation. They reflect on texts in relation to personal experience and draw on general knowledge to identify if there is an obvious flaw in a text-based idea.

2.5.3 MPLc skill specifications

2.5.3.1 Reading comprehension: Domain R

In summary the reading comprehension skills for each of the three constructs of retrieving information, interpreting information and reflect on information expected for MPLc are:

Retrieving information

Locate multiple pieces of related information that are dispersed throughout a text with familiar structures, when there is some similar information nearby.

Locate paratextual information in continuous and non-continuous texts (for example, footnotes in continuous texts, legends in maps).

Interpreting information

Connect pieces of related information across multiple sections of a text, including when ideas are well separated and there is competing information, in order to demonstrate understanding of less prominent ideas.

Sequence events when there are overlapping timelines.

Make inferences, drawing on obvious clues or prominent information, to summarise main ideas in paragraphs or across entire texts, when there is some competing information.

Select evidence from a text, including obvious tone, to support an interpretation (for example, a simple comparison of two characters or two events).

Apply information from the text to new examples (for example, classifying new items according to a described scheme).

Reflect on information

Recognise the implied audience of a text with a familiar format and content when there are multiple clues.

Provide an example of how a text relates to personal experience.

Draw on external knowledge to identify an obvious flaw in an idea or to make a prediction.

Recognise different text types when they have familiar styles, language or text layouts.

Distinguish between fact and opinion when the distinction is straightforward (for example, 'Evidence shows that …' [fact] versus 'In my view, …' [opinion]).

Recognise the purpose of common print conventions, such as use of symbols and simple graphics.

These specifications are elaborated in Table 15 which shows the GPF domain of reading Comprehension for Grade 8 with the three constructs of retrieving information, interpreting information and reflect on information with the associated subconstructs and their Grade 8 descriptors for meets global proficiency'. Note some subconstructs have multiple descriptors.

Table 15: GPF Grade 8 reading comprehension constructs, subconstructs and descriptors for 'meets'

Construct	Subconstructs	Grade 8 Descriptors for 'meets'
R1: Retrieving information	R1.1: Recognise the meaning of common Grade-level words	R1.1.1_M Recognize the meaning of common Grade 8-level words *(e.g., match a given word to an illustration or synonym or brief definition).*
	R1.2 Retrieve explicit information in a Grade-level continuous text by direct or close word matching	R1.2.1_M Retrieve a single piece of explicit information from a Grade 8-level continuous text by director close-word matching when the information required is nearby but not adjacent to the matched word and there is competing information. R1.2.2_M Retrieve a single piece of explicit information from a Grade 8-level non-continuous text *(e.g., detailed diagrams, tables, and graphs)* by direct- or close-word matching when the information required is not prominent and there is competing information. R1.2.3_M Retrieve a single piece of explicit information that meets two criteria from a Grade 8-level non-continuous text *(e.g., detailed diagrams, tables, and graphs)* by direct- or close-word matching when there is competing information.
	R1.3: Retrieve explicit information in a grade-level text by synonymous word matching	R1.3.1_M Retrieve a single piece of explicit information from a Grade 8-level continuous text by synonymous word matching when the information required is not prominent and there is competing information. R1.3.2_M Retrieve a single piece of explicit information from a Grade 8-level non-continuous text *(e.g., detailed diagrams, tables, and graphs)* by synonymous word matching when the information required is not prominent and there is competing information.
R2: Interpreting Information	R2.1: Identify the meaning of unknown words and	R2.1.1_M Identify the meaning of unknown words (*including familiar words used in unfamiliar ways*) in a Grade 8-level text when there are multiple clues (*e.g.,*

Construct	Subconstructs	Grade 8 Descriptors for 'meets'
	expressions in a grade-level text	*use language-specific morphological clues or contextual clues to identify the meaning of unknown words*). R2.1.2_M Identify the meaning of idiomatic or figurative expressions in a Grade 8-level text when there are multiple clues.
	R2.2: Make inferences in a grade-level text	R2.2.1_M Make inferences in a Grade 8-level continuous text by relating two or more pieces of explicit and/or implicit information *(e.g., causal relationship or comparisons*) from a paragraph but not in consecutive sentences, when there is limited competing information. R2.2.2_M Make inferences in a Grade 8-level noncontinuous text (*e.g., detailed diagrams, tables, and graphs*) by relating two or more pieces of explicit and/or implicit information (*e.g., causal relationship or comparisons*) from two parts of the text when there is limited competing information. R2.2.3_M Identify the sequence of events/actions/steps in a Grade 8-level text when the sequence has to be inferred *(e.g., a step is not explicitly stated)* and there is competing information such as overlapping timelines. R2.2.4_M Identify, compare, or contrast point(s) of view *(e.g., of a group, character, or the author)* in a Grade 8-level text when there is limited competing information and when the point of view is prominent but not explicitly stated. R2.2.5_M Identify prominent evidence in a Grade 8-level text to support or explain an idea, action, or statement in the text when the relationship is not explicit. R2.2.6_M Draw a basic conclusion from a Grade 8-level text by synthesizing prominent information from one or more paragraphs and/or sections when the conclusion is clearly implied but not explicitly stated.
	R2.3: Identify the main and secondary ideas in a grade-level text	R2.3.1_M Distinguish between a prominent main idea and secondary ideas in a Grade 8-level text or part of a text *(e.g., a paragraph)*.

Construct	Subconstructs	Grade 8 Descriptors for 'meets'
R3: Reflect on Information	R3.1: Identify the purpose and audience of a text	R3.1.1_M Identify the purpose of a Grade 8-level text or features of the text *(e.g., images/graphics, paratextual features, and vocabulary)* when there are multiple clues, limited competing information, and the purpose is not explicitly stated. R3.1.2_M Use evidence in a Grade 8-level text to support the identification of the purpose. R3.1.3 Identify the audience for a Grade 8-level text when there are multiple clues, limited competing information, and the audience is not explicitly stated. R3.1.4_M Use relevant evidence in a Grade 8-level text to support the identification of the audience.
	R3.2: Evaluate a text with justification	R3.2.1_M Give an opinion (when different perspectives are valid) about a Grade 8-level text and use prominent evidence from the text to justify that opinion.
	R3.3: Evaluate the status of claims made in a text	R3.3.1_M Distinguish between factual information and opinion *(as presented)* in a Grade 8-level text.
	R3.4: Evaluate the effectiveness of a text	R3.4.1_M Evaluate the effectiveness of the choice of features *(e.g., images/graphics, paratextual features, and vocabulary)* when these are used in a highly conventional way in a Grade 8-level text.

2.5.3.2 Sample items for MPLc

See Appendix A for MPLc sample items for reading.

2.6 MPLc blueprint for reading

The UIS reporting Criterion 1 for MPLc reading prescribes the scope of the skills that must be targeted, the level of difficulty required, the minimum number of items and how they must be distributed across the specifications. The essential reporting requirements are shown in Table 16.

Table 16: Essential reporting requirements for MPLc reading

Ref.	**Description of requirements** for MPLc reading
1.1c (R)	Minimum 20 score-points assessing reading comprehension aligned to the GPF
1.2c (R)	As defined in the GPF, there should be minimum of: • 4 score-points assessing the retrieve information construct at Grade 8 • 4 score-points assessing the interpret information construct at Grade 8 • 4 score-points assessing the reflect on information construct at Grade 8
1.3c (R)	The assessment should cover 5 of the 10 reading comprehension subconstructs at Grade 8 in the GPF

At least 12 of the reading comprehension score-points must be targeted at Grade 8 with 4 score-points targeting each of retrieving information, interpreting information, and reflect on information. These 12 score points must also cover 5 of the 10 reading subconstructs at Grade 8. The remaining 8 required score-points can target reading comprehension in any Grade. If the assessment only has the minimum of 20 reading items, it is preferable if the remaining items target skills that are close to MPLc rather than being much more, or much less difficult.

Section 1.3 Providing a blueprint for the MPL, outlines some of the considerations in terms of the meeting or going beyond the minimum number of items required and the extent to which coverage of the subconstructs is balanced.

2.6.1 Minimum 12 items assessing reading comprehension

Of the minimum of 20 score points, at least 12 items (score points) must target the reading comprehension domain at Grade 8 in the GPF with 4 score points targeting retrieving information, 4 score points targeting interpreting information, and 4 score points targeting reflect on information. They should target the Grade 8 skill descriptors for 'meets minimum global proficiency' but may include items with Grade 8 skill descriptors for 'partially meets' and 'exceeds'. See section 2.5 Defining reading MPLc.

Targeting the descriptor skills is also supported by the MPLc sample items for reading in Appendix A.

The minimum of 4 items that must target retrieving information (R1) can target one or more of the retrieving information subconstructs (R1.1, R1.2, R1.3) or their related descriptors in any proportion, bearing in mind that 5 subconstructs must be targeted at Grade 8 by the minimum of 12 items altogether.

Table 17 shows three possible examples of how the minimum specifications might be met for 4 retrieving information items (shown in red text). The table shows which of the available descriptors have been selected for each subconstruct in these examples to illustrate other options that might have been selected.

Table 17: Examples of distribution of minimum of 4 retrieving information items at Grade 8

Retrieve subconstructs	**Example 1 at Grade 8**	**Example 2 at Grade 8**	**Example 3 at Grade 8**
R1.1: Recognise the meaning of common Grade-level words	R1.1.1_M – 1 item	R1.1.1_M	R1.1.1_M
R1.2 Retrieve explicit information in a Grade-level continuous text by direct or close word matching	R1.2.1_M – 1 item R1.2.2_M R1.2.3_M – 1 item	R1.2.1_M R1.2.2_M– 2 items R1.2.3_M	R1.2.1_M R1.2.2_M R1.2.3_M
R1.3: Retrieve explicit information in a Grade-level text by synonymous word matching	R1.3.1_M – 1 item R1.3.2_M	R1.3.1_M R1.3.2_M – 2 items	R1.3.1_M – 2 items R1.3.2_M – 2 items
Total	**4 items**	**4 items**	**4 items**
Targeting of subconstructs	*3 retrieve subconstructs*	*2 retrieve subconstructs*	*1 retrieve subconstruct*

A minimum of 4 items must target the construct of interpreting information (R2). These items can target one or more of the 3 sub-constructs (R2.1, R2.2, R2.3) or their related descriptors in any proportion.

Table 18 shows three possible examples of how the minimum specifications might be met for 4 interpreting information items (shown in red text) at Grade 8 taking into consideration the number of subconstructs that have already been targeted by retrieving items for each example. The table shows which of the available descriptors have been selected for each subconstruct in these examples to illustrate other options that might have been selected.

Table 18: Examples of distribution of minimum of 4 interpreting information items at Grade 8

Interpreting information subconstructs	**Example 1 at Grade 8**	**Example 2 at Grade 8**	**Example 3 at Grade 8**
Implications of retrieve targeting for each example	*3 retrieve subconstructs* *2 more required*	*2 retrieve subconstructs* *3 more required*	*1 retrieve subconstruct* *4 more required*
R2.1: Identify the meaning of unknown words and expressions in a grade-level text	R2.1.1_M R2.1.2_M	R2.1.1_M R2.1.2_M – 2 items	R2.1.1_M R2.1.2_M
R2.2: Make inferences in a grade-level text	R2.2.1_M – 1 item R2.2.2_M R2.2.3_M –1 item R2.2.4_M R2.2.5_M R2.2.6_M–1 item	R2.2.1_M – 2 items R2.2.2_M R2.2.3_M R2.2.4_M R2.2.5_M R2.2.6_M	R2.2.1_M R2.2.2_M – 2 items R2.2.3_M R2.2.4_M R2.2.5_M– 2 items R2.2.6_M
R2.3: Identify the main and secondary ideas in a grade-level text	R2.3.1_M – 1 item	R2.3.1_M	R2.3.1_M
Total	**4 items**	**4 items**	**4 items**
Implications for targeting Reflect items	*5 subconstructs met*	*2 retrieve + 2 interpret so 1 reflect subconstruct required*	*1 retrieve + 1 interpret so 3 reflect subconstructs required*

A minimum of 4 items must target the construct of reflect on information (R3). These items can target one or more of the sub-constructs (R3.1, R3.2, R3.3, R3.4) and their related descriptors at Grade 8 in any proportion.

Table 19 shows three possible examples of how the minimum specifications might be met for 4 reflect on information items (shown in red text) taking into consideration the number of subconstructs that have already been targeted by retrieving and interpreting items for each example. The table shows which of the available descriptors have been selected for each subconstruct in these examples to illustrate other options that might have been selected.

Table 19: Examples of distribution of minimum of 4 reflect on information items at Grade 8

Interpreting information subconstructs	**Example 1**	**Example 2**	**Example 3**
Targeting Reflect items	*5 subconstructs met*	*2 retrieve + 2 interpret* *1 reflect subconstruct required*	*1 retrieve + 1 interpret* *3 reflect subconstructs required*
R3.1: Identify the purpose and audience of a text	R3.1.1_M –1 item R3.1.2_M R3.1.3_M –1 item R3.1.4_M	R3.1.1_M –1 item R3.1.2_M – 1 item R3.1.3_M –1 item R3.1.4_M –1 item	R3.1.1_M R3.1.2_M R3.1.3_M – 2 items R3.1.4_M
R3.2: Evaluate a text with justification	R2.2.1_M	R2.2.1_M	R2.2.1_M – 1 item
R3.3: Evaluate the status of claims made in a text	R3.3.1_M – 2 items	R3.3.1_M	R3.3.1_M
R3.4: Evaluate the effectiveness of a text	R3.4.1_M	R3.4.1_M	R3.4.1_M – 1 item
Total	**4 items**	**4 items**	**4 items**

2.6.2 Remaining 8 items

The remaining 8 reading comprehension items (minimum of 20) can target one or more of the three subconstructs (retrieving, interpreting or reflecting) and any of the related descriptors at any grade. These are the relevant subconstructs:

Retrieving information

- R1.1: Recognise the meaning of common Grade-level words
- R1.2 Retrieve explicit information in a Grade-level continuous text by direct or close word matching
- R1.3: Retrieve explicit information in a Grade-level text by synonymous word matching

Interpreting information

- R2.1: Identify the meaning of unknown words and expressions in a Grade-level text
- R2.2: Make inferences in a Grade-level text
- R2.3: Identify the main and secondary ideas in a Grade-level text

Reflect on Information

- R3.1: Identify the purpose and audience of a text
- R3.2: Evaluate a text with justification
- R3.3 Evaluate the status of claims made in a text
- R3.4 Evaluate the effectiveness of a text

Distributing some of the remaining items across the range of 10 reading comprehension subconstructs skills helps to inform effective interventions by identifying students' strengths and any gaps.

Allocating some of the remaining items to Grade 7 skills helps identify what low achieving students can do, and allocating some items to Grade 9 skills helps identify what high achieving students can do while keeping the range of item difficulty reasonably close to MPLc.

The descriptors for each of the reading comprehension subconstructs at Grade 8 are shown in section 2.5 Defining reading MPLc. The GPF has the descriptors and examples for other Grades.

2.6.3 Blueprint examples

There are many different ways that 20 items can be spread across the reading comprehension constructs and subconstructs to target the minimum requirements for MPLc. The options vary the balance in the coverage of reading. Some possible examples with 20 items that all meet, or exceed the minimum specifications are shown in Table 20.

Table 20: Blueprint examples of meeting the minimum MPLc requirements

Construct	Subconstruct	Blueprint 1	Blueprint 2	Blueprint 3
Retrieving Information	R1.1		3 items *- 1 at Grade 7* *- 2 at Grade 8*	1 item *- 1 at Grade 9*
	R1.2	7 items *- 7 at Grade 8*	3 items *- 1 at Grade 6* *- 1 at Grade 7* *- 1 at Grade 8*	2 items *- 2 at Grade 8*
	R1.3		2 items *- 1 at Grade 7* *- 1 at Grade 8*	2 items *- 2 at Grade 8*
Interpret Information	R2.1	3 items *- 3 at Grade 8*		3 items *- 1 at Grade 7* *- 1 at Grade 8* *- 1 at Grade 9*
	R2.2	5 items *- 5 at Grade 8*	5 items *- 1 at Grade 7* *- 1 at Grade 6* *- 3 at Grade 8*	5 items *- 1 at Grade 7* *- 2 at Grade 8* *- 2 at Grade 9*
	R2.3		2 items *- 1 at Grade 7* *- 1 at Grade 8*	2 items *- 1 at Grade 8* *- 1 at Grade 9*
Reflect on information	R3.1		2 items *- 1 at Grade 7* *- 2 at Grade 8*	2 items *- 1 at Grade 8* *- 1 at Grade 9*
	R3.2	3 items *- 3 at Grade 8*		1 item *- 1 at Grade 8*
	R3.3			1 item *- 1 at Grade 8*
	R3.4	2 items *- 2 at Grade 8*	3 items *- 1 at Grade 7* *- 2 at Grade 8*	1 item *- 1 at Grade 8*
Total		**20 items**	**20 items**	**20 items**

Blueprint 1 shows 20 items all targeting Grade 8 distributed across 5 of the 10 reading comprehension subconstructs at Grade 8 (minimum subconstruct distribution). There are 7 retrieve items (minimum of 4 at Grade 8), 8 interpreting items (minimum of 4 at Grade 8) and 5 reflect items (minimum of 4 at Grade 8). Five of the subconstructs are not targeted.

Blueprint 2 shows 20 items distributed across 7 of the 10 reading comprehension subconstructs at Grade 8 (2 more than the minimum subconstruct distribution). There is the minimum of 4 items at Grade 8 for each of retrieving, interpreting and reflect. The 8 remaining items mostly target Grade 7 with 2 items targeting Grade 6.

Blueprint 3 shows 20 items distributed across 9 of the 10 reading subconstructs at Grade 8 (4 more than the minimum subconstruct distribution). There is the minimum of 4 items at Grade 8 for each of retrieving, interpreting and reflect. Six of the remaining items target Grade 9, and 2 items target Grade 7.

An **excellent blueprint** exceeds the minimum requirements by including additional items and improving coverage of the domain. The number of additional items and the reading comprehension construct and subconstruct coverage depends on the purpose. Some possibilities are shown in Table 21. For simplicity, these items are all at Grade 8. Providing the specifications for the minimum of 12 items are met in full, the minimum of 8 remaining items could also have been distributed across any Grades.

Table 21: Blueprint examples of excellence in relation to the MPLc requirements

Construct	Subconstruct	Blueprint 4 All at Grade 8	Blueprint 5 All at Grade 8
Retrieving Information	**R1.1**	1 item	3 items
	R1.2	4 items	5 items
	R1.3	4 items	5 items
Interpret Information	**R2.1**	2 items	3 items
	R2.2	4 items	6 items
	R2.3	3 items	3 items
Reflect on information	**R3.1**	2 items	2 items
	R3.2	2 items	3 items
	R3.3	1 item	
	R3.4	2 items	
Total		**25 items**	**30 items**

Blueprint 4: goes beyond the minimum specifications for Grade 8 by including additional items spread across each of the three constructs, so all are well above the minimum of 4 items per construct at Grade 8 (9 retrieve, 9 interpret and 7 reflect). The items are spread across all 10 of the subconstructs (minimum is 5 subconstructs). Reflect items can be quite challenging to develop, so including 7 reflect items allows for some possible loss of items with poor statistics.

Blueprint 5: goes beyond the minimum specifications for Grade 8 with 13 retrieve, 12 interpret and 5 reflect items so all are above the minimum of 4 items per construct at Grade 8. The items are spread

across 8 of the 10 subconstructs (minimum is 5 subconstructs) with most items concentrated in retrieving and interpreting information.

2.7 Reading MPLab blueprint

Table 22 shows one example of how to meet the minimum requirements for assessing MPLa and MPLb in the one reading test of 30 items.

Table 22: Blueprint Minimum example for Assessing MPLa and MPLb in one test

Construct	**Subconstruct**	**MPLa & MPLb**
Retrieving Information (MPLa & MPLb)	R1.1	5 items *-3 at Grade 2 + 2 at Grade 5*
	R1.2	5 items *-3 at Grade 2 + 2 at Grade 5* *+ 2 at Grade 4*
	R1.3	5 items *- 4 at Grade 2 + 1 at Grade 5*
Interpret Information (MPLb only)	R2.1	2 items *-2 at Grade 5* *-2 at Grade 4*
	R2.2	1 item *- 1 at Grade 5* *-1 at Grade 4*
	R2.3	2 items *- 2 at Grade 5*
Decoding (MPLa only)		5 items -5 at Grade 2
Total		**30 items**

Table 22's blueprint meets MPLa minimum requirements with 10 Retrieve items at Grade 2 that cover at least 2 subconstructs (in this example all 3 subconstructs are covered) plus 5 items targeting Decoding also at Grade 2. This gives 15 items targeting Grade 2 in the combined assessment with 5 targeting Grade 4 to make up the 20 minimum.

To meet MPLb minimum requirements there are 5 Retrieve and 5 Interpret items all at Grade 5 that cover at least 4 of the subconstructs (in this example all 6 subconstructs are covered) plus 5 items that target Grade 4. This gives 15 items targeting around Grade 5 (5 items target Grade 4) and 5 that target Grade 2 Retrieving to make up the 20 minimum targeting the Reading Comprehension construct.

In this example, the MPLa assessment includes 5 Decoding items but these items, or Listening Comprehension items cannot count towards the minimum of 20 items Reading Comprehension items required for MPLb.

Table 23 shows one excellent blueprint example of a combined assessment for MPLa and MPLb in reading.

Table 23: Blueprint Excellent example for Assessing MPLa and MPLb in one test

Construct	Subconstruct	MPLa & MPLb
Retrieving Information (MPLa & MPLb)	R1.1	5 items *-3 at Grade 2 + 2 at Grade 5*
	R1.2	6 items *-3 at Grade 2 + 2 at Grade 5* *+ 1 at Grade 4*
	R1.3	6 items *- 4 at Grade 2 + 1 at Grade 5* *+ 1 at Grade 4*
Interpret Information (MPLb only)	R2.1	3 items *-2 at Grade 5* *-1 at Grade 4*
	R2.2	2 items *- 1 at Grade 5* *- 1 at Grade 4*
	R2.3	3 items *- 2 at Grade 5* *- 1 at Grade 4*
Reflect on information (MPLb only)	R3.1	2 items *- 2 at Grade 5*
	R3.2	1 item *- 1 at Grade 5*
Decoding (MPLa only)		4 items *- 4 at Grade 2*
Listening Comprehension (MPLa only)		6 items *-3 at Grade 2* *-3 at Grade 3*
Total		**40 items**

Table 23 blueprint is effectively one MPLa test of 20 items combined with one MPLb test of 20 items. This example has 10 items that meet the minimum requirements for MPLa plus 4 Decoding and 6 Listening Comprehension items that provide information about students who may not be reading yet but are developing decoding and listening comprehension skills. The example has 10 items that meet the minimum requirements for MPLb plus 2 Retrieve items at Grade 4, 3 Interpret items at Grade 4 and 3 Reflect items at Grade 5 to provide more information about students who are almost at Grade 5 level for reading as well as more information about students' Reflect skills.

3. Mathematics

3.1 Defining mathematics MPLa (end of lower primary)

3.1.1 Nutshell statement

Students recognise, read, write, order and compare whole numbers up to 100. They demonstrate computational skills involving the processes of addition, subtraction, doubling and halving for whole numbers within 20. They recognise and name familiar shapes and describe their basic attributes. They recognise time in days, weeks and months. They describe location in a space using simple language.

3.1.2 Expanded statement

Students can read, write and compare whole numbers up to 100. They can add and subtract numbers within 20, double and halve whole numbers within 20, and solve application problems involving numbers within 20. Students can recognise simple shapes and their attributes and use these shapes to make other shapes. They can also measure and compare lengths of shapes and lines using non-standard units. They use calendars and recognise days in a week and months in a year. They can read simple data displays. They possess foundational knowledge of spatial orientation, and can appraise the relative size of real-world objects.

3.1.3 MPLa skill specifications

3.1.3.1 Number and operations: Domain N

In summary, the number and operations skills expected for MPLa are:

Whole numbers

Count, read, write, compare, and order whole numbers up to 100.

Represent quantities up to 100 concretely, pictorially, and symbolically.

Solve addition and subtraction problems within 20 that are presented concretely, pictorially, and symbolically.

Divide a group of up to 20 objects into 2 equal sets.

Solve simple real-world problems using addition and subtraction facts within 20.

These specifications are elaborated in Table 24 which shows the GPF domain of number and operations for Grade 2. This has one construct of whole numbers, four associated subconstructs and the Grade 2 descriptors for ‘meets global proficiency’.

Table 24: GPF Grade 2 number and operations construct, subconstructs and descriptors for 'meets'

Construct	Subconstructs	Grade 2 Descriptors for 'meets'
N1: Whole Numbers	N1.1 Identify and count in whole numbers, and identify relative magnitude	N1.1.1a_M Count in whole numbers up to 100. N1.1.1b_M Read and write whole numbers up to 100 in words and in numerals. N1.1.2_M Compare and order whole numbers up to 100. N1.1.3_M Skip count forward by twos or tens.
	N1.2: Represent whole numbers in equivalent ways	N1.2.1_M Identify and represent the equivalence between whole quantities up to 30 represented as objects, pictures, and numerals *(e.g., when given a picture of 30 flowers, identify the picture that has the number of butterflies that would be needed for each flower to have a butterfly; given a picture of 19 shapes, draw 19 more shapes)*.
	N1.3: Solve operations using whole numbers	N1.3.1_M Add and subtract within 20 (i.e., where the sum or minuend does not surpass 20), and represent these operations with objects, pictures, or symbols *(e.g., 16 - 3= __ ; 12 + 3 =__; when presented with a picture of 12 marbles with 3 more marbles added, complete or match to the number sentence 12 + 3 = __. Or, when presented with a picture of a carton that can hold 20 bottles, 7 of which have been removed, complete or match to the subtraction statement 20 - 7= __)*. N1.3.2_M Find the double of a set of up to 10 objects, and divide a group of up to 20 objects into 2 equal sets *(e.g., An octopus has 8 legs. There are 2 octopuses. How many octopus legs are there in total?; There are 16 biscuits. The biscuits will be shared equally by two friends. How many biscuits will each friend get?)*. N1.3.7_M Perform calculations involving two or more additions and subtractions, within the limits for meets expectations described above, when order of operations is not a factor *(e.g., 14 - 5 + 4 = __; 17 - 3 - 7 = __)*.
	N1.4: Solve real-world problems involving whole numbers	N1.4.1_M Solve simple real-world problems using addition and subtraction facts within 20 (i.e., where the sum or minuend does not surpass 20) *(e.g., There are 15 sheep in a field. 4 more sheep come into the field. How many sheep are in the field now?; There are 16 sheep in a field. 4 go to the stable. How many sheep are left in the field?)*.

3.1.3.2 Measurement: Domain M

In summary, the measurement skills expected for MPLa are:

Length, weight, capacity, volume, area and perimeter

Use non-standard units to measure and compare length and weight.

Time

Tell time using a digital clock.

Tell time using an analogue clock to the nearest hour.

Recognise the number of days in a week and months in a year.

Solve problems, including real-world problems, using a calendar (for example, given a calendar, answer the question: March 2 falls on which day of the week?).

Currency

Count combinations of commonly used currency denominations.

Combine commonly used currency denominations to make a specified amount.

These specifications are elaborated in Table 25 which shows the GPF domain of measurement for Grade 2. This has three constructs, associated subconstructs and the Grade 2 descriptors for 'meets global proficiency'.

Table 25: GPF Grade 2 measurement constructs, subconstructs and descriptors for 'meets'

Construct	Subconstructs	Grade 2 Descriptors for 'meets'
M1: Length, weight, capacity, volume, area and perimeter	M1.1 Use non-standard and standard units to measure, compare, and order	M1.1.1a_M Use non-standard units to estimate and compare the length of objects *(e.g., identify that the red pencil is 4 paper clips long and the black pencil is 6 paper clips long)*.
M2: Time	M2.1: Tell time	M2.1.2_M Tell time using an analog clock to the nearest hour. M2.1.4_M Recognize the number of days in a week and months in a year.
	M2.2: Solve problems involving time	M2.2.1_M Solve problems, including real-world problems, using a calendar *(e.g., given a calendar, answer the question: March 2 falls on what day of the week?)*.
M3: Currency	M3.1: Use different currency units to create amounts	M3.1.1a_M Count combinations of commonly used currency denominations. M3.1.1b_M Combine commonly used currency denominations to make a specified amount.

3.1.3.3 Geometry: Domain G

In summary, the geometry skills expected for MPLa are:

Spatial visualisations

Compose/decompose a larger two-dimensional (2D) shape from a small number of given shapes without lines showing where the shapes go (for example, use the smaller shapes to make the larger shape: ).

Properties of shapes and figures

Recognise and name shapes that are regular and irregular (for example, if shown an irregular triangle, recognise that it is a triangle; name a hexagon).

Recognise and name straight and curved lines and attributes of shapes (for example, number of sides, number of corners).

Recognise when a 2D shape has been rotated or reflected (for example, when shown a number of shapes, identify those that are the same, even when some are rotated or reflected).

Position and direction

Interpret and use positional terms (for example, in front of, behind, opposite, between).

Accurately use the terms left and right (for example, answer, 'Where is the teacher's desk?' 'To the [left] of the chalkboard.').

These specifications are elaborated in Table 26 which shows the GPF domain of geometry for Grade 2. This has three constructs, each with an associated subconstruct and the Grade 2 descriptors for 'meets global proficiency'.

Table 26: GPF Grade 2 geometry constructs, subconstructs and descriptors for 'meets'

Construct	Subconstructs	Grade 2 Descriptors for 'meets'
G1: Properties of shapes and figures	G1.1 Recognize and describe shapes and figures	G1.1.1_M Recognize and name shapes that are regular and irregular *(e.g., if shown an irregular triangle, recognize that it is a triangle; name a hexagon)*. G1.1.4_M Recognize and name straight and curved lines and attributes of shapes *(e.g., number of sides, number of corners)*. G1.1.9_M Recognize when a two-dimensional shape has been rotated or reflected *(e.g., when shown a number of shapes, identify those that are the same, even when some are rotated or reflected)*.
G2: Spatial visualizations	G2.1: Compose and decompose shapes and figures	G2.1.1_M Compose/decompose a larger two-dimensional shape from a small number of given shapes without lines showing where the shapes go *(e.g., use the smaller shapes to make the larger shape)*  .
G3: Position and direction	G3.1: Describe the position and direction of objects in space	G3.1.1_M Recognize and use positional terms that describe the location of an object with more precision *(e.g., answer the question, "Where is the book?" by saying, "The book is between the pencil and the bag.")*.

3.1.3.4 Statistics and probability: Domain S

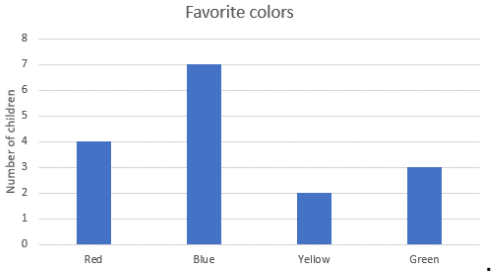
In summary, the statistics and probability skills expected for MPLa are:

Data management

> Compare categories of simple data displays (that is, simple column graphs / bar graphs, tally charts, pictographs) with up to four categories and a single unit scale (for example, for a column graph showing favourite colours, make statements like: 'More children chose green than yellow, 'Blue was the most popular colour', 'Three more children chose blue than chose red').

These specifications are elaborated in Table 27 which shows the GPF domain of statistics and probability for Grade 2. This has one construct of data management, an associated subconstruct and the Grade 2 descriptor for 'meets global proficiency'.

Table 27: GPF Grade 2 statistics and probability constructs, subconstructs and descriptors for 'meets'

Construct	Subconstructs	Grade 2 Descriptor for 'meets'
S1: Data management	S1.1 Retrieve and interpret data presented in displays	S1.1.2_M Compare between categories of a tally chart, bar graph, or pictograph with up to four categories and a single-unit scale, using terms such as more than or less than *(e.g., Which color was chosen less often than green on this bar graph?)*  .

3.1.3.5 Algebra: Domain A

In summary, the algebra skills expected for MPLa are:

Patterns

> Extend non-numerical repeating patterns, recognise repeating units, and identify a missing element (for example, ○□□○□□__□□).

These specifications are elaborated in Table 28 which shows the GPF domain of algebra for Grade 2. This has two constructs of patterns and relations and functions, associated subconstructs and the Grade 2 descriptors for 'meets global proficiency'.

Table 28: GPF Grade 2 algebra constructs, subconstructs and descriptors for 'meets'

Construct	Subconstructs	Grade 2 Descriptors for 'meets'
A1: Patterns	A1.1 Recognize, describe, extend, and generate patterns	A1.1.1_M Recognize repeating sets in a pattern and use this to identify a missing element and extend the pattern *(e.g., identify that ❍□□ is the repeating set in ❍□□❍□□❍□□; identify the missing element in the following set ❍□□❍□□__□□; when presented with ❍□□❍□□❍□□, add two additional sets to the pattern)*.
A3: Relations and functions	A3.2 Demonstrate an understanding of equivalency	A.3.2.1_M Create a numerical expression using only + to model a situation (e.g., represent the following in a number sentence: 3 people are on a bus, and 4 more get on: 3 + 4). A3.2.3_M Find a missing value in real-world addition problems within 20 (e.g., 3 people are on a bus. More people get on. Now there are 7. How many people got on the bus?).[7]

3.1.3.6 Sample items for MPLa

See Appendix B for the MPLa sample items for mathematics.

3.2 Mathematics MPLa blueprint

UIS Reporting Criterion 1 for MPLa mathematics prescribes the scope of the skills that must be targeted, the level of difficulty required, the minimum number of items and how they must be distributed across the specifications. The essential reporting requirements are shown in Table 29[8].

[7] There are no descriptors at 'meets' for this subconstruct within the GPF. These descriptors have been created to fill this gap. The examples included with these suggested new descriptors are taken from the existing 'exceeds' descriptors in the GPF.

[8] There are four **non-essential requirements:** 1.5a (M) 'Within the non-number and operations domains (measurement, geometry, statistics and probability, and algebra), items should cover at least 3 out 4 of these domains'; 1.6a (M) 'Within the non-number and operations domains (measurement, geometry, statistics and probability, and algebra), at least 6 out of 10 subconstructs should be represented'; 1.7a (M) 'If there is an intention to report on individual constructs, a minimum of 7 items per construct is required.'; and 1.9a (M) 'The language(s) of instruction of the children being assessed should be used for the assessment.'

Table 29: Essential reporting requirements for MPLa mathematics

Ref.	**Description of requirements** for MPLa mathematics
1.1a (M)	Minimum 20 score-points aligned to the GPF in mathematics
1.2a (M)	Minimum 10 score-points assessing number and operations domain in the GPF at Grade 2
1.3a (M)	The assessment must cover at least three out of the four number and operations subconstructs at Grade 2 in the GPF as selected in 1.2a(M) above
1.4a (M)	A minimum of 10 items must be included from any of the 4 non-number and operations domains (measurement, geometry, statistics and probability, and algebra)
1.8a (M)	Differences between the language of instruction, home language, and language of assessment must be noted and implications considered for interpretation of the outcomes

At least 10 of the mathematics score-points must be targeted at number and operations and cover at least three of the four number and operations subconstructs at Grade 2 in the GPF. The other 10 required mathematics score-points can target any Grades and can also target any of the domains of measurement, geometry, statistics and probability, and algebra. If the assessment only has the minimum of 20 mathematics items, it is preferable if the remaining items target skills that are close to MPLa rather than being much more, or much less difficult.

Section 1.3 Providing a blueprint for the MPL, outlines some of the considerations in terms of the meeting or going beyond the minimum number of items required and the extent to which coverage of the subconstructs is balanced.

3.2.1 Minimum 10 items assessing number and operations

Of the minimum 20 score points, the minimum of 10 items (score points) must target the number and operations domain in the GPF at Grade 2 and must cover three out of the four number and operations subconstructs.

- Whole numbers (N1) is the only number and operations construct at Grade 2.
- The items must cover three out of the four Grade 2 number and operations subconstructs N1.1, N1.2, N1.3 and N1.4):
    - N1.1: Identifying and counting in whole numbers, and identifying relative magnitude
    - N1.2: Representing whole numbers in equivalent ways
    - N1.3: Solving operations using whole numbers
    - N1.4: Solving real-world problems involving whole numbers.

The minimum of 10 items can target N1.1, N1.2, N1.3 and/or N1.4 at Grade 2 in any combination that adds up to 10, provided they are aligned to at least three of the four subconstructs.

The 10 items should target the Grade 2 skill descriptors for ‘meets minimum global proficiency’ for each subconstruct but may include items with Grade 2 skill descriptors for ‘partially meets’ and ‘exceeds’. These descriptors were provided in section 3.1 Defining mathematics MPLa.

Targeting the skill descriptors is also supported by the MPLa sample items for mathematics in Appendix B.

3.2.2 Remaining 10 items

A minimum of 20 mathematics items are required altogether with a minimum of 10 additional mathematics items targeting one or more of the four non-number and operations domains (measurement, geometry, statistics and probability, and algebra) and any of the related descriptors at any Grade level.

Allocating some, or all, of the 10 additional items to each of measurement, geometry, statistics and probability, and algebra broadens the coverage of the learning area. This can help to inform effective interventions by identifying the extent to which students' low mathematics achievement might be related to their limited comprehension in non-number domains.

3.2.3 Blueprint examples

There are many different ways that items can be spread across the constructs and subconstructs to target the minimum requirements for MPLa. The options vary the balance in the coverage of mathematics. Some examples that meet the minimum requirements are shown in Table 30.

Table 30: Blueprint examples of meeting the minimum MPLa requirements

Domain	Construct	Subconstruct	Blueprint 1	Blueprint 2	Blueprint 3
Number and operations	**Whole numbers**	**N1.1**	3 items	3 items	2 items
		N1.2	2 items	1 item	2 items
		N1.3	5 items	6 items	5 items
		N1.4	2 items		1 item
Measurement	**Length, weight, capacity, volume, area, and perimeter**	**M1.1**	2 items	2 items	1 item
	Time	**M2.1**	2 items	1 item	1 item
		M2.2	2 items		1 item
	Currency	**M3.1**	2 items		1 item
Geometry	**Properties of shapes and figures**	**G1.1**		2 items	2 items
	Spatial visualizations	**G2.1**		2 items	1 item
	Position and direction	**G3.1**		1 item	1 item
Statistics and probability	**Data management**	**S1.1**			1 item
Algebra	**Patterns**	**A1.1**		2 items	1 item
	Relations and functions	**A3.2**			
Total	**Total**		**20 items**	**20 items**	**20 items**

Blueprint 1: shows 20 items distributed across 2 of the mathematics domains (number and operations, and measurement). 12 items (2 more than the minimum) cover all 4 of the number and operations subconstructs. The remaining 8 items cover all of the measurement subconstructs. This example would be appropriate if the focus of the assessment is only on student achievement in number and operations, and measurement. There is no coverage of any geometry, statistics and probability, or algebra subconstructs. While this blueprint example meets the essential reporting requirements, it

does not satisfy the non-essential 1.5a[9]. That is, it does not cover 3 of the 4 non-number domains. As such, it is acceptable but not ideal.

Blueprint 2: focuses more coverage on the intra-mathematical and less on real-world applications of mathematics across the subconstructs. There are 10 items covering 3 of the 4 whole number subconstructs (minimum distribution). There is no coverage of the data management or currency constructs.

Blueprint 3: includes coverage of all subconstructs, including 10 items covering all 4 of the whole numbers subconstructs (minimum distribution).

An **excellent blueprint** exceeds the minimum requirements by including additional items. The number of additional items and domain, construct and subconstruct coverage depends on the purpose of the assessment. Some possibilities that all meet and go beyond the minimum specifications are shown in Table 31.

[9] There are four **non-essential requirements:** 1.5a (M) 'Within the non-number and operations domains (measurement, geometry, statistics and probability, and algebra), items should cover at least 3 out 4 of these domains'; 1.6a (M) 'Within the non-number and operations domains (measurement, geometry, statistics and probability, and algebra), at least 6 out of 10 subconstructs should be represented'; 1.7a (M) 'If there is an intention to report on individual constructs, a minimum of 7 items per construct is required.'; and 1.9a (M) 'The language(s) of instruction of the children being assessed should be used for the assessment.'

Table 31: Blueprint examples of excellence in relation to the MPLa requirements

Domain	Construct	Subconstruct	Blueprint 4	Blueprint 5
Number and operations	**Whole numbers**	**N1.1**	3 items	4 items
		N1.2	2 items	2 items
		N1.3	3 items	5 items
		N1.4	2 items	2 items
Measurement	**Length, weight, capacity, volume, area, and perimeter**	**M1.1**	2 items	2 items
	Time	**M2.1**	2 items	3 items
		M2.2	1 item	1 item
	Currency	**M3.1**	1 item	2 items
Geometry	**Properties of shapes and figures**	**G1.1**	3 items	4 items
	Spatial visualizations	**G2.1**	2 items	2 items
	Position and direction	**G3.1**	1 item	1 item
Statistics and probability	**Data management**	**S1.1**	2 items	3 items
Algebra	**Patterns**	**A1.1**	1 item	1 item
	Relations and functions	**A3.2**		1 item
Total	**Total**		**25 items**	**33 items**

Blueprint 4: includes 5 more than the minimum of 20 items, with 10 number and operations items (minimum distribution) plus 6 measurement items, 6 geometry items, 2 statistics and probability items and 1 algebra item to target the scope of the learning area of mathematics for Grade 2.

Blueprint 5: includes 13 more than the minimum of 20 items, with 13 number and operations items (minimum is 10 spread across 3 of the 4 subconstructs) plus 8 measurement items, 7 geometry items, 3 statistics and probability items and 2 algebra items to target the scope of the learning area of mathematics for Grade 2.

3.3 Defining mathematics MPLb (end of primary)

3.3.1 Nutshell statement

Students recognise, read, write, order and compare whole numbers within 100,000, unit fractions and their multiples. They add/subtract with whole numbers within 1,000 and multiply/divide with whole numbers within 100. Students can measure length, weight and capacity using standard units; read time on an analogue clock; calculate the perimeter of simple 2D shapes and the area of rectangles; and describe the attributes of familiar 2D and 3D shapes. They read, interpret and construct different types of data displays such as tables, column graphs and pictographs, and recognise, describe and extend number patterns. They can solve simple application problems.

3.3.2 Expanded statement

Students can add and subtract whole numbers within 1,000 and demonstrate fluency with multiplication facts up to 10 x 10 and related division facts; solve simple application problems with whole numbers using the four operations; identify simple equivalent fractions; compare and order unit fractions and fractions with related denominators; identify and represent quantities using decimal notation up to the tenths place; select and use a variety of tools to measure and compare length, weight and capacity/volume; read time to the minute on an analogue clock and calculate elapsed time in minutes within and across the hour; construct data displays with data arranged into categories and single or multi-unit scales; retrieve multiple pieces of information from data displays to solve problems; recognise and name 2D shapes and familiar 3D objects by their simple attributes such as number of faces, edges and vertices for 3D shapes and number of sides and corners for 2D shapes; describe and continue number patterns that increase or decrease by a constant value from any starting point; or that increase or decrease by a constant multiplier; and apply the concept of equivalence by finding a missing value in a number sentence.

3.3.3 MPLb skill specifications

3.3.3.1 Number and operations: Domain N

In summary, the number and operations skills expected for MPLb are:

Whole numbers

Read, write, compare, and order whole numbers up to 10,000.

Skip count forwards and backwards using twos, fives, tens, hundreds, and thousands.

Round whole numbers up to the nearest hundred and thousand.

Add and subtract whole numbers within 1,000.

Demonstrate fluency with multiplication facts up to 10 × 10, and related division facts.

Solve simple real-world problems using the four operations, with the unknown in different positions (addition and subtraction within 1,000 and multiplication problems using facts up to 10 × 10 and their associated division facts).

Fractions

Identify simple equivalent fractions where one denominator is a multiple of another (for example, 1/3 = 2/6).

Compare and order unit fractions (for example, 1/4, 1/3, 1/2) or fractions with different but related denominators (for example, 2/3, 7/12, 5/6).

Decimals

Identify and represent quantities using decimal notation (symbols) up to the tenths place (for example, identify that 0.8 is eight tenths).

These specifications are elaborated in Table 32 which shows the GPF domain of number and operations for Grade 5. This has three constructs of whole numbers, fractions and decimals, associated subconstructs and the Grade 5 descriptors for 'meets global proficiency'.

Table 32: GPF Grade 5 number and operations construct, subconstructs and descriptors for 'meets'

Construct	Subconstructs	Grade 5 Descriptors for 'meets'
N1: Whole Numbers	N1.1 Identify and count in whole numbers, and identify relative magnitude	N1.1.1a_M Count in whole numbers up to any whole number. N1.1.1b_M Read and write whole numbers greater than 10,000 in words and numerals. N1.1.2_M Compare and order whole numbers up to 100,000. N1.1.3_M Skip count forwards and backwards by thousands.
	N1.2: Represent whole numbers in equivalent ways	N1.2.2_M Use place-value concepts for thousands, hundreds, tens, and ones *(e.g., compose or decompose a four-digit whole number using a number sentence such as 1,383 = 1 thousand, 3 hundreds, 8 tens, and 3 ones; 1383 = 1,000 + 300 + 80 + 3; determine the value of a digit in the thousands place)*. N1.2.3_M Round whole numbers to the nearest hundred.
	N1.3: Solve operations using whole numbers	N1.3.1_M Add and subtract beyond 1,000 (i.e., where the sum or minuend surpasses 1,000), with and without regrouping, and represent these operations with objects, pictures, or symbols *(e.g., 1457 - 129; use number lines to reason through or solve addition and subtraction problems)*. N1.3.3_M Multiply, with and without regrouping, and divide, with no remainder, any number by a one-digit number and multiply two, 2-digit numbers, with and without regrouping *(e.g., 342 x 4 = __; 42 x 34 = __; 1380 ÷ 5 = __)*. N1.3.7_M Perform calculations involving two or more operations, within the limits for meets

Construct	Subconstructs	Grade 5 Descriptors for 'meets'
		expectations described above, respecting the order of operations *(e.g., 1754 + 53 x 53 = __; 4 x 9 x 8 = __)*.
	N1.4: Solve real-world problems involving whole numbers	N1.4.1_M Solve simple real-world problems involving addition and subtraction of whole numbers within 1,000 (i.e., where the sum or minuend does not surpass 1,000) with and without regrouping, including problems involving measurement and currency units *(e.g., There were 740 people living in a town. 83 more people come to live in the town. What is the total number of people living in the town now?; There are 750 people living in a town. Only 327 of them were born in the town. How many were born outside the town?)*. N1.4.2_M Solve simple real-world problems involving the multiplication of two whole numbers to 10, and associated division facts *(e.g., Amina is putting fruit into bags. Each bag will contain 7 pieces of fruit. How many bags will Amina need for 28 pieces of fruit?; Amina has 4 bags. Each bag contains 7 pieces of fruit. How many pieces of fruit are there in total?)*.
N2: Fractions	N2.1: Identify and represent fractions using objects, pictures, and symbols, and identify relative magnitude	N2.1.2_M Identify and express proper fractions as equivalent fractions with denominators up to 12 *(e.g., express a fraction in simplest form 6/9 = □/3; 2/10 = 1/□; express as a multiple of another 4/5 = 8/□)*. N2.1.4_M Compare and order fractions with different but related denominators up to 12 *(e.g., 2/3 and 5/6)*.
	N2.2: Solve operations using fractions	N2.2.1_M Add and subtract proper fractions with different but related denominators *(e.g., 2/3 + 1/6; 7/8 - 1/4)*. N2.2.3_M Multiply commonly-used fractions by whole numbers, or divide proper fractions by whole numbers, and represent such operations with objects or pictures *(e.g., represent 3/4 x 12 with 3 by 4 grid with 3 of the columns colored in; or represent 3/4 divided by 2 as a 1 x 1 grid with one side divided into 4 equal parts and 3 blocks colored*

Construct	Subconstructs	Grade 5 Descriptors for 'meets'
		in and then other side divided into 2 to produce 8 equal blocks with 6 colored in).
	N2.3: Solve real-world problems involving fractions	N2.3.1_M Solve real-world problems involving addition and subtraction of proper fractions with different but related denominators *(e.g., Paola has 2/5 of a chocolate bar left. Her friend Carola has 3/10 of the same chocolate bar. Together, they have what fraction of the chocolate bar?; Paola has 2/3 of a chocolate bar left. If she gives her friend Carola 1/6 of what remains, what fraction of the chocolate bar will Paola have left?)*. N2.3.2_M Solve real-world problems involving the multiplication and division of a proper fraction and a whole number *(e.g., Misha has half a pizza. If she shares it with her brother, what fraction of the original pizza will each receive?)*.
N3: Decimals	N3.1: Identify and represent decimals using objects, pictures, and symbols, and identify relative magnitude	N3.1.1_M Identify and represent quantities using decimal notation (i.e., symbols) up to the tenths place *(e.g., identify that 0.8 is 8 tenths)*. N3.1.2_M Compare and order decimal numbers up to the tenths place *(e.g., sort the following decimals from high to low: 0.8, 0.3, 0.1)*.
	N3.2: Represent decimals in equivalent ways (including fractions and percentages)	N3.2.1_M Round decimal numbers to the nearest tenths place *(e.g., round 3.46 to 3.5)*. N3.2.2_M Identify and express fractions with denominators of 10 using decimal notation *(e.g., 7/10 = 0.7)*.
	N3.3: Solve operations using decimals	N3.3.1_M Add and subtract decimal numbers up to the tenths place. Create or identify concrete or picture models to represent such additions *(e.g., 0.5 + 0.2)*.

3.3.3.2 Measurement: Domain M

In summary, the measurement skills expected for MPLb are:

Length, weight, capacity, volume, area, and perimeter

Select and use a variety of tools to measure and compare length, weight, and capacity/volume (to the nearest marked increment on the scale).

Identify the relationship between the relative size of adjacent units within a familiar standard system of measurement for length, weight and capacity/volume (for example, identify the number of millimetres in a centimetre, the number of pints in a quart, the number of grams in a kilogram).

Calculate the perimeter of a polygon.

Solve problems, including real-world problems, involving the area of a rectangle.

Time

Tell time using an analogue clock to the nearest minute.

Solve problems, including real word problems, involving elapsed time in minutes across hours (for example, calculate the difference between 3:24 and 5:12 or the difference between 16:35 and 18:22), including problems involving schedules (that is, timetables, agendas, itineraries).

These specifications are elaborated in Table 33 which shows the GPF domain of measurement for Grade 5. This has two constructs, associated subconstructs and the Grade 5 descriptors for 'meets global proficiency'.

Table 33: GPF Grade 5 measurement constructs, subconstructs and descriptors for 'meets'

Construct	**Subconstructs**	**Grade 5 Descriptors for 'meets'**
M1: Length, weight, capacity, volume, area and perimeter	M1.1 Use non-standard and standard units to measure, compare, and order	M1.1.3a_M Identify the relationship between the relative size of adjacent units within a standard system of measurement for length and weight *(e.g., identify the number of millimeters in a centimeter)*. M1.1.3b_M Identify the relationship between the relative size of adjacent units within a standard system of measurement for capacity/volume *(e.g., identify the number of pints in a quart)*. M1.1.4_M Read scales to the nearest marked increment on a variety of measuring tools involving fractions and decimals to the tenths place, containing both labeled and unlabeled scale increments *(e.g., read a kitchen scale containing increments expressed as fractions)*.
	M1.2 Solve problems involving measurement	M1.2.1_M Solve problems, including real-world problems, involving the perimeter of a polygon. M1.2.3_M Solve problems, including real-world problems, involving the calculation of the area of a rectangle.
M2: Time	M2.1: Tell time	M2.1.3_M Recognize equivalence between representations of time *(e.g., digital, analog, and written; 15 minutes is a quarter of an hour)*.

Construct	Subconstructs	Grade 5 Descriptors for 'meets'
	M2.2: Solve problems involving time	M2.2.2_M Solve problems, including real-world problems, involving elapsed time in minutes across hours *(e.g., calculate the difference between 3:24 and 5:12 or the difference between 16:35 and 18:22), including problems involving schedules (i.e., timetables, agendas, itineraries)*. M2.2.3_M Solve problems, including real-world problems, involving the number of days in a week, months in a year, hours in a day, minutes in an hour, and seconds in a minute.

3.3.3.3 Geometry: Domain G

In summary, the geometry skills expected for MPLb are:

Properties of shapes and figures

Recognise and name 2D shapes and simple 3D objects by their attributes (that is, their lines and angle properties; for example, distinguishing between equilateral, isosceles and scalene triangles; describing the number of faces, edges and vertices of a rectangular prism).

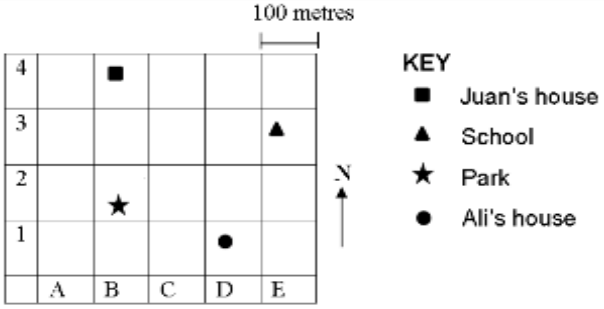
Spatial visualizations

Identify the net of a cube or specific faces on the net of a cube (for example, fold mentally to answer the question, 'Which of these is the net of a cube?'; 'Identify opposite faces on a net.').

Position and direction

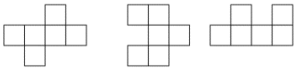
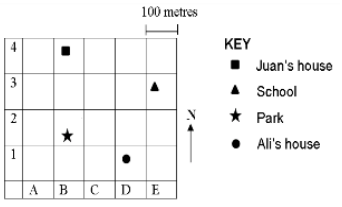
Follow more complex directions and/or give simple directions to a given location (for example, go straight, turn right at the corner with the tree, turn left at the next corner, keep going to the green house).

Use different kinds of simple maps, such as alphanumeric maps, grid maps, or local equivalents, to give and follow two-step directions to a given location (for example, 'Using this map, if you are at the school, you walk 100 metres north, and turn left. What would you be facing?'; 'Which of these is closest to the distance between the park and Juan's house? 100 metres / 150 metres / 200 metres / 250 metres).



These specifications are elaborated in Table 34 which shows the GPF domain of geometry for Grade 5. This has three constructs, each with an associated subconstruct and the Grade 5 descriptors for 'meets global proficiency'.

Table 34: GPF Grade 5 geometry constructs, subconstructs and descriptors for 'meets'

Construct	Subconstructs	Grade 5 Descriptors for 'meets'
G1: Properties of shapes and figures	G1.1: Differentiate shapes and figures by their attributes	G1.1.2a_M Recognize and name three-dimensional figures by their attributes *(e.g., faces, edges, vertices)*. G1.1.5_M Recognize and name types of triangles *(e.g., isosceles, scalene, equilateral, and right angle)*. G1.1.7_M Recognize types of angles by their magnitude *(e.g., right, straight, acute, obtuse)*.
G2: Spatial visualizations	G2.1: Compose and decompose shapes and figures	G2.1.2_M Identify the net of a cube or specific faces on the net of a cube *(e.g., fold mentally to answer the question, which of these is the net of a cube?; identify opposite faces on a net).*  .
G3: Position and direction	G3.1: Describe the position and direction of objects in space	G3.1.2_M Use a grid map with compass directions when the grid dimensions are given in terms of the real-world distance *(e.g., Which of these is closest to the distance between the park and Juan's house? a) 100 meters b) 150 meters c) 200 meters d) 250 meters)*  .

3.3.3.4 Statistics and probability: Domain S

In summary, the statistics and probability skills expected for MPLb are:

Data management

Complete missing information in simple data displays using data arranged into categories, with a single or multi-unit scale, with some support provided (for example, labelled horizontal and/or vertical axes).

Retrieve multiple pieces of information from data displays to solve problems (for example, calculate a total represented by multiple bars on a graph, compare two categories on the graph).

Chance and probability

Identify and compare the likelihoods of everyday events and simple probability experiments, using descriptive words such as 'certain', 'impossible', 'likely', 'unlikely'.

These specifications are elaborated in Table 35 which shows the GPF domain of statistics and probability for Grade 5. This has two constructs of data management and chance and probability, each with an associated subconstruct and the Grade 5 descriptors for 'meets global proficiency'.

Table 35: GPF Grade 5 statistics and probability constructs, subconstructs and descriptors for 'meets'

Construct	Subconstructs	Grade 5 Descriptors for 'meets'
S1: Data management	S1.1 Retrieve and interpret data presented in displays	S1.1.3_M Compare by calculating differences between categories in a tally chart, bar graph, or pictograph with a multi-unit scale. S1.1.4_M Organize data and construct a tally chart, bar graph, or pictograph that arranges data into categories and uses a single- or multi-unit scale.
S2: Chance and probability	S2.1: Describe the likelihood of events in different ways	S2.1.1_M Identify the likelihood of an event happening as likely or unlikely *(e.g., There are 9 blue, 1 red, 1 green, and 1 yellow marbles in a bag. Which color is likely to be selected?)*.

3.3.3.5 Algebra: Domain A

In summary, the algebra skills expected for MPLb are:

Patterns

Describe numerical patterns as increasing by a constant value but starting at a number that is not a multiple of the value of the pattern (for example, the pattern 5, 8, 11, 14 starts at 5 and goes up by 3).

Describe numerical patterns that increase or decrease by a constant multiplier, and use this information to identify a missing element or extend the pattern (for example, describe that the pattern 2, 4, 8, 16 starts at 2 and doubles or that the pattern 20, 10, 5, 2.5 starts at 20 and halves; identify the missing element in the pattern 3, 6, __, 24, 48; write the next two numbers in the pattern 80, 40, 20, 10).

Relations and functions

Demonstrate understanding of equivalence by finding a missing value in a number sentence using addition, subtraction, multiplication or division of numbers within 100 (for example, 23 + __ = 29; 6 × __ = 54).

These specifications are elaborated in Table 36 which shows the GPF domain of algebra for Grade 5. This has two constructs of patterns and relations and functions, each with an associated subconstruct and the Grade 5 descriptors for 'meets global proficiency'.

Table 36: GPF Grade 5 algebra constructs, subconstructs and descriptors for 'meets'

Construct	Subconstructs	Grade 5 Descriptors for 'meets'
A1: Patterns	A1.1 Recognize, describe, extend, and generate patterns	A1.1.2_M Describe numerical patterns that increase or decrease by a constant multiplier, and use this information to identify a missing element or extend the pattern *(e.g., describe that the pattern 2, 4, 8, 16 starts at 2 and doubles or that the pattern 20, 10, 5, 2.5 starts at 20 and halves; identify the missing element in the pattern 3, 6, __, 24, 48; write the next two numbers in the pattern 80, 40, 20, 10)*.
A3: Relations and functions	A3.2: Demonstrate an understanding of equivalency	A3.2.2_M Represent real-world problems involving the multiplication of two whole numbers to 10 and related division facts, using a number sentence with a symbol or blank to represent the missing value *(e.g., Paul has 3 bags of oranges. There are the same number of oranges in each bag. He has 18 oranges altogether. How many oranges are there in each bag? Represent the situation with a multiplication sentence)*. A3.2.3_M Find a missing value in a number sentence using multiplication and division within 100 *(e.g., 7 x _ = 35)*.

3.3.3.6 **Sample items for MPLb**

See Appendix B for the MPLb sample items for mathematics.

3.4 Mathematics MPLb blueprint

UIS Reporting Criterion 1 for MPLb mathematics prescribes the scope of the skills that must be targeted, the level of difficulty required, the minimum number of items and how they must be distributed across the specifications. The essential reporting requirements are shown in Table 37.

Table 37: Essential reporting requirements for MPLb mathematics

Ref.	**Description of requirements** for MPLb mathematics
1.1b (M)	Minimum of 10 score-points assessing *number and operations* aligned to GPF
1.2b (M)	Minimum of 5 score-points assessing *measurement and geometry* aligned to the GPF
1.3b (M)	Minimum of 5 score-points assessing *statistics and probability* and *algebra* aligned to the GPF
1.4b (M)	The assessment must include 12 Grade 5 items covering 12 of the 21 subconstructs at Grade 5 in the GPF

Of the minimum 20 score-points for MPLb mathematics, at least 10 must be targeted at number and operations, 5 at measurement and geometry, and 5 at statistics and probability, and algebra. No specific subconstructs are identified in the essential reporting requirements and there is absolute discretion regarding the distribution of the score-points across multiple domains. For example, of the 5 score-points targeting measurement and geometry, all could target measurement descriptors, or all could target geometry descriptors, or the 5 could be distributed across these two domains. Similar variation is possible across the two domains of statistics and probability, and algebra.

At least 12 of the 20 score-points must target 12 of the 21 Grade 5 mathematics subconstructs and associated Grade skills descriptors. These descriptors were provided in section 3.3 Defining mathematics MPLb. The remaining 8 score-points (if a minimum of 20 is selected) can target any grades and can also target any domains, constructs or subconstructs in the mathematics GPF, provided the minimum requirements noted above are met. If the assessment only has the minimum of 20 mathematics items, it is preferable if the remaining items target skills that are close to the MPLb rather than being much more, or much less difficult.

Section 1.3 Providing a blueprint for the MPL, outlines some of the considerations in terms of the meeting or going beyond the minimum number of items required and the extent to which coverage of the subconstructs is balanced.

Targeting the skill descriptors is also supported by the MPLb sample items for mathematics in Appendix B.

3.4.1 Blueprint examples

There are many different ways that items can be spread across the constructs and subconstructs to target the minimum requirements for MPLb. The options vary the balance in the coverage of mathematics. Some examples that all meet the minimum requirements are shown in Table 38.

Table 38: Blueprint examples of meeting the minimum MPLb requirements

Domain	Construct	Subconstruct	Blueprint 1	Blueprint 2	Blueprint 3
Number and operations	**Whole numbers**	**N1.1**			
		N1.2		1 item	1 item
		N1.3	1 item	1 item	2 items
		N1.4		2 items	1 item
	Fractions	**N2.1**	1 item		1 item
		N2.2	2 items	2 items	1 item
		N2.3	1 item	2 items	1 item
	Decimals	**N3.1**	1 item		1 item
		N3.2	2 items	2 items	1 item
		N3.3	2 items		1 item
Measurement	**Length, weight, capacity, volume, area, and perimeter**	**M1.1**	1 item	2 items	1 item
		M1.2	2 items	1 item	1 item
	Time	**M2.1**	1 item		
		M2.2	1 item	1 item	1 item
Geometry	**Properties of shapes and figures**	**G1.1**			1 item
	Spatial visualizations	**G2.1**			
	Position and direction	**G3.1**		1 item	1 item
Statistics and probability	**Data management**	**S1.1**		3 items	1 item
	Chance and probability	**S2.1**	2 items		1 item
Algebra	**Patterns**	**A1.1**			1 item
	Relations and functions	**A3.2**	3 items	2 items	2 items
Total	**Total**		**20 items**	**20 items**	**20 items**

Blueprint 1: shows 20 items distributed across 13 of the subconstructs. In number and operations the majority of items are focusing on fractions and decimals. In the measurement and geometry domains, only measurement subconstructs are assessed. In statistics and probability, the focus of items is on the chance and probability construct.

Blueprint 2: shows 20 items distributed across 12 of the subconstructs (the minimum required). This example includes a significant coverage of subconstructs that focus on real-world mathematical problem solving and would be one approach to assessment of students' mathematical literacy.

Blueprint 3: shows a distribution of 20 items across a majority of subconstructs (18 out of 21). This is one approach to a broad coverage of all mathematics domains and constructs.

An **excellent blueprint** exceeds the minimum requirements by including additional items. The number of additional items and domain, construct and subconstruct coverage depends on the purpose of the assessment. Two possibilities that all meet and go beyond the minimum specifications are shown in Table 39.

Table 39: Blueprint examples of excellence in relation to the MPLb requirements

Domain	Construct	Subconstruct	Blueprint 4	Blueprint 5
Number and operations	**Whole numbers**	**N1.1**		2 items
		N1.2	1 item	1 item
		N1.3	1 item	2 items
		N1.4	2 items	1 item
	Fractions	**N2.1**	1 item	1 item
		N2.2	2 items	2 items
		N2.3	2 items	2 items
	Decimals	**N3.1**	1 item	1 item
		N3.2	2 items	2 items
		N3.3	1 item	1 item
Measurement	**Length, weight, capacity, volume, area, and perimeter**	**M1.1**	2 items	1 item
		M1.2	2 items	3 items
	Time	**M2.1**		1 item
		M2.2	1 item	2 items
Geometry	**Properties of shapes and figures**	**G1.1**		2 items
	Spatial visualizations	**G2.1**		1 item
	Position and direction	**G3.1**	1 item	2 items
Statistics and probability	**Data management**	**S1.1**	3 items	2 items
	Chance and probability	**S2.1**	1 item	1 item
Algebra	**Patterns**	**A1.1**		1 item
	Relations and functions	**A3.2**	2 items	2 items
Total	**Total**		**25 items**	**33 items**

Blueprint 4: includes 5 more than the minimum of 20 items, with 13 number and operations items (minimum is 10) plus 6 measurement and geometry items (minimum is 5), and 6 statistics and probability and algebra items (minimum is 5) to target the scope of the learning area of mathematics for Grade 5. 16 of the 21 subconstructs are covered in this example which focuses more on real-world problem solving and, like blueprint 2, would be a suitable assessment of mathematical literacy.

Blueprint 5: includes 13 more than the minimum of 20 items, with 15 number and operations items (minimum is 10) plus 12 measurement and geometry items (minimum is 5), and 6 statistics and probability and algebra items (minimum is 5) to target the full scope of the learning area of mathematics for Grade 5. All of the 21 subconstructs are covered in this example.

3.5 Defining MPLc (End of Lower Secondary)

3.5.1 Nutshell statement

Students demonstrate skills in computation with fractions, decimals, rates, ratios, percentages and integers. They apply geometric relationships and formulae such as area, volume, Pythagoras' theorem, and the angle sum of a triangle. They interpret and construct a variety of data displays and calculate measures of central tendency. They make use of algebraic representations of linear relationships. They can use their mathematics knowledge to solve application problems.

3.5.2 Expanded statement

Students can apply the order of operations and solve simple problems involving fractions, decimals and whole numbers. They can apply geometric relationships and formulae (namely, area of a triangle, circumference and area of a circle, volume of a rectangular prism, Pythagoras' theorem, and angle sum of a triangle) to solve straightforward problems in simple contexts. They can interpret and construct a variety of data displays and calculate measures of central tendency. They can graph linear equations on a coordinate grid. They can solve equations in one variable and model context-based situations using simple algebraic representations. They can evaluate and calculate with simple algebraic expressions. They can use proportional reasoning to solve problems.

3.5.3 MPLc Skill Specifications

3.5.3.1 Number and operations: Domain N

In summary, the number and operations skills expected for MPLc are:

Operations across number

Evaluate numerical expressions requiring application of order of operations.

Solve problems with fractions, decimals, and whole numbers.

Identify and express percentages less than 1% and greater than 100% as fractions or mixed numbers and vice versa (for example, 124% =$1\frac{24}{100}$; 0.2% = $\frac{2}{1000}$).

Multiply and divide two decimal numbers and divide a whole number by a decimal.

Solve real-world application problems involving the multiplication or division of two decimal numbers.

Fractions/decimals

Compare and order positive and negative decimals and fractions (for example, place these numbers on a number line from –1 to +1: –0.4, $+\frac{1}{2}$, $-\frac{4}{5}$, 0.25, $-\frac{1}{3}$, $\frac{3}{4}$).

Exponents and roots

Apply the laws of exponents.

These specifications are elaborated in Table 40 which shows the GPF domain of number and operations for Grade 8. This has four constructs, associated subconstructs and the Grade 8 descriptors for 'meets global proficiency'.

Table 40: GPF Grade 8 number and operations construct, subconstructs and descriptors for 'meets'

Construct	Subconstructs	Grade 8 Descriptors for 'meets'
N3: Decimals	N3.2: Represent decimals in equivalent ways (including fractions and percentages)	N3.2.3_M Compare and order positive and negative decimals and fractions *(e.g., place these numbers on a number line from -1 to +1: -0.4, +1/2, -4/5, 0.25, -1/3, 3/4)*. N3.2.4_M Identify and express percentages less than 1% and greater than 100% as fractions or mixed numbers and vice versa *(e.g., 124% = 1 24/100; 0.2% = 2/1000)*.
	N3.3: Solve operations using decimals	N3.3.2_M Multiply and divide two decimal numbers and divide a whole number by a decimal.
	N3.4: Solve real-world problems involving decimals	N3.4.1b_M Solve real-world problems involving the multiplication or division of two decimal numbers *(e.g., Pascal has seven .75-liter containers of olive oil. He sells half of them. How many liters of olive oil did he sell?; Sheila buys a 4.5-liter barrel of olive oil. She sells it in 0.75-liter containers. How many containers can she make with the 4.5-liter barrel?)*.
N4: Integers	N4.2: Solve operations using integers	N4.2.3_M Identify common factors and common multiples of two numbers *(e.g., find the lowest common multiple and the greatest common factor of 12 and 16)*.
	N4.3: Solve real-world problems involving integers	N4.3.1_M Solve real-world problems involving the multiplication or division of two integers, including at least one negative integer *(e.g., It is -8 degrees Celsius on Tuesday. On Wednesday, it is three times colder. What is the temperature on Wednesday?)*.
N5: Exponents and roots	N5.1: Identify and represent exponents and roots using objects, pictures, or symbols, and identify relative magnitude	N5.1.2_M Identify and represent very large whole numbers using scientific notation and positive exponents *(e.g., 600 = 6 x 10^2)*. N5.1.3_M Compare and order large numbers expressed in scientific notation *(e.g., 3.1 x 10^5, 9.2 x 10^5, 2.7 x 10^3, 6.1 x 10^2)*.
	N5.2: Solve operations involving exponents and roots	N5.2.1_M Multiply and divide quantities expressed in exponential notation with positive exponents, including scientific notation (e.g., $3^5 \div 3^2$ or $4^3 \times 4^2$).[10]
N6: Operations across number	N6.1: Solve operations involving integers, fractions, decimals, percentages, and exponents	N6.1.1_M Perform calculations involving two or more operations of integers, decimals, and fractions, within the limits for meets expectations described above, respecting the order of operations.

[10] There are no descriptors at 'meets' for this subconstruct within the GPF. This descriptor has been created to fill this gap. This new descriptor has been generated by adding 'with positive exponents' to the existing 'exceeds' descriptor. This limits the consideration of exponents making this a slightly easier skill for students - the 'exceeds' descriptor implies that both positive and negative exponents are included. The example included with this suggested new descriptor is taken from the existing 'exceeds' descriptor in the GPF. A new example could be included to replace this if needed.

3.5.3.2 Measurement: Domain M

In summary, the measurement skills expected for MPLc are:

Length, weight, capacity, volume, area, and perimeter

> Make conversions of units of length and weight between different systems of measurement when the conversion factor is provided (for example, convert 12 cm to inches given 1 inch is 2.54 cm; convert pounds to kilograms given 1 pound is 0.45 kg).
>
> Solve problems, including real-world problems, involving the calculation of the volume of a rectangular prism (for example., calculate the volume in cubic centimetres of a box with a length of 10 cm, width of 10 cm, and height of 15 cm).
>
> Solve simple problems involving the area of triangles and the area and/or circumference of circles.

These specifications are elaborated in Table 41 which shows the GPF domain of measurement for Grade 8. This has two constructs, associated subconstructs and the Grade 8 descriptors for 'meets global proficiency'.

Table 41: GPF Grade 8 measurement constructs, subconstructs and descriptors for 'meets'

Construct	Subconstructs	Grade 8 Descriptors for 'meets'
M1: Length, weight, capacity, volume, area and perimeter	M1.1 Use non-standard and standard units to measure, compare, and order	M1.1.3a_M Make conversions of units of length and weight between different systems of measurement when the conversion factor is provided *(e.g., convert 12 cm to inches given 1 inch is 2.54 cm, or convert pounds to kilograms given 1 pound is 0.45 kg)*. M1.1.3b_M Make conversions of units of capacity/volume between different systems of measurement where the conversion factor is provided *(e.g., convert 750 milliliters to pints given 1 pint is 473 mL)*.
	M1.2 Solve problems involving measurement	M1.2.4_M Solve problems, including real-world problems, involving the calculation of the area of a triangle *(e.g., work out the area of a triangle with base length and height given)*. M1.2.7_M Solve problems, including real-world problems, involving the calculation of the volume of a rectangular prism *(e.g., calculate the volume in cubic centimeters of a box with a length of 10 cm, width of 10 cm, and height of 15 cm)*.
M2: Time	M2.2: Solve problems involving time	M2.2.3_M Solve problems, including real-world problems, involving time zones *(e.g., When it is 4 p.m. on Tuesday in New York, it is 6 a.m. on Wednesday in Sydney. When it is 11 a.m. on Thursday in Sydney, what time and day will it be in New York?)*.

3.5.3.3 Geometry: Domain G

In summary, the geometry skills expected for MPLc are:

Properties of shapes and figures

Classify angles in polygons.

Recognise and name parts of the circle (namely, radius, diameter, circumference) and identify the relationship between the radius and diameter.

Describe and implement 2D shape transformations (namely, reflection, rotation, translation, enlargement/reduction).

Determine measurements in right triangles using Pythagoras' theorem.

Use the angle sum of a triangle to solve problems (for example, determine the missing angle of a triangle where two angles are given).

Spatial visualisations

Identify the net of a familiar 3D figure, such as a prism, cylinder, cone, or pyramid (for example, fold or unfold mentally to answer the question, 'What figure does this make when folded?'; 'What figure does this make when unfolded?').

Position and direction

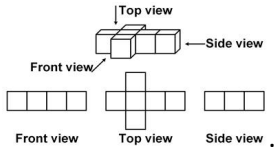
Identify the outcomes of one or more transformations on a 2D object.

Locate and plot points on a plane in all four quadrants of a Cartesian coordinate system.

These specifications are elaborated in Table 42 which shows the GPF domain of geometry for Grade 8. This has three constructs, each with an associated subconstruct and the Grade 8 descriptors for 'meets global proficiency'.

Table 42: GPF Grade 8 geometry constructs, subconstructs and descriptors for 'meets'

Construct	Subconstructs	Grade 8 Descriptors for 'meets'
G1: Properties of shapes and figures	G1.1: Differentiate shapes and figures by their attributes	G1.1.6_M Recognize and name parts of the circle (i.e., radius, diameter, circumference) and identify the relationship between the radius and diameter. G1.1.8_M Use the angle sum of a triangle to solve problems *(e.g., determine the missing angle of a triangle where two angles are given)*. G1.1.12_M Describe and implement two-dimensional shape transformations (i.e., reflection, rotation, translation, enlargement/reduction).
G2: Spatial visualizations	G2.1: Compose and decompose shapes and figures	G2.1.2_M Identify the net of a familiar three-dimensional figure (i.e., prism, cylinder, cone, or pyramid) *(e.g., fold or unfold mentally to answer the question, "What figure does this make*

Construct	Subconstructs	Grade 8 Descriptors for 'meets'
		when folded?"; "What figure does this make when unfolded?") 
G3: Position and direction	G3.1: Describe the position and direction of objects in space	G3.1.3a_M Locate and plot points on a plane in all four quadrants of a Cartesian coordinate system.

3.5.3.4 Statistics and probability: Domain S

In summary, the statistics and probability skills expected for MPLc are:

Data management

Read, interpret and construct a variety of data displays, including two-way tables, line graphs, circle (pie) graphs, compound bar graphs.

Calculate range and measures of central tendency (namely, mean, median and mode).

Chance and probability

Compare probabilities of simple events.

These specifications are elaborated in Table 43 which shows the GPF domain of statistics and probability for Grade 8. This has two constructs of data management and chance and probability, each with associated subconstructs and the Grade 8 descriptors for 'meets global proficiency'.

Table 43: GPF Grade 8 statistics and probability constructs, subconstructs and descriptors for 'meets'

Construct	Subconstructs	Grade 8 Descriptors for 'meets'
S1: Data management	S1.1 Retrieve and interpret data presented in displays	S1.1.6_M Organize data and construct pie charts and Venn diagrams (categorical data), and line graphs and dot plots (bivariate data) when some support is provided *(e.g., construct a line graph when given labeled horizontal and/or vertical axes, or match a table to the correct pie chart given a range of pie chart options)*.
	S1.2: Calculate and interpret central tendency	S1.2.1a_M Describe the effect of adding or removing a specific data value on the mean, median, or mode of a set of data *(e.g., "What would be the effect of removing a score of 20 from the scores 20, 80, 70, and 75 on the mean?" with the possible answers being: a) it would increase, b) it would decrease, c) it would stay the same. The same question can be asked about the effect on the median and the mode. Another example is: Juanita plays hockey and aims to*

Construct	Subconstructs	Grade 8 Descriptors for 'meets'
		achieve a mean of 3 goals per game by the end of the season. Her goals for the first four games are shown: 2, 4, 1, 3. She has one more game to play this season. How many goals must she score in this game to achieve her aim?). S1.2.2_M Compare the distribution of sub-categories within a set of data *(e.g., compare temperatures in a 24-hour period split into day temperatures and night temperatures)*.
S2: Chance and probability	S2.1: Describe the likelihood of events in different ways	S2.1.3_M Find the expected number of occurrences of a specific independent outcome when a probability experiment is repeated many times *(e.g., calculate the expected number of heads with 50 flips of a fair coin)*.
	S2.2: Identify permutations and combinations	S2.2.1_M Systematically count all the possible outcomes (sample space) for a situation involving a compound event comprised of two simple events with replacement (e.g., calculate all of the possible outcomes when selecting a marble from a bag containing 5 marbles, then selecting a second marble after putting the first marble back in the bag).[11]

3.5.3.5 Algebra: Domain A

In summary, the algebra skills expected for MPLc are:

Expressions

Use expressions to represent problem situations with multiple variables (for example, 'Akeelah bought 4 blouses for x dollars and a wristwatch for y dollars. Represent this as an expression.').

Evaluate and simplify exponential expressions using the laws of exponents (for example, evaluate $2x^3$ when x = 7; simplify $(3x^4)^2$).

Multiply and divide linear monomials, and simplify linear expressions, by using the distributive property (for example, multiply (3x)(5y); simplify 2x(3x + 4)).

[11] There are no descriptors at 'meets' for this subconstruct within the GPF. This descriptor has been created to fill this gap. The existing 'exceeds' descriptor includes with and without replacement in the compound event. This suggested new descriptor for 'meets' reduces this to only 'with replacement' since 'with replacement' is generally recognised as the simpler of the two. 'With replacement' means that: the total number of possible outcomes remains constant because the item is returned to the pool after each selection, and each event is **independent** of previous events, meaning the probabilities stay the same for each selection. The example included with this descriptor is taken from one of the examples in the current 'exceeds' descriptor. A new example for 'exceeds' can be created if needed.

Relations and functions

Solve linear equations in one variable.

Represent context-based situations with expressions and equations in one or two variables.

Interpret equations and their solutions in terms of context (for example, given an algebraic graph, such as a distance-time graph, interpret the slope as speed).

Use formulas to solve context-based problems.

Solve problems involving ratios, proportions, and percentages.

These specifications are elaborated in Table 44 which shows the GPF domain of algebra for Grade 8. This has two constructs of expressions and relations and functions, associated subconstructs and the Grade 8 descriptor for 'meets global proficiency'.

Table 44: GPF Grade 8 algebra constructs, subconstructs and descriptors for 'meets'

Construct	**Subconstructs**	**Grade 8 Descriptors for 'meets'**
A2: Expressions	A2.1: Evaluate, model, and compute with expressions	A2.1.1_M Use expressions to represent problem situations with multiple variables *(e.g., Akeelah bought 4 blouses for x dollars and a wristwatch for y dollars. Represent this as an expression)*. A2.1.3_M Multiply and divide linear monomials, and simplify linear expressions by using the distributive property *(e.g., multiply (3x)(5y); simplify 2x(3x + 4))*. A2.1.4_M Evaluate and simplify exponential expressions using the Laws of Exponents *(e.g., evaluate $2x^3$ when x = 7; simplify $(2x^3)^2$)*.
A3: Relations and functions	A3.1: Solve problems involving variation (ratio, proportion, and percentage)	A3.1.2_M Solve proportions written as two equal ratios *(e.g., solve 2/3 = 10/x)*. A3.1.3_M Solve problems, including real-world problems, involving percent increase or decrease *(e.g., A shirt that normally costs 25 euros is on sale for 10% off. How much does it cost now?; A shirt cost 25 euros in November and then 20 euros in December. What is the percent decrease in cost?)*.
	A3.3: Solve equations and inequalities	A3.3.1_M Represent and solve problems, including real-world problems, using more than two steps, including those that involve the distributive property, combining like terms, etc. *(e.g., solve 3x + 4 (x + 2) = 22; The older children get two more cookies than the younger children. If there are three younger children and four older children and 22 cookies were distributed, how many cookies did the*

Construct	Subconstructs	Grade 8 Descriptors for 'meets'
		younger children get?; Represent as 3x + 4 (x + 2) = 22) and solve). A3.3.2_M Interpret equations and their solutions in terms of context *(e.g., given an algebraic graph, such as a distance-time graph, interpret the slope as speed)*.

3.5.3.6 Sample items for MPLc

See Appendix B for the MPLc sample items for mathematics.

3.6 Mathematics MPLc blueprint

UIS Reporting Criterion 1 for MPLc mathematics prescribes the scope of the skills that must be targeted, the level of difficulty required, the minimum number of items and how they must be distributed across the specifications. The essential reporting requirements are shown in Table 45.

Table 45: Essential reporting requirements for MPLc mathematics

Ref.	**Description of requirements** for MPLc mathematics
1.1c (M)	Minimum of 10 score-points assessing *number and operations* aligned to GPF
1.2c (M)	Minimum of 5 score-points assessing *measurement and geometry* aligned to the GPF
1.3c (M)	Minimum of 5 score-points assessing *statistics and probability* and *algebra* aligned to the GPF
1.4c (M)	The assessment must include 12 Grade 8 items covering 12 of the 21 subconstructs at Grade 8 in the GPF

Of the minimum 20 score-points for MPLc mathematics, at least 10 must be targeted at number and operations, 5 at measurement and geometry, and 5 at statistics and probability, and algebra. No specific subconstructs are identified in the essential reporting requirements and there is absolute discretion regarding the distribution of the score-points across multiple domains. For example, of the 5 score-points targeting measurement and geometry, all could target measurement descriptors, or all could target geometry descriptors, or the 5 could be distributed across these two domains. Similar variation is possible across the two domains of statistics and probability, and algebra.

At least 12 of the 20 score-points must target 12 of the 21 Grade 8 mathematics subconstructs and associated Grade skills descriptors. These descriptors were provided in section 3.5 Defining mathematics MPLc. The remaining 8 score-points (if a minimum of 20 is selected) can target any grades and can also target any domains, constructs or subconstructs in the mathematics GPF, provided the minimum requirements noted above are met. If the assessment only has the minimum of

20 mathematics items, it is preferable if the remaining items target skills that are close to the MPLc rather than being much more, or much less difficult.

Section 1.3 Providing a blueprint for the MPL, outlines some of the considerations in terms of the meeting or going beyond the minimum number of items required and the extent to which coverage of the subconstructs is balanced.

Targeting the skill descriptors is also supported by the MPLc sample items for mathematics in Appendix B.

3.6.1 Blueprint examples

There are many different ways that items can be spread across the constructs and subconstructs to target the minimum requirements for MPLc. The options vary the balance in the coverage of mathematics. Some examples that all meet the minimum requirements are shown in Table 46.

Table 46: Blueprint examples of meeting the minimum MPLc requirements

Domain	Construct	Subconstruct	Blueprint 1	Blueprint 2	Blueprint 3
Number and operations	**Decimals**	**N3.2**	1 item	1 item	1 item
		N3.3	3 items		1 item
		N3.4		2 items	2 items
	Integers	**N4.2**	1 item		1 item
		N4.3		2 items	2 items
	Exponents and roots	**N5.1**	1 item	1 item	1 item
		N5.2	1 item	1 item	
	Operations across number	**N6.1**	3 items	3 items	2 items
Measurement	**Length, weight, capacity, volume, area, and perimeter**	**M1.1**		1 item	1 item
		M1.2	2 items	3 items	1 item
	Time	**M2.2**		1 item	
Geometry	**Properties of shapes and figures**	**G1.1**	1 item		1 item
	Spatial visualizations	**G2.1**	1 item		1 item
	Position and direction	**G3.1**	1 item		1 item
Statistics and probability	**Data management**	**S1.1**		2 items	1 item

		S1.2	1 item		1 item
	Chance and probability	**S2.1**	1 item		1 item
		S2.2			
Algebra	**Expressions**	**A2.1**	1 item	1 item	1 item
	Relations and functions	**A3.1**	1 item	1 item	1 item
		A3.3	1 item	1 item	
Total	**Total**		**20 items**	**20 items**	**20 items**

Blueprint 1: shows 20 items distributed across 15 of the subconstructs (minimum is 12). The selected subconstructs in this example have a greater focus on intra-mathematical skills, with less inclusion of real-world applications of mathematical understanding.

Blueprint 2: shows 20 items distributed across 13 of the subconstructs (minimum is 12). This example includes a significant coverage of subconstructs that focus on real-world mathematical problem solving and would be one approach to assessment of students' mathematical literacy.

Blueprint 3: shows a distribution of 20 items across a majority of subconstructs (17 out of 21). This is one approach to a broad coverage of all mathematics domains and constructs.

An **excellent blueprint** exceeds the minimum requirements by including additional items. The number of additional items and domain, construct and subconstruct coverage depends on the purpose of the assessment. Some possibilities that all meet and go beyond the minimum specifications are shown in Table 47.

Table 47: Blueprint examples of excellence in relation to MPLc requirements

Domain	Construct	Subconstruct	Blueprint 4	Blueprint 5
Number and operations	**Decimals**	**N3.2**	1 item	2 items
		N3.3	1 item	1 item
		N3.4	2 items	2 items
	Integers	**N4.2**	1 item	1 item
		N4.3	2 items	2 items
	Exponents and roots	**N5.1**	1 item	1 item
		N5.2	1 item	1 item

	Operations across number	**N6.1**	2 items	3 items
Measurement	**Length, weight, capacity, volume, area, and perimeter**	**M1.1**	1 item	1 item
		M1.2	2 items	2 items
	Time	**M2.2**	1 item	1 item
Geometry	**Properties of shapes and figures**	**G1.1**	1 item	3 items
	Spatial visualizations	**G2.1**	1 item	1 item
	Position and direction	**G3.1**	1 item	2 items
Statistics and probability	**Data management**	**S1.1**	1 item	1 item
		S1.2	1 item	1 item
	Chance and probability	**S2.1**	1 item	1 item
		S2.2	1 item	1 item
Algebra	**Expressions**	**A2.1**	1 item	2 items
	Relations and functions	**A3.1**	1 item	2 items
		A3.3	1 item	2 items
Total	**Total**		**25 items**	**33 items**

Blueprint 4: includes 5 more than the minimum of 20 items, with 11 number and operations items (minimum is 10) plus 7 measurement and geometry items (minimum is 5), and 7 statistics and probability and algebra items (minimum is 5) to target the scope of the learning area of mathematics for Grade 5. All of the 21 subconstructs are covered in this example.

Blueprint 5: includes 13 more than the minimum of 20 items, with 13 number and operations items (minimum is 10) plus 10 measurement and geometry items (minimum is 5), and 10 statistics and probability and algebra items (minimum is 5) to target the full scope of the learning area of Mathematics for Grade 5. All of the 21 subconstructs are covered in this example.

3.7 Mathematics MPLab blueprint

There are many different ways that items can be spread across the constructs and subconstructs to target the minimum requirements for two of the MPLs. Section 1.3.3, Targeting 2 MPLs in the same assessment, notes some of the considerations that make assessing two of the MPLs in one assessment more challenging. One example that meets the minimum requirements for an assessment of both MPLa and MPLb is shown in Table 48.

Table 48: Blueprint example for minimum combined MPLa and MPLb requirements

Domain	Construct	Subconstruct	Blueprint MPLa and MPLb
Number and operations	**Whole numbers**	**N1.1**	2 items (Grade 2)
		N1.2	2 items (Grade 2)
		N1.3	4 items (Grade 2)
		N1.4	2 items (Grade 2)
	Fractions	**N2.1**	1 item (Grade 3)
		N2.2	1 item (Grade 4)
		N2.3	1 item (Grade 5)
	Decimals	**N3.1**	1 item (Grade 5)
		N3.2	1 item (Grade 5)
		N3.3	1 item (Grade 5)
Measurement	**Length, weight, capacity, volume, area, and perimeter**	**M1.1**	1 item (Grade 3) / 1 item (Grade 5)
		M1.2	1 item (Grade 4) / 1 item (Grade 5)
	Time	**M2.1**	
		M2.2	1 item (Grade 5)
	Currency	**M3.1**	1 item (Grade 2)
Geometry	**Properties of shapes and figures**	**G1.1**	
	Spatial visualizations	**G2.1**	1 item (Grade 5)
	Position and direction	**G3.1**	1 item (Grade 5)
Statistics and probability	**Data management**	**S1.1**	1 item (Grade 2) / 1 item (Grade 4) / 1 item (Grade 5)
	Chance and probability	**S2.1**	1 item (Grade 5)
Algebra	**Patterns**	**A1.1**	1 item (Grade 3)
	Relations and functions	**A3.2**	1 item (Grade 5)

Total	**Total**		**30 items**

The coverage of the items in the blueprint example from Table 48 is summarised in Table 49. This summary demonstrates the challenge of domain and subconstruct coverage if constructing an assessment to meet 2 of the MPLs.

Table 49: Summary of item coverage in minimum example for combined MPLa and MPLb requirements

		Grade 2	**Grade 3**	**Grade 4**	**Grade 5**	
Domain	**Number and operations**	10 items	1 item	1 item	4 items	16 items
	Measurement	1 item	1 item	1 item	3 items	7 items
	Geometry				2 items	2 items
	Statistics and probability	1 item		1 item	2 items	4 items
	Algebra		1 item		1 item	2 items
		12 items	3 items	3 items	12 items	

This blueprint example satisfies the conditions for MPLa:

- 10 Grade 2 items assess the Number and operations domain
- All four of the Number and operations subconstructs at Grade 2 are covered (at least 3 must be)
- There are 14 items from non-Number and operations domains (there must be at least 10)

The blueprint example also satisfies the conditions for MPLb:

- 16 items assess Number and operations (there must be at least 10)
- 9 items assess Measurement and Geometry (there must be at least 5)
- 6 items assess Statistics and probability and Algebra (there must be at least 5)
- There are 12 Grade 5 items which cover 12 of the 21 Grade 5 subconstructs

The inclusion of a small number of Grade 3 and Grade 4 items (3 at each grade level) is intended to allow for some reliability in the measurement of the MPLa and MPLb cut-points in this one assessment.

A second, excellent example of a blueprint for a combined assessment of MPLa and MPLb is included in Table 50.

Table 50: Blueprint excellent example for combined MPLa and MPLb requirements

Domain	Construct	Subconstruct	Blueprint MPLa and MPLb
Number and operations	**Whole numbers**	**N1.1**	2 items (Grade 2)
		N1.2	2 items (Grade 2) / 1 item (Grade 4)
		N1.3	5 items (Grade 2) / 1 item (Grade 3) / 1 item (Grade 4)
		N1.4	1 item (Grade 2) / 1 item (Grade 5)
	Fractions	**N2.1**	1 item (Grade 5)
		N2.2	1 item (Grade 5)
		N2.3	1 item (Grade 5)
	Decimals	**N3.1**	1 item (Grade 5)
		N3.2	1 item (Grade 5)
		N3.3	1 item (Grade 5)
Measurement	**Length, weight, capacity, volume, area, and perimeter**	**M1.1**	1 item (Grade 3) / 1 item (Grade 5)
		M1.2	1 item (Grade 5)
	Time	**M2.1**	1 item (Grade 2)
		M2.2	1 item (Grade 3) / 1 item (Grade 5)
	Currency	**M3.1**	1 item (Grade 2)
Geometry	**Properties of shapes and figures**	**G1.1**	1 item (Grade 3) / 1 item (Grade 4) / 1 item (Grade 5)
	Spatial visualizations	**G2.1**	1 item (Grade 2)
	Position and direction	**G3.1**	1 item (Grade 2) / 1 item (Grade 5)
Statistics and probability	**Data management**	**S1.1**	1 item (Grade 2) / 1 item (Grade 4)
	Chance and probability	**S2.1**	1 item (Grade 5)
Algebra	**Patterns**	**A1.1**	1 item (Grade 3) / 1 item (Grade 5)
	Relations and functions	**A3.2**	1 item (Grade 4) / 1 item (Grade 5)
Total	**Total**		**40 items**

The coverage of the items in the excellent example from Table 50 is summarised in Table 51. This example effectively combines two 20-item tests – one for MPLa and one for MPLb.

Table 51: Summary of item coverage in excellent example for combined MPLa and MPLb requirements

		Grade 2	Grade 3	Grade 4	Grade 5	
Domain	**Number and operations**	10 items	1 item	2 items	7 items	20 items
	Measurement	2 items	2 items		3 items	7 items
	Geometry	2 items	1 item	1 item	2 items	6 items
	Statistics and probability	1 item		1 item	1 item	3 items
	Algebra		1 item	1 item	2 items	4 items
		15 items	5 items	5 items	15 items	

This example satisfies the conditions for MPLa:

- 10 Grade 2 items assess the Number and operations domain
- All four of the Number and operations subconstructs at Grade 2 are covered (at least 3 must be)
- There are 20 items from non-Number and operations domains (there must be at least 10)

The example also satisfies the conditions for MPLb:

- 20 items assess Number and operations (there must be at least 10)
- 13 items assess Measurement and Geometry (there must be at least 5)
- 7 items assess Statistics and probability and Algebra (there must be at least 5)
- There are 15 Grade 5 items which cover 15 of the 21 Grade 5 subconstructs

The inclusion of a small number of Grade 3 and Grade 4 items (5 at each grade level) is intended to allow for some reliability in the measurement of the MPLa and MPLb cut-points in this one assessment.

4. Appendix A: Reading sample items

4.1 Reading sample items for MPLa (end of lower primary)

4.1.1 Decoding examples

Decoding example 1

y x ch sh qu w z j
Instruction: Say the sounds for these letters.
Answer: Student gives a sound for each letter or letter combination applying common English sound symbol correspondences: 'y' as in 'yoghurt'; 'x' as in 'fox'; 'ch' as in 'chip'; 'sh' as in 'ship'; 'qu' as in 'queen; 'z' as in 'zoo'; and 'j' as in 'jet'.

Decoding Construct	Subconstruct	Descriptor
D1: Precision	D1.1 Identify sound-symbol/fingerspelling or symbol/morpheme correspondence	D1.1.1_M If the Grade 2 curriculum introduces new symbols at the Grade 2-level, say or sign common Grade 2 level symbol-sound/fingerspelling and/or symbol-morpheme correspondences (*language- and country-specific).*

Commentary: The example provided applies to English only. The difficulty of the sound-symbol correspondences that are appropriate for Grade 2 depend on how English is taught in each context. This example assumes students have been introduced to simple, regular consonant and short vowel sounds and symbols in Grade 1 and are progressing to some of the less common letter-sounds as well as starting to learn the sounds for common digraphs (two letters make one phoneme) in Grade 2.

Decoding example 2

sood
pight
reek
paim

lafe

Instruction: Say these nonsense words.

Answer: Student correctly pronounces each nonsense word applying common English sound symbol correspondences. The ‘oo’ in ‘sood’ as in ‘food’; the ‘igh’ in ‘pight’ as in fight; the ‘ee’ in ‘reek’ as in ‘creek’; the ‘ai’ in ‘paim’ as in ‘pain’; and the ‘a_e’ in ‘lafe’ with a long ‘a’.

Decoding Construct	Subconstruct	Descriptor
D1: Precision	D1.2: Decode isolated words	D2.1.1_M Accurately say or sign a Grade 2-level continuous text with few errors *(e.g., no more than 10 percent of the words in the text).*

Commentary: The example provided applies to English only. Nonsense words are used because the student must apply their sound-symbol correspondence knowledge and cannot use sight recognition of real words. The difficulty of the sound-symbol correspondences that are appropriate for Grade 2 depend on how English is taught in each context. This example assumes students have been introduced to simple, regular consonant and short vowel sounds and symbols in Grade 1 and are progressing to long vowels and digraphs (two letters make one phoneme) in Grade 2.

Decoding example 3

_ anana

c

m

b

Instruction: Circle the letter to complete the word.

Answer: Circle ‘b’

Decoding Construct	Subconstruct	Descriptor
D1: Precision	D1.2: Decode isolated words	D1.2.1_M Accurately say or sign common, isolated Grade 2-level words *(language- and country specific).*

Commentary: The example provided applies to English only. The image of a banana needs to be used in contexts where a banana is likely to be very familiar to students but is also likely to be a word they have not learned to read as yet. Students need to apply their knowledge of a simple and common letter-sound correspondence in English to identify that the first sound and therefore the first letter in banana is ‘b’.

Decoding example 4

radical rabbit racket random

Students hear, but do not see the word ‘racket’

Instruction: *Circle the word you hear the teacher say.*

Answer: Circle ‘racket’

Decoding Construct	Subconstruct	Descriptor
D1: Precision	D1.2: Decode isolated words	D1.2.1_M Accurately say or sign common, isolated Grade 2-level words *(language- and country specific).*

Commentary: The example provided applies to English only. Apart from ‘rabbit’ the three other words are unlikely to be words the student knows however the letter-sounds are common. All the words follow regular English spelling patterns using simple letter-sound correspondences that students should have learned in Grade 1. All four words start with ‘ra’ so students need to listen to the remaining sounds in the word ‘racket’ and match these sounds to the remaining letters in each word. Only two options end with ‘t’ and of these the correct word is the only word with a ‘ck’ sound in the middle.

Decoding example 5

Van is at school. He has new pencils.

Van draws a picture of a big tree with
green leaves and red flowers.

Instruction: Read this sentence aloud.

Answer: The student reads the text aloud at pace and with no more than 2 errors (10% of 22 words).

Decoding Construct	Subconstruct	Descriptor
D:2 Fluency	D2.1 Say or sign a Grade-level continuous text at pace and with accuracy	D2.1.1_M Accurately say or sign a Grade 2-level continuous text with few errors *(e.g., no more than 10 percent of the words in the text).*

Commentary: The example provided applies to English. The words are common words that students in Grade 2 are likely to have learned to read, but the text can be modified if some words are unfamiliar such as changing the name of the child to another short, simple word. This text is taken from the GPF reading comprehension sample texts as it is an example of the kind of text students need to read independently, so likely to be suitable for reading aloud fluently.

4.1.2 Reading comprehension examples

To assess reading comprehension, students must independently read the information on which the question is based (for example, if a task requires matching a word to an image, students must independently read the word). If students independently read a piece of text, the questions may be read aloud to them, and answers may be given orally or in writing.

Reading comprehension text types at Grade 2

At Grade 2, texts are so short that they are mainly simple descriptions. Texts typically have a single character engaged in a simple action, or a very brief description of a single object or event. A reading assessment is intended to measure reading comprehension, which means a set of questions about a text must require students to read the whole text. It should not be possible for students to use general or prior knowledge to answer any questions without reading the text, or to accurately predict the answers to most questions after reading the title, or the first line. Each question may be based on a small part of the text, but as a set, the questions should require students to read all of the text (GPF).

Reading comprehension example 1

Vijay is helping his dad. They are picking fruit and putting it into bags. Dad is going to take the fruit to the market.

Question (Retrieving): Where is Dad going?

Answer: 'Market' or 'to the market' or 'Dad is going to the market' or 'Dad is going to take the fruit to the market.'

['Dad is picking fruit' is incorrect.]

Reading Comprehension Construct	Subconstruct	Descriptor
R1: Retrieving information	R1.2 Retrieve explicit information in a Grade-level text by direct- or close-word matching	R1.2.1_M Retrieve a single piece of explicit information from a Grade 2-level continuous text by direct- or close-word matching when the information required is adjacent to the matched word and there is no competing information. This will generally be in response to a 'who', 'what', 'when,' or 'where' question

Commentary: Students read a short, simple text of three sentences and locate a piece of explicit information ('market') which is near to the matched words in the question ('is', 'Dad' and 'going'). The target information is within one sentence, and it is prominent as it is at the end of the text. The vocabulary is likely to be familiar to students and there is no competing information (only one place is mentioned). Students may give their answer orally or in writing.

Reading comprehension example 2

Question (Retrieving): What does the picture show?

A. *The girl sits in the basket.*
B. *The girl washes the basket.*
C. *The girl stands next to the basket.*

Answer: C. The girl stands next to the basket.

Reading Comprehension Construct	Subconstruct	Descriptor
R1: Retrieving information	R1.1: Recognize the meaning of common Grade-level words	R1.1.1_M: Recognize the meaning of common Grade 2-level words (e.g., match a given word to an illustration or synonym or provide a brief spoken/signed definition).

Commentary: The question ('What does the picture show?') may be read to the students. The task for the student is to independently read and select the correct option in this multiple-choice question. Each option is a simple sentence, with 'the girl' and 'the basket' repeated in each. The difference is in the words that describe what the girl is doing. Students need to identify the meaning of the word ('stands') that matches the picture. While the picture must be interpreted in order to answer the question, this should be a trivial task for students at this level: the challenge of the item is in reading the three sentences and recognising the words that match the picture. Both the context shown in the picture and the vocabulary in the sentences are likely to be familiar to students at this level.

Reading comprehension example 3 (from the GPF)

Information (Description): Van

Van is at school. He has new pencils.

Van draws a picture of a big tree with green leaves and red flowers.

Question (retrieving): What does Van draw?

Answer: Tree / big tree / (big) green tree / (big) green tree with flowers

Reading Comprehension Construct	Subconstruct	Descriptor
R1: Retrieving information	R1.2 Retrieve explicit information in a	R1.2.1_M Retrieve a single piece of explicit information from a Grade 2-level continuous text by direct- or close-

	Grade-level text by direct- or close-word matching	word matching when the information required is adjacent to the matched word and there is no competing information. This will generally be in response to a 'who', 'what', 'when,' or 'where' question

Commentary: The description of what Van drew is not in a prominent position but is adjacent to the matched word and there is no competing information.

Information (Description): Maya

My name is Maya. After school, I always sweep the yard.

Then I have a snack. Mum likes having a nice clean yard.

Question 1 (retrieving): What does Maya's mum like?

Answer 1: (Having) a nice clean yard

Question 2 (retrieving): What does Maya do after school?

Answer 2: Sweeps the yard / has a snack

Reading Comprehension Construct	Subconstruct	Descriptor
R1: Retrieving information	R1.2 Retrieve explicit information in a Grade-level text by direct- or close-word matching	R1.2.1_M Retrieve a single piece of explicit information from a Grade 2-level continuous text by direct- or close-word matching when the information required is adjacent to the matched word and there is no competing information. This will generally be in response to a 'who', 'what', 'when,' or 'where' question

Commentary: Question 1: The key is a direct, adjacent word match for a single piece of explicit information with no competing information. It is at the end of the text, which makes it less prominent than the beginning

Question 2: The information is a direct, adjacent word match in a position that is not prominent but has no competing information.

4.1.3 Listening comprehension examples

Developing one's skill in actively and attentively listening to texts that are read aloud is a precursor to reading comprehension. Prior to the point at which learners can read independently, they are able to understand texts of greater complexity when such texts are read aloud to them, compared to when

they read for themselves. The texts in examples 3 and 4 would be read aloud to students (that is, they would not be expected to read the texts themselves).

GPF Listening comprehension: text criteria for Grade 2

Grade 2 listening comprehension texts should generally be very short texts (4–6 sentences may make sense in some contexts, but this depends on the length of words) based on a familiar theme with a simple storyline (e.g., simple, predictable content; a clear main idea with few details). Texts should be mainly narrative but may include some simple, familiar information texts or instructions. Narrative texts should contain a maximum of three characters. Vocabulary should be limited to common, everyday words with highly familiar meaning. Texts should also supply some explicit clues and details to allow the listener to make simple inferences.

Listening comprehension example 1

Dodo

Ayasha has a cat called Dodo. She is looking for Dodo. She looks in the toy basket. She sees Dodo's favourite toy mouse, but no Dodo. Ayasha looks in the kitchen. She puts some milk in a saucer and calls, 'Dodo come and get some milk', but Dodo does not come. Then she sees Dodo. He is asleep by the window, lying in the sun.

Question (Interpreting): Why doesn't Dodo come when Ayasha calls?

Answer: Because he is asleep. [or similar]

Listening Comprehension Construct	Subconstruct	Descriptor
C3: Interpreting information	C3.1: Interpret information in a short, Grade-level continuous text read to or signed for the learner	C3.1.1_M: When listening to a short Grade 2-level continuous text, make simple inferences by connecting pieces of prominent, explicit information when there are multiple clues and limited competing information. his will generally be in response to a 'why' or 'how' question.

Commentary: Students listen to a short story and make a simple inference across the last three sentences, from 'She puts some milk in a saucer …' to the end. Dodo does not come when Ayasha calls him because he is asleep. The causal connection is implicit rather than explicit – the term 'because' is not used – so this item is classified as 'interpreting information' rather than 'retrieving information'. This text is unlikely to contain any words that are unfamiliar to students at this level.

However, in order to answer the question successfully, students need to track the noun and pronoun referencing in the story (Ayasha … she; Dodo … he).

Listening comprehension example 2

Thambo

'Hurry up, Thambo,' calls Mum. 'You will be late for school.' Mum is getting cross.

Then Mum hears their goat bleating and looks outside. Thambo is dragging the goat away from the gate to the vegetable garden. Mum goes outside.

'The gate was not tied up properly and the goat was pushing it open,' explains Thambo. 'She wanted to eat the plants.'

Mum helps Thambo to tie the gate up securely this time.

'Thanks for saving our vegetables,' says Mum.

Question (Retrieving): What did the goat want to do?

Answer: Refers to the goat wanting to eat the plants/vegetables or wanting to push the gate open.

Listening Comprehension Construct	Subconstruct	Descriptor
C2: Retrieving information	C2.1: Retrieve explicit information in a short, Grade-level continuous text read to or signed for the learner	C2.1.1_M: When listening to a short Grade 2-level continuous text, retrieve explicit information by direct- or close-word matching or by simple synonymous-word matching when there is limited competing information. This will generally be in response to a 'who', 'what', 'when,' or 'where' question

Commentary: Students listen to and follow the story. They need to identify that the goat wanted to get into the vegetable garden – which is explicitly stated by Thambo. This statement occurs in the middle of the text, which is longer than those that students working at this level would be expected to read independently (compare the text in the reading comprehension examples).

Listening comprehension example 3 (from the GPF)

Narrative: Tadala's Deed

One day Tadala found a bag and he picked it up. He took the bag to the village chief. The next week, the chief called Tadala to come speak with him. The chief told him that the woman who owned the bag was very thankful Tadala returned the bag. The chief gave Tadala a football and a box of oranges from the woman to say thank you. Tadala loved football, he was so happy he found the bag.

Question 1 (retrieving): Who was thankful that Tadala returned the bag?

Answer 1: the woman.

Listening Comprehension Construct	Subconstruct	Descriptor
C2: Retrieving information	C2.1: Retrieve explicit information in a short, Grade-level continuous text read to or signed for the learner	C2.1.1_M: When listening to a short Grade 2-level continuous text, retrieve explicit information by direct- or close-word matching or by simple synonymous-word matching when there is limited competing information. This will generally be in response to a 'who', 'what', 'when,' or 'where' question

Commentary: Students listen to and follow the story. They need to identify that the woman whose bag Tadala had found was thankful. This information is explicitly stated. The possibility that the chief might be thankful provides some limited competing information.

Question 2 (interpreting): Why do you think Tadala took the bag to the village chief?

Answer 2: Refers to the chief being likely to know who lost the bag or being in charge of lost items.

Listening Comprehension Construct	Subconstruct	Descriptor
C3: Interpreting information	C3.1: Interpret information in a short, Grade-level continuous text read to or signed for the learner	C3.1.1_M: When listening to a short Grade 2-level continuous text, make simple inferences by connecting pieces of prominent, explicit information when there are multiple clues and limited competing information. his will generally be in response to a 'why' or 'how' question.

Commentary: Students listen to and follow the story. They need to infer that the chief is the person who looks after lost items in the village and will likely find the owner. The extent to which this is a familiar inference depends on the context. In contexts where students do not know about the role of a chief in a village, or are not familiar with the chief performing this function, then this item could become a reflecting skill rather than interpreting.

Listening comprehension example 4 (from the GPF)

Expository: At the Watering Hole

It is a hot day. Many animals from the savannah come to drink at the watering hole. Some come alone and others come in groups. The big rhino comes to drink alone. The tall giraffe comes to drink alone. A pack of growling hyenas come to drink. A flock of squawking birds comes to drink. At the end of the day, all of the animals of the savannah have come to drink from the watering hole.

Question 1 (retrieving): What animals come to drink in groups?

Answer 1: hyenas and/or birds

Question 2 (retrieving): What animals come to drink alone?

Answer 2: rhino and/or giraffe

Listening Comprehension Construct	Subconstruct	Descriptor
C2: Retrieving information	C2.1: Retrieve explicit information in a short, Grade-level continuous	C2.1.1_M: When listening to a short Grade 2-level continuous text, retrieve explicit information by direct- or close-word matching or by simple

	text read to or signed for the learner	synonymous-word matching when there is limited competing information. This will generally be in response to a 'who', 'what', 'when,' or 'where' question

Commentary: Students listen to and follow the story. They are asked to recall explicitly stated information. Identifying one animal that drinks in a group, or one animal that drinks alone is sufficient to answer either item. Only one of these two items would be administered.

Question 3 (interpreting): Where is the watering hole?

Answer 3: savannah

Listening Comprehension Construct	Subconstruct	Descriptor
C3: Interpreting information	C3.1: Interpret information in a short, Grade-level continuous text read to or signed for the learner	C3.1.1_M: When listening to a short Grade 2-level continuous text, make simple inferences by connecting pieces of prominent, explicit information when there are multiple clues and limited competing information. his will generally be in response to a 'why' or 'how' question.

Commentary: Students listen to and follow the story. They need to infer that the water hole is in the savannah. The information is prominent as it is stated twice: at the beginning and the end of the text.

4.2 Reading sample items for MPLb (end of primary)

4.2.1 Reading comprehension examples

Reading comprehension example 1

Sassoon and Marco

The Story

Sassoon had written a story. It was on top of his desk. Marco walked by, picked up the story and started to read it.
'Give it back to me,' Sassoon yelled.
'I just want to read the story,' Marco said. He held it up high.
'No, it's private. I don't want anyone to read it,' said Sassoon. He tried to grab it back.
A teacher came into the room. 'What are you two doing?' she said.

Question: Why does Marco hold the story up high?

D. because he has finished reading it
E. so Sassoon cannot reach it
F. so the teacher can see it
G. because it was on top of Sassoon's desk

Answer: B. so Sassoon cannot reach it.

Reading Comprehension Construct	Subconstruct	Descriptor
R2: Interpreting information	R2.2: Make inferences in a Grade-level text	R2.2.1_M Make inferences in a Grade 5-level continuous text by relating two or more pieces of explicit and/or implicit information (e.g., causal relationship or comparisons) from a paragraph but not in consecutive sentences, when there is limited competing information.

Commentary: This question requires students to infer a causal relationship from several details in a narrative text. It focuses on an explicitly stated action (Marco holding the story up high) that is a secondary idea in the context of the overall situation. The reason for Marco holding the story up high is not explicitly stated, but by linking across the events described in the first few sentences (Marco 'picks up the story' and 'starts to read it'; Sassoon says, 'it's private', and tries to 'grab it back'), the reader can infer that Marco is trying to prevent Sassoon from recovering his story.

Reading comprehension example 2

The Story

Sassoon had written a story. It was on top of his desk. Marco walked by, picked up the story and started to read it.
'Give it back to me,' Sassoon yelled.
'I just want to read the story,' Marco said. He held it up high.
'No, it's private. I don't want anyone to read it,' said Sassoon. He tried to grab it back.
A teacher came into the room. 'What are you two doing?' she said.

Question: What is the teacher probably going to do?

Answer: Any plausible response that is consistent with the teacher having asked the boys to explain the situation. For example:

- give the story back to Sassoon
- tell the boys not to fight
- take the book away from Marco.

Reading Comprehension Construct	Subconstruct	Descriptor
R3: Reflecting on information	R3.2: Evaluate a text with justification	R3.2.1_M Give an opinion (when different perspectives are valid) about a Grade 5-level text and use prominent evidence from the text to justify that opinion.

Commentary: This question requires students to make a prediction: what will happen after the teacher sees Sassoon trying to grab his book from Marco. This is likely to be a familiar scenario with several plausible outcomes. For example, the teacher may recognise the injustice being done to Marco and return his book, or she could just tell both boys to stop fighting and even take the book away. Responses that are inconsistent with the text would be considered incorrect. For example, the teacher is clearly going to do something, as she has asked the boys to explain themselves, so 'do nothing' or 'leave the room' would be considered incorrect. The item is classified as 'Reflecting on information' as readers need to draw on their personal experience of classrooms and teacher/student interactions in order to provide a plausible response.

Students need to read the text themselves, but may give either an oral or written response to the question.

Reading comprehension example 3 (from the GPF)

The Giant Coconut Crab

The giant coconut crab lives in Asia. It looks the same as any small crab you might see in a rock pool at the beach, but the giant coconut crab can grow to nearly one meter wide. Take one really big step. That is how big this crab can grow, from its legs on one side to its legs on the other side! The giant coconut crab eats fruit, seeds, and nuts. It can climb coconut palms and pick the coconuts. It uses its strong front claws to make a hole in the tough coconut shell and then it eats the fruit inside. It has a very good sense of smell, which helps it look for food at night. Sometimes, it picks up shiny things that someone has dropped, like a silver watch or sparkly jewelry, and takes them away. Giant coconut crabs can live for up to 40 years. Their only enemy is people who like to catch and eat them. The giant coconut crab is sometimes also called the "robber crab" or "palm thief.

Question 1: How wide is a giant coconut crab when measured from its left leg to its right leg?

Answer 1: Nearly one meter wide / one really big step

Question 2: How does the giant coconut crab find something to eat when it's dark?

Answer 2: By smell / uses its sense of smell

Question 3: Why is the giant coconut crab also called a "robber crab"?

Answer 3: Because it takes away / steals jewelry/watches

Answer 1

Reading Comprehension Construct	Subconstruct	Descriptor
Retrieving Information	R1.2: Retrieve explicit information in a Grade-level continuous text by direct or close word matching	R1.2.1_M Retrieve a single piece of explicit information from a Grade 5-level continuous text by direct- or close-word matching when the information required is nearby but not adjacent to the matched word and there is limited competing information.

Commentary: The close word matching of "leg" to "legs" is nearby but not adjacent to the information "one meter." There is limited competing information with the word "small."

Answer 2

Reading Comprehension Construct	Subconstruct	Descriptor
Retrieving Information	R1.3 Retrieve explicit information in a Grade-level text by synonymous word matching	R1.3.1_M Retrieve a single piece of explicit information from a Grade 5-level continuous text by synonymous word matching when the information required is not prominent and there is limited competing information.

Commentary: The synonymous word matching can be made with "look for food" and "and find something to eat" in the less prominent area of the middle of the text. There is some competing information with the adjacent sentence containing the words "shiny" and "sparkly."

Answer 3

Reading Comprehension Construct	Subconstruct	Descriptor
Retrieving Information	R2.1 Identify the meaning of unknown words and expressions in a Grade-level text	R2.1.2_M Identify the meaning of idiomatic or figurative expressions in a Grade 5-level text when there are multiple clues (e.g., use language specific semantic clues or contextual clues).

Commentary: A connection needs to be made between the clue given in the middle of the text that describes the crab "taking away" or stealing valuable objects and the figurative expression "robber crab" that appears in the last sentence.

Reading comprehension example 4 (from the GPF)

Chiumbo and the goats

Every day Chiumbo took the goats out to find new grass. At night, he brought them home again. Every day was the same. One day, Chiumbo was so bored that he fell asleep. The goats started walking off down the road, but an old man saw them. He brought the goats back and woke Chiumbo up. "Thank you, old man," said Chiumbo. The next day, Chiumbo fell asleep again. An eagle saw Chiumbo and flew down hoping to have baby goat for dinner, but all the other birds made so much noise they woke Chiumbo. "Thank you, birds," said Chiumbo as he waved a big stick to frighten the eagle away. "This is good," said Chiumbo, "I can sleep every day." The next day, Chiumbo was asleep in the grass when a thief crept up and stole two of Chiumbo's goats. When Chiumbo finally woke up, he searched and searched but he could not find the missing goats. Chiumbo was very frightened. When he got home, his father was waiting. Chiumbo told his father the truth straight away and said that he was very sorry. "Have you learned your lesson now?" his father said angrily. Then he added, "You are a very lucky boy. A policeman caught the thief and so we've got our two goats back." And after that, Chiumbo became the best goat minder in the village.

Question 1: Number these actions in the order they appear in the story.

• An eagle tried to take a baby goat

• Chiumbo cannot find the goats

• A thief stole the goats

• An old man brought the goats back

Answer 1: An eagle tried to take a baby goat (2)

• Chiumbo cannot find the goats (4)

• A thief stole the goats (3)

• An old man brought the goats back (1)

Question 2: Do you think Chiumbo should have been punished for sleeping instead of watching the goats?

Yes No

Use evidence from the text to support your answer.

Answer 2: Answers "yes" and refers to: The goats being stolen because he wasn't doing his job

OR Answers "no" and refers to: • He told the truth • He learned from his mistake because now he is the best minder in the village

Answer 1

Reading Comprehension Construct	Subconstruct	Descriptor
Interpret information	R2.2 Make inferences in a Grade-level text	R2.2.3_M Identify the sequence of up to four prominent events/actions/steps in a Grade 5-level text.

Commentary: The sentences describe four events that happen chronologically in the story and need to be ordered into the correct sequence.

Answer 2

Reading Comprehension Construct	Subconstruct	Descriptor
Reflect on information	R3.2 Evaluate a text with justification	R3.2.1_M Give an opinion (*when different perspectives are valid)* about a Grade 5-level text and use prominent evidence from the text to justify that opinion.

Commentary: The text provides evidence to support either argument. A broad understanding of the story is needed to support the argument. Evidence for both sides is prominent in the text.

Reading comprehension example 5 (from the GPF)

Orange and Cardamom Fruit Salad

Ingredients

4 oranges

1/2 cup of raisins

1 tablespoon of honey

½ teaspoon of cardamom powder (a spice)

Instructions

1. Peel 3 oranges, cut into slices, and put in a bowl.

2. Pick over the raisins to remove any stalks and add to the bowl.

3. Put the juice of one orange into a saucepan with the cardamom and honey. Stir over a gentle heat for 5 minutes.

4. Pour the hot sauce over the fruit in the bowl and mix gently.

5. If you don't eat it immediately, keep it cool.

Question 1: Write one thing listed in the text that is put into the saucepan.

Answer 1: (Orange) juice / cardamom / honey

Question 2: The ingredients list says 4 oranges but only 3 oranges are peeled and sliced. What is the other orange used for?

Answer 2: Juicing / squeezing for juice

Question 3: "Pick over the raisins …"

What does "pick over" mean?

A. Take out

B. Put in

C. Check

D. Wash

Answer 3: C. Check

Answer 1

Reading Comprehension Construct	Subconstruct	Descriptor
Retrieving information	R1.2 Retrieve explicit information in a Grade-level continuous text by direct or close word matching	R1.2.2_M Retrieve a single piece of explicit information from a Grade 5-level non-continuous text (e.g., simple diagrams and tables) by director close-word matching when the information required is not prominent and there is limited competing information.

Commentary: The information is found by direct word matching with "saucepan," but it is in the middle of the procedural list and is therefore not prominent. There is some competing information with "orange" and "raisins" also being ingredients listed.

Answer 2

Reading Comprehension Construct	Subconstruct	Descriptor
Retrieving information	R1.3 Retrieve explicit information in a Grade-level text by synonymous word matching	R1.3.2_M Retrieve a single piece of explicit information from a Grade 5-level non-continuous text (e.g., simple diagrams and tables) by synonymous word matching when the information required is not prominent and there is limited competing information.

Commentary: The connection needs to be made through synonymous word matching of "other orange used for" in the question and "put the juice of one orange" in the middle of the procedural list. The information in the text is not prominent. There is some competing information in the instructions relating to the other three oranges.

Answer 3

Reading Comprehension Construct	Subconstruct	Descriptor
Interpreting information	R2.1 Identify the meaning of unknown words and expressions in a Grade-level text	R2.1.2_M Identify the meaning of unknown words (including familiar words used in unfamiliar ways) in a Grade 5-level text when there are multiple clues (*e.g., use language-specific morphological clues or contextual clues to identify the meaning of unknown words)*

Commentary: A connection needs to be made between the figurative expression “pick over” at the beginning of the sentence and the clue that immediately appears at the end of the sentence, “to remove any stalks.”

Reading comprehension example 5 continued (from the GPF)

Orange and Cardamom Fruit Salad

Ingredients

4 oranges

1/2 cup of raisins

1 tablespoon of honey

½ teaspoon of cardamom powder (a spice)

Instructions

1. Peel 3 oranges, cut into slices, and put in a bowl.

2. Pick over the raisins to remove any stalks and add to the bowl.

3. Put the juice of one orange into a saucepan with the cardamom and honey. Stir over a gentle heat for 5 minutes.

4. Pour the hot sauce over the fruit in the bowl and mix gently.

5. If you don’t eat it immediately, keep it cool.

Question 4: Each sentence in the Instructions section starts with a number.

What is the meaning of these numbers?

A. How many things you need

B. The ordering of the tasks

C. The ranking of best taste

D. The times it takes to cook

Answer 4: B. The ordering of the tasks

Question 5: What do you need to do just after your put the juice, honey, and cardamom into the saucepan?

Answer 5: Refers to heating the sauce / heating gently for 5 minutes

Question 6: What can you learn from this text?

A. How to be safe in the kitchen

B. How to cool hot food

C. How to cut fruit

D. How to make a dessert

Answer 6: D. How to make a dessert

Answer 4

Reading Comprehension Construct	Subconstruct	Descriptor
R2 Interpreting information	R2.2: Make inferences in a Grade-level text	R2.2.2_M Make inferences in a Grade 5-level noncontinuous text (e.g., detailed diagrams, tables, and graphs) by relating two or more pieces of explicit and/or implicit information (e.g., causal relationship or comparisons) from two parts of the text when there is limited competing information.

Commentary: This text uses numerals to explain several different concepts (quantifying, showing procedure, and time measurement). The connection needs to be made between the meaning of the numbers in the Instructions section as a way to signify the order of tasks. The main source of competing information is in the Ingredients section where the numbers are used to show quantities.

Answer 5

Reading Comprehension Construct	Subconstruct	Descriptor
R2 Interpreting information	R2.2: Make inferences in a Grade-level text	R2.2.3_M Identify the sequence of up to four prominent events/actions/steps in a Grade 5-level text.

Commentary: Identifies the next step that appears in the middle of a procedural text.

Answer 6

Reading Comprehension Construct	Subconstruct	Descriptor

R3 Reflect on information	R3.1: Identify the purpose and audience of a text	R3.1.1_M Identify the purpose of a Grade 5-level text when there are prominent clues and the purpose is not explicitly stated

Commentary: The purpose of this text needs to be identified by understanding what the outcome will be of following the instructions. While there are many individual actions stated, this question asks about the overall purpose of the text.

4.3 Reading sample items for MPLc (end of lower secondary)

4.3.1 Reading comprehension examples

Reading comprehension example 1 (from GPF)

Table

Country Fact File

	Afghanistan 	**Vietnam** 	**Philippines** 	**Nepal** 
Climate	arid to semi- arid; freezing winters and hot summers	tropical in south; monsoonal in north	usually hot and humid	subtropical in south; cool summers and severe winters in north
Geography	landlocked and mountainous	the fertile Mekong River delta covers a large part of southwestern Vietnam	made up of 7107 islands	landlocked; contains eight of the world's 10 highest peaks
Main crops	wheat, fruits, nuts; wool, sheepskins	paddy rice, coffee, rubber, cotton, fish	sugarcane, coconuts, rice	rice, corn, wheat, sugarcane, milk
Typical exports (goods sold to other countries)	fruits and nuts, carpets, saffron	crude oil, marine products, rice, coffee, rubber, garments	electronic equipment, transport equipment, garments	carpets, clothing, leather goods
Wildlife	the Marco Polo sheep: it has the longest horns of any sheep	the saola (related to wild cattle): one of the world's rarest animals	the Philippine Eagle: the largest eagle in the world	the one- horned rhinoceros: the world's fourth largest land mammal

Question 1: Which country exports rice?

Question 2 Name one country that grows and exports two of its crops.

Question 3: Which country has an unusual bird?

A. Afghanistan

B. Vietnam

C. Philippines

D. Nepal

Answer 1: Nepal

Answer 2: Afghanistan or Vietnam

Answer 3: C. Philippine

Answer 1

Reading Comprehension Construct	Subconstruct	Descriptor
R1: Retrieving information	R1.2 Retrieve explicit information in a Grade-level continuous text by direct or close word matching	R1.2.2_M Retrieve a single piece of explicit information from a Grade 8-level non-continuous text *(e.g., detailed diagrams, tables, and graphs)* by direct- or close-word matching when the information required is not prominent and there is competing information.

Commentary: Exports" can be directly matched to the fourth-row heading "Typical exports." "Rice" is mentioned in the second column, which the column header identifies as "Vietnam." The location of the information is not prominent (fourth row, second column). There is competing information, as rice is also a main crop for three countries.

Answer 2

Reading Comprehension Construct	Subconstruct	Descriptor
R1: Retrieving information	R1.2 Retrieve explicit information in a Grade-level continuous text by direct or close word matching	R1.2.3_M Retrieve a single piece of explicit information from a Grade 8-level non-continuous text *(e.g., detailed diagrams, tables, and graphs)* by direct- or close-word matching when the information required is not prominent and there is competing information.

Commentary: One country must be identified that meets the criteria of both growing and exporting two of its crops. Two countries meet these criteria. Either is acceptable.

Answer 3

Reading Comprehension Construct	Subconstruct	Descriptor
Retrieving information	R1.3 Retrieve explicit information in a Grade-level text by synonymous word matching	R1.3.2_M Retrieve a single piece of explicit information from a Grade 8-level non-continuous text *(e.g., detailed diagrams, tables, and graphs)* by synonymous word matching when the information required is not prominent and there is competing information.

Commentary: A synonymous match must be made between "bird" and the Philippines eagle. The information is not prominent, as it is in the last row. The competing information is that there are other unusual animals, but none of these are birds.

Reading comprehension example 1 continued (from GPF)

Table

Country Fact File

	Afghanistan 	Vietnam 	Philippines 	Nepal 
Climate	arid to semi- arid; freezing winters and hot summers	tropical in south; monsoonal in north	usually hot and humid	subtropical in south; cool summers and severe winters in north
Geography	landlocked and mountainous	the fertile Mekong River delta covers a large part of southwestern Vietnam	made up of 7107 islands	landlocked; contains eight of the world's 10 highest peaks
Main crops	wheat, fruits, nuts; wool, sheepskins	paddy rice, coffee, rubber, cotton, fish	sugarcane, coconuts, rice	rice, corn, wheat, sugarcane, milk
Typical exports (goods sold to other countries)	fruits and nuts, carpets, saffron	crude oil, marine products, rice, coffee, rubber, garments	electronic equipment, transport equipment, garments	carpets, clothing, leather goods
Wildlife	the Marco Polo sheep: it has the longest horns of any sheep	the saola (related to wild cattle): one of the world's rarest animals	the Philippine Eagle: the largest eagle in the world	the one- horned rhinoceros: the world's fourth largest land mammal

Question 4: What do all the kinds of wildlife in the table have in common?

A. They are large.

B. They are horned.

C. They are unusual.

D. They are endangered

Question 5: Which of these statements is an opinion and which is a fact about the information in 'Country Fact File'? Write 'fact' or 'opinion' next to each statement.

- The Philippines has the best weather for a holiday.

- Two of the countries are landlocked.
- Vietnam has the greatest number of different exports.
- All of the countries have interesting wildlife.

Answer 4: C They are unusual.

Answer 5: Opinion, Fact, Fact, Opinion

Answer 4

Reading Comprehension Construct	Subconstruct	Descriptor
Interpreting information	R2.2 Make inferences in a Grade-level text	R2.2.6_M Draw a basic conclusion from a Grade 8-level text by synthesizing prominent information from one or more paragraphs and/or sections when the conclusion is clearly implied but not explicitly stated.

Commentary: The prominent main idea in the examples of wildlife is that they are unusual animals: longest horns, rarest mammal, largest eagle, and fourth largest mammal. The secondary ideas are the details of how each animal is unusual that cannot be generalized across the group.

Answer 5

Reading comprehension Construct	Subconstruct	Descriptor
R3: Reflect on information	R3.3: Evaluate the status of claims made in a text	R3.3.1_M Distinguish between factual information and opinion *(as presented)* in a Grade 8-level text.

Commentary:

The question presents four statements about the text and requires students to evaluate whether each of the statements is a fact or an opinion. The inclusion of subjective words in the statements of opinion ('best', 'interesting') should make this distinction fairly prominent to students. However, the word 'fact' in the title of the table may act as competing information.

Reading comprehension example 1 continued (from GPF)

Table

Country Fact File

	Afghanistan 	Vietnam 	Philippines 	Nepal 
Climate	arid to semi- arid; freezing winters and hot summers	tropical in south; monsoonal in north	usually hot and humid	subtropical in south; cool summers and severe winters in north
Geography	landlocked and mountainous	the fertile Mekong River delta covers a large part of southwestern Vietnam	made up of 7107 islands	landlocked; contains eight of the world's 10 highest peaks
Main crops	wheat, fruits, nuts; wool, sheepskins	paddy rice, coffee, rubber, cotton, fish	sugarcane, coconuts, rice	rice, corn, wheat, sugarcane, milk
Typical exports (goods sold to other countries)	fruits and nuts, carpets, saffron	crude oil, marine products, rice, coffee, rubber, garments	electronic equipment, transport equipment, garments	carpets, clothing, leather goods
Wildlife	the Marco Polo sheep: it has the longest horns of any sheep	the saola (related to wild cattle): one of the world's rarest animals	the Philippine Eagle: the largest eagle in the world	the one- horned rhinoceros: the world's fourth largest land mammal

Question 6: Some support has been provided to help the reader understand unfamiliar words.

Give an example of one word and the support provided.

Question 7: Who do you think this text was written for?

Circle one:

Primary students Secondary students

Use evidence from the text to give a reason for your choice.

Question 8: Maria says the typical exports show that Vietnam is the most successful country.

Do you agree or disagree with Maria? Circle one.

Agree Disagree

Use evidence from the text to give a reason for your choice.

Answer 6: Refers to the definition for exports or saola, e.g., saola (a kind of antelope)

Answer 7: Provides a plausible reason, e.g., primary because text is short and simple OR secondary because there are lots of hard words OR circles both with a plausible explanation

Question 8: Selects either option and provides a plausible reason: Agrees and refers to Vietnam selling a greater diversity of goods / more goods, or disagrees and refers to Philippines selling electronic equipment / transport equipment (implies skill/value); Nepal making carpets/leather goods that require skill; Afghanistan selling saffron, which is very expensive

Answer 6

Reading Comprehension Construct	Subconstruct	Descriptor
Reflect on information	R3.1 Identify the purpose and audience of a text	R3.1.2_M Use evidence in a Grade 8-level text to support the identification of the purpose.

Commentary: The task is to locate a word where there is evidence of support provided to the reader to help understand the word. Two definitions are provided in brackets to explain the meaning of "exports" and "saola." Either word with the definition is acceptable

Answer 7

Reading Comprehension Construct	Subconstruct	Descriptor
Reflect on information	R3.1 Identify the purpose and audience of a text	R3.1.4_M Use relevant evidence in a Grade 8-level text to support the identification of the audience.

Commentary: The task is to select and then justify if the intended audience is likely to be primary or secondary students. Depending on context and likely reading skills of students, the vocabulary in the text may be considered complex and extensive, and therefore suited to secondary, or the vocabulary may be considered simple and the content relatively brief, and therefore appropriate to primary. Either justification is appropriate. A plausible reason that the text is suitable for either audience is also acceptable.

Answer 8

Reading Comprehension Construct	Subconstruct	Descriptor
Reflect on information	R3.2: Evaluate a text with justification	R3.2.1_M Give an opinion (when different perspectives are valid) about a Grade 8-level text and use prominent evidence from the text to justify that opinion.

Commentary: The task is to form an opinion about whether to agree or disagree with Maria's interpretation of the typical exports and find supporting evidence. Vietnam sells a great diversity of goods, which is a plausible indication of success. The Philippines is the only country to export electronic goods, which might be considered an indication of success, as it implies manufacturing skill or the value of the product. It might also be argued that success is indicated for Nepal, as carpets and leather goods require complex manufacturing, or Afghanistan may be considered successful because saffron is an expensive crop.

Reading comprehension example 2

Folk Tale

Beans

An old farmer was becoming frail. He decided to give his farm to a younger man. He had two nephews, but he was not sure if he could trust either of them. He invited them to his farm and gave them a test.

He gave each nephew a pot and a handful of beans. He told the nephews to plant the beans in their pot and come back in one month. He told them that he would then decide who was the most suitable man to take over his farm.

One month later, the two nephews came back.

The first nephew showed the farmer his pot. 'I worked very hard, Uncle. I gave my beans sun and water just like you said. Look at my plants now. They are healthy and green and are almost up to my knee.'

The second nephew showed the farmer his pot. 'I don't understand, Uncle. I gave my beans sun and water just like you said, but nothing has grown. I don't deserve the farm.'

The farmer reached into his pocket for the keys to his farm. 'Thank you, my nephews. This little test has shown me whom I can trust.' He handed the keys to his second nephew. 'The beans had already been cooked. They were never going to grow.'

Question 1: How would the first nephew have felt at the end of the story?

Answer 1: Any plausible response that is consistent with the first nephew failing the test after being eager to pass it. May refer to being caught cheating. For example:

- He would have felt ashamed.
- Embarrassed.
- Disappointed that he did not get the farm.

- Annoyed that he was caught cheating.
- Furious with the uncle because he did not give him the farm.

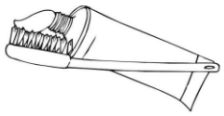
Determined to seek revenge on the uncle and the other nephew.

Reading Comprehension construct	Subconstruct	Descriptor
R2: Interpreting information	R2.2: Make inferences in a Grade-level text	R2.2.1_M Make inferences in a Grade 8-level continuous text by relating two or more pieces of explicit and/or implicit information (e.g., causal relationship or comparisons) from a paragraph but not in consecutive sentences, when there is limited competing information.

Commentary: At the end of the story, the response of the first nephew – the one who cheated in the test – is not included in the text and must be inferred. There are clues in the text to help. The first nephew boasts about his plants, so is clearly eager to win the competition and claim the farm. He doesn't win and so the obvious inference is that he will experience disappointment. Answers that refer to other plausible negative emotions – he might feel angry or frustrated – are also acceptable.

Reading comprehension example 3 (from the GPF)

Brushing Your Teeth



Do our teeth become cleaner and cleaner the longer and harder we brush them?

British researchers say no. They have actually tried out many different alternatives, and ended up with the perfect way to brush your teeth. A 2-minute brush, without brushing too hard, gives the best result. If you brush hard, you harm your tooth enamel and your gums without loosening food remnants or plaque.

Bente Hansen, an expert on tooth brushing, says that it is a good idea to hold the toothbrush the way you hold a pen. "Start in one corner and brush your way along the whole row," she says. "Don't forget your tongue either! It can actually contain loads of bacteria that may cause bad breath."

Question 1: What do the British researchers recommend?

A. That you brush your teeth as often as possible.

B. That you do not try to brush your tongue.

C. That you do not brush your teeth too hard.

D. That you brush your tongue more often than your teeth

OECD (2010), PISA 2009 Results: What Students Know and Can Do: Student Performance in Reading, Mathematics and Science (Volume I), PISA, OECD Publishing, Paris, https://doi.org/10.1787/9789264091450-en

Answer 1: C. That you do not brush your teeth too hard.

Question 2: Why is a pen mentioned in the text?

A. To help you understand how to hold a toothbrush.

B. Because you start in one corner with both a pen and a toothbrush.

C. To show that you can brush your teeth in many different ways.

D. Because you should take tooth brushing as seriously as writing

Answer 2: A. To help you understand how to hold a toothbrush.

Answer 1

Reading Comprehension Construct	Subconstruct	Descriptor
Retrieving information	R1.2 Retrieve explicit information in a Grade-level continuous text by direct or close word matching	R1.2.1_M Retrieve a single piece of explicit information from a Grade 8-level continuous text by director close-word matching when the information required is nearby but not adjacent to the matched word and there is competing information.

Commentary: The question gives a clear direction to the part of the text in which the information will be found, in the reference to 'British researchers'. The term 'British researchers' is near to the target information ('A two minute brush, without brushing too hard, gives the best result.'), but not adjacent, since it is separated by a sentence. This is a retrieval item since the words used in the question are directly or synonymously matched to words in the text. The word 'recommends' is synonymous with 'gives the best results'. This was a Level 1a item in PISA 2009. (published in OECD report on PISA 2009, volume I, page 92)

Answer 2

Reading Comprehension Construct	Subconstruct	Descriptor
	R3.1: Identify the purpose and audience of a text	R3.1.1_M M Identify the purpose of a Grade 8-level text or features of the text *(e.g., images/graphics, paratextual features, and vocabulary)* when there are multiple clues,

		limited competing information, and the purpose is not explicitly stated.

Commentary: This question requires identification of the purpose of a feature of the text: an analogy between a toothbrush and a pen. The task, first, is to find the reference to a pen, and then to reflect on the purpose of the analogy—that is, to help the reader "understand." Although there are not multiple clues, there is very limited competing information. This was a Level 1a item in PISA 2009. [*published in OECD report on PISA 2009, volume I, page 93*]

5. Appendix B: Mathematics sample items

5.1 Mathematics sample items for MPLa (end of lower primary)

5.1.1 Number and operations examples

Number and operations example 1

Write the next number in the counting pattern.

54, 56, 58, ___

Answer: 60

Domain	Construct	Descriptor
Number and operations	N1: Whole numbers	N1.1.3_M Skip count forward by twos or tens.

Commentary:

This task requires students to:

1. identify the pattern in the three numbers shown (the pattern is increasing by 2)
2. extend the pattern by writing the next number.

Number and operations example 2

Circle the largest number in each pair.

31	13	91	29	37	70

Answer: (31) 13 (91) 29 37 (70)

Domain	Construct	Descriptor
Number and operations	N1: Whole numbers	N1.1.2_M Compare and order whole numbers up to 100.

Commentary:

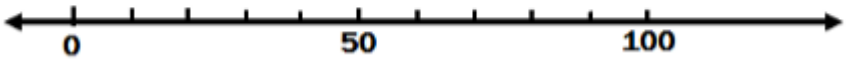
This task requires students to compare the three pairs of whole numbers given. Students need to recognise the pairings of numbers – shown using boxes drawn around each pair – and then identify the largest number of each pair.

For the first pair, the digits in the two numbers are identical, so students will need to identify the ordering of these digits that creates the larger of the two possibilities. For the second and third pair, the two numbers share some common digits, but students will need to identify the tens digit as they key marker of the larger number.

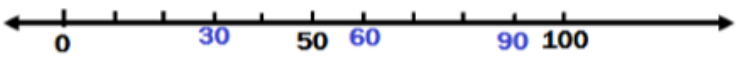
Number and operations example 3

Place each of these numbers onto the number line below.

30 90 60



Answer:



Domain	Construct	Descriptor
Number and operations	N1: Whole numbers	N1.1.2_M Compare and order whole numbers up to 100.

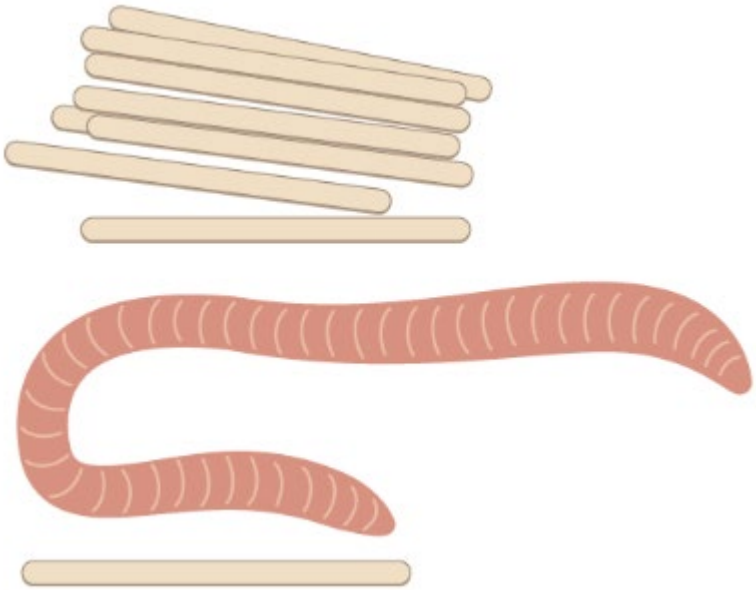
Commentary:

This task requires students to first understand the scale on the given line. They can determine the values of the unlabelled markers from those labelled at 0, 50 and 100. Having determined these values, students can then position the numbers 30, 60 and 90 correctly.

5.1.2 Measurement examples

Measurement example 1

Jim uses sticks to see how long a worm is.



How long is the worm?

A. 1 stick
B. 2 sticks
C. 3 sticks
D. 4 sticks

Answer: C. 3 sticks

Domain	Construct	Descriptor
Measurement	M1: Length, weight, capacity, volume, area and perimeter	M1.1.1a_M Use non-standard units to estimate and compare the length of objects.

Commentary:

This task requires students to identify the sticks as objects of fixed length, and then use these to visually estimate the length of a real-world object (a worm). If students were to actually perform this task, they would likely align sticks along the length of the worm. To do this task from the image, will require mental manipulation of either, or both, the worm and the stick.

Measurement example 2

Which clock shows 8 o'clock?

Answer: 

Domain	Construct	Descriptor
Measurement	M2: Time	M2.1.2_M Tell time using an analog clock to the nearest hour.

Commentary:

This task requires students to identify the analog clock face that correctly represents the given time. They need to identify the 8 on the clock face, and the position of the hour hand of the clock pointing at this number.

Measurement example 3

There is a star on the calendar to show when Emma is going to play at her friend's house.

MAY						
SUN	MON	TUES	WED	THU	FRI	SAT
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	★	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

What is the date when Emma is going to play with her friend?

A. 9 May
B. 10 May
C. 16 May
D. 22 May
E. 23 May

Answer: C. 16 May

Domain	Construct	Descriptor
Measurement	M2: Time	M2.2.1_M Solve problems, including real-world problems, using a calendar.

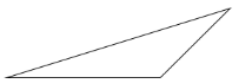
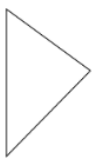
Commentary:

This task requires identifying the missing date from the given calendar month. Students need to be able to use the information from either the rows or the coumns to determine the missing date.

5.1.3 Geometry examples

Geometry example 1

Which of these shapes is a triangle?
Select 'Yes' or 'No' for each shape.

Shape	Yes	No
	○	○
	○	○
	○	○
	○	○

Answer: Yes, No, Yes, No

Domain	Construct	Descriptor
Geometry	G1: Properties of shapes and figures	G1.1.1_M Recognize and name shapes that are regular and irregular.

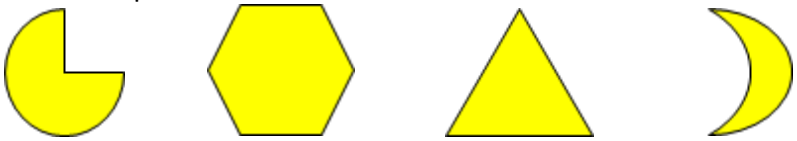
Commentary:

This task requires students to be able to recognise the key features of triangles – they are straight-sided shapes with 3 sides. Students need to be able to use this knowledge to identify and correctly select the shapes that match these features, and to disregard the shapes that do not – that is, those that have curved sides and/or more than 3 sides.

Geometry example 2

Please read the following question aloud to the student:

Which shape has sides that are all curved?



Answer: 

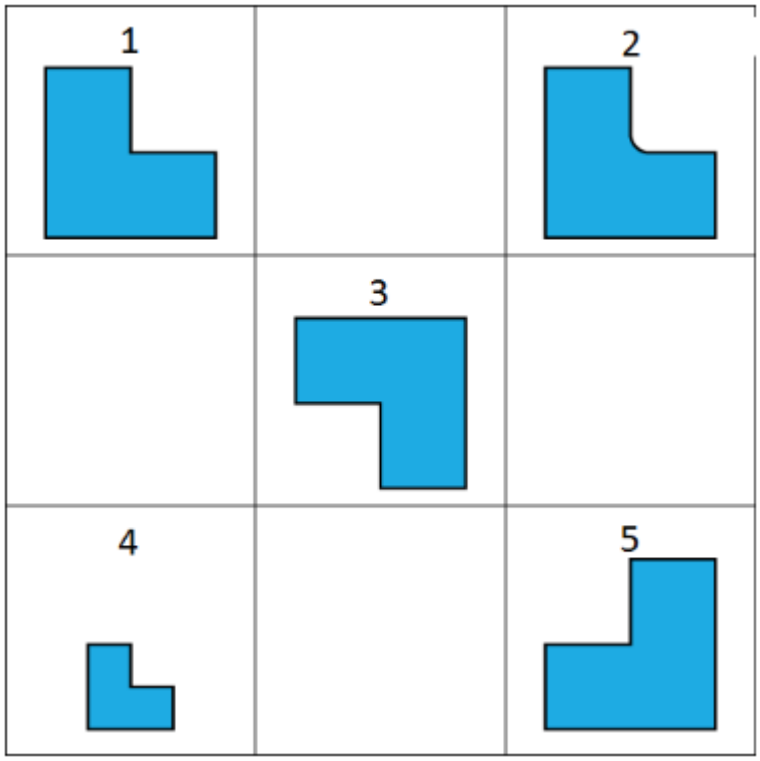
Domain	Construct	Descriptor
Geometry	G1: Properties of shapes and figures	G1.1.4_M Recognize and name straight and curved lines and attributes of shapes.

Commentary:

This task requires students to understand information presented orally in a single short sentence, including the terms ‘side’ and ‘curved’ in the context of 2D shape properties. They then need to inspect each given shape to determine whether its sides are curved or straight, and select the shape that has all sides curved.

Geometry example 3

Shape 1 is the same size and shape as Shape 3.
Which other shapes from the grid are the same size and shape as Shape 3?



Answer: Shape 5

Domain	Construct	Descriptor
Geometry	G1: Properties of shapes and figures	G1.1.9_M Recognize when a two-dimensional shape has been rotated or reflected.

Commentary:

This task requires students to recognise that Shape 5 is a rotation of either Shape 1 or Shape 3, and shares the same size and shape propoerties of these two other shapes. Students can select more than one option as their answer, and so they will need to also recognise the features of Shape 2 (curved sides) and of Shape 4 (smaller size) that make them not suitable to choose.

5.1.4 Statistics and probability examples

Statistics and probability example 1

Zoe watches cars driving past.
She counts the colours of the cars using a tally chart.

There are 9 white cars.

Colour	Count
Black	𝍸 ||
White	𝍸 ||||
Red	||||
Blue	||

How many more black cars are there than red cars?

A. 7
B. 4
C. 3
D. 2

Answer: C. 3

Domain	Construct	Descriptor
Statistics and probability	S1: Data management	S1.1.2_M Compare between categories of a tally chart, bar graph, or pictograph with up to four categories and a single-unit scale, using terms such as more than or less than.

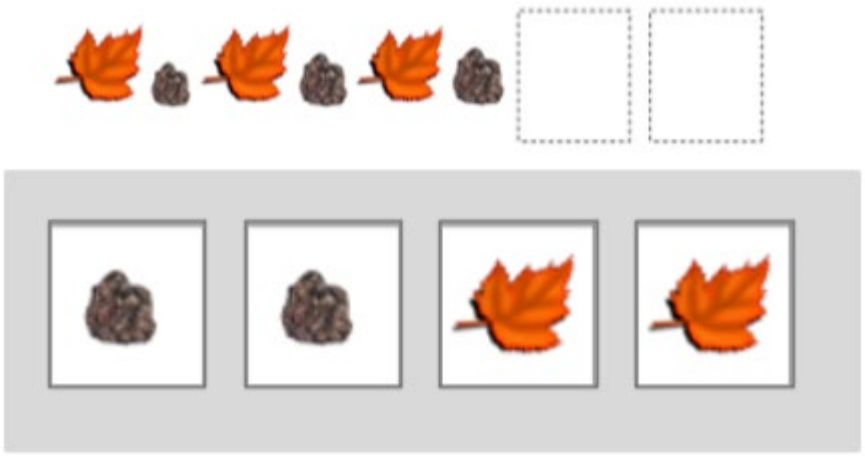
Commentary:

This task requires students to use the information given to interpret the tally chart, and then to compare the tallies of two categories in the chart. They are given a key (there are 9 white cars) with which to interpret the tally marks – especially the marker that indicates a tally of 5. They then need to count the tallies of the two identified categories and find the difference between these.

5.1.5 Algebra examples

Algebra example 1

What comes next in the pattern?
Draw a line from the object to its place in the pattern.



Answer: Correct indication that student is selecting  in this order.

Domain	Construct	Descriptor
Algebra	A1: Patterns	A1.1.1_M Recognize repeating sets in a pattern and use this to identify a missing element and extend the pattern.

Commentary:

This item requires students to understand information presented in one short sentence including the terms 'next' and 'pattern', and to interpret and use images. They need to use reasoning to identify the pattern, and find a strategy to identify the 'next' two objects. Finally, they need to construct their response by dragging multiple images into the given spaces in the correct sequence.

5.2 Mathematics sample items for MPLb (end of primary)

5.2.1 Number and operations examples

Number and operations example 1

Round 1342 to the nearest 100.

_____

Answer: 1300

Domain	Construct	Descriptor
Number and operations	N1: Whole numbers	N1.2.3_M Round whole numbers to the nearest hundred.

Commentary:

This task requires students to understand place value (so as to identify the hundreds place) as well as the rules for determining whether to round up or round down.

Number and operations example 2

Question 1

For a school assembly there are 17 rows of chairs with 10 in each row.
On the stage there are 3 rows of chairs with 8 in each row.

How many chairs are there altogether?

_____

Answer: 194

Domain	Construct	Descriptor
Number and operations	N1: Whole numbers	N1.3.7_M Perform calculations involving two or more operations, within the limits for meets expectations described above, respecting the order of operations.

Commentary:

This task requires students to recognise that the stimulus text locates two groups of chairs – the chairs on the stage, and the others. Students need to perform three calculations to determine the total number of chairs:

- 17 × 10

- 3 × 8 (the number of chairs on the stage)
- and the sum of these products.

5.2.2 Measurement examples

Measurement example 1 (Number and operations example 2 continued)

Question 2

A school assembly went for 45 minutes and finished at 3:30 pm.

What time did the assembly start?

_____ pm

Answer: 2:45

Domain	Construct	Descriptor
Measurement	M2: Time	M2.2.2_M Solve problems, including real-world problems, involving elapsed time in minutes across hours.

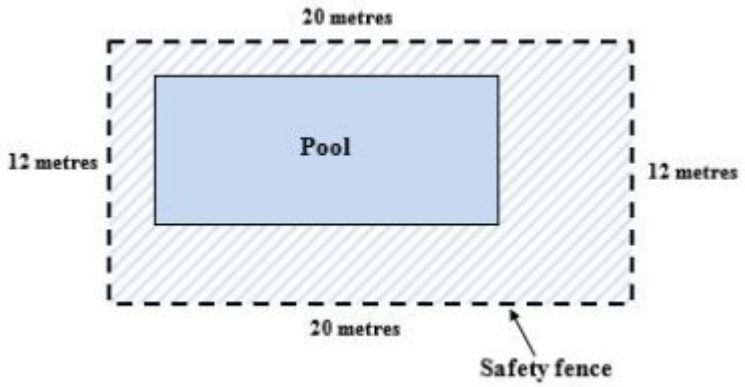
Commentary:

This task requires students to determine a starting time, giving a finishing time and an elapsed time. Students need to identify the finishing time (3:30) and then either:

- subtract 45 minutes from this to determine the correct starting time, or
- identify possible starting times, add 45 minutes to each one, and determine finishing times for each, so as to match with the actual finishing time.

Measurement example 2

A pool has a safety fence around it.



What is the total length of the safety fence?

_____ metres

Answer: 64

Domain	Construct	Descriptor
Measurement	M1: Length, Weight, Capacity, Volume, Area and Perimeter	M1.2.1_M Solve problems, including real-world problems, involving the perimeter of a polygon.

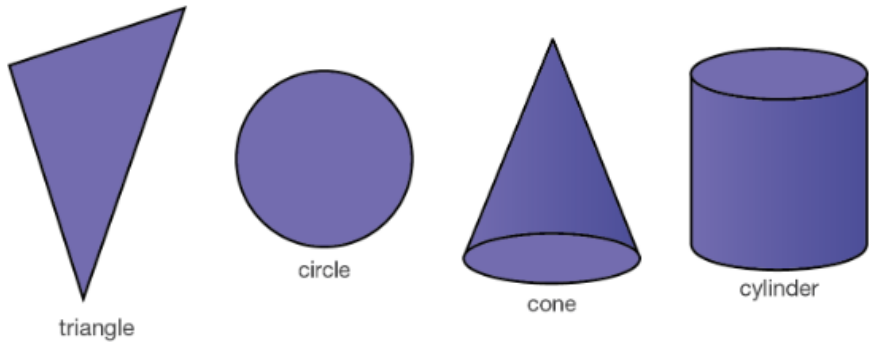
Commentary:

This task requires students to determine the perimeter of a rectangle, in a real-world context. Students need to identify the safety fence on the diagram and recognise the dimensions given as characteristics of the fence. They then need to add these dimensions to calculate the total length (perimeter).

5.2.3 Geometry examples

Geometry example 1

Here are some 2D shapes and 3D objects.



Below are some statements about the shapes and objects.
Select 'True' or 'False' for each statement.

Statement	True	False
The cone has 3 edges.	◯	◯
The triangle is the only 2D shape shown that has sides and corners.	◯	◯
Both the cone and the cylinder have faces that are circles.	◯	◯

Answer: False, True, True

Domain	Construct	Descriptor
Geometry	G1: Properties of shapes and figures	G1.1.2a_M Recognize and name three-dimensional figures by their attributes.

Commentary:

This task requires students to recognise features of two-dimensional shapes and three-dimensional objects.

- For the first statement, students need to recognise that a cone does not have 3 edges. They should be able to identify the edge of the circular face as the only edge of a cone.
- For the second statement, students need to begin by identifying the 2D shapes – the triangle and circle. They should recognise that the triangle is the only 2D shape to include corners (vertices). Sides are generally recognised as straight line segments joining two points and so the triangle is also the only 2D shape to feature sides. Some students may indicate confusion with the use of this terminology, but the inclusion of corners in the statement clarifies the triangle as the only possible shape to satisfy the statement.
- For the third statement students need to understand the face as a feature of three-dimensional objects. The cone and cylinder are shown as two-dimensional projections and

so the circular faces are represented in this question as ellipses – students need to recognise this projection and identify the circle as a correct face for these two objects.

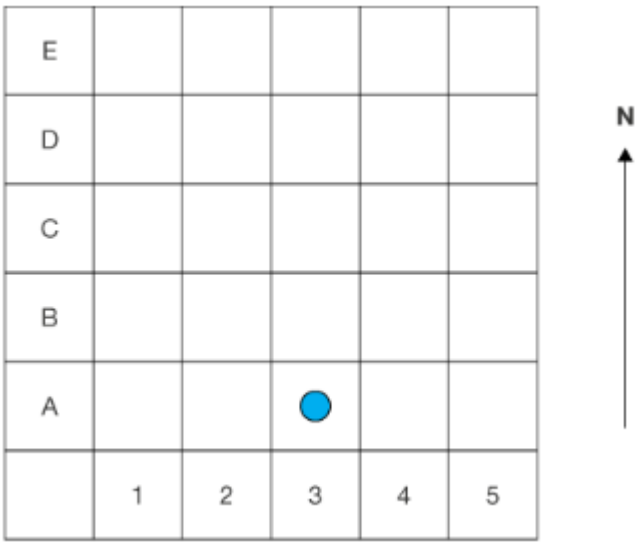
Suggested scoring:

It is possible with complex multiple-choice questions like this to award full or partial credit to student responses.

For example, full credit (2 points) could be awarded for students correctly identifying all statements, with partial credit (1 point) awarded for students only correctly identifying two of the three statements.

Geometry example 2

Each grid square on this map has a length of 1 metre. The North arrow is also shown.



John is at location 3A on the map.
He walks 2 metres North, then 1 metre East.
At which grid square location is John now?

_____

Answer: 4C

Domain	Construct	Descriptor
Geometry	G3: Position and direction	G3.1.2_M Use a grid map with compass directions when the grid dimensions are given in terms of the real-world distance.

Commentary:

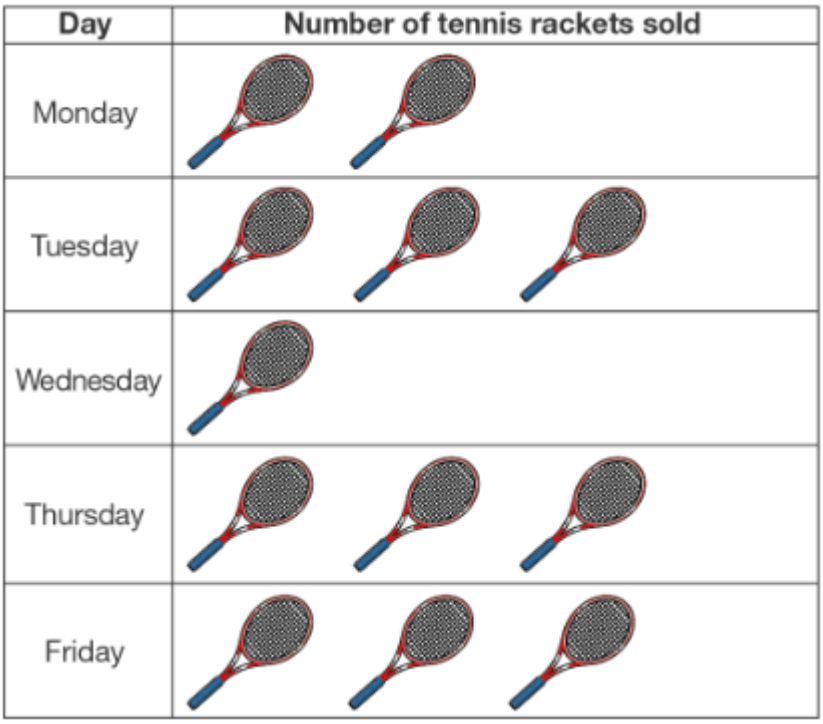
This task requires students to understand both grid maps and compass directions. The image includes a marker at the grid position 3A, so students need to recognise that this is the position of John identified in the text. Given the map scale information provided (1 grid = 1 metre) students then need to translate the movement instructions to grid positions. Students also need to use the North marker as a reference to identify changes in movement – from North to East in this example.

Students should be able to identify that John moves from 3A to 3C (2 metres North) and then to 4C (1 metre East).

5.2.4 Statistics and probability examples

Statistics and probability example 1

This graph shows the number of tennis rackets sold by a shop from Monday to Friday this week.
The key is missing.



On Tuesday, 10 more rackets were sold than on Wednesday.

How many tennis rackets does  represent?

_____

Answer: 5

Domain	Construct	Descriptor
Statistics and probability	S1: Data management	S1.1.3_M Compare by calculating differences between categories in a tally chart, bar graph, or pictograph with a multi-unit scale.

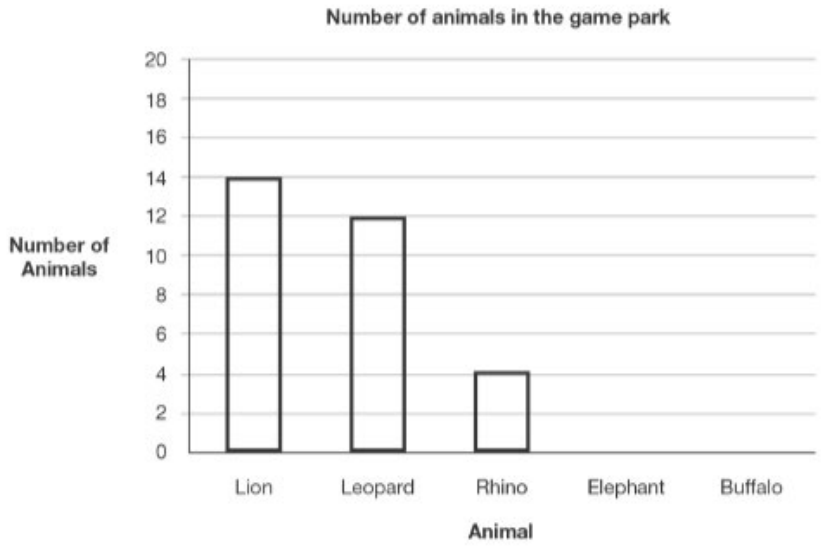
Commentary:

This task requires students to interpret a pictograph, represented without a key, given specific information. Students need to identify what the key for the pictograph should be.

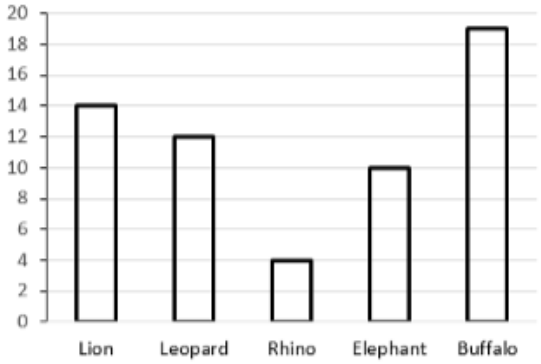
Students need to use the comparison statement – 10 more rackets sold on Tuesday compared to Wednesday. They can identify the difference in the number of rackets shown on the pictograph for Tuesday and Wednesday – Tuesday has 2 more – and use this difference with the comparison statement to infer that since 2 rackets in the pictograph is 10 rackets sold, the 1 racket on the pictograph must be equivalent to 5 rackets sold.

Statistics and probability example 2

This graph shows the number of some types of animals in a conservation park in Africa. The graph is not complete.



There are 10 elephants and 19 buffalos.
Draw bars on the graph to show this information.



Answer:

Domain	Construct	Descriptor
Statistics and probability	S1: Data management	S1.1.4_M Organize data and construct a tally chart, bar graph, or pictograph that arranges data into categories and uses a single- or multi-unit scale.

Commentary:

This task requires students to complete the construction of a bar graph. They need to use the 2-unit scale to correctly identify the height of each of the two extra bars/columns. For one of the bars/columns (representing the 19 buffalos) they need to be able to interpolate between the even-numbered grid lines to represent the odd-numbered count.

Suggested scoring:

Students are asked to add two discrete elements to the incomplete graph, which allows for full or partial credit to be awarded.

- Full credit (2 points): draws two bars/columns correctly
- Partial credit (1 point): draws one bar/column correctly

Statistics and probability example 3

A bag contains 28 blue marbles and 2 red marbles.
Ann takes a marble from the bag without looking.

What is the chance that the marble is **red**?

A. Impossible
B. Unlikely
C. Likely
D. Certain

Answer: B. Unlikely

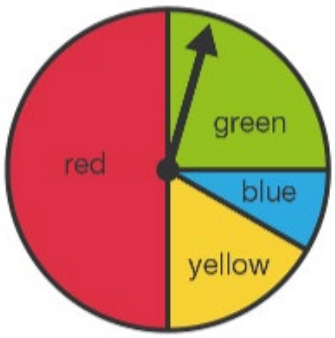
Domain	Construct	Descriptor
Statistics and probability	S2: Chance and probability	S2.1.1_M Identify the likelihood of an event happening as likely or unlikely.

Commentary:

This task requires students to describe the probability of a simple event using informal language (likely/unlikely). The students need to recognise that given the total number of marbles in the bag (30), that drawing a red marble is possible but much less likely than drawing a blue marble – and so 'unlikely' is the most appropriate label to give this outcome.

Statistics and probability example 4

Alan spins the arrow on this spinner and it lands on green.



Alan spins the arrow again.
Below are some statements about Alan's second spin.
Select 'Yes' or 'No' for each statement.

Statement	Yes	No
The arrow is more likely to land on red than green.	◯	◯
It is possible to land on pink on this spinner.	◯	◯

It is less likely for the spinner to land on yellow than on blue.	○	○

Answer: Yes, No, No

Domain	Construct	Descriptor
Statistics and probability	S2: Chance and probability	S2.1.1_M Identify the likelihood of an event happening as likely or unlikely.

Commentary:

This task requires students to display an understanding of probabilistic terms given in words (impossible, more likely, less likely) by comparing the likelihood of given outcomes in the context of a circular spinner that has coloured sectors of differing area. Students need to comprehend the given statements and evaluate them by comparing the areas of different colours, the key idea being that the greater the area covered by a given colour on the spinner, the more likely it is for the arrow to land on that colour.

Suggested scoring:

It is possible with complex multiple-choice questions like this to award full or partial credit to student responses.

For example, full credit (2 points) could be awarded for students correctly identifying all statements, with partial credit (1 point) awarded for students only correctly identifying two of the three statements.

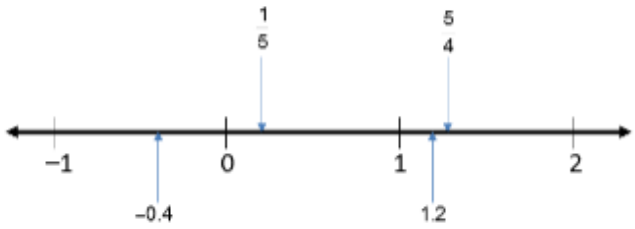
5.3 Mathematics sample items for MPLc (end of lower secondary)

5.3.1 Number and operations examples

Number and operations example 1

Place each of these numbers onto the number line below.

$\frac{1}{5}$ $\frac{5}{4}$ −0.4 1.2



Answer:

Domain	Construct	Descriptor
Number and operations	N3: Decimals	N3.2.3_M Compare and order positive and negative decimals and fractions.

Commentary:

This task requires students to place the 4 numbers in correct relative positions. There is no scale given in this task, so students will first need to create a suitable origin and scale based on the 4 numbers given. Students should recognise that because the numbers vary from negative to positive, 0 would be a suitable origin. They should choose a scale that will allow for the placement of the smallest number (–0.4) and the largest number ($\frac{5}{4}$).

Having set-up a scaled number line students could approximate the positions of the 4 numbers by using smaller graduations on the line. Graduations of 0.25 or 0.2 or even 0.1 could be helpful in positioning the numbers.

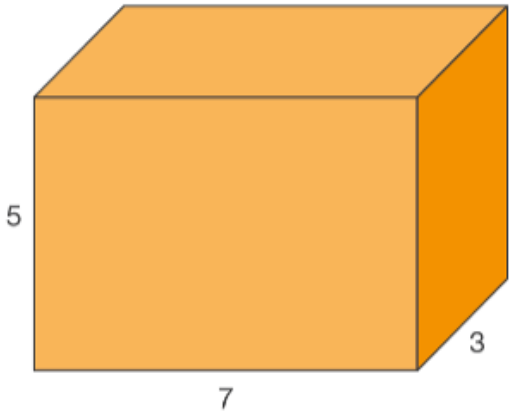
Suggested scoring:

- Full credit (2 points): numbers in correct numerical order AND relative positions are reasonably accurate
- Partial credit (1 point): numbers in correct numerical order

5.3.2 Measurement examples

Measurement example 1

Which of the following calculations gives the **volume** of this cuboid?



A. 7 + 5 + 3
B. 2 x ((7 × 5) + (7 × 3) + (5 × 3))
C. 4 × 7 + 4 × 5 + 4 × 3
D. 7 × 5 × 3

Answer: D. 7 × 5 × 3

Domain	Construct	Descriptor
Measurement	M1: Length, Weight, Capacity, Volume, Area, and Perimeter	M1.2.7_M Solve problems, including real-world problems, involving the calculation of the volume of a rectangular prism.

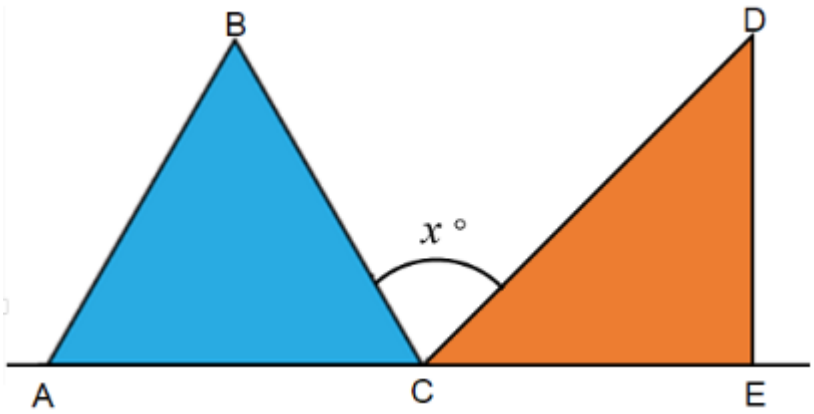
Commentary:

This task requires students to demonstrate understanding of the formula used to calculate the volume of a cuboid. Students need to identify the fomula that correctly uses the given dimensions. They might recognise this formula directly and select the correct option, or they might progressively dismiss the alternative options as giving other physical quantities or as being incorrect combinations of the given dimensions.

5.3.3 Geometry examples

Geometry example 1

Triangle ABC (the blue triangle) is equilateral.
Triangle CDE (the orange triangle) is right-angled and isosceles.



What is the value of x?

_____

Show your working.

_____

_____

_____

Answer: 75

Domain	Construct	Descriptor
Geometry	G1: Properties of shapes and figures	G1.1.8_M Use the angle sum of a triangle to solve problems.

Commentary:

This task requires students to demonstrate understanding of the angle sum of a triangle and the angle sum along a straight line. Students need to use the information about the nature of the two triangles to deduce the internal angles of each, and then use this to calculate the final answer.

Given the information that the blue triangle is equilateral, students could either use existing knowledge that each internal angle is 60°, or could use the angle sum formula along with the knowledge that an equilateral triangle has 3 equal angles to deduce that each internal angle is 60°.

Given the information that the orange triangle is right-angled, students should be able to identify the internal angle at E to be 90°. This triangle is also identified as isosceles, so students can note that two of the internal angles of this triangle must be equal. Given a right angle and the angle sum formula, students can deduce that the other two internal angles of this triangle are 45°.

Finally, students can use these deductions, along with the angle sum along a straight line to calculate the unknown angle x as being 75°.

Suggested scoring:

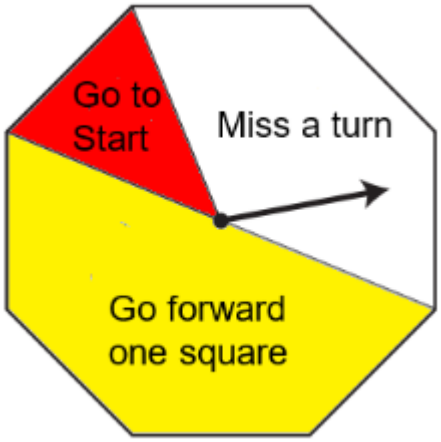
Students are asked to show their working, which is typical of a question that might receive full or partial credit.

- Full credit (2 points): correct value of 75, with or without working shown
    - Example of working:
      Blue triangle equilateral, so all angles are 60
      Orange triangle RA, so angle at E is 90; also isosceles, other 2 angles must add to 90, so each is 45
      Angles at C are 60, 45 and x
      60 + 45 + x = 180
      105 + x = 180
      x = 180 – 105
      x = 75
- Partial credit (1 point): correct working shown with a simple error that leads to an incorrect final value
    - Example of working with error:
      Angles at C are 60, 45 and x
      60 + 45 + x = 180
      105 + x = 180
      x = 180 – 105
      x = 85

5.3.4 Statistics and probability examples

Statistics and probability example 1

In a game this 8-sided spinner is used.
In the diagram, the spinner shows ‘Miss a turn’.



Question 1
The spinner was spun 200 times.
About how many times would you expect the result 'Go to Start'?

_____

Answer: 25 times OR $\frac{1}{8}$ of the total times (possible answers that could be accepted, depending on agreed scoring rules)

Domain	Construct	Descriptor
Statistics and probability	S2: Chance and Probability	S2.1.3_M Find the expected number of occurrences of a specific independent outcome when a probability experiment is repeated many times.

Commentary:

This task requires students to determine a likely expected number of occurrences for a given probability experiment. The spinner has an octagonal shape allowing students to divide it into 8 equal triangular regions and then allocate the likely probabilities based on the number of each of these regions that has been shaded with a particular colour. The students need to understand that the 'Go to start' region – which is shaded red – covers exactly one of these regions giving a probability of the spinner arrow landing here as 1 in 8.

The probability (1/8) equates to a likely 25 times out of 200 spins. Using this, or a similar question, would require scorers to consider how they might treat responses of 25 compared to responses of 1/8 – both responses could be scored equally, or only 25 scored as correct.

Question 2
In one game the spinner landed on 'Miss a turn' 30 times.

What is the most likely number of times that the spinner was spun?
Show your working.

_____

_____

_____

Answer: 80

Domain	Construct	Descriptor
Statistics and probability	S2: Chance and Probability	S2.1.3_M Find the expected number of occurrences of a specific independent outcome when a probability experiment is repeated many times.

Commentary:

This second task asks students the reverse question to the first. Here, the number of one outcome is given and students are required to determine the likely total number of times the experiment is repeated. Students need to use their understanding of the probabilities of each of the 8 regions of the octagonal spinner to determine the likely probability of the spinner arrow landing in the 'Miss a turn' region – 3 in 8, or 3/8.

Students then need to use this knowledge and the 30 outcomes to determine the likely total number of repetitions of the experiment – in this case, spins of the spinner – as 80.

This second question tests the same GPF descriptor but is a more mathematically challenging question. One, or both, of these questions could be used depending on the intent of the assessment.

5.3.5 Algebra examples

Algebra example 1

Fiona chooses a jacket for 89.50 zeds and a shirt for 49.50 zeds from a rack displaying this sign.

How much will she pay altogether?

A. 139.00 zeds
B. 114.25 zeds
C. 94.25 zeds
D. 69.50 zeds

Answer: B. 114.25 zeds

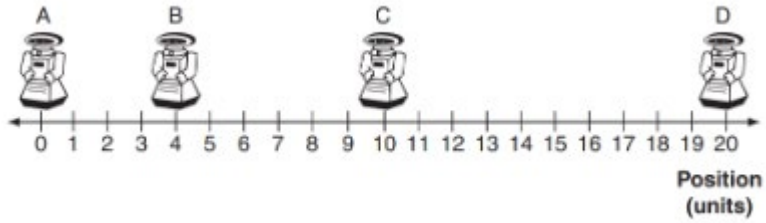
Domain	Construct	Descriptor
Algebra	A3: Relations and functions	A3.1.3_M Solve problems, including real-world problems, involving percent increase or decrease.

Commentary:

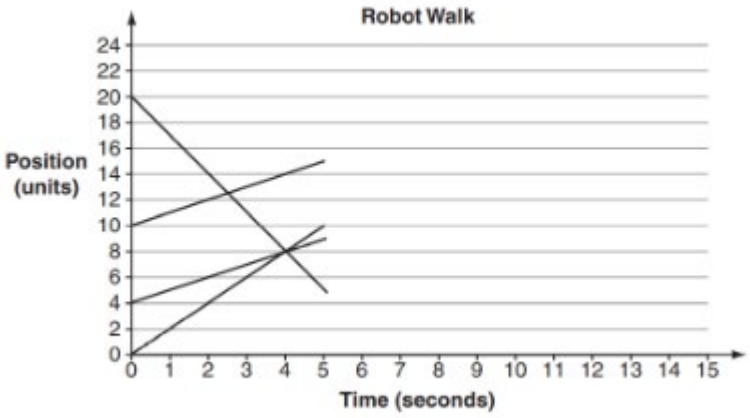
This task requires students to interpret the information from a sale sign and apply this to the purchase of 2 items. Students need to recognise that the given discount (50%) is applied to the second item purchased and that this comes with the specific requirement that it be of equal or lesser value to the first. They should apply the discount to the 49.50 only. Applying no discount, or applying the discount to either the 89.50 jacket, or to both items, gives incorrect alternative options.

Algebra example 2

In a computer game, robots move left or right on a number line.
The starting positions of four robots are shown.



The graph shows where the robots move to during the first five seconds.



Which robot travels at the fastest speed?

Robot

_____

Explain your answer and show any calculations you make.

_____

_____

_____

Answer: D with suitable explanation (see the commentary below)

Domain	Construct	Descriptor
Algebra	A3: Solve equations and inequalities	A3.3.2_M Interpret equations and their solutions in terms of context.

Commentary:

This task requires students to match the four robots to the individual lines on the graph, and then interpret the speed of the robots from these lines.

1. Students need to use the given starting positions of the robots to match them to the graph lines.
2. Students then need to interpret the speed of each robot, either by
    - analysing the gradient/slope of each line: identifying the slope for robot D as the steepest and therefore the fastest speed
    - analysing the change in position of each robot over the 5 seconds shown: robot A travels 10 units in 5 seconds; robot B travels 5 units in 5 seconds; robot C travels 5 units in 5 seconds; robot D travels 15 units in 5 seconds, and therefore robot D has the fastest speed

Suggested scoring:

This question could be used to award full or partial credit to students, based on the explanation of their selection. Whether or not students need to include calculations in their explanation could also be considered.

Examples of suitable explanations:

- The slope of the line is the speed of each robot. Robot D has the greatest slope and therefore the greatest speed.
- The movement of each robot is recorded over 5 seconds.
  Robot A – 10 units
  Robot B – 5 units
  Robot C – 5 units
  Robot D – 15 units
  Robot D travelled the furthest in the time period and so must have moved at the fastest speed.

Algebra example 3

$m^3 \times m^{-2}$

Which one of the following is equivalent to the index expression above?

A. $-6 \times m$
B. $-5 \times m$
C. $\frac{m^2}{m^3}$
D. $\frac{m^3}{m^2}$

Answer: D. $\frac{m^3}{m^2}$

Domain	Construct	Descriptor
Algebra	A2: Expressions	A2.1.4_M Evaluate and simplify exponential expressions using the Laws of Exponents.

Commentary:

This task requires a routine application of procedures for simplifying index expressions and fractions. It requires students to use the following aspects of mathematical knowledge:

- a number with a negative index can be rewritten so it has a positive index when it's moved to the denominator of a unit fraction
- any whole number can be written as a fraction over 1
- the procedure for multiplying fractions (multiply numerators and multiply denominators).

$$m^3 \times \frac{1}{m^2} = \frac{m^3}{1} \times \frac{1}{m^2} = \frac{m^3}{m^2}$$

6. References

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SDG 4.1.1 MINIMUM PROFICIENCY LEVELS

Definition and blueprint for assessment

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