



Government of the Republic of Trinidad and Tobago

MINISTRY OF EDUCATION

ASSESSMENT FRAMEWORK FOR THE SECONDARY ENTRANCE ASSESSMENT 2025-2028



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Foreword

The Assessment Framework for the Secondary Entrance Assessment (SEA) 2025-2028 specifies the purpose, components, format and content of the SEA. The Assessment is based on the English Language Arts and Mathematics outcomes in the Curriculum Guides (2013). The specific English Language Arts skills to be assessed are: English Language Arts Writing, Spelling, Punctuation, Capitalisation, Grammar and Reading Comprehension. In Mathematics, Number, Measurement, Geometry and Statistics are assessed.

The main purpose of the Secondary Entrance Assessment is to facilitate the transition from primary to secondary school. The Assessment Framework for SEA 2025 - 2028 is intended to assist teachers and all those involved in the preparation of students for secondary school. It is anticipated that the specifications for each paper will allow teachers to better assist students in understanding the format and requirements of the Secondary Entrance Assessment.

It is hoped that through use of a student-centred approach to teaching, with a focus on the development of a range of skills at different levels of thinking, our students will be better prepared for the opportunities available at the secondary level and life in general.

Components of Secondary Entrance Assessment 2025-2028

The SEA is a public examination that facilitates placement of students in secondary schools in Trinidad and Tobago based on the following criteria:

- Parents' choices
- Students' performance by order of merit
- Principals' 20% selection (Denominational schools)
- Gender
- Residence
- Multiple births

The Secondary Entrance Assessment comprises three papers that all candidates must attempt:

1. English Language Arts Writing
2. Mathematics
3. English Language Arts (Spelling, Punctuation, Capitalisation, Grammar, and Reading Comprehension)

Table 1: Time and Order of Papers

Paper	Time Allotment
English Language Arts Writing	Fifty (50) minutes
Mathematics	Seventy-five (75) minutes
English Language Arts	Seventy-five (75) minutes

The schedule of the working time, the total time for the administration of the assessment and the number of items in each test are shown in Table 2. The total time for the administration of the assessment is approximately 4 hours 30 minutes while the actual working time for the candidates is 3 hours 20 minutes.

Table 2: Working Time, Total Administration Time and Number of Items for the SEA Papers

Activity	Time (Minutes)					Number of Items
	Distribution of Booklets	Reading of Directions	Working Time	Collection of Booklets	Total Time	
Completion of the English Language Arts Writing Test	5	3	50	5	63	1
Completion of the Mathematics Test	5	3	75	5	88	40
B R E A K					30	
Completion of the English Language Arts Test	5	3	75	5	88	36
TOTAL	15	9	200	15	239	77

Weighting of Papers and Placement in Secondary Schools

The weighting of the Mathematics, English Language Arts and ELA Writing papers is 100:60:40. Students' scores in each paper will be converted to standard scores and weighted as shown in Table 3. The weighted scores will then be combined and the combined score (composite score) used for placement of students in secondary schools. Standard scores utilise the variance in each paper and therefore allow the student's relative standing (position) in each paper to be maintained when they are combined, thus ensuring fairness in the placement process.

Table 3: Weighting of SEA Papers

Paper	Weighting
Mathematics	100 %
English Language Arts	60 %
English Language Arts Writing	40 %

English Language Arts (ELA) Writing Paper

The English Language Arts Writing paper will contain three items randomly assigned in any one year:

- Either (i) Three (3) narrative items
Or (ii) Three (3) expository items

Students will be asked to respond to one item which will be scored by two persons. Each response will be scored based on the following criteria:

- Content
- Language Use
- Grammar and Mechanics
- Organisation

General Assessment Objectives for ELA Writing

Students will:

- Demonstrate knowledge of narrative and expository writing
- Write stories and simple reports (expository)
- Use descriptive language and sensory details appropriate to stories
- Use figurative language appropriate to stories
- Use factual details appropriate to reports
- Use formal language and tone appropriate to reports
- Express written ideas clearly and coherently
- Generate a variety of sentence types
- Demonstrate accurate use of grammar, spelling and mechanics
- Demonstrate effective organisation of ideas

ELA - Spelling, Punctuation, Capitalisation, Grammar, and Reading Comprehension

The English Language Arts assessment comprises Spelling, Punctuation, Capitalisation Grammar, and Reading Comprehension. The assessment objectives are taken from Standards Three, Four and Five as specified in the National Primary School Curriculum (2013). This is built on the understanding that many of the foundation skills developed during Infant and Junior school act as building blocks.

The English Language Arts paper is designed to assess spelling, punctuation, capitalisation and grammar in context. This means that short continuous text will be utilised for students to respond. The reading comprehension section will assess different levels of thinking. Passages will be complemented by simple visuals designed to reflect authentic reading material. Additionally, a range of materials including prose (fiction/non-fiction), poetry and graphic text will be used. **Vocabulary will be assessed in context; that is, in the Reading Comprehension component of Section II.**

The English Language Arts Paper consists of thirty-six (36) items and assesses the following language skills from the Republic of Trinidad and Tobago Primary School Curriculum - English Language Arts (2013).

- Spelling
- Punctuation and Capitalisation
- Standard English Grammar
- Reading Comprehension
 - Extract of non-fiction text **or** fiction text
 - Poetry
 - Graphic text

The English Language Arts Paper is scored out of a total of sixty-four (64) marks (Table 4). Items in Section I (Spelling, Punctuation, Capitalisation, and Grammar) are worth thirty (30) marks, while items in Section II (Reading Comprehension) are worth thirty-four (34) marks.

Table 4: Distribution of English Language Arts Items

(Section I) Language Focus	No. of Items	No. of Marks
Revision of spelling within context	6	12
Revision of punctuation and capitalisation within context	6	6
Revision of grammar within context	6	12
(Section II) Reading Comprehension	No. of Items	No. of Marks
Non-fiction text or fiction text	7	13
Poetry	7	13
Graphic text	4	8
TOTAL	36	64

Assessment Objectives for the English Language Arts Paper: Comprehension

The SEA English Language Arts assessment objectives are embedded in the Republic of Trinidad and Tobago Primary School Curriculum - English Language Arts (2013).

Educators are directed to the English Language Arts programmes for Standards Three, Four and Five. Based on the comprehension purposes and levels, the SEA will assess students' ability to understand the following:

- Non-fiction text or fiction text
- Poetry
- Graphic text

It should be noted that “all texts are not equal and can vary with regard to length, syntactic complexity, abstractness of ideas, and organizational structure” (Mullis, Martin, Sainsbury, 2016, p. 18). However, all passages will be selected based on the appropriate readability levels.

Reading Comprehension Thinking Processes

The SEA will assess three types of reading comprehension thinking processes within each of the three texts, these are:

- Literal
- Inferential
- Evaluation and appreciation

Table 5 displays the Reading Comprehension Processes and percent associated with each type of text. These processes are more specific to comprehension.

Table 5: Reading Comprehension Processes by Text Type

Type of Text	No. of Items	Thinking Processes			Total Marks
		Literal	Inferential	Evaluation/ Appreciation	
Fiction/Non-fiction	7	2	3	2	13
Poetry	7	2	3	2	13
Graphic	4	1	2	1	8
Total	18	5 (28%)	8 (44%)	5 (28%)	34

Literal

This involves giving attention to information explicitly stated by the author. In this process, readers seek to understand the straightforward meaning of the text, such as facts, vocabulary, dates, times and locations (Day & Park, 2005). Such questions can be answered directly and explicitly from the text. A more complex task might be the recognition or recall of a series of facts or the sequencing of incidents in a reading selection. For example: *Where did the story take place?*

Inferential

Making inferences involves more than just a literal understanding. Students may initially have difficulty with responses to these questions because the answers are in the text but are not explicitly stated (Day & Park, 2005) and thus the connections need to be inferred (Mullis, Martin & Sainsbury (2016). Skilled readers are often able to make these connections automatically (West & Stanovich, 2000). According to Mullis, Martin & Sainsbury (2016), “With this type of processing, readers typically focus on more than just word, phrase, or sentence-level meaning. While the focus may be on local meaning residing within one part of the text, the focus also may be on more global meaning, representing the whole text” (p.20). For example: *What might have happened if Rapunzel did not have long hair?*

Evaluation/Appreciation

As readers evaluate the content of the text, the focus shifts from constructing meaning to critically considering the text itself (Mullis, Martin & Sainsbury, 2016). In terms of appreciation, readers connect emotionally and aesthetically with the text. It is an emotional response to the literary techniques, forms, styles, and structures. **While no such responses are incorrect, they cannot be unfounded; they must relate to the content of the text and reflect a literal understanding of the material** (Day & Park, 2005). For example, “*What do you like or dislike about this passage?*” Students will have to use both their literal understanding and their own knowledge to respond.

Objectives and Reading Comprehension Processes for Non-fiction Text (Content Area)

Number	Objectives	Processes
1	Identify main idea from text	Literal
2	Identify main idea from text (inferred)	Inferential
3	Identify supporting details from text	Literal
4	Determine the contextual meaning of words and phrases in factual texts	Literal
5	Demonstrate an understanding of supporting details and show their relationship within text	Inferential
6	Use pictures, words, definitions and context clues to infer meanings in context	Inferential
7	Analyse simple details and represent in graphic organisers	Inferential
8	Explain cause and effect relationships in texts	Inferential
9	Comprehend content (message, in print text and visual media.)	Inferential
10	Evaluate texts by making explicit and inferential reference to texts	Evaluation and Appreciation
11	Identify the connotative meanings of familiar and new words contextually	Inferential
12	Express preferences and support their views by reference to texts	Evaluation and Appreciation
13	Support personal views with reference to text	Evaluation and Appreciation
14	Understand that texts have purposes and are written for audiences	Inferential
15	Examine the writer's and reader's point-of-view	Evaluation and Appreciation

Objectives and Reading Comprehension Processes for Fiction Texts (Poems and Stories)

Number	Objectives	Processes
16	Retrieve information that is stated explicitly	Literal
17	Determine the contextual meaning of words and phrases in fiction texts	Literal
18	Identify the connotative meanings of familiar and new words contextually.	Inferential
19	Use context-clues, word structure clues, definition clues and background knowledge to determine the meaning of words or phrases	Inferential
20	Explore the mood of a literary piece	Evaluation and appreciation
21	Identify words/language used to create specific moods	Inferential
22	Identify words/language used to appeal to the senses	Literal
23	Identify figures of speech in literary texts (simile, metaphor, personification)	Literal
24	Interpret figures of speech in literary texts (metaphor)	Inferential
25	Comprehend content (message, in print text and visual media.)	Inferential
26	Identify imagery in literary texts	Inferential
27	Examine the writer's and the reader's points-of-view	Evaluation and appreciation
28	Draw conclusions (about characters, setting and events) based on evidence provided in literary text	Inferential
29	Infer meaning (cause and effect) as they relate to literary texts	Inferential
30	Offer solutions to major conflicts in the text	Evaluation and Appreciation
31	Identify tone in poems and prose	Inferential
32	Make judgements on the behaviour of characters	Evaluation and Appreciation
33	Judge the nature of characters with supporting evidence	Evaluation and Appreciation
34	Make connections between literature and real-life situations	Inferential

Objectives and Reading Comprehension Processes for Graphic Texts

Number	Objectives	Processes
35	Comprehend content (message, in print text and visual media.)	Inferential
36	Explain the purpose of selected media texts	Inferential
37	Identify implied messages in selected media texts based on elements of design	Inferential
38	Identify overt messages in selected media texts based on elements of design	Literal
39	Recognize that different media forms use particular language styles and techniques in their construction	Inferential
40	Analyse selected media to understand how information/messages are presented to audiences	Evaluation and appreciation
41	Evaluate techniques used in media texts	Evaluation and appreciation

Grammar in context

1. Use parts of speech with correct verb tense and concord in writing
2. Ensure noun and pronoun concord
3. Ensure agreement of subject and verb and subject and pronoun
4. Use nouns: common, proper, collective and abstract in sentences
5. Use adjectives: comparative and superlative degree
6. Use pronouns: personal, possessive, reflexive and relative pronoun.
7. Use adverbs: comparative and superlative forms
8. Use prepositions in context
9. Use conjunctions to combine ideas and sentences
10. Use nouns, subject pronouns, verbs, adjectives and conjunctions to form compound sentences

11. Use a conjunction to join a main clause and subordinate clause to form a complex sentence
12. Use verbal forms: simple present, past, future, present continuous tense, past perfect tense
13. Use the correct form of the verb in writing
14. Use regular and irregular verb forms
15. Choose verbs to agree with subjects in number
16. Ensure concord in sentences that contain parenthetical phrases
17. Use modals: can, may, should, would, could, might
18. Use participles-past and present
19. Use adverbs: comparative and superlative forms
20. Make new words by adding prefixes and suffixes to root words
21. Recognize the function of prepositions, adverbs, adjectives, nouns, verbal forms and conjunctions in context
22. Revise concord, choice of vocabulary and spelling in own sentences

Spelling and Vocabulary

1. Apply spelling rules when writing. Produce the following correctly:
 - plural forms in which 'y' is changed to 'i' and 'f' to 'v' before adding an 'es' ending
 - words that double the final consonant before adding endings
 - words that drop the final 'e' before an ending
 - 'ie' and 'ei' words
 - words with hard and soft 'c' and 'g'
 - words with silent letters
 - common homophones
2. Use spelling rules in writing. Produce the following correctly:
 - convert compound words into plural forms
 - when a word ends in a silent '-e', drop the '-e' before adding '-ing'
 - for action words that end in '-ie', change the '-ie' to a '-y' before adding 'ing'
 - when the suffix '-full' is added to the end of a base word, drop one '-l'

- double the last letter of words ending in a short vowel followed by a single consonant before adding a '-y' e.g. bag - baggy
 - add a '-y' to words ending with two consonants to form describing words e.g. dirt-dirty
 - for words ending in a silent '-e', drop the '-e' before adding '-y' e.g. ice-icy
3. Make new words by adding prefixes and suffixes to root words
 4. Use the different types of vocabulary in context across content areas: technical terms; synonyms; antonyms; homophones; homographs; words with multiple-meanings
 5. Discover and correct misspelt words

Capitalisation and Punctuation

1. Use punctuation marks and capital letters correctly in writing
2. Use the colon and quotation marks for dialogue, titles and direct speech
3. Use the following punctuation marks in sentences: full stop, question mark, exclamation mark, apostrophe in contractions and possessives, quotation marks, colons and commas
4. Use capital letters in sentences for: first word in a quotation; title of books, chapters, poems; title of proper names; important words in headlines, subject heading
5. Edit capitalisation and punctuation in sentences

Mathematics Paper

The **Mathematics paper consists of 40 items** and encompasses the four strands of the syllabus.

- Number
- Geometry
- Measurement
- Statistics

The SEA assesses three types of thinking processes within each of the four strands. These processes – knowing, applying and reasoning – have incorporated those currently used in the Republic of Trinidad and Tobago Primary School Curriculum- Mathematics (2013) and are in conformity with international best practices (Grønmo, Lindquist, Arora, & Mullis, 2015).

Distribution of Marks by Section

The paper is divided into three sections as displayed in Table 6. Details in terms of the allocation of marks and items by strands and sections are identified in Tables 7a and 7b, respectively.

Table 6: Distribution of Mathematics Items and Marks by Section

Section	No. of Items	Marks per Item
Section I	20	1
Section II	16	2 or 3
Section III	4	4

Table 7a: Distribution of Items by Strands and Sections

Strands	Section I	Section II	Section III	No. of Items
Number	10	8	1	19
Geometry	3	2	1	6
Measurement	4	4	1	9
Statistics	3	2	1	6
Total	20	16	4	40

Table 7b: Distribution of Marks by Strands and Sections

Strands	Section I	Section II	Section III	No. of Marks
Number	10	20	4	34
Geometry	3	4	4	11
Measurement	4	10	4	18
Statistics	3	5	4	12
Total	20	39	16	75

Mathematical Thinking Processes

The SEA assesses three types of mathematical thinking processes within each of the four strands, these are:

- Knowing
- Applying
- Reasoning

Table 8 displays the thinking processes and percentages associated with each strand. Such processes are designed to indicate what students are able to do with the content. The Mathematical Thinking Processes are more specific to Mathematics and reflect a more contemporary approach unlike that which was used in the previous SEA Guidelines.

Distribution of Items by Strands and Thinking Processes

Table 8: Number of Items by Thinking Processes

Strands	No. of Items	Knowing	Applying	Reasoning
Number	19	9	6	4
Geometry	6	3	2	1
Measurement	9	3	4	2
Statistics	6	3	2	1
Total	40	18 (45%)	14 (35%)	8 (20%)

Knowing

The ability to use or apply mathematical reasoning and problem solving is premised on the understanding that the student has a level of familiarity with mathematical concepts and fluency in mathematical skills (Grønmo, Lindquist, Arora, & Mullis, 2015). Grønmo et al. (2015) further assert that knowing enables “easy recall of the language and basic facts and conventions of number, symbolic representation, and spatial relations”. There are several aspects of knowing, including recall, recognize, classify/order, compute, retrieve and measure.

Recall	Recall definitions, terminology, number properties, units of measurement, geometric properties, and notation.
Recognize	Recognise numbers, expressions, quantities, and shapes. Recognise entities that are mathematically equivalent (e.g., equivalent familiar fractions, decimals, and percents; different orientations of simple geometric figures).
Classify/Order	Classify numbers, expressions, quantities, and shapes by common properties.
Compute	Carry out algorithmic procedures for +, −, ×, ÷, or a combination of these with whole numbers, fractions, and decimals.
Retrieve	Retrieve information from graphs, tables, texts, or other sources.
Measure	Use measuring instruments; and choose appropriate units of measurement.

Applying

The applying domain involves the application of mathematics in a range of contexts (Grønmo, et al., 2015). In some items aligned with this domain, students need to apply mathematical knowledge of facts, skills, and procedures or understanding of mathematical concepts to create representations. Representation of ideas form the core of mathematical thinking and communication, and the ability to create equivalent representations is fundamental to success in the subject. Problem solving is central to the applying domain, with an emphasis on more familiar and routine tasks. Problems may be set in real-life situations, or may be concerned with purely mathematical questions involving, for example, numeric expressions, geometric figures, or statistical data sets. Various aspects of applying are further explained below.

Determine	Determine efficient/appropriate operations, strategies, and tools for solving problems for which there are commonly used methods of solution.
Represent/Model	Display data in tables or graphs; geometric figures, or diagrams that model problem situations; and generate equivalent representations for a given mathematical entity or relationship.
Implement	Implement strategies and operations to solve problems involving familiar mathematical concepts and procedures.

Reasoning

Reasoning mathematically involves logical, systematic thinking (Grønmo, et al. 2015). It includes intuitive and inductive reasoning based on patterns and regularities that can be used to arrive at solutions to problems set in novel or unfamiliar situations. Such problems may be purely mathematical or may have real-life settings. Both types of items involve transferring knowledge and skills to new situations; and interactions among reasoning skills usually are a feature of such items. Reasoning involves the ability to observe and make conjectures. It also involves making logical deductions based on specific assumptions and rules, and justifying results. Various aspects of reasoning are highlighted below.

Analyse	Determine, describe, or use relationships among numbers, expressions, quantities, and shapes.
Integrate/Synthesize	Link different elements of knowledge, related representations, and procedures to solve problems.
Evaluate	Evaluate alternative problem-solving strategies and solutions.
Draw Conclusions	Make valid inferences on the basis of information and evidence.
Generalize	Make statements that represent relationships in more general and more widely applicable terms.
Justify	Provide mathematical arguments to support a strategy or solution.

Assessment Objectives for the Mathematics Paper

Objectives and Thinking Processes for Number Strand

No.	Objectives	Processes
	Number Concepts, Place Value and Rounding	
1	Represent any number up to one million using numerals or word names	Knowing
2	Represent a number up to one million concretely, pictorially, symbolically using multiple models and connect to numerals and number names	Knowing
3	State the value or place value of a digit in any whole number up to one million	Knowing
4	Sequence number names and numerals	Knowing
5	Compare whole numbers to one million and use the symbols $>$ or $<$ to show the relationship between them	Applying
6	Order a given set of numbers in ascending or descending order and explain the order by making references to place value	Applying
7	Identify the missing numbers in an ordered sequence or on a number line	Knowing
8	Express a whole number up to one million using expanded notation	Knowing
9	Write the numeral represented by a given expanded notation	Knowing
10	Round whole numbers to the nearest thousand	Knowing
11	Differentiate between factors and multiples and prime and composite numbers and identify square numbers	Applying
12	Calculate the square of a number up to the square of 12	Knowing
13	List square numbers up to 144	Knowing
14	Identify coins, bills, their value and the value of a set of coins/bills (up to 100 cents and \$100)	Knowing

No.	Objectives	Processes
15	Determine the possible combinations of coins/bills, which are equal to given amounts (up to 100 cents and \$100)	Reasoning
	Whole Number (Operations): Addition, Subtraction, Multiplication, Division	
16	Solve problems involving addition (up to 4-digit numbers with sum less than 10 000) and up to 4 addends and subtraction (with minuend up to 4 digits)	Applying
17	Solve one-step addition and subtraction problems involving whole numbers and money including bills, best buy, profit and loss, using dollars only and cents only	Applying
18	Solve multi-step addition and subtraction problems involving whole numbers and money including bills, best buy, profit and loss, using dollars only and cents only	Reasoning
19	Solve real-life problems involving addition and subtraction	Reasoning
20	Explain or demonstrate how an answer was obtained when solving problems involving addition, subtraction or both	Reasoning
21	Multiply two-, three- and four-digit numbers by one- or two-digit multipliers	Knowing
22	Divide two-, three- and four-digit numbers by one- or two-digit divisors with and without remainder	Knowing
23	Solve real-life problems involving multiplication and division	Reasoning
24	Solve one-step multiplication and division problems (including problems involving the unitary method) involving whole numbers and money (including bills, best buy, profit and loss, rate (weekly, hourly, daily, monthly, yearly and by the minute - using dollars only and cents only)	Reasoning
25	Solve multi-step multiplication and division problems (including problems involving the unitary method) involving whole numbers and money (including bills, best buy, profit and loss, rate (weekly, hourly, daily, monthly, yearly and by the minute - using dollars only and cents only)	Reasoning
26	Explain through the use of words and diagrams the procedures involving multiplication using whole numbers	Reasoning
27	Explain through the use of words and diagrams the procedures involving division using whole numbers	Reasoning
28	Explain or demonstrate how an answer was obtained when solving problems involving multiplication, division, or both	Reasoning
29	Interpret the remainder in relation to the context of the word problem	Reasoning
30	Solve one-step word problems involving any one of the four basic operations on whole numbers	Applying
31	Solve multi-step words problems involving any combination of the four basic operations on whole numbers	Reasoning
32	Use estimation strategies in problem solving contexts with whole numbers	Reasoning

No.	Objectives	Processes
33	Use estimation skills to check solutions to problems and determine reasonableness of answer	Reasoning
	Number Patterns	
34	Explore repeating, increasing and decreasing patterns	Reasoning
35	Describe and extend whole number patterns involving the four operations	Reasoning
36	Describe and extend patterns involving fractions, by using the pattern rule	Reasoning
37	Explore patterns involving square numbers up to 144 and square roots up to 12	Reasoning
38	Insert missing elements in number patterns and explain reasoning	Reasoning
39	Use a pattern rule to determine missing elements for a given pattern and to extend or predict subsequent elements in patterns	Reasoning
40	Recognize when an error occurs in a pattern and explain what is wrong	Reasoning
41	Solve problems involving the use of number patterns	Reasoning
	Number Relationships	
42	Explore algebraic thinking (number patterns and number relationships)	Reasoning
43	Solve problems involving number sentences with one unknown number represented by a symbol and explain reasoning	Reasoning
	Fractions	
44	Represent a fraction using pictorial and symbolic representations	Applying
45	Recognize and generate equivalent fractions using a variety of models	Applying
46	Create equivalent fractions using the rule	Knowing
47	Reduce a fraction to the lowest equivalent form	Knowing
48	Order proper fractions with unlike denominators using equivalent forms	Reasoning
49	Demonstrate an understanding of proper fractions, improper fractions and mixed numbers	Reasoning
50	Express improper fractions as mixed numbers	Knowing
51	Express mixed numbers as improper fractions	Knowing
52	Place a given set of fractions, including mixed numbers and improper fractions, on a number line and explain strategies used to determine position	Reasoning
53	Add and subtract fractions involving same denominator	Knowing
54	Add a fraction to a whole number	Applying
55	Add and subtract fractions involving one denominator as a multiple of the other	Knowing
56	Subtract a fraction from a whole number	Applying
57	Add or subtract two fractions (including whole/mixed numbers)	Applying
58	Calculate fractions of a collection or set	Knowing
59	Calculate the whole given a part as a unit fraction	Knowing

No.	Objectives	Processes
60	Multiply fractions by whole numbers	Applying
61	Solve problems involving the multiplication of a fraction by a whole number	Reasoning
62	Solve problems involving the multiplication of a fraction by a fraction	Reasoning
63	Solve problems involving the multiplication of a fraction by mixed numbers	Reasoning
64	Divide a whole number by a fraction	Applying
65	Divide a fraction by a whole number	Applying
66	Divide a fraction by a fraction	Applying
67	Solve problems involving the division of a whole number by a fraction, a fraction by a whole number and a fraction by a fraction	Reasoning
68	Solve one-step problems involving fractions	Applying
69	Solve multi-step problems involving fractions	Reasoning
70	Solve real-life problems involving fractions and using the algorithms developed	Reasoning
	Decimals	
71	Use decimal notation as another form of writing base ten fractions (tenths, hundredths)	Knowing
72	Express decimals as common fractions	Knowing
73	Record money values using decimals	Knowing
74	State the place value of digits in decimal fractions up to hundredth	Knowing
75	Explore the place value of decimals to hundredths including expanded notation	Applying
76	State the value of digits in decimal fractions up to hundredths	Knowing
77	Express decimal fractions using expanded notation	Knowing
78	Convert expanded notation to decimal fractions	Knowing
79	Compare and order decimals up to hundredths	Applying
80	Arrange decimal fractions in ascending and descending order (up to hundredths)	Knowing
81	Round decimals to the nearest whole number and tenths	Knowing
82	Develop an understanding of the algorithm for addition and subtraction of decimals	Applying
83	Solve problems involving the multiplication of a decimal by a whole number	Applying
84	Solve problems involving the multiplication of tenths by tenths	Applying
85	Solve problems involving the division of a decimal fraction by a whole number (dividend up to 2 decimal places)	Reasoning
86	Use a number of strategies to solve routine and non-routine problems involving decimals	Reasoning

No.	Objectives	Processes
87	Solve real-world problems involving the addition and subtraction of decimals to hundredths using the algorithm	Reasoning
88	Solve one-step and multi-step problems involving decimals (including money transactions, bills, best buy, profit and loss) using the four operations	Reasoning
Percent		
89	Calculate simple percent of quantities e.g. 10% of \$200 = $\frac{1}{10}$ of \$200 = \$20	Knowing
90	Express a quantity as a percentage of another	Applying
91	Express a percent (e.g. 50%, 25%, 20% and 10%) as a fraction (e.g. $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, and $\frac{1}{10}$)	Knowing
92	Express a percent (e.g. 50%, 25%, 20% and 10%) as a decimal (e.g. 0.5, 0.25, 0.2 and 0.1)	Knowing
93	Order fractions, decimals and percents	Applying
94	Solve one-step problems involving percent	Applying
95	Solve multi-step problems involving percent	Reasoning
Problem Solving		
96	Solve real-life, one-step problems involving whole numbers, (including profit and loss, best buy, discount, savings, salaries, wages, loans, simple interest, VAT)	Applying
97	Solve real-life, multi-step problems involving whole numbers, (including profit and loss, best buy, discount, savings, salaries, wages, loans, simple interest, VAT)	Reasoning
98	Solve problems involving direct proportions	Reasoning
99	Solve problems involving unequal sharing (not including the use of ratio)	Reasoning

Objectives and Thinking Processes for Geometry Strand

No.	Objectives	Processes
	Solids and Plane Shapes	
100	Recognize and name solids from pictorial representations	Knowing
101	Draw the faces of solids and explore their properties	Applying
102	Describe the properties of solids in relation to number and types of faces, edges and vertices	Knowing
103	Name the solids with uniform cross-sections	Knowing
104	Solve problems involving solids	Reasoning
105	Identify and list the properties of solids including cross-sections, base, height and angles	Applying
106	Recognize and name plane shapes from pictorial representations	Knowing
107	Classify solids and plane shapes and give reasons for their classification	Applying
108	Solve problems involving plane shapes	Reasoning
109	Construct and draw regular and irregular polygons given their properties using the principles of parallel and perpendicular lines, angles and number of sides	Applying
110	Differentiate between regular and irregular polygons (triangles, quadrilaterals, pentagons, hexagons, octagons)	Knowing
111	Describe the properties of specific quadrilaterals (rectangle, square, trapezium, parallelogram and rhombus)	Knowing
112	Classify and compare quadrilaterals according to their attributes (no. of sides and angles, no. of equal sides, no. of pairs of parallel sides, no. of perpendicular sides)	Applying
113	Solve problems involving solids and plane shapes	Reasoning
114	Classify triangles (same, similar or different) based on properties of sides and angles	Applying
115	Identify and name triangles as scalene, right angled, isosceles and equilateral	Knowing
116	Compare and describe the properties of the sides and angles of the scalene, right angled, isosceles and equilateral triangles	Applying
	Geometrical Patterns	
117	Name a repeating pattern containing three to five elements in its core (name as 'number' pattern e.g. 'three' pattern or using a letter code e.g. ABCABC)	Knowing
118	Distinguish between repeating and non-repeating patterns in a given set involving solids or plane shapes by identifying the part that repeats or errors	Applying
119	Recognize and complete patterns using solids or plane shapes (repeating – 3 to 5 elements, growing or increasing and decreasing)	Reasoning

No.	Objectives	Processes
120	Describe a given pattern (repeating, increasing or decreasing) determine the pattern rule and extend the pattern using pictorial representation	Reasoning
121	Insert the missing elements in given patterns and explain the reasoning	Reasoning
	Symmetry	
122	Determine whether plane shapes, letters and numerals are symmetrical	Knowing
123	Complete a symmetrical shape given half of the shape and a line of symmetry	Applying
124	Determine the number of lines of symmetry in plane shapes – (regular, irregular and curved) and in numerals and letters	Applying
125	Solve problems involving line symmetry	Reasoning
	Angles	
126	Describe an amount of turn (e.g. whole turn, three quarter turn, half turn or quarter turn)	Knowing
127	Describe an angle as a measure of turn and name the quarter turn as a right angle or the angle formed when perpendicular lines meet	Knowing
128	Identify angles on faces of solids or plane shapes that are right angles, greater than right angles or smaller than right angles	Applying
129	Investigate angles (right angles, angles greater than and smaller than right angles) in regular and irregular polygons and faces of solids	Applying
130	Draw shapes with angles of various sizes and describe the angles	Reasoning

Objectives and Thinking Processes for Measurement Strand

No.	Objectives	Processes
	Linear Measure	
131	Select and use the most appropriate standard unit for measuring various lengths/distances	Knowing
132	Measure lengths in millimetres	Applying
133	Measure lengths using combinations of millimetres, centimetres and metres	Applying
134	Convert linear measure from one form to the other: <ul style="list-style-type: none"> • millimetres to centimetres and vice versa • centimetres to metres and vice versa • kilometres to metres 	Knowing
135	Apply decimal knowledge to record measurements. e.g. 123 cm = 1.23 m	Applying
136	Solve computational problems involving the metre and the centimetre by using the relationship between them	Reasoning

No.	Objectives	Processes
137	Solve problems involving length	Reasoning
138	Develop and use formulae for finding the perimeter of squares and rectangles	Reasoning
139	Write and explain the formulae for finding the perimeter of any given rectangle and square	Reasoning
140	Calculate and compare perimeters of squares and rectangles	Applying
141	Construct or draw two or more rectangles for a given perimeter in a problem-solving context	Reasoning
142	Find the perimeters of simple composite figures that may be dissected into rectangles and squares	Applying
143	Solve problems in real-life contexts involving perimeter	Reasoning
144	Solve problems involving perimeter of compound shapes	Reasoning
	Area	
145	Select the appropriate unit of measure when measuring surfaces of varying sizes and explain the suitability of the unit	Knowing
146	Draw different shapes of a given area on grids	Reasoning
147	Calculate area of plane shapes drawn on a grid with unit squares	Applying
148	Compare and order area of surfaces and explain reasoning using appropriate vocabulary	Reasoning
149	Approximate the area of surfaces to the nearest square metre or square centimetre	Reasoning
150	Develop and use formulae to calculate the area of squares and rectangles	Reasoning
151	Write and explain the formulae for finding the area of squares and rectangles	Reasoning
152	Calculate the areas of compound shapes that may be dissected into rectangles and squares	Applying
153	Solve problems involving area	Reasoning
154	Solve problems in real-life contexts involving area	Reasoning
155	Solve problems involving area and perimeter of plane shapes	Reasoning
	Volume and Capacity	
156	State the relationship between the litre and millilitre and convert from litre to millilitre	Knowing
157	Identify the cubic centimetre and cubic metre (cm^3 and m^3) as the standard units for measuring volume	Knowing
158	State the relationship between the metric units of volume and capacity (e.g. $1\text{L} = 1000 \text{ cm}^3$)	Knowing
159	Measure the volume of boxes by stacking and packing cubic blocks into them and counting to determine the volume	Reasoning
160	Calculate the volume of cubes and cuboids	Applying

No.	Objectives	Processes
161	Solve problems involving capacity, number and money	Reasoning
162	Solve problems involving volume and/or capacity	Reasoning
	Mass	
163	Determine the most appropriate standard unit for measuring mass/weight	Knowing
164	Convert kilograms to grams	Knowing
165	Measure and compare the masses/weights of objects in kilograms and grams using a set of scales.	Knowing
166	Solve problems involving different units of mass/weight (e.g. Find the total mass/weight of three items weighing 50g, 750g and 2.5kg)	Reasoning
167	Calculate unknown mass/weight on a balance (including the use of algebraic reasoning)	Reasoning
168	Solve computational and real-life problems involving grams and kilograms	Reasoning
169	Solve real-life problems involving mass/weight, number and money	Reasoning
	Time	
170	Tell time in five-minute intervals using the digital and analog clocks	Knowing
171	State the time after given intervals on analog and digital clocks	Knowing
172	Match times shown on standard digital clocks, 24-hour digital clocks and analog clocks to the minute, and record the time	Knowing
173	Relate seconds to minutes, minutes to hours, hours to days, days to weeks, days/weeks to months and months to years and use the relationships to solve problems	Applying
174	Convert hours to minutes	Knowing
175	Calculate the duration of events using starting and finishing times (elapsed time)	Applying
176	Interpret simple time schedules (e.g. the calendar)	Knowing
177	Solve computational and real-life problems involving hours and minutes	Reasoning
178	Solve problems involving time and other related concepts (using proportional reasoning)	Reasoning

Objectives and Thinking Processes for Statistics Strand

No.	Objectives	Processes
179	Represent data using tally charts, frequency tables and graphs (pictographs, block graphs, bar graphs) using various scale factors	Applying
180	Interpret the findings displayed in the tables, charts (including tally charts, no pie charts) and graphs (pictographs, block graphs, bar graphs)	Reasoning
181	Determine a suitable scale for data and record the scale in a key	Reasoning
182	Use analysed data to solve problems, draw conclusions and make decisions	Reasoning
183	Communicate findings and decisions made using appropriate vocabulary associated with statistics	Reasoning
184	Evaluate decisions made based on analysis of data represented in tables, charts and graphs	Reasoning
185	Determine the mode of a given set of data	Knowing
186	Explore the concept of mean using various activities related to equal sharing or distribution	Reasoning
187	Determine and use the rule for calculating the mean of a given set of data	Applying
188	Calculate the mean of a given set of data	Knowing
189	Solve problems involving mean/average	Reasoning

References

Mullis, I.V.S. & Martin, M.O. (Eds.) (2013). *TIMSS 2015 Assessment Frameworks*. Retrieved from Boston College, TIMSS & PIRLS International Study Center website: <http://timssandpirls.bc.edu/timss2015/frameworks.html>

Mullis, I.V.S. & Martin, M.O. (Eds.) (2015). *PIRLS 2016 Assessment Framework*. Retrieved from Boston College, TIMSS & PIRLS International Study Center website: <http://timssandpirls.bc.edu/pirls2016/framework.html>