FOI 202300391122

National Standardised Assessment - AlphaPlus - Assessment Construct and Pupil Report

Contents

Please note – redactions herein fall under section 38(1)(b) – personal data and section 33(1)(b) – commercial sensitivity exemptions under FOISA.

SNSA assessment design

1. Purpose

This document describes the 'as built' SNSA assessment design in terms of the numbers of questions overall, and per block, numbers of question blocks and constraints on block positioning.

2. Document Control

Document Title	SNSA assessment design
Document Owner	**[redacted – section 38(1)(b)]**
Review Date (if required)	28/06/22
Status of this version	Shared with SG

2.1. Version History

Date	Version	Comments	Author	Approved by	Date Approved
03/05/2022	0.1	Initial draft	[redacted – section 38(1)(b)]	[redacted – section 38(1)(b)]	
01/06/2022	1.0	Released to SG	[redacted – section 38(1)(b)]		
28/06/2022	1.1	Released to SG	[redacted – section 38(1)(b)]		
11/07/2022	1.2	Released to SG	[redacted – section 38(1)(b)]	[redacted – section 38(1)(b)]	12/07/22

3. Contents

4. All assessments

4.1. Broad outline of design

The SNSA assessments are ‘blocked adaptive’ assessments. Being an adaptive assessment means that different learners receive different items from a pool, and that the items delivered to each learner are tailored to their ability level. Being a blocked assessment means that the items are organised into sets (blocks) which should always be delivered together, in a consistent order. In general, the assessments are intended to be 30 items long (though P1 assessments are slightly shorter at 27), with a range of different block lengths in use:

- Both P1s (Literacy and Numeracy): 4x six item blocks and 1x three item block = 27 items
- P4-S3 Numeracy: 6x five item blocks = 30 items
- P4-S3 Reading: 5x six item blocks = 30 items
- P4-S3 Writing: 7x four item blocks and 1x two item block = 30 items

These block lengths are dictated by the text lengths in use for Writing and Reading. This means that between five and eight blocks are delivered depending on the subject and stage.

There are some additional rules in place to ensure a good experience for learners. This includes a constraint to ensure that learners receive items from a good balance of content areas. Further, the first ten items (2-3 blocks) delivered are selected from a specifically chosen subset of all the blocks in the assessment to ensure a suitable introduction to the assessment at a moderate level of challenge.

The below diagrams provide visual examples of the default operation of the assessments, depending how long the blocks are intended to be.

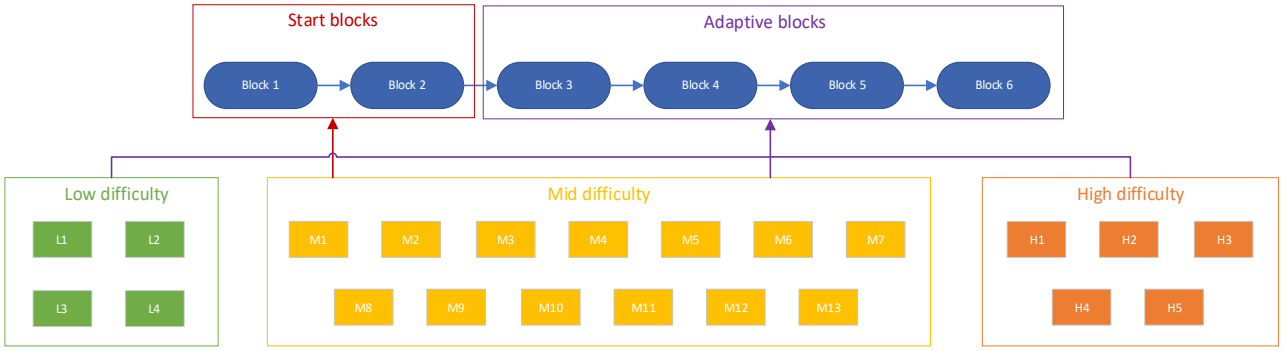


Figure 1: Example six-block design (Numeracy)

Because this design features blocks five items in length, six blocks are needed to deliver a 30-item long assessment. The first blocks are selected from the Mid difficulty blocks, and the subsequent blocks can be delivered from any of the blocks in the item pool.

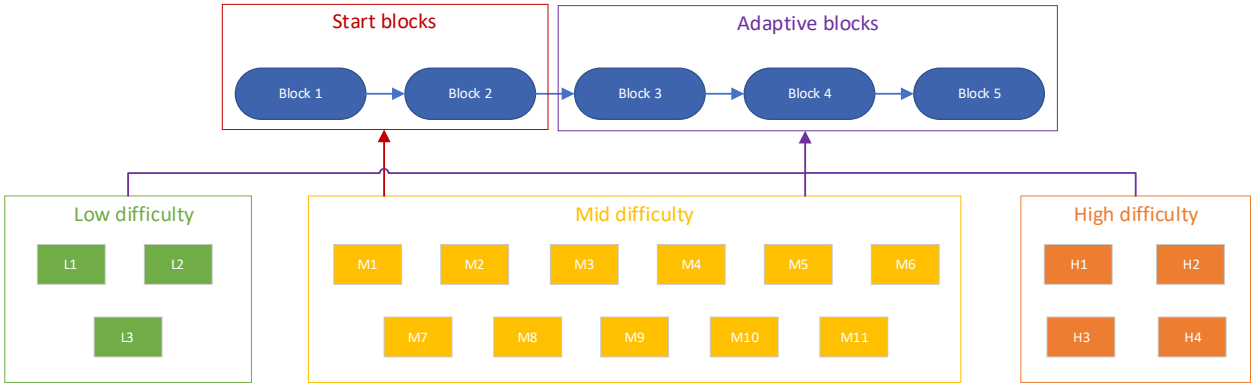


Figure 2: Example five-block design (Reading & P1)

Because this design features blocks six items in length, five blocks are needed to deliver a 30-item long assessment. The first blocks are selected from the Mid difficulty blocks, and the subsequent blocks can be delivered from any of the blocks in the item pool.

P1 assessments follow this model in terms of delivering five blocks in total, though one block is half the length of the others to meet the 27 desired total assessment length.

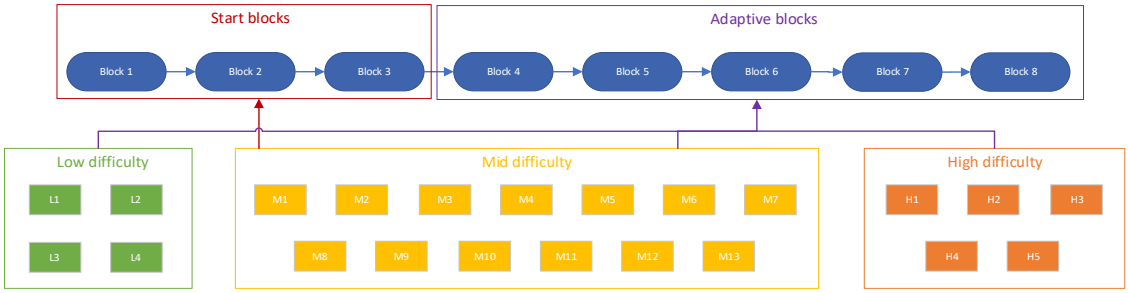


Figure 3: Example eight-block design (Writing)

Because this design features blocks four items in length, eight blocks are needed to deliver a 28-item long assessment. In order to reach the ideal 30-item long assessment, one of the blocks is half the length of the others (2 items long). The first blocks are selected from the Mid difficulty blocks, and the subsequent blocks can be delivered from any of the blocks in the item pool.

4.2. Specifics of intended design rules

[redacted - section 33(1)(b)]

5. Specific assessments

5.1. Block delivery variations

Some rules or configured settings which control block delivery differ from assessment to assessment, across subjects and/or stages. A summary of these variable settings is provided in the table below.

Table 1: Summary of settings that vary across stage/subject

Subject	Level	MinimumLength	Questions per block	Blocks to meet length	"ForcedStart" blocks for delivery first	Limit on total number of "ForcedStart" blocks
Numeracy	P1	27	3 or 6	[redacted - section 33(1)(b)]	[redacted - section 33(1)(b)]	[redacted - section 33(1)(b)]
Numeracy	P4	30	5	[redacted - section 33(1)(b)]	[redacted - section 33(1)(b)]	[redacted - section 33(1)(b)]
Numeracy	P7	30	5	[redacted - section 33(1)(b)]	[redacted - section 33(1)(b)]	[redacted - section 33(1)(b)]
Numeracy	S3	30	5	[redacted - section 33(1)(b)]	[redacted - section 33(1)(b)]	[redacted - section 33(1)(b)]
Literacy	P1	27	3 or 6	[redacted - section 33(1)(b)]	[redacted - section 33(1)(b)]	[redacted - section 33(1)(b)]
Reading	P4	29	4 or 5	[redacted - section 33(1)(b)]	[redacted - section 33(1)(b)]	[redacted - section 33(1)(b)]
Reading	P7	30	5	[redacted - section 33(1)(b)]	[redacted - section 33(1)(b)]	[redacted - section 33(1)(b)]

Reading	S3	29	4 or 5	[redacted - section 33(1)(b)]	[redacted - section 33(1)(b)]	[redacted - section 33(1)(b)]
Writing	P4	30	2 or 4	[redacted - section 33(1)(b)]	[redacted - section 33(1)(b)]	[redacted - section 33(1)(b)]
Writing	P7	30	2 or 4	[redacted - section 33(1)(b)]	[redacted - section 33(1)(b)]	[redacted - section 33(1)(b)]
Writing	S3	30	2 or 4	[redacted - section 33(1)(b)]	[redacted - section 33(1)(b)]	[redacted - section 33(1)(b)]

[redacted - section 33(1)(b)]

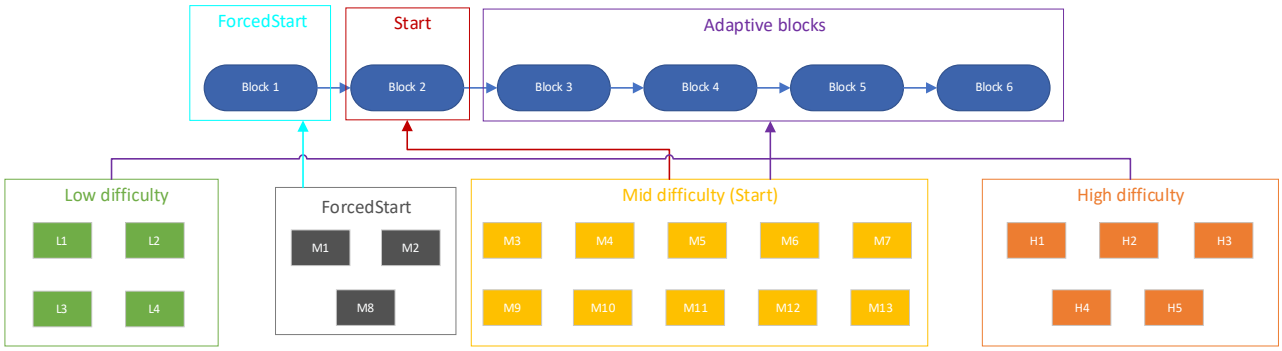


Figure 4: Example five-item block design, with additional ForcedStart constraint

Here the grey box shows a subset of the Mid difficulty items identified as “ForcedStart” items. One of these blocks must be delivered first in each learner’s assessment, then any Mid difficulty block can be selected second, then in subsequent blocks any difficulty level of block can be selected.

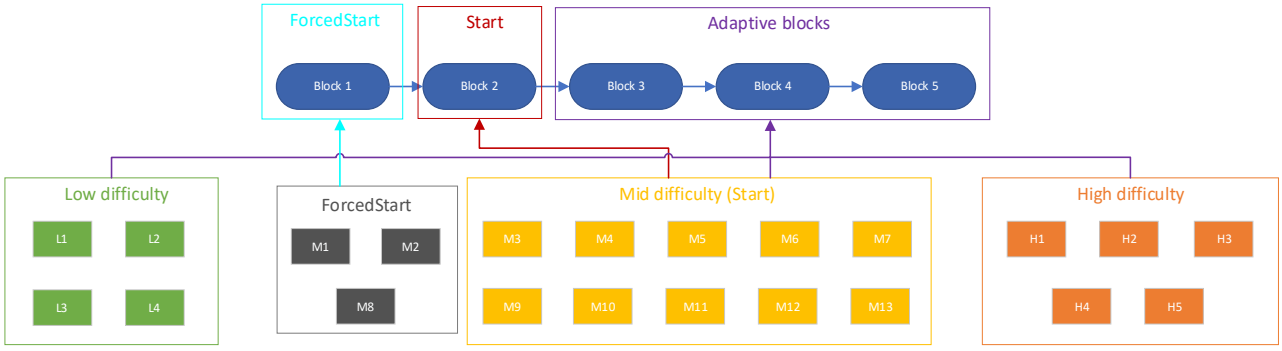


Figure 5: Example six-item block design, with additional ForcedStart constraint

This diagram is as above, just with one fewer block in the Adaptive blocks section due to the blocks containing an additional item.

The final column in Table 1 above notes an additional limit for P7 Writing, which is that of the four “ForcedStart” blocks no more than two can be delivered to any one learner. This rectified their high exposure due to having a content pattern desirable to the adaptive algorithm driving assessments.

5.1.1. Enemy relationships

In addition to the starting constraints varying across stage/subject combinations, in some Reading assessments there are texts split across two friend sets (in order to achieve better content balance across each friend set, generally because one text features only items from a limited number of content areas). In these cases, to prevent confusion for learners at the same text reappearing later into an assessment, we implement an enemy relationship between the blocks in question to prevent them appearing together in the same learner's assessment. This is done by specifying the desired enemy items in the **Enemy.Items** field in the item pool. The affected blocks are:

- P7 Reading
    - B13 and B15

5.2. Content constraint variations

In addition to the variable designs mentioned above, the table below shows a summary of the content balance desired in each stage/subject, as this varies somewhat. Note that the values presented are percentage ranges. I.e. for P1 Numeracy between 40 and 50 per cent of the items on the assessment should be Number items.

Table 2: Summary of desired content balance across stages/subjects

Subject	Skills	Level							
		P1		P4		P7		S3	
		Min	Max	Min	Max	Min	Max	Min	Max
Numeracy	Number	40	50	30	40	30	40	25	35
	Fractions, decimal fractions and percentages	5	15	15	25	15	25	15	25
	Money, time and measurement	25	35	25	35	25	35	25	35
	Information handling	10	20	10	20	10	20	15	25
Reading/ Literacy	Tools for reading	50	60	10	20	10	20	5	15
	Finding and using information	10	20	25	35	20	30	20	30
	Understanding, analysing and evaluating	25	35	50	60	55	65	60	70
Writing	Spelling			35	45	35	45	35	45
	Punctuation			25	35	25	35	25	35
	Grammar			25	35	25	35	25	35

5.3. Reverse order item pool variants

One other facet of variation across subject/stage combinations is that because few unique blocks appear at the start of the assessment in some subject/stage combinations, to introduce sufficient variation to the first blocks presented to learners (to mitigate exposure concerns) a “reverse order” variant of the assessment has been introduced. This is identical to the “forward order” default assessment, but the **FriendOrder** of items within certain friend sets (those presented at the start of the assessment) has been altered (i.e. item 1 in a set may become item 5, item 2 may become item 4, and so on). This ultimately means that the configuration file for the assessment is identical in both order variants, but the item pool is different because the **FriendOrder** column differs.

Unlike accent variants which are specifically scheduled by teachers according to learners’ needs, the “forward” and “reverse” variants of assessments are randomly allocated Surpass-side after scheduling. This means that if a teacher schedules for instance a P4 numeracy Accent 1 assessment, for a learner, that learner has a 50:50 chance of receiving either the “forward” or “reverse” version of the assessment. During the assessment itself there is no indication as to which of these assessments has been selected – only post hoc when examining the assessment’s data can this be determined for sure.

[redacted - section 33(1)(b)]

6. Subject/stage level summaries

6.1. Numeracy

6.1.1. P1

- Each assessment should consist of five blocks.
    - Only one block is permitted to be length 3, meaning the remaining four will be of length 6.
- The very first block delivered should be a “ForcedStart” block as indicated in the **Curriculum** field. The second block delivered should be a “Start” block as indicated in their **Curriculum** field in the item pool. Items with “NonStart” in this field should not be delivered in the first two blocks.
- The **MinimumLength and MaximumLength** of the assessment are defined in the configuration file is 27 items. Due to the above constraint that only a single block can be a 3-length block, all assessments should be this long.
- There are two variants of the assessment, one ‘forward’ and one ‘reverse’ order which have different item pools. Items in the following blocks’ **FriendOrder** values differ between these two item pools: M0, M5 and M8. This is the only difference between the two item pools.
- The content balance for this assessment should be as follows:

[redacted - section 33(1)(b)]

6.1.2. P4

- Each assessment should consist of six blocks of five items.
- The very first block delivered should be a “ForcedStart” block as indicated in the **Curriculum** field. The second block delivered should be a “Start” block as indicated in their **Curriculum** field in the item pool. Items with “NonStart” in this field should not be delivered in the first two blocks.
- The **MinimumLength** of the assessment as defined in the configuration file is 30 items. Due to the consistent length of all blocks in this assessment’s item bank, all assessments should be this long.
- The content balance for this assessment should be as follows:

[redacted - section 33(1)(b)]

6.1.3. P7

- Each assessment should consist of six blocks of five items.
- The first two blocks delivered should be from a specific set of moderate difficulty blocks indicated by having “Start” in their **Curriculum** field in the item pool. Items with “NonStart” in this field should not be delivered in the first two blocks.
- The **MinimumLength** of the assessment as defined in the configuration file is 30 items. Due to the consistent length of all blocks in this assessment’s item bank, all assessments should be this long.
- The content balance for this assessment should be as follows:

[redacted - section 33(1)(b)]

6.1.4. S3

- Each assessment should consist of six blocks of five items.
- The first two blocks delivered should be from a specific set of moderate difficulty blocks indicated by having “Start” in their **Curriculum** field in the item pool. Items with “NonStart” in this field should not be delivered in the first two blocks.
- The **MinimumLength** of the assessment as defined in the configuration file is 30 items. Due to the consistent length of all blocks in this assessment’s item bank, all assessments should be this long.
- The content balance for this assessment should be as follows:

[redacted - section 33(1)(b)]

6.2. Literacy

6.2.1. P1

- Each assessment should consist of five blocks.
    - Only one block is permitted to be length 3, meaning the remaining four will be of length 6.
- The very first block delivered should be a “ForcedStart” block as indicated in the **Curriculum** field. The second block delivered should be a “Start” block as indicated in their **Curriculum** field in the item pool. Items with “NonStart” in this field should not be delivered in the first two blocks.
- The **MinimumLength and MaximumLength** of the assessment are defined in the configuration file is 27 items. Due to the above constraint that only a single block can be a 3-length block, all assessments should be this long.
- There are two variants of the assessment, one ‘forward’ and one ‘reverse’ order which have different item pools. Items in the following blocks’ **FriendOrder** values differ between these two item pools: B1, B2, B5 and B12. This is the only difference between the two item pools.
- The content balance for this assessment should be as follows:

[redacted - section 33(1)(b)]

6.3. Reading

6.3.1. P4

- Each assessment should consist of six blocks.
    - Only one block is permitted to be length 4, meaning the remaining five will be of length 5.
- The very first block delivered should be a “ForcedStart” block as indicated in the **Curriculum** field. The second block delivered should be a “Start” block as indicated in their **Curriculum** field in the item pool. Items with “NonStart” in this field should not be delivered in the first two blocks.

- Across the whole assessment two of the blocks with “ForcedStart” in their **Curriculum** field must be selected (rather than the usual maximum of one), whilst one with “ForcedExtra” in this field must be delivered.
- The **MinimumLength and MaximumLength** of the assessment are defined in the configuration file is 29 items. Due to the above constraint that only a single block can be a 4-length block, all assessments should be this long.
- The content balance for this assessment should be as follows:

[redacted - section 33(1)(b)]

6.3.2. P7

- Each assessment should consist of six blocks of five items.
- The very first block delivered should be a “ForcedStart” block as indicated in the **Curriculum** field. The second block delivered should be a “Start” block as indicated in their **Curriculum** field in the item pool. Items with “NonStart” in this field should not be delivered in the first two blocks.
- There are two variants of the assessment, one ‘forward’ and one ‘reverse’ order which have different item pools. Items in the following blocks’ **FriendOrder** values differ between these two item pools: B8 and B11. This is the only difference between the two item pools.
- The **MinimumLength and MaximumLength** of the assessment are defined in the configuration file is 30 items.
- The content balance for this assessment should be as follows:

[redacted - section 33(1)(b)]

6.3.3. S3

- Each assessment should consist of six blocks.
    - Only one block is permitted to be length 4, meaning the remaining five will be of length 5.
- The very first block delivered should be a “ForcedStart” block as indicated in the **Curriculum** field. The second block delivered should be a “Start” block as indicated in their **Curriculum** field in the item pool. Items with “NonStart” in this field should not be delivered in the first two blocks.
- The **MinimumLength and MaximumLength** of the assessment are defined in the configuration file is 29 items. Due to the above constraint that only a single block can be a 4-length block, all assessments should be this long.
- There are two variants of the assessment, one ‘forward’ and one ‘reverse’ order which have different item pools. Items in the following blocks’ **FriendOrder** values differ between these two item pools: B7 and B10. This is the only difference between the two item pools.
- The content balance for this assessment should be as follows:

[redacted - section 33(1)(b)]

6.4. Writing

6.4.1. P4

- Each assessment should consist of eight blocks.
    - Only one block is permitted to be length 2, meaning the remaining seven will be of length 4.
- The first three blocks delivered should be from a specific set of moderate difficulty blocks indicated by having “Start” in their **Curriculum** field in the item pool. Items with “NonStart” in this field should not be delivered in the first two blocks.
- The **MinimumLength** of the assessment as defined in the configuration file is 30 items. Due to the consistent length of all blocks in this assessment’s item bank, all assessments should be this long.
- The content balance for this assessment should be as follows:

[redacted - section 33(1)(b)]

6.4.2. P7

- Each assessment should consist of eight blocks.
    - Only one block is permitted to be length 2, meaning the remaining seven will be of length 4.
- The first three blocks delivered should be from a specific set of moderate difficulty blocks indicated by having “Start” in their **Curriculum** field in the item pool. Items with “NonStart” in this field should not be delivered in the first two blocks.
- The **MinimumLength** of the assessment as defined in the configuration file is 30 items. Due to the consistent length of all blocks in this assessment’s item bank, all assessments should be this long.
- The content balance for this assessment should be as follows:

[redacted - section 33(1)(b)]

6.4.3. S3

- Each assessment should consist of eight blocks.
    - Only one block is permitted to be length 2, meaning the remaining seven will be of length 4.
- The first three blocks delivered should be from a specific set of moderate difficulty blocks indicated by having “Start” in their **Curriculum** field in the item pool. Items with “NonStart” in this field should not be delivered in the first two blocks.
- The **MinimumLength** of the assessment as defined in the configuration file is 30 items. Due to the consistent length of all blocks in this assessment’s item bank, all assessments should be this long.
- The content balance for this assessment should be as follows:

[redacted - section 33(1)(b)]

Response to FOI request 202300391122

Examples of learner and school reports

Please note that to comply with data protection legislation, the data which has been used to produce the reports below is operational synthetic testing data, and is not representative of real learner data.

Individual Learner Report
p.1/4

SNSA Numeracy P7

Individual Report

Name Abrahams, Brianne

Assessment SNSA Numeracy P7

School Internal Testing School - SNSA 1

Date 21/09/2022

Overall, Brianne has shown capacity at Band 11 and above on the SNSA Numeracy P7.
In the context of overall Band 11 and above capacity, Brianne has performed as appropriate in Fractions, decimal fractions and percentages. Brianne has performed as appropriate in Information handling. Brianne has performed as appropriate in Money, time and measurement. Brianne has performed as appropriate in Number. The next page of this report gives more details about Brianne's performance on individual questions.

Band 11 and above (682 and above)	Interpret problems and apply the correct operations to complete calculations involving estimation, the multiplication of 2-digit numbers. They can solve problems involving a fraction of a fraction and can calculate a percentage of a given value. They can solve problems involving the areas of rectangles and convert units of mass.
Band 10 (634- 681)	Solve word problems involving proportional reasoning to find fractions of a group and can also add fractions and decimal fractions. They can calculate durations and convert between units, e.g. for length or volume, and read scales for values between labelled marks. They can interpret pie charts and determine the probability of outcomes on a simple spinner.
Band 9 (586- 633)	Apply all four operations to solve problems involving whole numbers up to 1 000 000 and with money. They can order fractions and decimal fractions. They can convert time in fractions of an hour to minutes, use coins to show change from £20 or £30. They can interpret Venn diagrams with three overlapping sets of data.
Band 8 (538- 585)	Solve a multi-step word problem, use place value in numbers with up to 6 digits and identify and order 3-digit numbers represented in words. They can calculate durations across hours, minutes and seconds within a day and identify the group that makes up a population for a particular kind of survey.
Band 7 (490- 537)	Solve single-step word problems involving any of the four operations and understand that negative integers are less than zero. They can convert between 24- and 12- hour time and interpret a timetable. Learners can typically read a simple line graph and choose the tally chart that matches a given column graph.
Band 6 and under (up to 489)	Solve simple multi-step word problems requiring addition or subtraction of 2-digit numbers, and can recognise the hundreds digit in a 3-digit number. They can tell time to the quarter hour using analogue clocks. Learners can compare sizes of segments in a pie chart and interpret tally charts.

SNSA Numeracy P7

Individual Report

Name Abrahams, Brianne Assessment SNSA Numeracy P7

School Internal Testing School - SNSA 1 Date 21/09/2022

Content Area	Item Description	Difficulty	Result
Fractions, decimal fractions and percentages	Calculate a non-unit fraction of a quantity	Band 10	✓ Correct
	Calculate a simple fraction of a 2-digit number, in context	Band 11	✓ Correct
	Convert a decimal fraction to its simplest fraction, with a context	Band 11	✓ Correct
	Convert a fraction into a decimal fraction	Band 11	✓ Correct
	Decrease a quantity by a given fraction and solve a multi-step problem, in context	Band 11	✓ Correct
	Identify a pictorial representation of fractions of a given percentage	Band 9	✓ Correct
Information handling	Determine a value from a given table showing class interval data	Band 9	✓ Correct
	Identify the picture which gives the greatest probability of a given event	Band 9	✓ Correct
	Interpret a comparative line graph	Band 10	✓ Correct
	Interpret the percentage represented within a segment of a pie chart	Band 10	✓ Correct
	Match a spinner to given probabilities for all of the three given outcomes	Band 10	✓ Correct
	Use given information to determine the probability of an event, using the language of probability	Band 8	✓ Correct
Money, time and measurement	Calculate a total capacity involving conversion between millilitres and litres	Band 11	✓ Correct
	Calculate the change received from £10 for a purchase of multiple items	Band 11	✓ Correct
	Calculate the duration of an activity, converting hours to minutes	Band 11	✓ Correct
	Calculate the perimeter of a compound straight sided 2D shape	Band 11	✓ Correct
	Solve a division problem involving converting between kilograms and grams, with a decimal fraction answer	Band 11	✓ Correct
	Solve a multi-step problem involving purchases made using £10	Band 9	✓ Correct
	Solve a problem involving multiplication and conversion between millilitres and litres	Band 10	✓ Correct

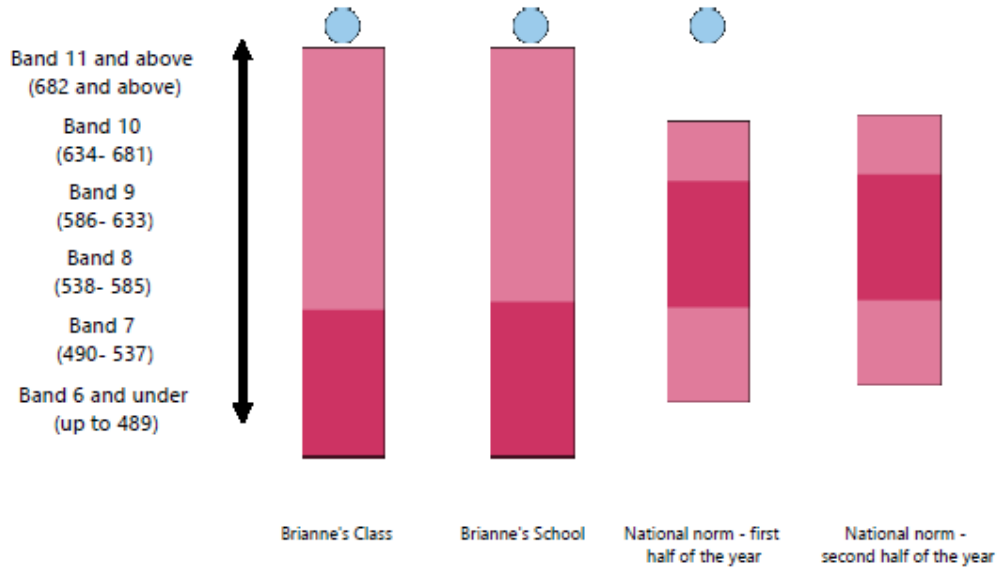
Money, time and measurement	Solve a problem which involves converting between units of length, in context	Band 9	✓ Correct
Number	Divide a decimal by a 1-digit whole number in context	Band 10	✓ Correct
	Divide a decimal fraction by a single digit whole number	Band 11	✗ Incorrect
	Identify the 6-digit number with the greatest value, in a group of 6-digit numbers	Band 8	✓ Correct
	Identify the decimal fraction that matches a place value description	Band 11	✗ Incorrect
	Order decimal fractions, with one and two decimal places	Band 11	✓ Correct
	Round a 5-digit number to the nearest thousand	Band 8	✓ Correct
	Solve a problem involving finding the difference between two 5-digit numbers, in context	Band 9	✓ Correct
	Solve a problem involving multiplication and subtraction, in context	Band 9	✓ Correct
	Solve a problem involving negative numbers presented in a table, in the context of temperature	Band 11	✓ Correct
	Solve a two-step problem involving addition and multiplication in the context of money	Band 11	✓ Correct

SNSA Numeracy P7

Individual Report

Name Abrahams, Brianne Assessment SNSA Numeracy P7

School Internal Testing School - SNSA 1 Date 21/09/2022



The chart compares Brianne's overall achievement with that of other P7 learners.

The darker shaded section of each chart represents the middle 50% of learners in the respective group.

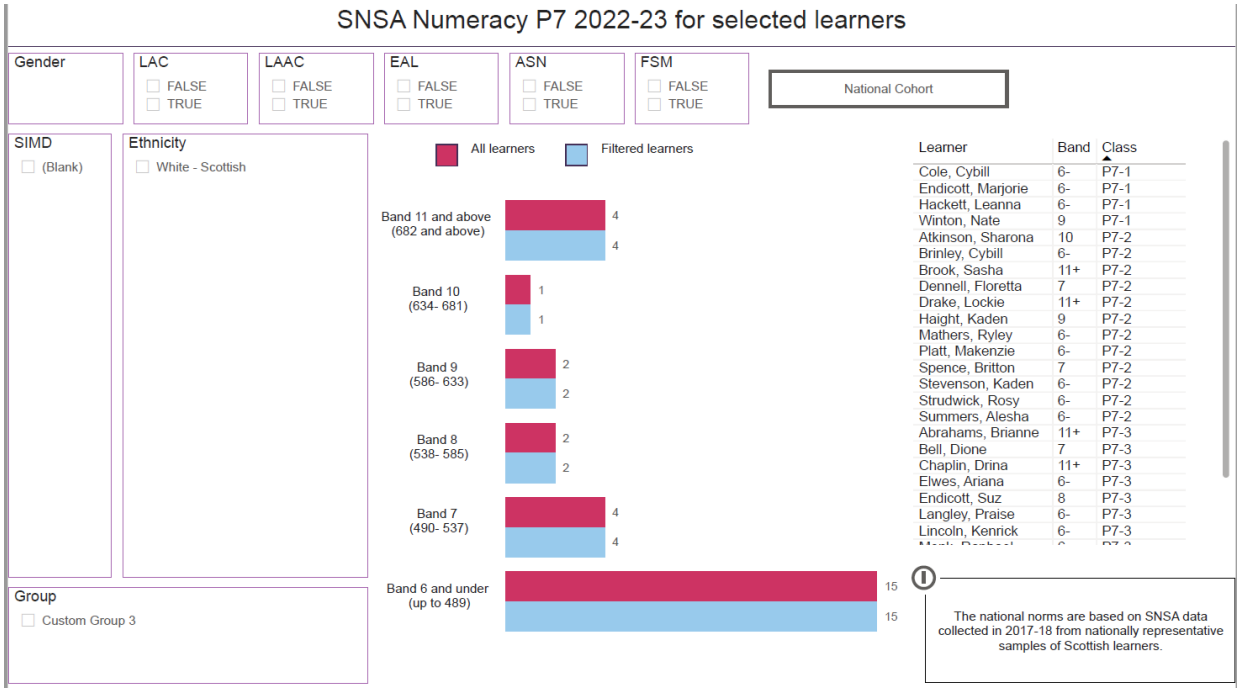
The lighter shaded portions represent the range of capacity of the whole group, except for the top and bottom 5%.

Comparative information for Brianne's class is based on 13 completed assessments.

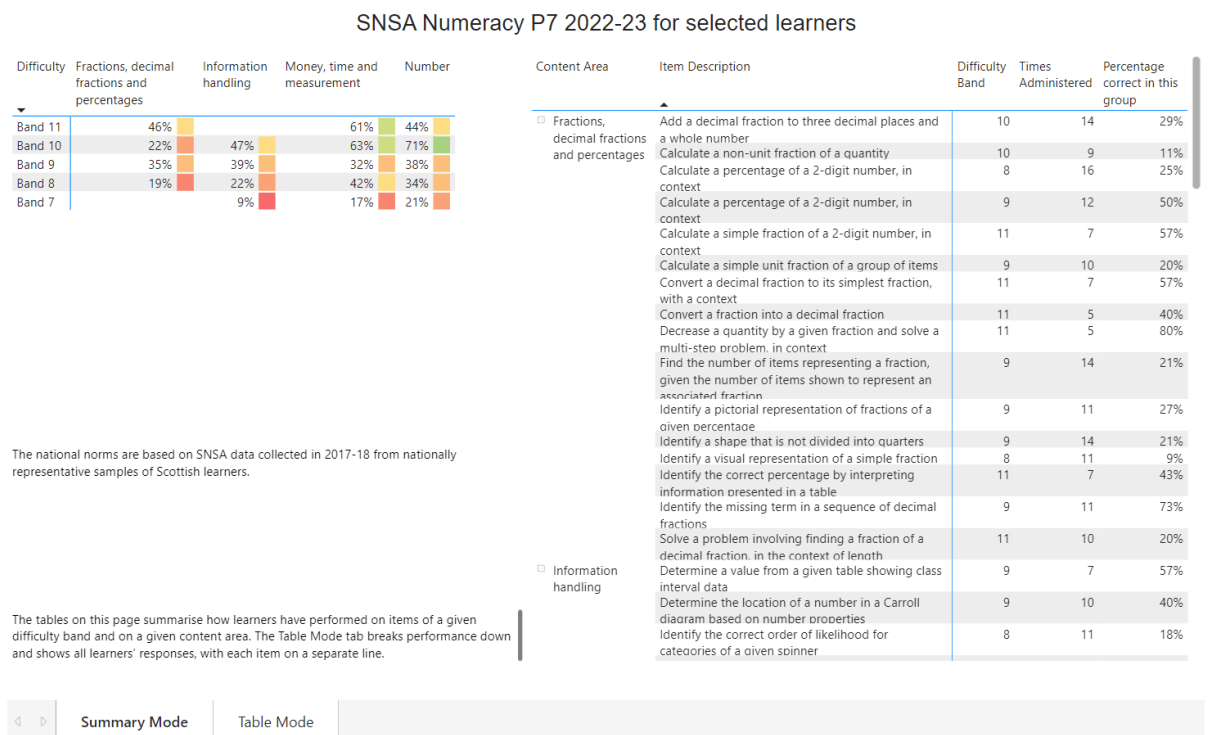
Comparative information for Brianne's school is based on 29 completed assessments.

The national norms are based on SNSA data collected in 2017-18 from nationally representative samples of Scottish learners.

Group Aggregate Report
p.1/1



Group Diagnostic Report
p.1/2 – Summary tab



p.2/2 Table mode

Report filters

Clear filters

SNSA Numeracy P7 2022-23 for selected learners

✓ Correct
✗ Incorrect
● Not Attempted

Content Area	Item Description	Full name	AE1	AS1	AS2	BA1	BS1	CB1	CC1	DB1	DC1	EM1	EP1	FD1	FS1	KH1	KL1	KS1	LD1	LH1	ME1
		Achieved Band / Item band	6-	6-	6-	11+	7	6-	6-	7	11+	7	8	7	6-	9	6-	6-	11+	6-	6-
Fractions, decimal fractions and percentages	Add a decimal fraction to three decimal places and a whole number	Band 10	●					●	✗	✓		✗			✗			✓		●	
	Calculate a non-unit fraction of a quantity	Band 10	●	✗		✓	✗	●				✗		✗	✗						
	Calculate a percentage of a 2-digit number, in context	Band 9		✗	✗		✗		✗	✓		✗		✗			✓				✓
	Calculate a percentage of a 2-digit number, in context	Band 8	●	✗	✗			●	✗	✓				✗	✓		●	✗		●	●
	Calculate a simple fraction of a 2-digit number, in context	Band 11				✓					✓		✗								
	Calculate a simple unit fraction of a group of items	Band 9			✗					✗		✗				●			✓		
	Convert a decimal fraction to its simplest fraction, with a context	Band 11				✓	✗				✓		✓				●		✓		
	Convert a fraction into a decimal fraction	Band 11				✓					✓		✗						✗		
	Decrease a quantity by a given fraction and solve a multi-step problem, in context	Band 11				✓					✓		✗								
	Find the number of items representing a fraction, given the number of items shown to represent an associated fraction	Band 9	●					●	✗				●	✓	●		●	●		●	●
	Identify a pictorial representation of fractions of a given percentage	Band 9		●		✓			✗		✓		●					●	✓	●	
	Identify a shape that is not divided into quarters	Band 9	●	●	●			●	✓					✓	●			●		●	●
	Identify a visual representation of a simple fraction	Band 8	●					●		✓					✗		●	✗		●	
	Identify the correct percentage by interpreting information presented in a table	Band 11					✗					✗							✓		

Summary Mode | Table Mode