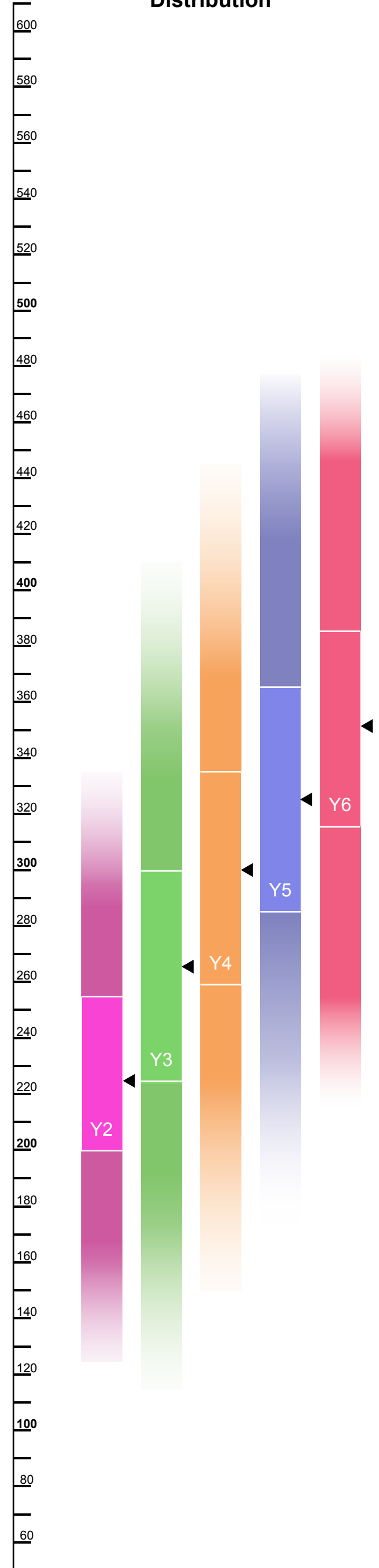# Number & Algebra Learning Progressions

Descriptor

Number and Algebra Scale

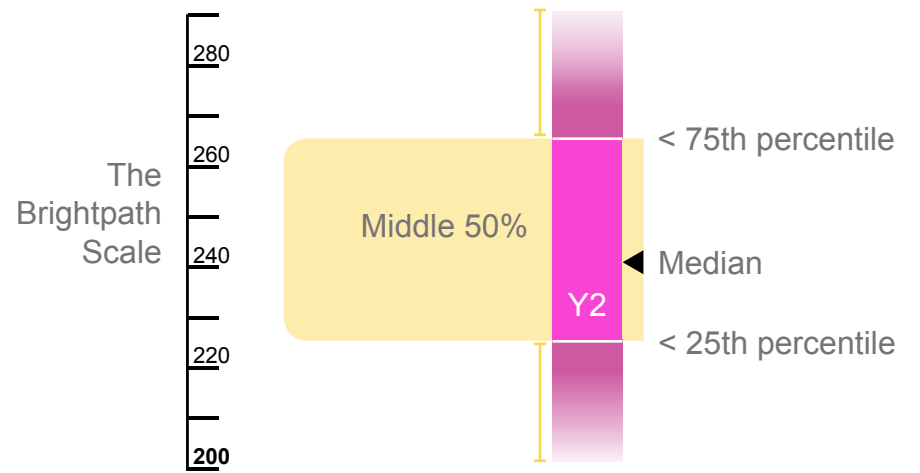**Student Performance Distribution**

485 - 600
Applies expansion, distributive and index laws to solve numerical and algebraic expressions. Identifies and uses factors of 3-digit numbers to solve problems. Uses ratio, proportional reasoning and metric conversion to calculate quantities. Compares and applies fractions and percentages to solve multi-step problems. Plots, analyses and interprets graphs.

435 - 485
Uses place value, distributive law and the four operations to compare expressions, find remainders, missing numbers and parts of a whole. Solves rate, ratio, distance, time, speed and percentage problems using proportional reasoning. Solves problems involving discount, profit and loss. Solves a variety of algebraic expressions.

395 - 435
Applies the four operations to solve problems involving rate, ratio, fractions, decimals and percentages. Compares the cost of items to determine the 'best buy'. Solves linear equations and evaluates formal and informal algebraic expressions.

360 -395
Solves multi-step problems involving all four operations and problems involving direct proportion, percentage increases and decreases. Solves quadratic expressions, and linear equations to plot graphs.

320 -360
Uses place value to identify and order decimal numbers. Represents rational numbers in equivalent forms to solve problems. Solves rate, ratio and purchasing problems. Solves algebraic and linear expressions. Identifies non-linear graphs.

280 - 320
Solves simple problems involving the four operations Adds and subtracts fractions with the same denominator and calculates a fraction of a 2-digit number. Calculates change. Identifies the sequence in a number pattern and describes linear patterns.

230 - 280
Solves simple problems involving addition and subtraction of 4- and 5-digit numbers. Uses multiplication facts and the inverse operations of multiplication and division to solve problems. Solves simple purchasing problems. Analyses and continues number patterns.

170 - 230
Solves simple problems involving addition and subtraction of 2- and 3-digit numbers. Associates collections of coins with their value. Partitions shapes into fractions. Develops simple number patterns.

60 - 170
Skip counts in groups and identifies increasing and decreasing number sequences. Adds and subtracts single digit numbers using counting of objects or number lines.

Scale	Distribution
600	
580	
560	
540	
520	
500	
480	Y6
460	Y5
440	Y4
420	
400	
380	
360	
340	
320	
300	
280	
260	Y3
240	
220	
200	Y2
180	
160	
140	
120	
100	
80	
60	

Interpreting the Display

A summary of the Brightpath Learning Progressions

230 - 280

Solves simple problems involving addition and subtraction of 4- and 5-digit numbers. Uses multiplication facts and the inverse operations of multiplication and division to solve problems. Solves simple purchasing problems. Analyses and continues number patterns.

The Brightpath Scale

280
260
240
220
200

Middle 50%

Y2

< 75th percentile

Median

< 25th percentile

Distribution of Student Performance				
Median	75th percentile	25th percentile	Middle 50%	Bar Extensions
The middle score of all student's scores in the year level	Upper box boundary, indicates 75% of students have reached this score or lower	Lower box boundary, indicates 25% of students have reached this score or lower	50% of students in a given year level perform between the boundaries of the score recorded for 25th percentile and 75th percentile	The extension of the colour bars shows the spread of scores along the scale excluding outliers, i.e. uncommon individual scores very far away from the mean

The student performance distributions were derived based on data collected in 2021 on the Number and Algebra Scale.

Number of assessments per year level				
Year 2	Year 3	Year 4	Year 5	Year 6
5,878	8,369	8,399	9,156	9,074

More about Brightpath Mathematics

The Brightpath Mathematics online assessments are available for year levels 2 to 9 and include Number & Algebra and Measurement & Geometry tests. Students conduct the tests online and results are automatically calculated. The assessments have been designed so:

- teachers and students receive immediate feedback for their learning, where they are and what they need to focus on next,

- teachers can use assessments as the starting point for their lesson planning and teaching, and

- teachers can be supported in evaluating the success of their teaching intervention

Question No. 16 **Focus Question**

Sonya had $10. She bought 6 doodle spinners from a shop. Each doodle spinner costs $1.20. How much change should Sonya get?

- $1.20
- $2.80
- $7.20
- $8.80

Test Results

April's score on the test
18 out of 38

Result for question No. 16

April's answer is Challenge level for April
Incorrect Medium Difficulty

April may need to do more work on tasks like this before getting them right.

This is a Focus Question

These are questions for April to focus on next. April's answer was wrong but they could get these questions right with some more practice or work.

Focus questions are highlighted at the bottom of the question area.

numbers follows the same rule.

□ = 3 x △ + 5

△	□
1	8
5	20
20	65
100	?

While packing books, Nate used 1 box to pack 8 books. All the books were of the same size.

How many boxes will Nate need to pack 48 such books?

- 4 boxes
- 6 boxes
- 10 boxes
- 12 boxes

What is the missing number on the table?

- 85
- 105
- 205
- 305

Molly uses identical strings to make a pattern.

She starts with 4 strings for Picture 1

How many strings does Molly need for Picture 5?

- 36 strings
- 38 strings
- 40 strings

Fatima and Hala bathed a total of 28 puppies at an animal shelter.

Hala bathed 6 puppies more than Fatima.

How many puppies did Hala bathe?

- 11 puppies
- 17 puppies
- 15 puppies
- 10 puppies

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