Big Maths

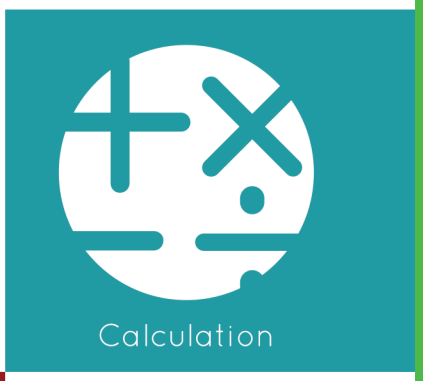
Year 6

Termly Learning Objectives


Counting

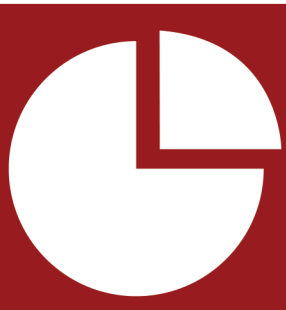
Learn Its


It's Nothing New


Calculation


Shape

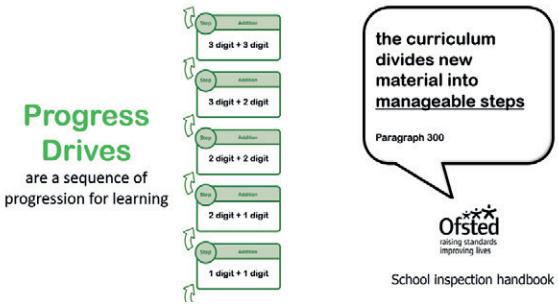

Amounts

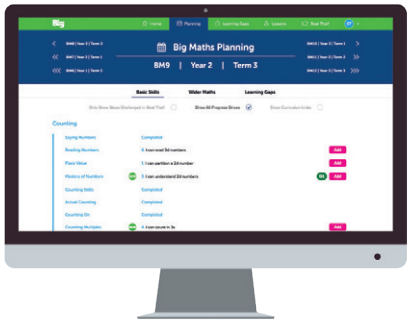

Fractions


Explaining Data

Andrell Education Ltd

Big Maths takes the broader curriculum statements from the national curriculum and breaks them down into smaller manageable steps. This results in a sequence of learning that forms the structure of the Big Maths curriculum design, which schools can then adopt. In Big Maths we call each strand/spine a Progress Drive, since it becomes a tool for the teacher to drive (as in 'to guide' or 'to steer') the learner's progress. We can see too how Ofsted now explicitly recognises this as a crucial curriculum design feature for maths.



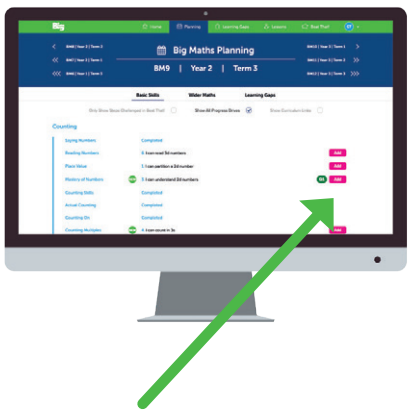


It is also effective to know *when* learners should secure each small step on the Progress Drive. This is an age-related expectation that comes from mapping the smaller steps to national curriculum year group statements. This provides the teacher with a clear and simple view of which steps need to be secured each term in order to keep the learner 'on track'. These can be seen as a list of term by term learning objective statements on the Big Maths Online website.

This can also be seen here in this 'termly learning objectives' planning document. This can be downloaded and printed out from the library section within the Big Maths Online website (new learning is denoted by being highlighted in green).

Basic Skills

Progress Drive	Step	Statement	✓
Place Value	5	I can partition a 3dp number	
Mastery of Numbers	8	I can understand 3dp numbers	
	9	I can understand 5, 6, 7, 8d numbers	
Count Along in 4 Ways	-25s	-25s	
Counting Along Scales	6	I can find the gap between 2 negative numbers	
Multiplying by 10	5	I can multiply whole numbers and decimals by 1000	
Dividing by 10	5	I can divide whole numbers and decimals by 1000	
Multiple-Factor-Prime	4	I understand prime numbers	
Addition	36	I can solve additions with 2dp	
	37	I can solve any additions with 2dp	
	38	I can solve additions with larger numbers	



Click here to immediately add this step to Big Maths Online weekly/lesson planning:

- Teacher notes are added automatically.
- Personalised notes can be added.
- Chosen resources from Big Maths Online can also be immediately added.

This planning guidance should not be used as a list that takes the teacher back to the antiquated days of simply 'covering a curriculum', but rather is a list of 'next steps' for learners to secure (that term) in their long term memory, the teacher having ensured learners have secured earlier steps on that Progress Drive. The teacher will need to construct their own plan as to how they will guide their pupils from their current starting points to the desired end points for that term. Although this requires important thinking that can only be done at the bespoke level of that teacher responding to that particular class of children, the planning process itself is quick and easy since the step is always simply located from the structure of the Big Maths curriculum, and the teacher notes and resources are there to be found at that location. All the teacher need do is click and add that step to their weekly/lesson plan, and then familiarise themselves with the delivery of that step.

A more short-hand version of this termly planning view is to use the Big Maths planning document that outlines the expected finishing position for leaners that term on each Progress Drive. This document simply shows which step the learner should be on by the end of that term if they are to be classed as 'on track'.

	Progress Drive	Steps
C	Saying Numbers	✓
	Reading Numbers	10, 11
	Place Value	4
	Mastery of Numbers	7
	Counting Skills	✓
	Actual Counting	✓
	Counting On	✓
	Counting Multiples	✓
	Counting Along in 4 Ways	-2s, -5s
	Counting Along Scales	5

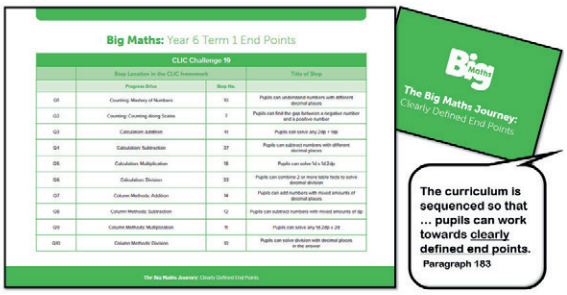
	Progress Drive	Steps
S	Explore & Draw	24
	2D Shapes	23
	3D Shapes	20, 21
	Position & Direction	26, 27

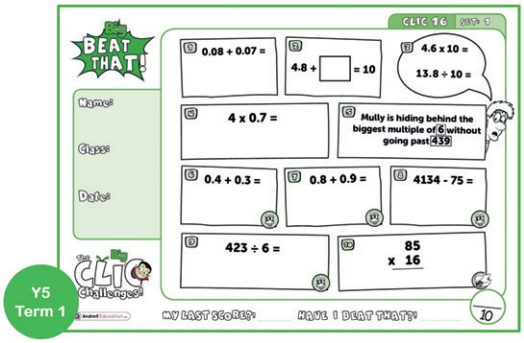
	Progress Drive	Steps
L	Learn its	✓

	Progress Drive	Steps
A	Amounts of Distance	26
	Amounts of Mass	16
	Amounts of Money	15
	Amounts of Space	20
	Amounts of Temperature	11
	Amounts of Time	27
	Amounts of Time: Telling the Time	✓
	Amounts of Turn	22, 23, 24

	Progress Drive	Steps
I	Swapping the Units	✓
	INN: Addition and Subtraction	✓
	Doubling & Halving	✓ ✓ ✓
	INN: Number Bonds to 10	✓
	x10 & ÷10	4 4
	INN: Multiplication	5
	Coin Multiplication	5

	Progress Drive	Steps
F	Fractions of a Whole	17
	Fractions of a Set	13
	Fractions: Counting	18
	Fractions: Learn its	9
	Fractions: It's Nothing New	7
	Fractions: Calculation	8 - 12





The Big Maths Beat That challenges are also mapped into this age-related expectation journey. Indeed, the 10 questions on each CLIC challenge represent the most essential core knowledge of the curriculum that the learner should have acquired. In effect, the 10 questions are 10 learning objectives that provide the sharpest focus of a clearly defined end point for each term. This allows the school to have perfect transparency as to which individuals, and what proportion of individuals, are 'on track' at any one time. Ensuring all pupils secure this core knowledge of the curriculum is a vital aspect of any mastery approach. Again, this idea of breaking the bigger maths journey into smaller clearly defined parts, mapped into an expected timeframe, is something that has been part of Big Maths for over a decade, but that Ofsted now recognises as an essential element of curriculum design.

Using Big Maths Online to track the performance of pupils will speed up the teacher's response to planning the next steps for learning. This can be extended into pupils completing their challenges online so that there is no printing, photocopying, sheet-management or marking; yet, the teacher can use the learning gaps feature to respond immediately in their online planning if they so wish.

Basic Skills

Progress Drive	Step	Statement	✓
Mastery of Numbers	10	I can understand numbers with different decimal places	
Counting Along Scales	7	I can find the gap between a negative number and a positive number	
Addition	39	I can solve additions with several numbers	
	40	I can solve 2dp + 1dp	
	41	I can solve any 2dp + 1dp	
Subtraction	37	I can subtract numbers with different decimal places	
Multiplication	17	I can solve 1d x 1d.1dp	
	18	I can solve 1d x 1d.2dp	
Division	32	I can use a Tables Fact to find a decimal division fact	
	33	I can combine 2 or more Tables Facts to solve decimal division	
Addition - Column Methods	11	I can add numbers with 1dp	
	12	I can add numbers with 2dp	
	13	I can add numbers with 3dp	
	14	I can add numbers with mixed amounts of decimal places	
Subtraction - Column Methods	9	I can subtract numbers with 1dp	
	10	I can subtract numbers with 2dp	
	11	I can subtract numbers with 3dp	
	12	I can subtract numbers with mixed amounts of decimal places	
Multiplication - Column Methods	7	I can solve any 4d x 2d	
	8	I can solve any 1d.1dp x 1d	
	9	I can solve any 1d.2dp x 1d	
	10	I can solve any 1d.1dp x 2d	
	11	I can solve any 1d.2dp x 2d	

Basic Skills (Continued)

Progress Drive	Step	Statement	✓
Division - Column Methods	8	I can solve any 3d ÷ 2d	
	9	I can solve any 4d ÷ 2d and show the remainder as a fraction	
	10	I can solve division with decimal places in the answer	

Wider Maths

Progress Drive	Step	Statement	✓
Explore and Draw	25	I can use a pair of compasses to draw a circle	
	26	I can draw a circle with a given radius	
	27	I can draw a circle with a given diameter	
2D Shapes	26	I know the relationships between radius, diameter and circumference in a circle	
3D Shapes	24	I can tell if a net makes a shape	
Position and Direction	29	I can reflect and translate shapes	
Amounts of Distance	29	I can convert kilometres and metres in both directions and to 3dp, and use in context	
	30	I can identify and measure the diameter of a circle	
	31	I can identify and measure the radius of a circle	
	32	I know what a circumference is and how it relates to diameter	
	33	I can find the circumference by knowing the radius or diameter	
Amounts of Mass	19	I can convert kilograms and grams in both directions and to 3dp, and use in context	
Amounts of Money	17	I can manage a simple budget	
Amounts of Space	27	I can convert litres and millilitres in both directions and to 3dp, and use in context	
Amounts of Temperature	14	I can find temperature differences between a positive and a negative number	
Amounts of Time	31	I can convert times and then calculate time gaps	
Amounts of Turn	31	I can measure the three angles of a selection of triangles, and explore the sum	
	32	I know 180° = sum of interior angles in every triangle (and can therefore find missing angles)	
	33	I know 360° = sum of interior angles in every quadrilateral and every circle (and can therefore find missing angles)	
Fractions of a Whole	17	I can show a variety of equivalent fractions	

Wider Maths (Continued)

Progress Drive	Step	Statement	✓
Fractions of a Set	14	I can tell you the total if I know the value of a fraction	
Fractions: Calculation	18	I can use common factors to simplify	
	19	I can find a new common denominator	
	20	I can multiply one fraction by another	
Percentages	4	I can write my Full Coin Card from only knowing 100 lots	
	5	I can find percentages of convenient numbers	
	6	I can find percentages of convenient numbers and use them to compare proportions	
Ratio	9	I can find the scale factor when comparing two corresponding amounts	
	10	I can use ratio notation to record my findings	
	11	I can maintain a ratio through differing totals	
Diagrams and Tables	25	I can read, use and calculate with a wide range of tables and timetables	
Bar Charts	11	I can draw a bar chart with continuous data	
Averages	1	I can tell you the lowest value from a set of data	
	2	I can tell you the highest value from a set of data	
	3	I can tell you the difference between the highest value and the lowest value	
	4	I can tell you the difference between the highest value and the lowest value	
	5	I know when and why a range is useful to explain data	
	6	I can find the mean value for a set of data	
	7	I know when and why the mean is useful to explain data	
Line Graphs	7	I can use line graphs to show relationships between two variables in other subjects	
	8	I can use a line graph to find missing values	

Wider Maths (Continued)

Progress Drive	Step	Statement	✓
Pie Charts	1	I can explain simple pie charts using my knowledge of fractions of a circle	
	2	I can find missing values, percentages or proportions	
	3	I can use missing percentages or proportions to provide missing values	
	4	I can find missing angles, given the proportional value and the total value	
	5	I can find missing proportional values given the angle and the total value	
Probability	7	I can show an even chance using numbers	
Pattern Spotting	17	I can spot patterns where the gap is a fraction	
Algebra	15	I can use algebra to show multiplication as repeated addition	
	16	I can use Pim to simplify expressions	
Prove It!	5	I can Prove It! - 5	

Wider Maths

Progress Drive	Step	Statement	✓
Explore and Draw	28	I can accurately draw a wide range of 2D shapes	
2D Shapes	27	I can combine all of my 2D shape knowledge and understanding to solve challenges	
3D Shapes	25	I can accurately draw nets for cubes	
	26	I can accurately draw the nets for a range of familiar 3D shapes	
	27	I can compare and classify a wide range of 3D shapes using mathematical detail	
Position and Direction	30	I can plot points in the second quadrant	
	31	I can plot points in the third and fourth quadrant	
	32	I can plot shapes that overlap into different quadrants	
	33	I can reflect shapes in the y axis	
	34	I can reflect shapes in the x axis	
	35	I can find missing coordinates for a variety of shapes (by drawing the shape to help)	
	36	I can find missing coordinates for a variety of shapes (without drawing the shape)	
Amounts of Distance	34	I can find distances from a given speed and a range of times	
	35	I can find time from a given speed and a range of distances	
Amounts of Mass	20	I can draw and interpret a conversion graph to change from a metric measure to an imperial measure, e.g. pounds and kilograms	
Amounts of Money	18	I can calculate profit and loss	
	19	I can find 'best value for money'	

Wider Maths (Continued)

Progress Drive	Step	Statement	✓
Amounts of Space	28	I can calculate volume using CLIC	
	29	I can find different shapes (different perimeters) with the same area	
	30	I can use a formula to find the area of triangles: 1/2(h x b)	
	31	I can use a formula to find the area of parallelograms: h x b	
	32	I can derive and apply the formula for the area of a trapezium	
Amounts of Temperature	15	I can increase a temperature by a given amount (including through zero)	
	16	I can decrease a temperature by a given amount (including through zero)	
Amounts of Time	32	I understand a decade, century, BC/AD, 52 weeks in a year	
Amounts of Turn	34	I can use all of my angle knowledge to find missing angles in lots of different contexts	
	35	I can find missing angles using multi-steps of deduction	
Fractions of a Whole	18	I can find a given fraction of a shape that is predivided into unequal pieces	
	19	I can find the fraction of a shape that is shaded (and unshaded) when given the ratio of shaded : unshaded	
Fractions: Calculation	21	I can convert, simplify and find equivalent fractions ready for ordering... and order them	
	22	I can convert, simplify and find equivalent fractions ready for calculating... and calculate with them	
	23	I can divide proper fractions by whole numbers	
	24	I can turn fractions into decimals (not recurring)	
	25	I can turn fractions into decimals (recurring)	

Wider Maths (Continued)

Progress Drive	Step	Statement	✓
Percentages	7	I can write out my Pie Chart Coin Card	
	8	I can find percentages of any number	
	9	I can find any percentage of any number using a calculator	
	10	I can find 100% if given a convenient percentage	
	11	I can find a new value if given a percentage increase	
	12	I can find a new value if given a percentage decrease	
	13	I can use percentage to compare best value	
Ratio	12	I can use my Coin Card for a variety of conversions	
	13	I can use my Coin Card for conversion, and graph the relationship	
Diagrams and Tables	25	I can read, use and calculate with a wide range of tables and timetables	
Bar Charts	12	I can find how many between two given values shown on the horizontal axis (with continuous data)	
Averages	8	I can find the mode value for a set of data	
	9	I know when and why the mode is useful to explain data	
	10	I can find the median value for a set of data	
	11	I know when and why the median is useful to explain data	
	12	I can compare two sets of data and explain the features of each	
Line Graphs	8	I can use a line graph to find missing values	

Wider Maths (Continued)

Progress Drive	Step	Statement	✓
Pie Charts	6	I can write out my Pie Chart Coin Card	
	7	I can use my Pie Chart Coin Card to find angles from percentages	
	8	I can use my Pie Chart Coin Card to find percentages from angles	
	9	I can convert proportions to percentages, and then to angles	
	10	I can find missing angles, given the proportional value and the total value... and draw the pie chart!	
	11	I can use my Pie Chart Coin Card to find angles from percentages... and draw the pie chart!	
Probability	8	I can use numbers to describe the likelihood of an event	
	9	I can show probabilities as fractions and explain what this means	
	10	I can say which probability is most likely by comparing fractions with the same denominator	
	11	I can say which probability is most likely by comparing fractions with different denominators	
	12	I can show probabilities as a decimal number between zero and one	
	13	I can show probabilities by converting to percentages	
	14	I can show relative probabilities by converting to percentages	
	15	I can show relative probabilities by converting to percentages (and then angles) and representing these with a pie chart	
Pattern Spotting	18	I can spot patterns where the gap itself is increasing by 1	
	19	I can spot patterns where the gap itself is increasing or decreasing by a fixed amount	
	20	I can spot patterns where the gap itself is increasing or decreasing by a non-fixed amount	

Wider Maths (Continued)

Progress Drive	Step	Statement	✓
Algebra	17	I can express functions using algebraic statements	
	18	I can use my understanding of the order of operations to carry out calculations	
	19	I can solve one step equations	
	20	I can find two unknown numbers in an algebraic equation	
	21	I can find more than one pair of numbers to satisfy an equation	
	22	I can use formulae and algebraic expressions in many areas of my maths and science	
Prove It!	6	I can Prove It! - 6	

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