

**‘Declarative Knowledge: is static in nature and consists of facts, formulae, concepts, principles and rules. I KNOW THAT...’ It can include the facts of number, time and space.**

‘...information points to prioritising core declarative knowledge in mathematics from an early age to level the playing field, particularly for pupils with special educational needs.’

‘...leaders prioritise and value consolidation.’ ‘...teachers should ensure that they give pupils adequate opportunities to practise.’

‘...the initial focus of any sequence of learning should be that pupils are familiar with the facts and methods that will form the strategies taught and applied later in the topic sequence.’

‘Teachers help pupils develop their automatic recall of core declarative knowledge, rather than rely on derivation, guesswork or casting around for clues.’

*Ofsted Research Review Series: Mathematics 2021*

\*\*\*\*Declarative Knowledge feeds into Procedural Knowledge.

Facts support the methods.\*\*\*\*

**Blue highlight - St Dennis’s Specific Expectations**

**Red font - St Dennis’s Priorities for Revisiting**

**Knowledge children will be tested on weekly**

| Scope + Sequence<br>Declarative Knowledge Facts to be learnt in each year group | EYFS                      | Key Stage 1                                      |   | Key Stage 2   |  |  |   |
|---|---------------------------|--|---|---|--|--|---|
|   | Reception                 | Year 1   | Year 2  | Year 3  | Year 4   | Year 5   | Year 6  |
|   |                           | Weekly arithmetic test-starting Autumn 2         | Weekly arithmetic test                                  | Weekly arithmetic test  | Weekly arithmetic test   | Weekly arithmetic test   | Weekly arithmetic test                                    |
| Place Value   | Verbally count beyond 20. | Count to and across 100, forwards and backwards. | Know the place value of each digit in a 2-digit number. | Know the place value of each digit in a 3-digit number.<br><br>Know negative numbers. | Count in multiples of 1000.<br>Read Roman numerals to 100.<br><br>Recognise the place value of each digit in a 4-digit number. | Read Roman numerals to 1000.<br><br>Know the value of each digit in a number up to 1,000,000.<br><br>Know numbers to 3 decimal places. | Know the value of each digit in a number up to 10,000,000 |

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|  | <p><b>Addition and Subtraction</b><br/>Automatically recall...</p> | <p>Subitise numbers up to 5<br/>Number bonds to 5 + some to 10.<br/>Double facts (within 10).<br/>Odd and even numbers up to 10.<br/>Subtraction facts within 5 + some to 10.</p> | <p>Know number bonds for each number to 10</p> | <p>Addition and subtraction facts within 20<br/>Know that addition is commutative and subtraction is not.</p> | <p>Know number bonds for all numbers to 20<br/>Number bonds to 100 in multiples of 10 and 5.</p>                          | <p>Number bonds to 100 in ones<br/>Number bonds to 1000 in multiples of 100s and 50s.</p>   | <p>Add and subtract numbers mentally with increasingly large numbers<br/>(100s, 1000s + 10,000s)<br/>Number bonds to 1000 in all multiples</p>  | <p>Number bonds to 1000 in all multiples<br/>Know the order of calculations. (BODMAS)</p>  |
|  | <p><b>Multiplication and Division</b></p>                          |   |  | <p>Know all the multiplication and division facts for X2,5 and 10 table</p>                                   | <p>Know all the multiplication and division facts for x3,4, and 8 table.<br/>Know doubles and halves of numbers to 20</p> | <p>1000 divided by 2, 4, 5 and 10.<br/>Know all the multiplication and division facts for all the x tables.<br/>Multiply and divide single-digit numbers by 10 and 100.</p> | <p>Recall prime numbers up to 20.<br/>Know all the multiplication and division facts for all the x tables.<br/>Find factor pairs of a number.<br/>I can recall square numbers up to 12 squared and their square roots.<br/>Identify prime numbers up to 20.</p> | <p>Know all the multiplication and division facts for all the x tables.<br/>Recall all prime numbers up to 50<br/>Identify common factors in pairs of numbers.</p> |

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|  | <b>Fractions</b>      |  | Recognise a half and a quarter.   | Recognise a quarter, half, third and equivalent fractions.   | Recognise that tenths arise from dividing an object/ number into 10 equal parts.  | To know the decimal equivalents for $\frac{1}{4}$ , and $\frac{3}{4}$ . | To know equivalent fractions.   | Convert between decimals, fractions and percentages. Identify the value of each digit in numbers to 3 decimal places. |
|  | <b>Time</b>           |  | Tell the time to the hour and half past.<br><br>To know and use language relating to dates, including months and years. | Tell the time to the hour, quarter past, quarter to, half past and 5 minutes intervals. Know number of minutes in an hour. | Tell the time. I can recall facts about durations of time. Tell the time using roman numerals. Use a 12 hour and 24-hour clock. Know number of days in each month and in the year. 60 seconds in a minute 60 minutes in an hour | Know analogue and digital time  | Know all previous years' time facts.  | Know all previous years' time facts.  |
|  | <b>Measures Facts</b> |  | To know cm is a unit of measure.<br><br>Know the value of different coins.  | To know - 1 cm=10 mm<br>100 cm=1 m<br>Know the symbols for pound and pence. (100p=£1)                                      | To know 1000g to 1 kg.  | Recall and convert different units of measure.                          | Recall metric conversions. 100cm=1m<br>Know 1000m=1 km<br>100ml in a litre<br>1000g in a kg | To know 5 miles is 8km  |

## Geometry

I know what a repeating pattern is. E.g. (AB, ABB and ABBC)

Recognise and name common 2-D and 3-D shapes. (Circle, triangle, square, rectangle, cube, cuboid, sphere, pyramids.)

Identify and describe the properties of 2-D shapes, including the number of sides, and lines symmetry in a vertical line. (Introduce pentagons, hexagons, octagons.)

Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces. (Introduce prisms)

Identify 2-D shapes on the surface of 3-D shapes.

Declare the difference between common 2-D and 3-D shapes and everyday objects.

Recognise angles as a property of shape or a description of a turn.

Identify right angles, recognise that 2 right angles make a half-turn, 3 make three-quarters of a turn and 4 a complete turn;

Identify horizontal and vertical lines and pairs of perpendicular and parallel lines. (Definitions = Declarative)

Classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes. (6 quadrilaterals + 3 triangles)

Know an acute angle is less than a right angle and an obtuse angle is more than a right angle.

Identify lines of symmetry in 2-D shapes presented in different orientations. (Dec. = What is a line of symmetry?)

Describe positions on a 2-D grid as coordinates in the first quadrant. (Dec. = Know which way around the co-ordinates go. Know and label the X / Y axis.)

Know angles are measured in degrees. (Introduce reflex angles.)

Identify: angles at a point and 1 whole turn (total  $360^\circ$ ) angles at a point on a straight line and half a turn (total  $180^\circ$ ) other multiples of  $90^\circ$ . (Dec. = define the definitions by degrees.)

Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.

Name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius.

Recognise angles where they meet at a point, are on a straight line, or are vertically opposite. (Introduce - Vertically opposite)

Know that angles inside a triangle add up to  $180^\circ$  Know that angles inside a quadrilateral add up to  $360^\circ$

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| Memory | <b>Planned rehearsal/consolidation opportunities</b><br><i>Aim = automatic recall / in long term memories</i><br>Time?<br>Timetabled? | Mastering Number 4 x week (15mins)<br><br>Spring onwards NumBots            | Mastering Number 4 x week (15mins)   | W/C Mastering Number 4 x week (15mins)   | Daily starter focusing on Number Bonds and TT facts.   | Daily starter focusing on Number Bonds and TT facts.   |  |  |
|        |   | 1 week a half term NumBots Challenge  | Summer 2 Daily 10mins TTRS   | Autumn 2 Daily 10mins TTRS   | Daily 10mins TTRS  | Daily 10mins TTRS  |  |  |
|        |   | Daily Arithmetic Starter focused on counting and 100 square pattern finding | Daily starter (5 min) Arithmetic Timetable.<br>Mon – PV<br>Tues – Add/Sub<br>Wed – Mult/Divide<br>Thurs – Fractions<br>Fri – Mix Up<br><i>Weekly arithmetic test</i><br><b>Planned using summative tests</b> | Daily starter (5 min) Arithmetic Timetable.<br>Mon – PV<br>Tues – Add/Sub<br>Wed – Mult/Divide<br>Thurs – Fractions<br>Fri – Mix Up<br><i>Weekly arithmetic test</i><br><br><b>Planned using summative tests</b> | Daily starter (5 min) Arithmetic Timetable.<br>Mon – PV<br>Tues – Add/Sub<br>Wed – Mult/Divide<br>Thurs – Fractions<br>Fri – Mix Up<br><i>Weekly arithmetic test</i><br><br><b>Planned using summative tests</b> | Daily starter Arithmetic Timetable.<br>Mon – PV<br>Tues – Add/Sub<br>Wed – Mult/Divide<br>Thurs – Fractions<br>Fri – Mix Up<br><i>Weekly arithmetic test</i><br><br><b>Planned using summative tests</b> | Daily starter Arithmetic Timetable.<br>Mon – PV<br>Tues – Add/Sub<br>Wed – Mult/Divide<br>Thurs – Fractions<br>Fri – Mix Up<br><i>Weekly arithmetic test</i><br><br><b>Planned using summative tests</b> | Daily starter Arithmetic Timetable.<br>Mon – PV<br>Tues – Add/Sub<br>Wed – Mult/Divide<br>Thurs – Fractions<br>Fri – Mix Up<br><i>Weekly arithmetic test</i><br><br><b>Planned using summative tests</b> |
|        | <b>Overlearning to prevent knowledge gaps for children at risk to keep up</b>   | Mastering Number Intervention   | Mastering Number Intervention  | Mastering Number Intervention  | Mastering Number Intervention  | TT Rockstars   | TT Rockstars   | TT Rockstars   |

|            |   |  |   |  |   |   |  |  |
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|            | <p><b>SEND provision in order for them to learn and remember key facts</b><br/>e.g.<br/>Quality First Teaching<br/>Same day intervention<br/>More practise time</p> | <p>Focus on number bonds to 5 / subitising.<br/><br/>Subtraction facts within 5.</p> | <p>Focus on number bonds to 10 and 20.<br/><br/>Subtraction facts within 10 and 20.</p> | <p>Focus on addition and subtraction facts within 20.</p>                          | <p>Focus on TT facts.<br/><br/>Focus on bonds to 100.</p>                                       | <p>Focus on TT facts.<br/><br/>Focus on bonds to 100.</p>                           | <p>Focus on TT and division facts.</p> | <p>Focus on TT and division facts.</p> |
| Assessment | <p><b>Benchmark for automaticity?</b><br/>(without use of memory aids)<br/>Speed?<br/>Accuracy?</p>   | <p>Bonds – 5 seconds<br/>90% correct</p>   | <p>Bonds – 5 seconds<br/>90% correct</p>  | <p>Bonds – 5 seconds<br/>90% correct</p>   | <p>TTRS Sound Score – 100 questions in 3minutes.</p>  | <p>TTRS Sound Score – 100 questions in 3minutes.<br/><br/>MTC Example 6 seconds</p> |  |  |
|            | <p><b>Low stakes assessment of Declarative Knowledge:</b><br/>Frequency?<br/>Time?<br/><i>It should be what they have been taught!</i></p>                          | <p>Summer term-weekly fun speedy recall</p>  | <p>Weekly speed test</p>  | <p>Weekly speed test</p>   | <p>Weekly Soundcheck on TTRS 25 Questions, 6 seconds, 20+/25<br/><br/>TTRS half termly Cig.</p> | <p>TTRS half termly Sound Score</p>   |  |  |
|            | <p><b>How do you use this data/information?</b></p>   | <p>Flashcards/ intervention / Homework to catch up bonds children are stuck on</p>   | <p>Flashcards/ intervention / Homework to catch up bonds children are stuck on</p>      | <p>Flashcards/ intervention / Homework to catch up bonds children are stuck on</p> | <p>Sound Score is used to set XT targets.</p>   | <p>Sound Score is used to set XT targets</p>  |  |  |

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| High Expectations + Fostering a Love of Maths | Rewarding of success + hard work<br><i>A chance to shine!</i> | NumBots Certificates for Levels achieved. | Half termly Arithmetic Class Averages displayed. Top 2 classes = Prize. Most progress child in each class picture displayed in school. |             | TTRS 100% certificates and Bronze, Silver + Gold Pins. |             |  |  |
|   | Enrichment Activities: Clubs and Competitions                 |   |  |             | TTRS Battles V TPAT Schools (Certificates)             |             |  |  |
|   | Parental Engagement   |   |  | TT Practise | TT Practise  | TT Practise |  |  |