

## Declarative Knowledge Plan 2023-24

School: Roche CP School

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**'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 mathematicians 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 = Roche's Specific Expectations

Red font = Roche's Priorities for Revisiting

Scope + Sequence Declarative Knowledge Facts to be learnt in each year group / GOALS	FACTS / RULES / VOCAB	EYFS	Key Stage 1		Key Stage 2			
		Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Place Value</b>		One ten is equivalent to ten ones.	One ten is equivalent to ten ones.  Declare numbers 0-20 as odd or even.	One ten is equivalent to ten ones.  One hundred is equivalent to ten tens and one hundred ones.  Declare numbers 0-100 as odd or even.	One hundred is equivalent to ten tens and one hundred ones.  An amount of hundreds can be expressed as an amount of tens e.g 200 = twenty tens  One thousand is equivalent to ten hundreds, one hundred tens and one thousand ones.  Roman Numerals: I = 1 V = 5 X = 10  Declare numbers 0-1,000 as odd or even.	One thousand is equivalent to ten hundreds, one hundred tens and one thousand ones.  Roman Numerals: I = 1 V = 5 X = 10 L = 50 C = 100  Declare any given number as odd or even.	Powers of ten can be expressed as multiples of smaller powers of 10 e.g $10,000 = 1,000 \times 10 = 100 \times 100 = 10 \times 1,000 = 10,000 \times 1$  Roman Numerals: I = 1 V = 5 X = 10 L = 50 C = 100 D = 500 M = 1,000  Declare any given number as odd or even.	
<b>Addition + Subtraction</b> Automatically recall...		Number bonds to 5 + some to 10.  Double facts (within 10).  Odd and even numbers up to 10.  Subtraction facts within 5 + some to 10.	Number bonds to 20.  Subtraction facts within 20.  Odd and even numbers up to 20.  Know that addition is commutative	Addition and subtraction facts within 20.  Know that addition is commutative and subtraction is not.	Number bonds to 100 in multiples of 10 and 5.	Number bonds to 100 in ones.  Number bonds to 1000 in multiples of 100s and 50s.	Add and subtract numbers mentally with increasingly large numbers. (100s, 1000s + 10,000s)  Number bonds to 1000 in multiples of 25s + 10s.	Know the order of calculations. (BODMAS)

and subtraction is not.

## Multiplication + Division

Double facts up to double 5 = 10

Double facts up to 20

Recall multiplication facts for the 10 times table, expressed as 'lots of 10' – TTRS in Summer 2

**Times table facts (including division facts) for the 10, 2 and 5 times table.**

Multiplication is commutative but division is not.

**Times table facts (including division facts) for the 10, 2, 5, 3, 4 and 8 times table.**

Associated fact multiplications, making one factor 10 times bigger e.g.  
 $4 \times 3 = 12$  so  $4 \times 30 = 120$

**Times table facts (including division facts) for tables up to 12 x 12.**

Associated fact multiplications and divisions, making one factor either 10 or 100 times bigger e.g.  
 $4 \times 3 = 12$  so  $4 \times 30 = 120$  and  $4 \times 300 = 1,200$   
 $12 \div 3 = 4$  so  $120 \div 3 = 40$  and  $1,200 \div 3 = 400$

**Times table facts (including division facts) for tables up to 12 x 12.**

Associated fact multiplications and divisions, making the factors a combination of 10, 100, 1,000 or 10,000 times bigger e.g.  
 $4 \times 3 = 12$  so  $4 \times 30 = 120$ ,  $4 \times 300 = 1,200$ ,  $4 \times 3,000 = 12,000$   
 $4 \times 3 = 12$  so  $40 \times 30 = 1,200$ ,  $40 \times 300 = 12,000$ ,  $400 \times 30 = 12,000$  and  $4,000 \times 30 = 120,000$   
 $12 \div 3 = 4$  so  $120 \div 3 = 40$  and  $1,200 \div 3 = 400$   
Prime numbers to 19  
Powers of 10 as  $10^2$  and  $10^3$  ( $100 = 10^2$ ,  $1,000 = 10^3$ )

Same as Year 5 plus:  
Correct order of operations (BODMAS)

## Fractions

Half facts in relation to doubles, up to half of 10 = 5

Define a half as one of two equal parts of a shape, object or amount. Define a quarter as one of four equal parts of a shape, object or amount. Half facts in relation to doubles, up to half of 20 = 10

$\frac{1}{2}$  is equivalent to  $\frac{2}{4}$   
Define one third as one of three equal parts of a shape, object or amount. Recall half facts for multiples of 10 up to 100

Define fractions as being either unit- or non-unit fractions. Know that  $\frac{1}{10}$  is equivalent to 0.1,  $\frac{2}{10}$  is equivalent to 0.2... up to  $\frac{10}{10}$  is equivalent to 1

Know decimal equivalents of  $\frac{1}{2}$ ,  $\frac{1}{4}$  and  $\frac{3}{4}$ . Know fractional and decimal equivalents of any number of tenths or hundredths. Define proper fractions, improper fractions and mixed numbers.

Recall percentage and decimal equivalents of  $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{5}$ ,  $\frac{2}{5}$ ,  $\frac{4}{5}$  and those fractions with a denominator of a multiple of 10 or 25. Write percentages as a fraction /100 and its decimal equivalent. Say whether any fraction with an even-numbered denominator is greater than or less than a half

Say whether any fraction is greater than or less than a half, including fractions with odd-numbered denominators.

<p><b>Measures and Time Facts</b></p>	<p>What the day is today, what it was yesterday and what it'll be tomorrow.</p>	<p>Value of monetary coins and notes on sight.</p> <p>Recall days of the week and months of the year.</p> <p><b>The time in o'clock and half-hour intervals.</b></p>	<p><b>Units of measure for length / height (cm/m), weight (g/Kg), capacity (ml/l) and temperature (°C).</b></p> <p>The symbols of pounds (£) and pence(p).</p> <p>Know the number of minutes in an hour and the number of hours in a day.</p> <p><b>The time in 5 minute intervals.</b></p>	<p>How to find the perimeter of simple 2D shapes.</p> <p>The number of seconds in a minute and the <b>number of days in each month, year and leap year.</b></p> <p><b>Read time to the nearest minute.</b></p> <p>Roman Numerals to XII.</p>	<p><b>1cm = 10mm</b>  <b>1m = 100cm</b>  <b>1m = 1,000mm</b>  <b>1km = 1,000m</b></p> <p><b>1kg = 1,000g</b></p> <p><b>1l = 1,000ml</b></p> <p><b>24 hour equivalent of a 12 hour time.</b></p>	<p>Formula for finding the perimeter and area of squares and rectangles.</p>	<p>Formula for the area of a parallelogram.</p> <p>Formula for the area of a triangle.</p> <p>Formula for the volume of a cuboid (including cubes).</p>
<p><b>Geometry</b></p>	<p>I know what a repeating pattern is. E.g. (AB, ABB and ABBC)</p>	<p>Recognise and name common 2-D and 3-D shapes.</p> <p>(Circle, triangle, square, rectangle, cube, cuboid, sphere, pyramids.)</p>	<p>Identify and describe the properties of 2-D shapes, including the number of sides, and lines symmetry in a vertical line.</p> <p>(Introduce pentagons, hexagons, octagons.)</p> <p>Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces.</p> <p>(Introduce prisms.)</p> <p>Identify 2-D shapes on the surface of 3-D shapes.</p> <p>Declare the difference between common 2-D and 3-D shapes and everyday objects.</p>	<p>Recognise angles as a property of shape or a description of a turn.</p> <p>Identify right angles, recognise that 2 right angles make a half-turn, 3 make three-quarters of a turn and 4 a complete turn;</p> <p>Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.</p> <p>(Definitions = Declarative)</p>	<p>Classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes.</p> <p>(6 quadrilaterals + 3 triangles)</p> <p>Know an acute angle is less than a right angle and an obtuse angle is more than a right angle.</p> <p>Identify lines of symmetry in 2-D shapes presented in different orientations.</p> <p>(Dec. = What is a line of symmetry?)</p> <p>Describe positions on a 2-D grid as coordinates in the first quadrant.</p> <p>(Dec. = Know which way around the co-ordinates go. Know and label the X and Y axis.)</p>	<p>Know angles are measured in degrees.</p> <p>(Introduce reflex angles.)</p> <p>Identify: angles at a point and 1 whole turn (total 360°) angles at a point on a straight line and half a turn (total 180°) other multiples of 90°. (Dec. = define the definitions by degrees.)</p> <p>Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.</p>	<p>Name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius.</p> <p>Recognise angles where they meet at a point, are on a straight line, or are vertically opposite.</p> <p>(Introduce - Vertically opposite)</p>

<b>Memory</b>	<b>Planned rehearsal/consolidation opportunities.</b> <b>Aim = automatic recall / in long term memories</b> Time? Timetabled?	W/C Mastering Number 4 x a week (15mins)  Spring onwards NumBots in CP and Home Tasks	W/C Mastering Number 4 x a week (15mins)  Summer 2 Daily 10mins TTRS	W/C Mastering Number 4 x a week (15mins)  Daily 10mins TTRS	W/C Mastering Number 4 x a week (15mins)  Daily 10mins TTRS	20mins a day on Number Bonds and XT facts.  Daily 10mins TTRS	20mins a day on Number Bonds.  Daily 10mins TTRS	Daily 10mins TTRS	
		1 week a half term NumBots Challenge	→						
		Daily Arithmetic Starter focused on counting and 100 square pattern finding.	Daily 15min Arithmetic Timetable. Mon – PV Tues – Add + Sub Wed – Mult. + Divide Thurs – Fractions Fri – Mix Up <b>Planned using summative tests</b>	→					
	<b>Overlearning to prevent knowledge gaps for children at risk.</b> <b>Intervention</b> Who? Lowest 20% SEND? When? Frequency? Expert to deliver?	Precision Teach  Mastering Number Intervention	Precision Teach  Mastering Number Intervention	Precision Teach  Mastering Number Intervention	Precision Teach  Mastering Number Intervention	Precision Teach	Precision Teach	Precision Teach	

	<b>SEND provision in order for them to learn and remember key facts</b> E.g. Quality First Teaching Pre-teach Same day intervention More practise time	CMC focus on number bonds to 5 / subitising.  Subtraction facts within 5.	CMC focus on number bonds to 10 and 20.  Addition and subtraction facts within 10 and 20 following Precision Teach Steps 1 – 12.	CMC focus on addition and subtraction facts within 20 following Precision Teach Steps 1 – 12.	CMC focus on addition and subtraction facts within 20 following Precision Teach Steps 1 – 12.  CMC focus on XT facts.  CMC focus on bonds to 100.	CMC focus on addition and subtraction facts within 20 following Precision Teach Steps 1 – 12.  CMC focus on XT facts.  CMC focus on bonds to 100.	CMC focus on addition and subtraction facts within 20 following Precision Teach Steps 1 – 12.  CMC focus on XT and division facts.	CMC focus on addition and subtraction facts within 20 following Precision Teach Steps 1 – 12.  CMC focus on XT and division facts.
<b>Assessment</b>	<b>Benchmark for automaticity?</b> (without use of memory aids) Speed? Accuracy?	Example: Bonds – 5 seconds 90% correct			TTRS Gig – 100 questions in 3minutes.	TTRS Gig – 100 questions in 3minutes.  MTC Example 6 seconds	TTRS Gig – 100 questions in 3 minutes.	TTRS Gig – 100 questions in 3 minutes.
	<b>Low stakes assessment of Declarative Knowledge:</b> Frequency? Time? <i>It should be what they have been taught!</i>				Weekly Soundcheck on TTRS 25 Questions, 6 seconds, 20+/25  TTRS half termly Gig.	TTRS half termly Gig.	TTRS half termly Gig.	Weekly half Arithmetic Tests.  TTRS half termly Gig.
	<b>How do you use this data/information?</b>				Gig is used to set XT targets.			
<b>High Expectations + Fostering a Love of Maths</b>	<b>Rewarding of success + hard work</b> <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.					

	<b>Enrichment Activities: Clubs and Competitions</b>				TTRS Battles V TPAT Schools. (Certificates)			
	<b>Parental Engagement</b>		CPG Homework Books					

