ST. GEORGE'S C of E PRIMARY SCHOOL

MATHS POLICY

By the Staff of St George's

Prepared by Mrs K Stringer

This policy needs to be read in conjunction with:

Equality statement
Assessment Policy
Inclusion Policy
Health and Safety policy
Feedback policy

Philosophy

At St. George's we believe that mathematics is an essential set of skills, which are necessary for completing everyday life. Mathematics equips pupils with a uniquely powerful set of tools such as logical reasoning and problem solving to understand and change the world.

Aims

- To provide experiences that are stimulating, exciting and relevant so that children are motivated, learn willingly and so develop their mathematical skills to their full potential.

- To promote enjoyment of learning through practical activity exploration and discussion.

- become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately (NC)

- reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language (NC)

- can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions

- To develop success, confidence and a sense of achievement so that children are able to talk about and explain their work and to apply their knowledge and understanding to solve real life problems.

Context

Mathematics teaches children how to make sense of the world around them through developing their ability to calculate, reason and solve problems. It is a core subject with a range of cross-curricular links taught discretely, but using opportunities from

other subjects to rehearse skills in a context. Mathematic teaching involves developing confidence, fluency and competence in number work; shape, space and measure; handling data and the using and applying of these skills. We aim to support children in achieving economic well-being by equipping children with a range of computational skills and the ability to solve problems in a variety of contexts using the National Curriculum 2014 and the statutory framework for the Early Years Foundation Stage.

The programmes of study are organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects.

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.

The broad content of our maths scheme is taken from the New National Curriculum 2014 and the Curriculum Guidance for the Early Years Foundation Stage. This is implemented through the use of the schemes of work as per the National Curriculum for maths, for YR to Y6. Fluency in maths is developed through Little Big Maths in the Early Years and Big Maths daily sessions in years 1 to 6. This ensures continuity and progression across all year groups and key stages.

Delivery

Early Years

Mathematics involves providing children with opportunities to develop and Improve their skills in counting, understanding and using numbers, calculating Simple addition and subtraction problems; and to describe shapes, spaces, and measures.

Children are able to develop and extend their mathematical skills and concepts through free and structured play and practical activities. Maths is delivered through specialised maths equipment, set activities, everyday language, story, songs action rhymes, games and PE. The children are encouraged to talk about their work, ask questions, make decisions and learn with others. Areas of learning include counting, sorting, matching, looking for patterns, making connections, recognising relationships and working with numbers, shapes, space and measures and problem solving.

In the Reception class the children have a weekly maths focus and then work in small groups on related activities during the week. There is a daily oral/mental lesson when the whole class work on counting, comparing, ordering numbers etc. When appropriate the children are introduced to the daily three-part maths lesson.

Years 1 to 6

In their maths work the children look for and investigate patterns and relationships, ask questions, make predictions, solve problems by developing and using their skills and knowledge and communicate their ideas in a variety of ways – discussions, explanations, writing, diagrams. They use computers, ipads, calculators and a wide range of mathematical tools/equipment.

Big Maths and Little Big Maths
Each year group from Nursery to year 6 has a Big Maths or Little Big Maths session on a daily basis. Years 1 to 6 also complete a Beat That Learn Its Challenge
The following information has been taken directly from the New National Curriculum and is to be implemented from September 2014.

Key stage 1 Programme of Study
Years 1 and 2

The principal focus of mathematics teaching in Key Stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources (for example, concrete objects and measuring tools).
At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measure to describe and compare different quantities such as length, mass, capacity/volume, time and money.
By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency.
Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Lower Key Stage 2 Programme of Study
Years 3 and 4

The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operation, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental method and perform calculation accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number. By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work. Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

Upper Key Stage 2 Programme of Study
Years 5 and 6

The principal focus of mathematics teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.
At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.
By the end of year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working of fractions, decimals and percentages.

Leadership and Management
The subject leader's role is to empower colleagues to teach maths to a high standard and support staff in the following ways:

- By keeping up to date on current issues; disseminating relevant information and providing training for staff members (either directly or through other professionals)
- Leading by example / modelling lessons or styles of teaching
- Having a knowledge of the quality of mathematics provision across the school
- Monitor and evaluate the implementation of the policy and new framework through classroom observations, scrutiny of planning, sampling children's work, looking at displays and analysing SAT and assessment test results. Feedback will be given to individual members of staff and to all staff on issues for the whole school.
- Identifying and acting on development needs of staff members
- Monitoring expectations, provision and attainment across the school and providing feedback to develop practice further in order to raise standards.

- Providing necessary equipment and maintaining it to a high standard.

Presentation and Marking

The previous day's work should be ruled off. The short date and learning objective should be clearly identified at the start of each day's work. In KS1 the teacher will do this.
All children will record their work in pencil. Children should be encouraged to space out their work: one digit per square and an empty line left between each row of work. The children will progress from using blank paper to 2 cm. square to 1cm. square paper as appropriate.
Rulers should be used at all times. Operation signs should be written on the bottom left hand side of the sum for vertical written strategies. Formation of numbers should be corrected.
Corrections should be clearly labelled. Incorrect work should be re-written in full before commencing further work.
In KS 2 children are given the opportunity to self assess using highlighters.

Marking should follow the school's policy.

Assessment, Recording and Reporting

Assessment, record keeping and reporting in maths follow the school's policies. Formative assessments are made against learning objectives at the end of each lesson and recorded in the class teacher's assessment diary or on the planning to inform the next days planning. Children's work, discussion and self assessment should be used to guide this assessment. These are then used to inform the next lesson allowing staff to match the correct level of work to the needs of the children to ensure progression. Review activities are carried out before and after each programme of study to assess prior learning and aid planning to ensure the appropriate objectives are covered for that class for that particular domain. Assessment through marking, evidence of work and discussion with the children is carried out during each programme of study to assess the children's knowledge and understanding of the area of work covered. The results are used to inform planning when the objectives are revisited in subsequent units.

Pupils in Y2 and Y6 take the national SAT tests and pupils in Y3, Y4 and Y5 take the optional SATs for their year group.

The assessment results are analysed and areas of strengths and weaknesses are highlighted. The information is placed on the termly and yearly school Tracking system (Scholarpack) and is analysed by class teachers and the Maths and assessment coordinators. This information is then used by staff to inform their future teaching and planning and allow the school to move forward.

Target setting

"I can" targets for pupils in years 1 to 6 under emerging, expected and exceeding have been developed for each year group in accordance with the expectation of the New Curriculum.

Special needs (additional needs?)

Activities within the classroom are planned to encourage full and active participation of all pupils irrespective of ability. Work is differentiated to ensure success for all children. Interventions such as Numicon and Numbers Count are carried out on a daily basis for specific children. These interventions are reviewed regularly through Pupil Progress meetings and support allocated according to needs.

Children not on line to achieve two levels of progress from Key Stage 1 to 2 are prioritised for additional intervention, as are those who are working below the level of expectation for their age. Class teachers are responsible for the content of these sessions although they may be delivered by a different teacher, HLTA or TA. Wave 3 intervention may also be used, to support individual pupils, to fill gaps in understanding.

Children are identified as Gifted and Talented mathematicians in accordance with the Gifted and Talented policy.

Gifted and Talented

Children who are gifted and talented in mathematics are identified by class teachers and noted on Scholarpack. Staff develop the individual needs of these children through extended problem solving activities, involving higher thought processes. Activities include differentiation and challenge, offering open-ended investigations, the use of extended vocabulary and more elaborate language as well as independent activities to enrich and extend their thinking.

Multi-Cultural Education

Mathematical teaching and learning reflects the multi-cultural nature of our society and there are opportunities for children to learn about mathematical aspects of their own everyday lives and those of others.

Equal opportunities

The maths curriculum offers an equal opportunity of access to all, irrespective of gender, race or special needs etc.

Health and safety

Maths resources will be examined in light of the school's Health and Safety Policy. It is the responsibility of staff to notice any damage or loss and to report their concerns to the co-ordinator. Children will be shown how to handle equipment and resources in an appropriate and safe way.

Cross-curricular links

The children use and apply their mathematical knowledge, skills and understanding in most areas of the curriculum including English, geography, science, design and technology.

Computing can enhance the teaching of mathematics significantly. It has ways of impacting on learning that are not possible with conventional methods. Teachers can use software to present information visually, dynamically and interactively, so that children understand concepts more quickly. A range of software and resources are available to support work with the computers and ipads. Computing is used in the maths lesson when the software meets the lesson's objectives.

Resources

Resources are kept in each classroom and the Community Room. Resources are labelled, appropriately stored and are easily accessible. Staff should ensure that resources are checked before being returned to the correct storage area so that they are available for the next person.

Monitoring and Evaluating

The Maths Subject Leader will also provide an annual summary report to the Head Teacher in which s/he evaluates the strengths and weaknesses in mathematics, and indicates areas for further improvement.

The subject leader provides a report to the Governing Body about the delivery and attainment of mathematics in school.

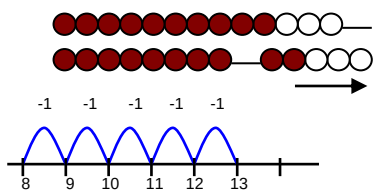
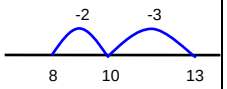
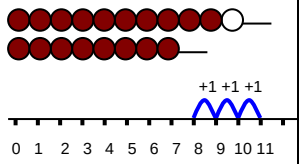
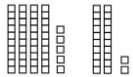
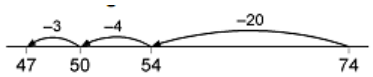
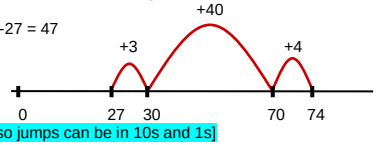
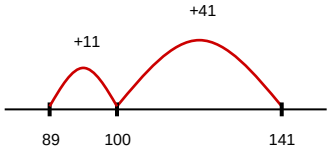
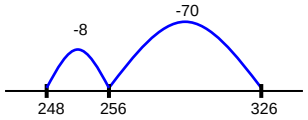
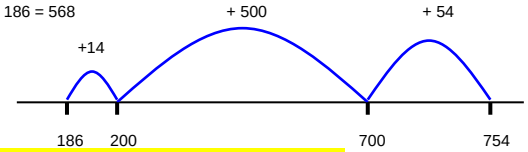
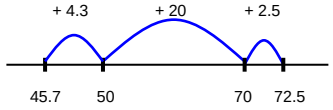
Policy approved by Governors

Date for review

SUBTRACTION

Reco

Estimation and checking

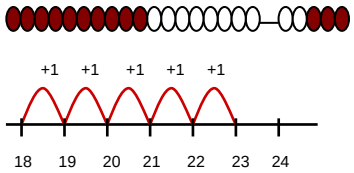
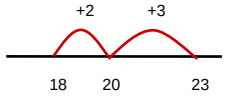
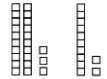
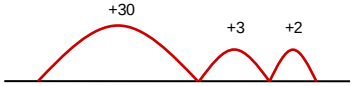
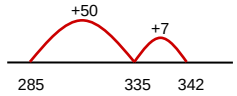
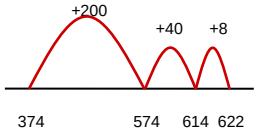
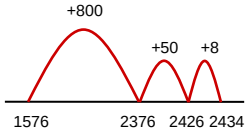
	AGE-RELATED EXPECTATIONS					Rapid Recall	Mental Calculation
YR	Subtraction as 'taking away' from a group	Practical or recorded using ICT (eg digital photos / pictures on IWB)	Pictures / Objects I have five cakes. I eat two of them. How many do I have left?  Might be recorded as: *5 – 2 = 3*	**Symbols** Mum baked 9 biscuits. I ate 5. How many were left? [Might be recorded as: *9 – 5 = 4*] 		1 less (nos up to 10)	(*see recording*)
Y1	Subtraction as 'taking away' and 'difference' (by counting on) U – U TU – U (bridging 10)	Practical or recorded using ICT Pictures / Symbols (*see above*)	**Taking away** – jumps of 1 (modelled using bead strings) 13 – 5 =8  	**Taking away** (efficient jumps) 13 – 5 = 8  No number line: 13 – 3 = 10 10 – 2 = 8	**Counting on** – jumps of 1 (modelled using bead strings) 11 – 8 = 3  	**Counting on** (efficient jumps) Number line / no number line 8 + **2** = 10 10 + **1** = 11	Subtraction facts to 10 1 / 10 less than a number	TU – multiple of 10
Y2	Subtraction as inverse of addition TU – TU (bridging 10s)	Pictures / Symbols 45 – 22 = 23 	Number lines - **taking away** 74 -27 = 47  [Also jumps can be in 10s and 1s]	Partitioning 74 - 27 74 – 20 = 54 54 – 4 = 50 50 – 3 = 47	Number lines – **counting on** 74 -27 = 47  [Also jumps can be in 10s and 1s]	Subtraction facts to at least 10	Difference by counting up TU – U / multiple of 10
Y3	TU – TU HTU – TU HTU – HTU	Number line – **counting on** 141 - 89 = 52  	Number line - **taking away** 326 – 78 = 248  Vertical number line may be used to record calculation	Partitioning 326 - 78 326 - 70 = 256 256 - 6 = 250 250 - 2 = 248	**Decomposition** 272 – 48 = 224 [**Red Alert**] 200 70 2 - 40 8 200 60 12 40 8 200 20 4	Subtraction facts to 20 Differences of multiples of 10	TU – U / TU HTU – HTU (by finding the difference) TU – near multiple of 10 (positive answers)
Y4	HTU – TU HTU – HTU Decimals: money (£7.85 - £3.49)	Number lines – **counting on** 754 – 186 = 568  Vertical number line may be used to record calculation	Partitioning 754 - 186 754 – 100 = 654 654 – 80 = 574 574 – 6 = 568	**Decomposition** 723 – 458 = 265 [**Red Alert**] 700 20 3 400 50 8 600 110 13 400 50 8 200 60 5	**Decomposition** (compact method) 6 13 11 7 4 1 – 3 6 7 3 7 4	Derive differences of pairs of multiples of 10 / 100 / 1000	TU – TU Subtract pairs of multiples of 10 / 100 / 1000 (Th)HTU – (Th)HTU (small difference)
Y5	ThHTU – HTU Decimals up to 2dp (72.5 – 45.7)	Number lines – **counting on** 72.5 – 45.7 = 26.8  	Partitioning 72.5 – 45.7 72.5 – 40 = 32.5 32.5 – 5 = 27.5 27.5 – 0.7 = 26.8	**Decomposition** 2362 – 548 = 1814 [**Red Alert**] 2000 300 60 2 500 40 8 1000 1300 50 12 500 40 8 1000 800 10 4	**Decomposition** (compact method) 72.5 – 45.7 6 7 11 2.15 – 4 5. 7 2 6. 8	Use number facts for mental subtraction 9 – 2 = 7 0.9 – 0.2 = 0.7 0.09 – 0.02 = 0.07	Near multiple of 1000 – Near multiple of 1000 (eg 6070 – 4097) Decimal – Decimal (eg 9.5 – 3.7)
Y6	*Consolidate / extend Y5 including:* Decimal to 3 dp relating to measures	**Recognise when one written method is more efficient.** (***See Y5 methods of recording)*** ➢ There was 2.5 litres in the jug. Stuart drank 385 ml. How much was left? ➢ 18.07 km – 3.243 km				(as above)	Integer / decimal (1dp) – Integer / decimal (1dp)

ADDITION

AGE-RELATED EXPECTATIONS

Recording

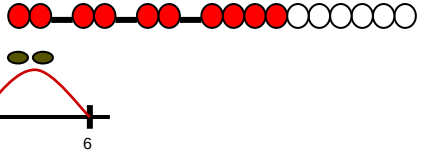
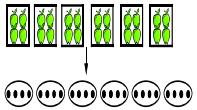
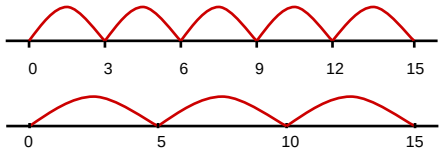
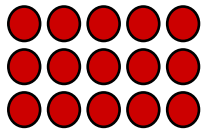
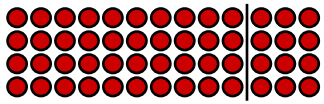
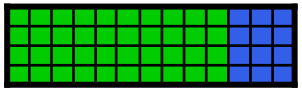
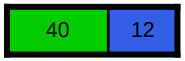
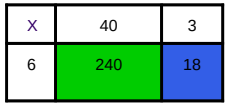
Estimation and checking

YR	Addition as 'combining 2 groups'	Practical / recorded using ICT (eg digital photos / pictures on IWB)	Pictures / Objects I eat 2 cakes and my friend eats 3. How many cakes did we eat altogether? Might be recorded as: *2 + 3 = 5* 		Symbols 8 people are on the bus. 5 more get on at the next stop. How many people are on the bus now?  [Might be recorded as: *8 + 5 = 13*]		1 more (nos up to 10)	(*see recording*)
Y1	Addition as 'counting on' U + U (bridging 10) TU + U (bridging 20)	Practical / recorded using ICT	Pictures / Symbols (*see above*)	Number track / Number line – jumps of 1 (modelled using bead strings) 18 + 5 = 23  	Number line (efficient jumps) 18 + 5  	No number line 18 + 5 18 + 2 = 20 20 + 3 = 23	Pairs to 10 Facts up to 5 1 / 10 more than a number	U + multiple of 10 TU + multiple of 10 +9 (by +10, -1)
Y2	TU + TU (bridging 10s)	Pictures / Symbols 23 + 12 = 35 	Number line (efficient jumps) 35 + 47  [Also jumps can be in 10s and 1s]		No number line 35 + 47 47 + 30 = 77 77 + 3 = 80 80 + 2 = 82	Partitioning 35 + 47 40 + 30 = 70 7 + 5 = 12	Bonds up to 10 Pairs to 20 Pairs to 100 (using multiples of 10)	TU + U / multiple of 10 U + U + U
Y3	TU + TU (bridging 100) HTU + TU (not bridging 1000) HTU + HTU (not bridging 1000)	Number line 57 + 285 = 342  		No number line 57 + 285 285 + 50 = 335 335 + 7 = 342	Partitioning 57 + 285 200 + 0 = 200 80 + 50 = 130 5 + 7 = 12	**Expanded** vertical 336 + 87 = 423 300 and 30 and 6 + 80 and 7 300 and 110 and 13	**Expanded** vertical 336 + 87 13 110 300 423	Bonds to 20 / 100 Pairs of two-digit multiples of 10 Multiples of 50 that total 1000	TU + U / TU TU + near multiple of 10
Y4	HTU + TU HTU + HTU (incl bridging 1000) Decimals: money (£7.85 + £3.49)	Number line 374 + 248 =  		No number line 374 + 248 374 + 200 = 574 574 + 40 = 614 614 + 8 = 622	Partitioning 374 + 248 300 + 200 = 500 70 + 40 = 110 4 + 8 = 12	**Expanded** vertical 374 + 248 12 110 500 622	**Compact** vertical 374 + 248 622 1 1	Bonds to 1000 Derive sums of pairs of multiples of 10 / 100 / 1000 (Multiples of 50 that total 1000) Pairs of fractions to 1	TU + TU (Pairs of multiples of 10 / 100 / 1000) Three, 2-digit multiples of 10 Two, three-digit multiples of 10
Y5	ThHTU + HTU Decimals up to 2dp (23.7 + 48.56)	Number line 1576 + 858 =  		No number line 1576 + 858 1576 + 800 = 2376 2376 + 50 = 2426 2426 + 8 = 2434	Partitioning 1576 + 858 1000 + 0 = 1000 500 + 800 = 1300 70 + 50 = 120 6 + 8 = 14	**Expanded** vertical 23.70 + 48.56 0.06 1.20 11.00 60.00 72.26	**Compact** vertical 23.70 + 48.56 72.26 1 1	(derive) Bonds up to 1 (2dp) (derive) Bonds up to 10 (1dp)	Decimal + Decimal (eg 19.7 + 3.4)
Y6	*Consolidate / extend Y5 including:* Three numbers Decimals up to 3dp (context: measures)	Number line 3.243 km + 18.07 km =		No number line 3.243 km + 18.07 km 18.07 + 3 = 21.07 21.07 + 0.2 = 21.27 21.27 + 0.04 = 21.31 21.31 + 0.003 = 21.313	Partitioning 3.243 km + 18.07 km 3 + 18 = 21 0.2 + 0.0 = 0.2 0.04 + 0.07 = 0.11 0.003 + 0 = 0.003	**Expanded** vertical 3.243 + 18.070 0.003 0.110 0.200 21.000	**Compact** vertical 3.243 + 18.070 21.313 1 1	(as above)	Integer / decimal (1dp) + Integer / decimal (1dp)

MULTIPLICATION **AGE-RELATED**

Recording

EXPECTATIONS

YR	Count repeated groups of the same size (1s / 2s / 5s / 10s) ref *Overview of learning 5*	Practical / recorded using ICT (eg digital photos / pictures on IWB)	Pictures / Objects 3 plates, 2 cakes on each plate: 	Symbols 3 plates, 2 cakes on each plate: 	Counting on in 1s and 2s	(*see recording*)
Y1	Solve (practical) problems that involve combining groups of 2, 5 or 10	Practical / recorded using ICT	Pictures / Symbols There are three sweets in one bag. How many sweets are there in five bags? 	Number tracks / Number line (modelled using bead strings) **2** x 3 **or** 3 x **2** [two, three times] or [three groups of two]  	Count on / back in 1s, 2s, 5s and 10s Doubles of numbers to 10	(*see recording*)
Y2	Multiplication as *repeated addition* and *arrays*	Pictures / Symbols There are four apples in each box. How many apples in six boxes 	Repeated addition 5 x 3 or 3 x 5  [ref *Multiplication facts* ITP]	Arrays 5 x 3 or 3 x 5  Also **14 x 2** as (10 x 2 and 4 x 2)	Count in 2s, 5s and 10s Derive multiples of 2, 5 & 10 Relate to x facts (and derive related ÷ facts) Doubles of numbers to 20	Doubles of TU numbers
Y3	TU x U (eg 13 x 4)	Arrays 13 x 4  10 x 4 = 40 3 x 4 = 12 [ref *Arrays* spreadsheet]	**Expanded** grid method 13 x 4 	**Compact** grid method 13 x 4  	Partitioning (possible use of number line to record steps) 13 x 4 = 52 10 x 4 = 40 3 x 4 = 12	Derive / recall 2, 3, 4, 5, 6 and 10 times tables (Derive related division facts) Recognise multiples of 2, 5 and 10 up to 1000	U / TU x 10 / 100 (describe the effect) Doubles of TU / HTU numbers
Y4	**Record, support and explain:** TU x U (eg 16 x 8; 43 x 6)	Partitioning 43 x 6 (estimate: 40 x 6 = 240) 40 x 6 = 240 3 x 6 = 18	**Compact** grid method 43 x 6  [ref *Multiplication grid* ITP]	**Expanded** vertical 43 x 6 18 (3 x 6) 240 (40 x 6) 258	**Compact** vertical 43 x 6 258 1	Derive / recall facts to 10 x 10 Multiples of numbers to 10 up to the 10th multiple	Numbers up to 1000 x 10 / 100 (whole number answers and understand the effect) Doubles of TU / HTU numbers and multiples of 10 / 100
Y5	**Refine and use efficient methods:** HTU x U TU x TU U.t x U	Grid method **47 × 36** (estimate: 50 × 40 = 2000) × | 40 | 7 30 | 1200 | 210 | 1410 6 | 240 | 42 | 282 1692	**Expanded** vertical **237 × 4** (estimate: 250 × 4 = 1000) 237 × 4 28 120 800 948	**Compact** vertical **4.7 × 8** (estimate: 5 × 8 = 40) 4.7 × 8 37.6 5	Recall quickly facts to 10 x 10 Use facts to multiply pairs of multiples of 10 / 100 Use known facts to derive other facts [Find common multiples of two numbers]	TU x U (eg 12 x 9) TU x TU (eg 16 x 25) Doubles of U.t / 0.th Multiply whole numbers / decimals by 10 / 100 / 1000
Y6	**Use efficient methods:** Integer x U (eg 2307 x 8) Decimal x U (eg 31.6 x 7) TU x TU HTU x TU	Grid method **5.65 × 9** (estimate: 6 × 9 = 54) × | 5 | 0.6 | 0.05 9 | 45 | 5.4 | 0.45 | 50.85 Answer: 5.65 × 9 = 50.85	**Expanded** vertical 2327 x 8 (estimate: 2300 x 10 = 23 000) 2327 x 8 56 160 2400 16000 18616	**Compact** vertical **256 × 18** (estimate: 250 × 20 = 5000) 256 × 18 2560 2048 4608 1 Answer: 256 × 18 = 4608	Use facts up to 10 x 10 to derive facts involving multiples of 10 / 100 (eg 80 x 30) and decimals (eg 0.8 x 7) Derive squares of numbers to 12 x 12 Derive corresponding squares of multiples of 10	TU x U U.t x U Integer x 1000 / 100 / 10 / 0.1 / 0.01

Estimate first

DIVISION

EXPECTATIONS

Recording →

Estimate first ↓

AGE-RELATED	Recording	Rapid Recall	Mental calculation
YR Share objects into equal groups and count how many in each group ref: *Overview of learning 10*	Practical / recorded using ICT (eg digital photos / pictures on IWB) Pictures / Objects 6 cakes shared between 2 6 cakes put into groups of 2 Symbols 6 cakes shared between 2 6 cakes put into groups of 2		(*see recording*)
Y1 Solve (practical) problems that involve sharing into equal groups	Practical / recorded using ICT Pictures / Symbols How many apples in each bowl if I share 12 apples between 3 bowls? Number tracks / Number line (modelled using bead strings) 8 ÷ 2 = 4 6 ÷ 2 = 3 0 2 4 6	Halves of even numbers to 10	(*see recording*)
Y2 Division as sharing and grouping (including remainders) TU ÷ U (where divisor is 2, 5 or 10)	Pictures / Symbols Four eggs fit in a box. How many boxes would you need to pack 20 eggs? Number lines / Arrays 15 ÷ 5 0 5 10 15 [ref *Grouping* ITP] Partitioning 28 ÷ 2 20 ÷ 2 = 10 8 ÷ 2 = 4	Derive / recall ÷ facts for 2, 5 and 10 tables Derive / recall halves of even numbers to 20	TU ÷ 2
Y3 TU ÷ U (where divisor is 2, 3, 4, 5, 6 or 10) Round remainders up / down, depending on the context	Number lines (start from zero) 33 ÷ 5 = 6 r3 0 5 10 15 20 25 30 33 Partitioning (multiples of the divisor) 50 ÷ 4 = 12 r2 10 x 4 = 40 2 x 4 = 8 (48) [ref *Number dials* ITP]	Derive / recall ÷ facts for 2, 3, 4, 5, 6 and 10 tables Derive / recall halves of even numbers to 40	TU / HTU ÷ 2
Y4 **Record, support and explain:** TU ÷U (eg 98 ÷ 6)	Number lines (start from zero) 96 ÷ 6 = 16 10 x 6 6 x 6 0 60 96 Partitioning (multiples of the divisor) 67 ÷ 4 = 16 r3 10 x 4 = 40 6 x 4 = 24 (64) Grouping (vertical layout) 96 ÷ 7 96 −70 (7 × 10) 26 −21 (7 × 3) 5 Answer: 13 R 5	Derive / recall ÷ facts up to the 10 times table	Numbers up to 1000 ÷ 10 / 100 (whole number answers and understand the effect Halves of TU / HTU numbers and multiples of 10 / 100
Y5 **Refine and use efficient methods:** HTU ÷ U	Grouping (expanded) 6)196 − 60 6×10 136 − 60 6×10 76 − 60 6×10 16 − 12 6×2 4 32 Answer: 32R4 'Empty' number line (start from 0) may be used to record calculation strategy Grouping (efficient) 346 ÷ 8 (estimate: 400 ÷ 8 = 50) 8)346 −320 (8×40) 26 −24 (8×3) 2 Answer: 43 R 2 Partitioning 247 ÷ 7 = 35 r2 30 x 7 = 210 5 x 7 = 35 (245) 'Short' division 291 ÷ 3 (estimate: 270 ÷ 3 = 90) 3)290+1 = 3)270+21 (90 ÷ 7) This is then shortened to: 97 3)291	Recall quickly ÷ facts up to 10 times table	Divide using factors of the divisor (eg ÷8 by ÷2 and then ÷4) Divide numbers by 10 / 100 / 1000 (describe the effect) Halves of U.t / 0.th
Y6 **Use efficient methods:** Integer ÷ U (eg 123 ÷7) Decimal ÷ U (eg 27.6 ÷8) HTU ÷ TU	Grouping (efficient) 25.6 ÷ 8 (estimate: 24 ÷ 8 = 3) 8)25.6 −24.0 (8×3.0) 1.6 −1.6 (8×0.2) 0 Answer: 25.6 ÷ 8 = 3.2 'Empty' number line may still be used 'Short' division 43 .4 ÷ 7 (estimate: 42 ÷ 7 = 6) 6 .2 7 43 .'4 Partitioning 43.4 ÷ 7 = 6.2 6 x 7 = 42 0.2 x 7 = 1.4 (43.4) 'Long' division 560 ÷ 24 (estimate: 550 ÷ 25 = 22) 23 24 560 −480 80 −72 8 Answer: 23 R 8	Derive ÷ facts involving multiples of 10 / 100 (eg 240 ÷ 30) and decimals (eg 4.8 ÷ 6)	Divide using factors of the divisor (eg ÷15 by ÷5 and then ÷3) TU ÷ U U.t ÷ U Integer ÷ 1000 / 100 / 10