St Mary's CE (Aided) Primary School
A Christ-centred school with a child-centred curriculum

Maths Policy
with
Calculation Progression

Updated: September 2020

Up for review: September 2021

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Our Vision

St Mary's CE (Aided) Primary School is a 'Christ-centred school with a child-centred curriculum' where wisdom and love guide and influence learning and teaching for our whole community. We treasure each child and enable them to flourish, using their God-given potential and establishing a secure foundation for them to thrive in a rapidly changing world.

Intent

We focus on children developing **fluency, reasoning** and **problem-solving** skills across all units of their Maths learning and to make rich connections to other curriculum areas (Science, Computing and topic work).

Mathematical skills and knowledge should be delivered, explored and revisited through conscious decision-making and an awareness of learning and progress needs and abilities. We will support children who are not sufficiently fluent with earlier materials to consolidate their understanding and will offer rich opportunities for reasoning and problem-solving to challenge learners who grasp concepts rapidly.

Children should develop resilience and self-confidence in applying their learning skills where wisdom and love guide and influence teaching and learning. The collaboration between peers and the teacher should build secure foundations and drive the learning, informing the content and strategies to maximise the progress and learning opportunities to enable each child to flourish.

Implementation

Long Term Plans

We currently use the White Rose Maths Hubs long term plans - https://whiterosemaths.com/resources/schemes-oflearning/primary-sols/

These plans show the various aspects of the Maths curriculum that are covered by each year group in line with the National Curriculum expectations. These help teachers to ensure that all areas of the Maths curriculum are covered for the relevant year group.

They are used as a guide, together with teacher assessments, observations and analysis of data to inform planning so teachers adapt these plans to meet the needs of the children in each class, which is recorded in weekly planning.

In addition, the DfE guidance can be used to cross-reference learning progression and examples - https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/897806/Maths_guidance_KS_1_and_2.pdf

Weekly planning

When planning, teachers first use data from White Rose end of block assessments - which we use as a pre-test before a unit - to plan with a mastery approach in mind where they are expected to take the following mastery strategies into account:

- *small steps building foundations for each stage of learning.*
- *a focus of key vocabulary for each unit and lesson, displayed on working walls in the classrooms.*
- *varied fluency (additional to the suggestions of the Scheme of Work (SOW)).*
- *ensuring the inclusion of all learners, providing support and intervention (where needed) for those with additional needs.*
- *acceleration of some students with the varied fluency to enable enough challenge.*
- *opportunities for reasoning and problem-solving for ALL children.*
- *opportunities to explore objectives at 'greater depth'.*
- *live marking and feedback throughout the lesson with opportunities for peer and self-marking to move learning on quickly and pinpoint children that need further support within the lesson.*

Differentiation

Support: Teachers may refer to the previous year's long-term plan for those children who have additional needs and are not working within the age-related expectations for their year group.

Challenge: A 'mastery' approach has been adopted and implemented for the planning, delivery and engagement with Mathematics. The need for children to fully

embed their maths learning and build on their prior learning with confidence lead to the adoption of this approach to enable teachers and learners to spend the time needed on each unit of maths as is needed for the children to feel confident and challenged.

Weekly lesson expectations

- X5 lessons a week

In EYFS and KS1 – lessons max of 1hr including Mental Starter.
In KS2, also 1hr, although opportunities for problem solving and deeper learning can extend to 1hr15 mins max.
Occasionally, lessons can span across a breaktime/lunchtime.

- X1 lesson a fortnight **must** be problem-solving and reasoning *(refer to Problem Solving & Reasoning section below)*
- X1 lesson a week could be times table focused *(optional if class are fluent or have gaps in main unit delivered so this is made a priority)*
- x1 TTRockstars for max 15mins

Follow up set as part of whole school weekly homework Can be on iPads during a times tables session or an extra 15 mins added to a computing session.

- Starters for lessons should have a Mental Maths recall focus
- Minimum x2 a week, early morning work must be Maths focused

Either times tables or fluency focus
Alternatively, looking back at previous learning (see Flashback 4 on WR & Fluent in Five on Third Space Learning).

CPA

Across the whole school we use the Concrete, Pictorial and Abstract (CPA) approach for introducing, exploring, applying and then explaining mathematical concepts.

We use this approach to embed and systematically build on children's learning. We chose to implement and use the White Rose Maths Scheme of Work to timetable units of work, exploring them progressively, drawing on resources and visual representations from additional sources ,such as NCETM spine documents, NRICH and Rising Stars to link vocabulary to problem-solving and reasoning for various units.

Bar Modelling

Alongside the CPA approach, we use Bar Modelling to help with the visualisation of the abstract concepts and for problem-solving and reasoning.

Resources

The resources that children use in lessons should build children' independence with their learning. They need to have access to a choice of resources that they, themselves can choose from.

Resources are an integral part of Maths learning from Reception to Year 6 and allow the children to show their knowledge and understanding in each strand.

Children should have access to the following:

- Numicon
- Bead Strings
- Tens Frames
- Base Ten/Diennes
- Place Value counters
- Multi-link
- Double sided counters
- Part Whole frames
- Blank number lines (0-10, 0-50, 0-100, 0-1000)
- Place Value grids
- Interactive WR Smart board resources

Times Tables

In KS1 and KS2 teachers are expected to teach explicit times tables sessions providing opportunities to use TTRockstars to promote speed and confidence in their times tables recall. In KS1 we have introduced NumBots to encourage fluency with counting, ordering and other number facts.

Times Tables progression

- *EYFS to use Numbots for number facts from Spring 1*
- *Y1 to use Numbots until Spring 1 and then introduce TT Rockstars for 2, 5, 10*
- *Y2 to focus on 3, 4, 6 and 8*
- *Y3 to move on to 7, 9, 11 and 12*
- *Y4 must be a consolidating year in preparation for the Multiplication Test in Spring 2*
- *Y5 and Y6 focusing on speed and fluency of all times tables with division facts and application to all learning.*

Problem-solving and reasoning

Both problem-solving and reasoning strands are referred to in the WR units of learning so plans must contain bi-weekly cross-curricular and real-life opportunities for children to develop these skills.

A good starting place for these are:

- the use of NRich resources https://nrich.maths.org/12779
- the NCETM mastery resources (follow link for complete year group activity booklets) https://www.ncetm.org.uk/classroom-resources/assessment-materials-primary/

The skills that need to be taught and considered when teaching and planning for problem-solving opportunities are:

- Visualising
- Working backwards
- Reasoning logically
- Conjecturing
- Working systematically
- Looking for patterns
- Trial and improvement

Assessment

Each unit of work will be assessed at the start and the end of each WRM unit, using the end of block assessments so that progression can be monitored and used to inform planning and teaching.

https://whiterosemaths.com/resources/assessment/primary-assessment/

Throughout the academic year, teachers will complete end-of-term assessments using the PUMA tests to provide indicators of individual termly and annual progress. These assessments are completed in October, March and June with KS1 and KS2 SATS taking place in May.

Teachers complete a termly times tables assessment and then carry out weekly or bi-weekly class assessments to monitor individual's progress and plan next steps for their learners. A test is carried out twice each term.

Working Walls

Each class should have an interactive Maths Working Wall near to the front of the class to refer to and use as an integral part of the learning.

Working Wall Expectations

- WWs must reference and reflect CURRENT work.
- Show individual steps being covered in particular subjects or topics.
- Display a vocabulary section to go alongside the CURRENT unit of work.
- Evidence the entire learning journey or process – either as the unit progresses or as a complete process with reference made to each step and the work on the board to which it refers.
- Build their use into your lesson planning – either in the warm up or initial lesson introductions or as part of the plenary session. This not only brings the wall to the attention of the children but they actively get to understand how the wall works and more importantly evolves.
- Actively build in the use of the working wall so they have a use and purpose in the teaching programme and learning environment.
- Reinforce and consolidate knowledge & understanding through practical applications to skills.

Working Wall Non-Negotiables

- Vocabulary - children must be completely immersed in the correct terminology.

  At the beginning of each week/unit, it is good practice to discuss the vocabulary for the week on a Monday considering what they already know and introduce any new words as you progress through the unit (can be done as a mind map - then printed off or hand-written). Another good way to show new vocabulary is to have the words on small slips of paper and then displayed around the board for reference. http://www.lindfieldprimaryacademy.org.uk/docs/Mathematical%20Vocabulary%20ePDF.pdf

- Example WAGOLLs (What A Good One Looks Like)

  It is so important that we remember that the purpose of a working wall is to facilitate learning rather than simply to display children's work. As you work through modelling of Maths methods, attach these to your working wall/board and add children's work to show how they have used this themselves. You could even create a class examples book as reference for future learning.

- Reasoning and problem-solving sentence starters and generalisations - children must have sentence starters to support their thinking when problem-solving and discussion when reasoning.

  These should be displayed permanently and then referred to as part of the vocabulary and language for teaching input and children's learning. These should be modelled and praised when used in the correct contexts when children show they are using them successfully.

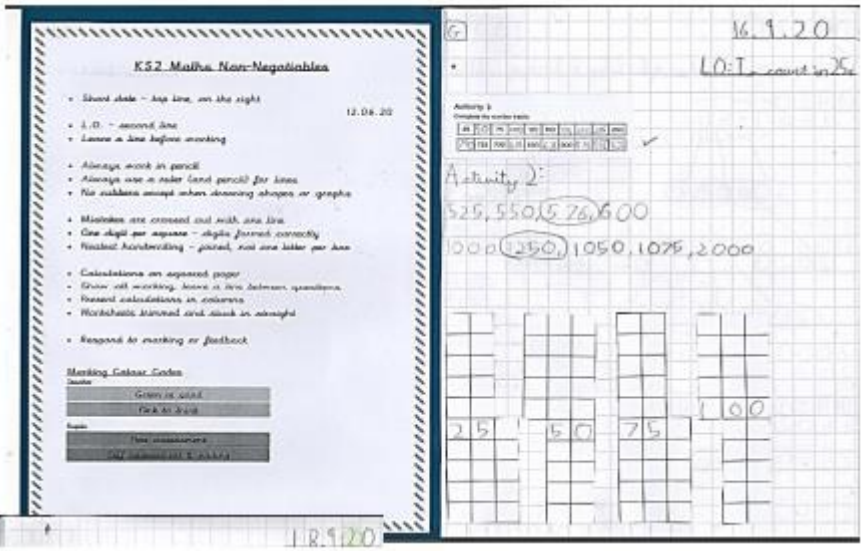
  Generalisation example: If I know that when I add 1000, only the Thousand digit changes, I know that when I subtract 1000, only the Thousand digit changes. *See

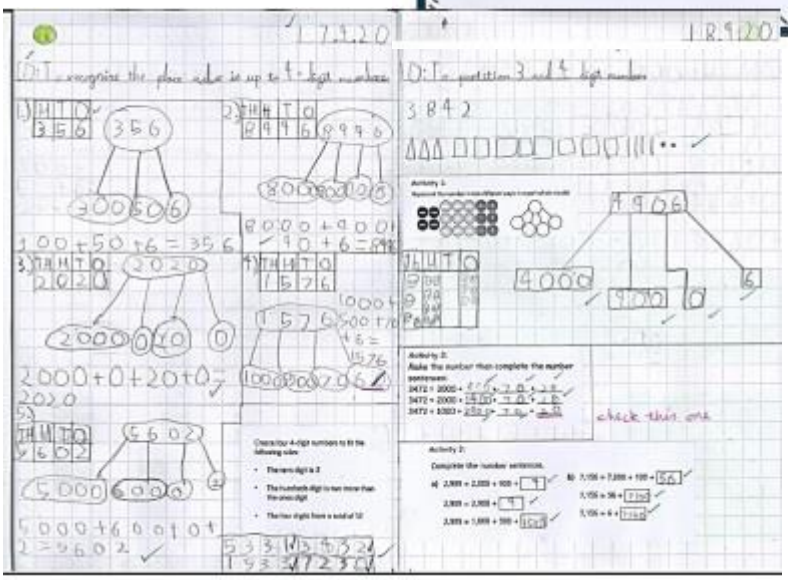
document *Working Wall documents for display* for titles and sentence starters for Maths Working Walls.

Book non-negotiables

Refer to the whole school Non-negotiables for KS1 and KS2 exercise books.

KS2 example: Non-negotiables should be carefully followed, plus extra note to be taken with layout of INDIVIDUAL ACTIVITIES that children work through within the progression in each lesson.





With this final example, I would like to highlight the layout of the individual activities that the children complete.

They must be **individual** with space so children can use their books to present and show their methods and working out, as well as space to record their reasoning and justifications if needed.

If a child is writing directly on to an activity, the piece of paper **MUST** be big enough for them to do so.

Children must have more opportunities than not, to record their Maths on the square paper in books - to show their presentation and thinking as well as develop their place value accuracy.

Impact

The impact of our Mathematics curriculum is that children understand the relevance of what they are learning in relation to real world concepts.

We have fostered an environment where Maths is fun and it is OK to be 'wrong' because the journey to finding an answer is most important. Our children have a growth mindset and they make measurable progression against their own targets.

Our Maths books are packed with a range of activities showing evidence of fluency, reasoning and problem-solving. Our feedback and interventions are supporting children to strive to be the best mathematicians they can be ensuring a greater proportion of children are on track.

Children 'have a go' and choose the equipment they need to help them to learn along with the strategies they think are best suited to each problem. Children are developing skills in being articulate and are able to reason well verbally, pictorially and in written form.

Our school standards are high, we moderate our books both internally and externally and children are achieving well.

Attainment and Progress

Attainment

- Whole school target of 85% ARE (Age-Related Expectation) and 20% GD (Greater Depth)

At the end of KS1 and KS2:

- The % of pupils working at ARE within each year group will be at least in line with national averages.
- The % of pupils working at GD within each year group will be at least in line with national averages

Progress

- There will be no significant gaps in the progress of different groups of pupils (e.g. disadvantaged vs non-disadvantaged)
- Pupils will secure at least 6 points progress each year, and secure GD at KS2 if GD was achieved at KS1.

Appendices

Appendix 1 - Calculation progression

Appendix 2 - Planning

Appendix 3 - Web resources

Appendix 4 - WR grids for in-class resources

Appendix 5 - Mental Maths - Spring 1 focus for school implementation

Appendix 1 – Calculation progression

Addition

Step 1

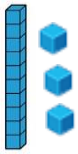
Concrete

Pictorial

Abstract

3 + 4 = 7

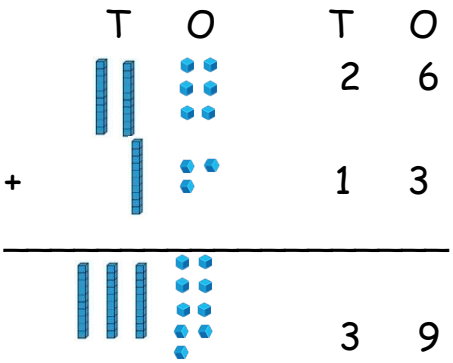
Step 2



6 + 7 = 13

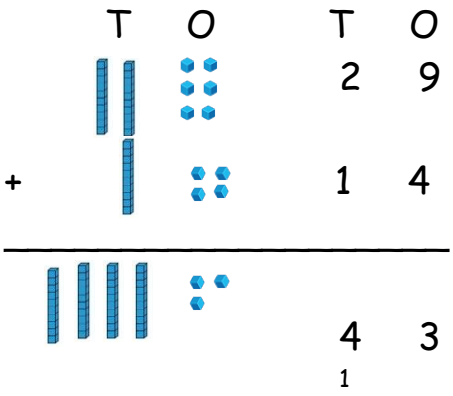
Use base ten to show how we add across the 10s bridge. Exchanging ones for a 10.

Step 3a



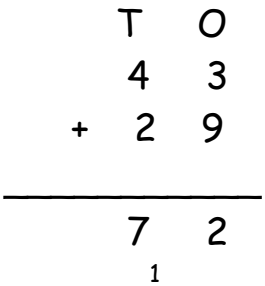
Without regrouping (lots of practice)
*Use laminated sheets with this on to support
*Use jottings to support this too

Step 3b – exchange with diennes



With regrouping

Step 4 Just column method increasing in number of digits.



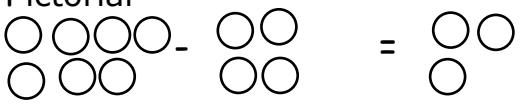
Without regrouping (lots of practice)
With regrouping

*Introduce decimals in context as early as possible with money and/or when children are ready for it.
*Across ALL year groups, support children with concrete-pictorial-abstract

Step 1

Concrete

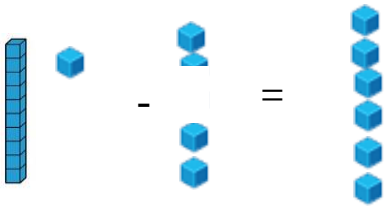
Pictorial



Abstract

7 - 4 = 3

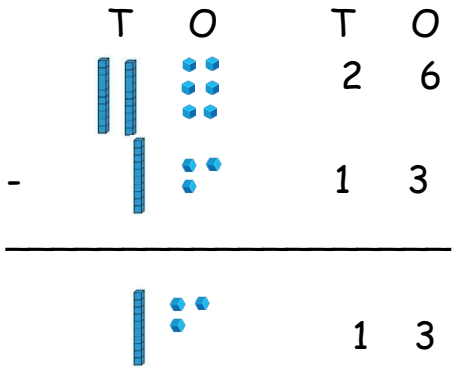
Step 2



11 - 5 = 6

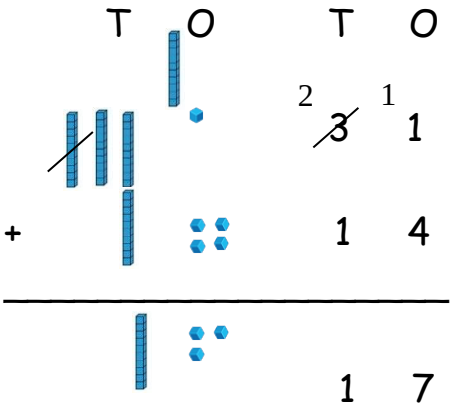
Use base ten to show how we add across the 10s bridge. Exchanging tens for ones.

Step 3a



Without regrouping (lots of practice)
*Use laminated sheets with this on to support
*Use jottings to support this too

Step 3b – regrouping with diennes



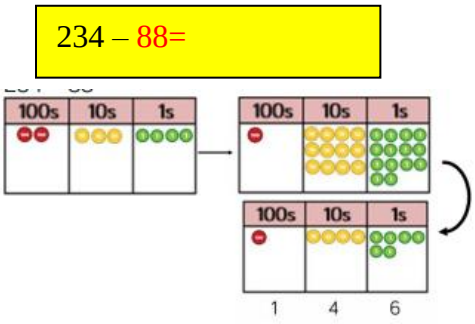
*change the tens diennes for ten ones

Step 4 Column method increasing in number of digits. Continue to use diennes and counters for place value.

H T O

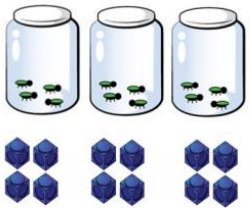
1 1 2 1
2 3 4
- 8 8

1 4 6



Without regrouping (lots of practice)
With regrouping

Step 1



There are _____ **equal groups of** _____

Abstract
4 + 4 + 4 =
Then
3 x 4 =

Step 2

Concrete

5 x 2 =

Pictorial using arrays

Abstract
5 x 2 = 10 and knowing that 2 x 5 = 10

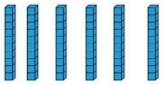
Step 3

21 x 3 =

And:
Understanding what happens to a single and two-digit number when multiplying by 10 and 100
e.g. 2 x 10 = 20
6 x 10 = 60
13 x 10 = 130
9 x 100 = 900
25 x 100 = 2500

Step 4

Grid method with dienes and counters

x	20	1
3		

Grid method alongside dienes and counters

x	20	1
3	60	3

Notes:
*Increase number of digits
*Start from Ones using this method

Step 5

Show both of these methods alongside each other.

123 x 2 =

x	100	20	3
2	200	40	6

```
  H  T  O
  1  2  3
X        2
---------
        6
     4  0
  2  0  0
---------
  2  4  6
```

*include crossing the tens and hundreds barrier

Step 6

123 x 6 =

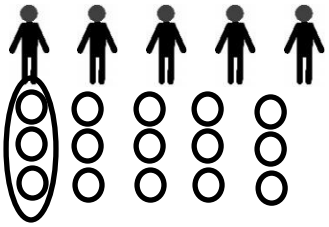
```
  H  T  O
  1  2  3
X        6
---------
  7  3  8
  1  1
```

Notes:
*Support children using **dienes** and **place value counters** for this abstract approach.
*Increase number of digits
*Start from Ones using this method

Step 1

Sharing using concrete resources and images

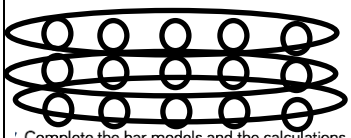
15 ÷ 5 = 3



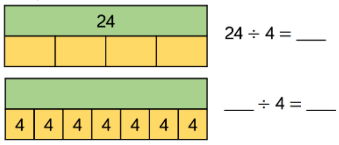
Step 2

Grouping using concrete resources and images

15 ÷ 5 = 3



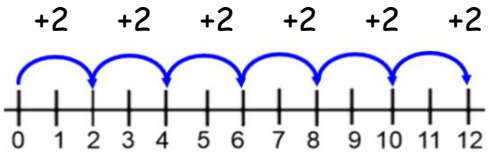
Complete the bar models and the calculations.



Step 3

Number line and **Grouping using times tables facts** (2s, 3s, 4s, 5s, 8s and 10s)

12 ÷ 2 = 6



Step 4

Using **times tables facts** and their **inverse**

35 ÷ 5 = ?

I know that 7 x 5 = 35

Therefore 35 ÷ 5 = 7

Step 5

Short division without, <u>then</u> with remainders

98 ÷ 7 becomes

$$7\overline{)98} = 14$$

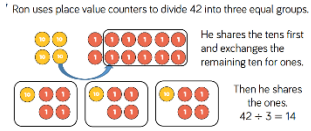
Answer: 14

432 ÷ 5 becomes

$$5\overline{)432} = 86 \text{ r } 2$$

Answer: 86 remainder 2

*Use short division with concrete and pictorial support.



Step 5b

Showing how to change the remainder to a decimal point when children are ready for it.

731 ÷ 5 = 146.2

$$5\overline{)731.0} = 146.2$$

Step 6

Long division

Used for dividing larger numbers by 2-digit numbers. Using 'chunking'.

*Start with multiples of 10 then 100 to help with the process.

Method a)

		3	6	
12	4	3	2	
–	3	6	0	(×10)
		7	2	
–		7	2	(×6)
			0	

Multiples to help
12 × 1 = 12
12 × 2 = 24
12 × 5 = 60
12 × 10 = 120

Method b)

	0	3	6
12	4	3	2
–	3	6	↓
		7	2
–		7	2
			0

	0	4	8	9	
15	7	3	3	5	
–	6	0	0	0	(×400)
	1	3	3	5	
–	1	2	0	0	(×80)
		1	3	5	
–		1	3	5	(×9)
				0	

*Larger digits using chunking.

Showing how to change a remainder to a fraction or known decimal: 87 ÷ 4 = 21 r 3 or 21 ¾ or 21.75

Weekly Maths Plan Place Value Unit
USA Class Year 4 Autumn Term Week 2

Main Outcomes: Place value in 3 and 4-digit numbers. (Some Year 3 and Year 4 focus)

Objectives	**Vocabulary**	**Support**
• Count in multiples of 25. • Recognise the place value of each digit in a four-digit number (thousands, hundreds, ten and ones). • Partition 3 and 4-digit numbers in different ways.	number ones tens, hundreds digit one-, two- or three-digit number place, place value stands for, represents intervals count divide equal	TC (2W), EM (2S) DMP (2B+) 3B RC, FW, AD, RW
		Challenge 3S FG, JW 3W+ SE, LE, JNP, FP,
		Pupil Premium MP (3W) FP (3W+) RC (3B) DMP (2B+) MG (3B+) TC (2W)

	WHOLE CLASS TEACHING and LEARNING		INDEPENDENT ACTIVITIES Include support, challenge and adult grouping		RESOURCES VOCABULARY
	LEARNING LO / SUCC CRIT / KEY QS	TEACHING INPUT AND PLENARY	EXPECTED SUPPORT	GREATER DEPTH	
Wednesday 11:45-12:15 (30 minute session after PPA)	LO to count in 25s. SUCCESS CRITERIA I can divide a 100 square in to 25s. I can count in intervals of 100. I can count in intervals of 50.	**STARTER** Oral counting in 100s using a blank number line on IWB. Oral counting in 50s using a blank number line on IWB. Can we count as easily in 25s? How could we do this? **MAIN** Show a 100 square – how many tens? How many 1s? how many 20s? Now divide the square into 25s. 2 tens and 5ones. Get children to draw around each section then cut out on paper version. **Mini Plenary**	Children to make their own 25s. Complete the missing number lines then stick in their made 25s. Activity 1: Complete the number tracks Activity 2: Circle the mistake in each sequence. 2, 275 2,300 2,325 2,350 2,400, ... 1,000 975 925 900 875 ...		**RESOURCES** paper 100 squares for each child **VOCABULARY** count intervals divide one hundred fifty twenty five

25		75		125	150					250
	725	700		650		600				

	I can count in intervals of 25s. I can continue a sequence. I can spot mistakes. KEY Qs What digit do multiples of 25 end in? What's the same and what's different about counting in 25s and 50s?	Check throughout the lesson to ensure children are counting with accuracy. If children come up with their own sequence, share with the class.	Children to have help when counting with the number lines and filling in the missing numbers.	Make up own sequence with a mistake to spot. Share with the class. SE, LE, FG, JW, JNP, **FP**	
Thursday 9:20-10:30	LO to recognize the place value in up to 4-digit numbers. **SUCCESS CRITERIA**	**STARTER** Have a mixture of PV counters, diennes and whiteboards on the tables. Ask children in pairs or 3s to make the following numbers using the resources: 300 237 506 1506 2562 4305	Children to choose 3 3-digit numbers to represent in the 3 different ways. 356 207 829 655 999 Then move on to 3 4-digit numbers to represent in the 3 different ways. 5602 2359 1576 2020 8996 TA to support: IF, JL, AD, EM, MP		**RESOURCES** PV charts and counters. diennes/base ten place value counters

	I can make a 3 digit number using a resource or pictorially. I can add 10 more, 100 more and 1000 more to a number and explain what is happening. **KEY QS** What is the value of _____ digit in this number? If ten ones make ten, how many tens make one hundred? How many hundreds make 1000?	Discuss what happens with the 0 place value holder. **MAIN** Now show the part whole frame, pv columns and addition sentence to show what we know about the numbers in the starter. **MINI PLENARY** Throughout the lesson, share examples and go through answers with children self-marking where possible.  Using each digit card, which numbers can you make? Use the place value grid to help. Finish with the problem as a whole class. Lots of discussion and talking through then recording in books. Compare your answers with a partner.	**SUPPORT** Start with 2-digit numbers, then move on to 3. Make sure they are using the resources to support them. T to support TC, DMP	**EXTEND** How many different ways can you make these numbers? e.g. 452 (3 hundreds 15tens 2ones) • 321 • 4653 Create four 4-digit numbers to fit the following rules: • The tens digit is 3 • The hundreds digit is two more than the ones digit • The four digits have a total of 12	place value grids **VOCABULARY** digit number ones tens hundreds thousands value 3-digit 4-digit **ten ones = ten** **ten tens = one hundred** **ten hundreds = one thousand**

Hundreds | Tens | Ones

Friday 9:20 – 10:30

LO to partition 3 and 4 digit numbers in different ways.

SUCCESS CRITERIA

I can use a resource or drawing to make a 3 digit and 4 digit number.
I can partition a 3 digit number into 3 parts.
I can partition a 4 digit number in to 4 parts.
I can find different ways to partition 3 and 4 digit numbers.

STARTER

Mo is drawing numbers. Can you complete them for him?

246 ☐☐//// 390 ☐/// 706 ☐☐⁘ **then**

What is the value of the underlined digit in each number?

6,9<u>8</u>3 | <u>9</u>,021 | <u>7</u>89 | 6,57<u>0</u>

Represent each of the numbers on a place value grid.

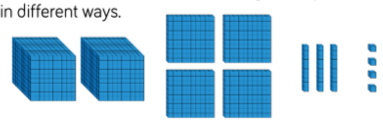
MAIN

Have the WR interactive WB resource ready to model this (staff shared – maths – WR interactive resources)
Ask children to have or draw: 3 hundreds 7 tens and 5 ones.
Ask them to partition these using + sentences.
e.g. 300 + 70 + 5

Can they now complete the following:
200 + _____ + 5
100 + 250 + _____ (how many tens and ones do we need to make the original number?)

Share the image and make together.

Move the Base 10 around and make exchanges to represent the number in different ways.



2000 + 400 + ☐ + 4
1000 + ☐ + ☐ + 14
1000 + 1300 + ☐ + ☐

What is happening in each of the sentences below? Show by drawing round and moving resources.

Children to work through the following activities. Stick each sheet in individually then complete the sentences – model this.

TA to check on MP, FP, IF, MG

Activity 1:

Represent the number in two different ways in a part-whole model.

Activity 2:

Make the number then complete the number sentences:
3472 = 3000 + _____ + _____ + _____
3472 = 2000 + _____ + _____ + _____
3472 = 1000 + _____ + _____ + _____

Activity 3:

Complete the number sentences.

a) 2,909 = 2,000 + 900 + ☐
2,909 = 2,900 + ☐
2,909 = 1,000 + 900 + ☐

b) 7,156 = 7,000 + 100 + ☐
7,156 = 56 + ☐
7,156 = 6 + ☐

Activity 4:

Alex has 4 digit cards.

1	2	7	9

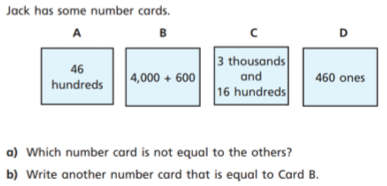
She makes a 4-digit number.
Her number has 7 thousands and 1 ten.
What numbers could Alex have made?

RESOURCES

diennes/base ten
place value counters
place value grids

VOCABULARY

partition
digit
thousand
hundred
ten
one
value
diennes/base ten
place value

	KEY QS What number is being represented? If we have ten hundreds, can we exchange them for something?	**MINI PLENARY** Some place value counters are hidden. The total is six thousand, four hundred and thirty two. Which place value counters could be hidden? Think of at least three solutions. 	**SUPPORT** With T: TC, DMP, RC Work through the same activities but different questions Activity 1 as above. Activity 2: 345 = 300 + _____ + _____ 345 = 200 + _____ + _____ 345 = 100 + _____ + _____ 423 = 400 + _____ + _____ 423 = 300 + _____ + _____ 423 = 200 + _____ + _____ I 326 = 300 + _____ + _____ 326 = 200 + _____ + _____ 326 = 100 + _____ + _____ Activity 3: I have 3 digit cards. **5 6 4** I make a 3 digit number. My number has 4 tens. What possible numbers could I make?	**EXTEND** TA to talk through the question with the children and get them to share their reasoning. Children need to write what each number is equal to and then work through a and b below.  a) Which number card is not equal to the others? b) Write another number card that is equal to Card B. SE, LE, FG, JW, JNP, **FP**	

Appendix 3 - Web resources

We use TT Rockstars in school and children can access this at home by going to:

https://ttrockstars.com/

https://play.numbots.com/

Below are some useful links to websites that will also help children at home with their learning:

Games for Times Tables Recall:

http://www.multiplication.com/games/all-games

3,4,5,6,7,and 8 Times Table Games:

http://www.mad4maths.com/multiplication_table_math_games/

Great site for practising recall:

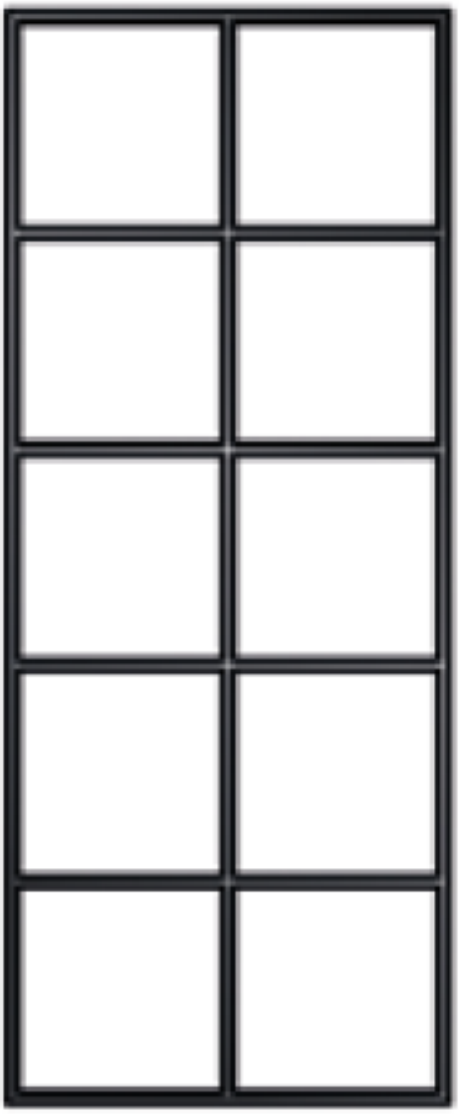
http://www.topmarks.co.uk/maths-games/hit-the-button

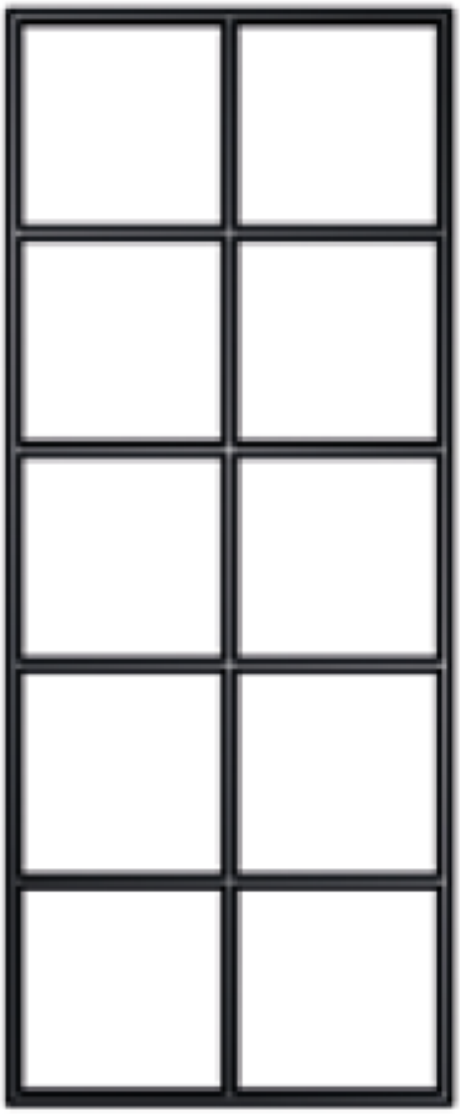
Hit the button is an excellent resource!!

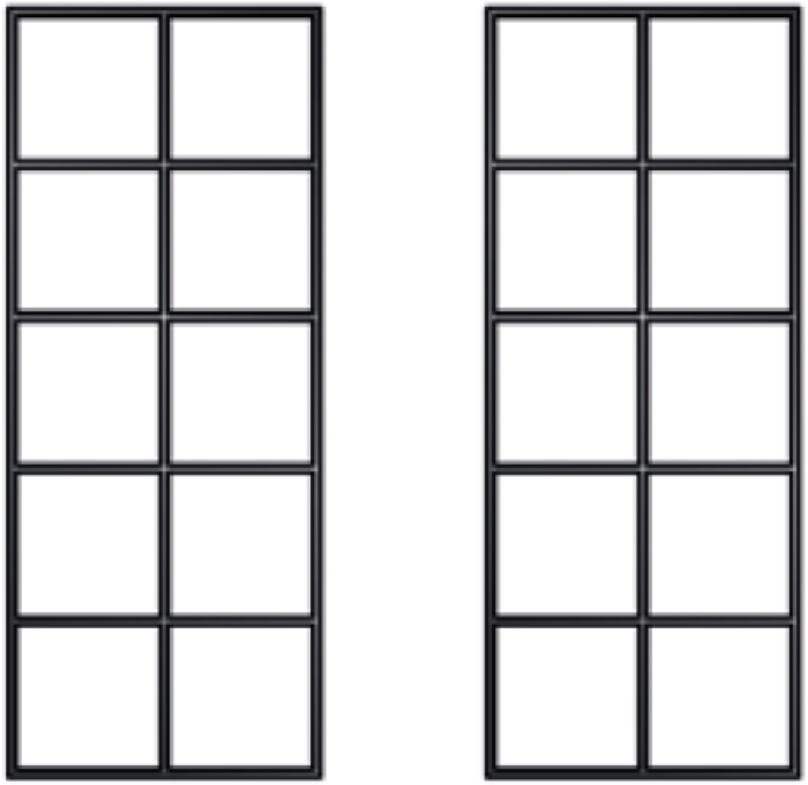
Lots of tables fun:

http://resources.woodlands-junior.kent.sch.uk/maths/timestable/index.html

Appendix 4 – WR grids for in-class resources





Model	Calculations
	

Model	Calculations

Tens	Ones

Hundreds	Tens	Ones

Thousands	Hundreds	Tens	Ones

Millions			Thousands			Ones		
H	T	O	H	T	O	H	T	O

Appendix 5 - Mental Maths - Spring 1 focus for school implementation

Mental Maths:

Children need to have daily opportunities to practise their Mental Maths skills, drawing on previous learning and securing their number facts. We use the Flashback in 4 slides 5 times a week for 15 minutes to practise these and talk through and discuss the different and most efficient strategies. (e.g. X3 sessions after lunch, X2 session EMW)

KS1 Key Instant Recall Facts and Times tables

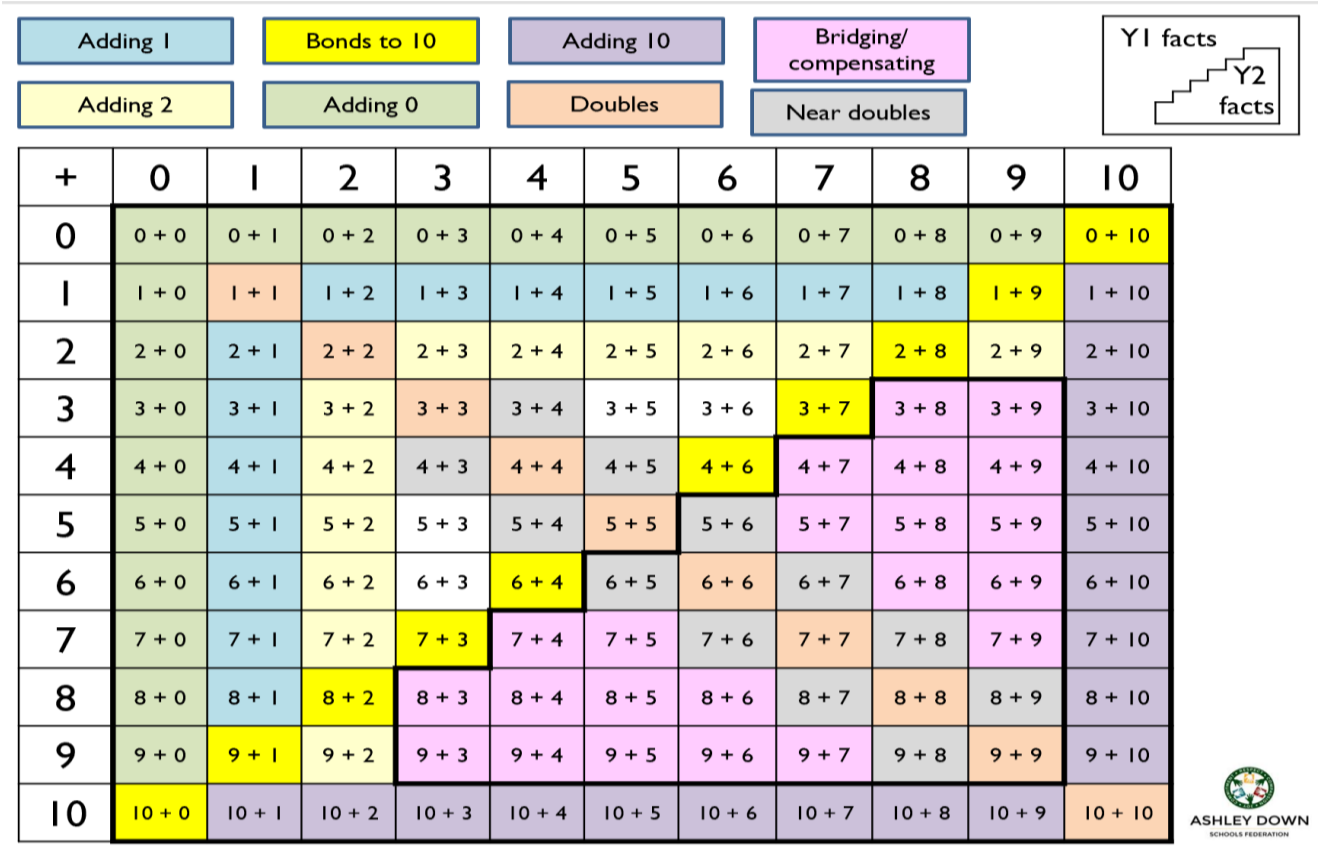
Children should be exposed to key instant recall facts on a daily basis, during transitions, when lining up, as starters and plenaries to lessons and as early morning activities or settling activities after lunch.

Children will need to be assessed on these when they enter KS1 and then a record kept of those skills in which they are confident and those that need practice. Teachers should explicitly teach these using flashcards, online activities and concrete resources; tens frames and double sided counters, objects, number lines and bead strings.

The following model from NCETM can be used for teaching and learning progression across Year 1 and 2 and for aiding children with interventions for recall of these facts.

https://www.ncetm.org.uk/resources/50006

http://www.nottinghamschools.org.uk/media/1170651/number-fact-fluency-programme.pdf



+	0	1	2	3	4	5	6	7	8	9	10
0	0 + 0	0 + 1	0 + 2	0 + 3	0 + 4	0 + 5	0 + 6	0 + 7	0 + 8	0 + 9	0 + 10
1	1 + 0	1 + 1	1 + 2	1 + 3	1 + 4	1 + 5	1 + 6	1 + 7	1 + 8	1 + 9	1 + 10
2	2 + 0	2 + 1	2 + 2	2 + 3	2 + 4	2 + 5	2 + 6	2 + 7	2 + 8	2 + 9	2 + 10
3	3 + 0	3 + 1	3 + 2	3 + 3	3 + 4	3 + 5	3 + 6	3 + 7	3 + 8	3 + 9	3 + 10
4	4 + 0	4 + 1	4 + 2	4 + 3	4 + 4	4 + 5	4 + 6	4 + 7	4 + 8	4 + 9	4 + 10
5	5 + 0	5 + 1	5 + 2	5 + 3	5 + 4	5 + 5	5 + 6	5 + 7	5 + 8	5 + 9	5 + 10
6	6 + 0	6 + 1	6 + 2	6 + 3	6 + 4	6 + 5	6 + 6	6 + 7	6 + 8	6 + 9	6 + 10
7	7 + 0	7 + 1	7 + 2	7 + 3	7 + 4	7 + 5	7 + 6	7 + 7	7 + 8	7 + 9	7 + 10
8	8 + 0	8 + 1	8 + 2	8 + 3	8 + 4	8 + 5	8 + 6	8 + 7	8 + 8	8 + 9	8 + 10
9	9 + 0	9 + 1	9 + 2	9 + 3	9 + 4	9 + 5	9 + 6	9 + 7	9 + 8	9 + 9	9 + 10
10	10 + 0	10 + 1	10 + 2	10 + 3	10 + 4	10 + 5	10 + 6	10 + 7	10 + 8	10 + 9	10 + 10

ASHLEY DOWN SCHOOLS FEDERATION

A suggested progression for teaching addition facts

Group A: Year 1 (Within 10)

1. Adding 1 (e.g. 7 + 1 *and* 1 + 7)
2. Doubles of numbers to 5 (e.g. 4 + 4)
3. Adding 2 (e.g. 4 + 2 *and* 2 + 4)
4. Number bonds to 10 (e.g. 8 + 2 *and* 2 + 8)
5. Adding 10 to a number (e.g. 5 + 10 *and* 10 + 5)
6. Adding 0 to a number (e.g. 3 + 0 *and* 0 + 3)
7. Near doubles (e.g. 3 + 4 *and* 4 + 3)
8. The ones without a family! 5 + 3, 3 + 5, 6 + 3, 3 + 6

Group B: Year 2 (Bridging 10)

9. Doubles of numbers to 10 (e.g. 7 + 7)
10. Near doubles (e.g. 5 + 6 *and* 6 +5)
11. Bridging (e.g. 8 + 4 *and* 4 + 8)
12. Compensating

Can be used somewhat interchangeably

Alongside

Partitioning 2, 3, 4, 5, 6 and 10

Partitioning 7, 8 and 9

Partitioning 11 – 20 into single digit addends

ASHLEY DOWN SCHOOLS FEDERATION

Addition facts: cut these up for pupil interviewing

0 + 10	1 + 10	2 + 10	3 + 10	4 + 10	5 + 10	6 + 10	7 + 10	8 + 10	9 + 10	10 + 10
0 + 9	1 + 9	2 + 9	3 + 9	4 + 9	5 + 9	6 + 9	7 + 9	8 + 9	9 + 9	10 + 9
0 + 8	1 + 8	2 + 8	3 + 8	4 + 8	5 + 8	6 + 8	7 + 8	8 + 8	9 + 8	10 + 8
0 + 7	1 + 7	2 + 7	3 + 7	4 + 7	5 + 7	6 + 7	7 + 7	8 + 7	9 + 7	10 + 7
0 + 6	1 + 6	2 + 6	3 + 6	4 + 6	5 + 6	6 + 6	7 + 6	8 + 6	9 + 6	10 + 6
0 + 5	1 + 5	2 + 5	3 + 5	4 + 5	5 + 5	6 + 5	7 + 5	8 + 5	9 + 5	10 + 5
0 + 4	1 + 4	2 + 4	3 + 4	4 + 4	5 + 4	6 + 4	7 + 4	8 + 4	9 + 4	10 + 4
0 + 3	1 + 3	2 + 3	3 + 3	4 + 3	5 + 3	6 + 3	7 + 3	8 + 3	9 + 3	10 + 3
0 + 2	1 + 2	2 + 2	3 + 2	4 + 2	5 + 2	6 + 2	7 + 2	8 + 2	9 + 2	10 + 2
0 + 1	1 + 1	2 + 1	3 + 1	4 + 1	5 + 1	6 + 1	7 + 1	8 + 1	9 + 1	10 + 1
0 + 0	1 + 0	2 + 0	3 + 0	4 + 0	5 + 0	6 + 0	7 + 0	8 + 0	9 + 0	10 + 0

We use Numbots in school for them to practise and children can access this at home by going to https://play.numbots.com/

KS2 Key Instant Recall facts and times tables

X2 15 minutes per week.

Times Tables - the use of TT Rockstars, the expectations for its use in school and at home, rewards/prizes for achievement if we do this

https://static.thirdspacelearning.com/assets/documents/pdfs/KS1_2_Times_Tables_Termly_Planner.pdf