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Engage Academy

Maths

2022

ENGAGE ACADEMY

Nurturing inclusive learning communities

ETHOS ACADEMY TRUST

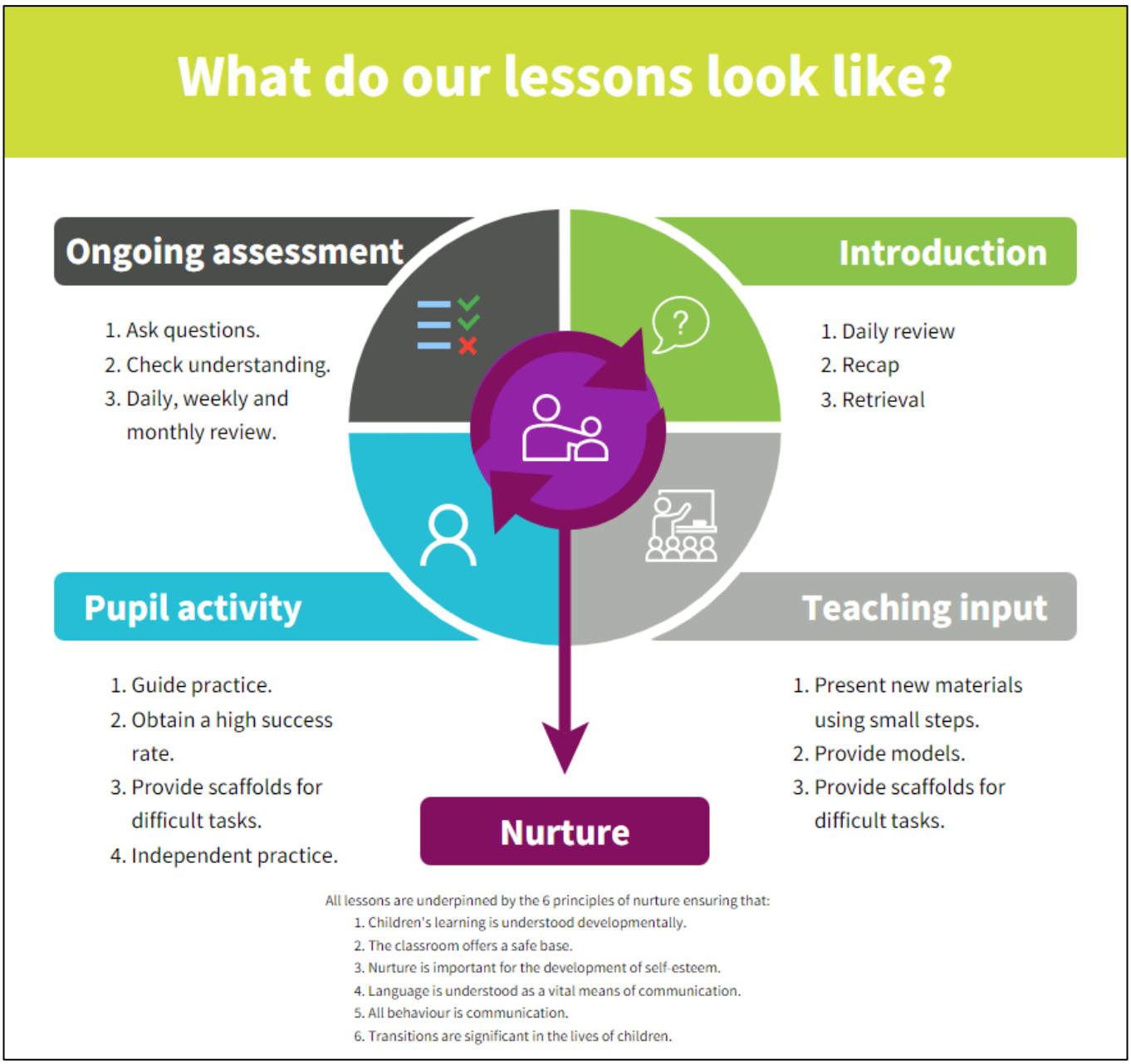
THE CURRICULUM INTENT AND SEQUENCE

1	THE INTENT OF THE CURRICULUM
	Maths is a core subject which pupils will access daily to recall, develop and build on the knowledge and skills they require to prepare them for the opportunities and experiences ahead of them. Mathematical skill is an aspect which pupils will need when they move on from the academy and the curriculum aim to have them engaged in mathematical skill within their learning capacity, that challenges their learning level and to understand maths can be fun. The curriculum will address the pupils specific needs in maths and be built around the understanding of the pupils SEMH needs. This means maths will be practised daily, in one format or another for every pupil which is suited to their needs. The strand pupils are placed in means that the curriculum will be ambitious to those who need to be challenged further but also include all pupils who need to be challenged at their level. The curriculum has three priorities; • To engage pupils in daily maths learning, • Challenge pupils mathematically at the appropriate level, • Build and develop on pupils mental maths skill and speed of recall.

2	THE IMPLEMENTATION OF THE CURRICULUM
	Maths will be taught to a level in class that meets the specific level of the pupils and will follow the outline of strand 1, 2 or 3 below. This will incorporate the use of WRMH (White Rose Maths Hub) and follow their overviews for pupils who can access the appropriate year groups learning for their knowledge. It may be that certain pupils have to move below their year group learning in certain steps of the overview so that gaps in knowledge can be addressed. This means that the curriculum can be fluid and address the needs of the pupil their and then. Pupils may need to follow a personalised maths learning path to re-engage them into maths learning before moving onto one of the WRMH year overviews and progress through being taught elements of the schemes learning. This means teachers will have to know pupils learning levels thoroughly to make sure the pupil is following the correct learning strand and appropriate scheme of learning.

3	THE IMPACT OF THE CURRICULUM
	As a result of a curriculum which holds individuals pupils needs at heart that can be fluid, pupils will be able to either re-engage in maths learning, build and develop on prior knowledge or be challenged to attain further in their maths when they join Engage academy. The learning pupils will be taking part in will flow from day to day and enable pupils to see the maths learning journey they have been on. This could be from being able to write the numbers 1-5 to writing up to 20 or from knowing only addition and subtraction methods to being confident with all three. In any way, the journey will be personal and the pupils will be able to reflect on this. As the pupils develop through the strands, the daily mental math develops for them to continue to practice

areas specific to them and continue to practice elements they have been learning in class. This then cements their knowledge so they are prepared for opportunities, and experiences ahead.



Strategies	What do we expect to see in lessons?
Daily review	Pupils given immediate feedback by supporting adult. AFL by the teacher.
Present new materials using small steps	Teacher to guide pupils through new materials in small steps, asking for feedback and allowing pupils to attempt alongside an adult.

Provide models	Teacher to model examples to pupils. Follow concrete, pictorial and abstract learning.
Provide scaffolds for difficult tasks	Access to manipulatives and maths resources for adults to suggest or pupils to independently retrieve. Provide appropriate framework, guidance or materials for pupil to succeed with calculation. Follow concrete, pictorial and abstract learning.
Guided practice	Adult and pupil to work in tandem to answer questions to allow pupil to build confidence in learning before moving on to independent learning.
Obtain a high success rate	Supporting adult to provide instant feedback, intervention and address misconceptions so pupil can answer question successfully there and then.
Independent practice	Pupil to work without adult support once teacher has provided input.
Weekly and monthly review	Teacher to use AFL to support and guide learning that week and review short term planning.

SKILLS PROGRESSION

The skills progression of the pupils in mathematics depends on each individual pupil and the progress strand they are assessed on whilst at Engage academy. Outlined below is what is expected to be seen in progress of the pupil within the strand they are on.		
1	2	3
The learners on strand one will be able to access the WRMH scheme at either ARE or a year below. This will mean they will be able to closely follow the skill progression of the WRMS and teachers should refer to the scheme guidance for each unit to support them. There will possibly be some gaps in their learning in other areas which go further below this level. When accessing the maths lesson, the pupils will follow the structure of the lesson (as outlined in the scheme) and in each lesson, for the skill taught, move from concrete to pictorial to abstract. They then will be able to attempt reasoning and problem solving, with some pupils	The learners on strand two may be able to access some of the WRMH scheme within their Key Stage. The pupil may exceed in some areas of maths but have large gaps in others. This will mean that the pupils won't be able to constantly follow the same year group of learning and at times may have to dip into learning which is 2/3 years below their own year group. Pupils will be comfortable with concrete and pictorial learning and may need support with abstract. The pupils in this strand needs the teacher to understand the pupils' strengths and weakness and use of constant AFL to be able to make sure they are accessing the correct content to make skills progression. If this is	The learners on strand two will be working on re-engaging with maths learning and enjoying maths learning. The pupils might be able to access some of the WRMH within or outside their Key Stage for some aspects of maths or need to complete maths work using concrete learning only and play based learning. Some pupils will be able to move onto pictorial and abstract in some areas but potentially struggle in others due to large gaps or knowledge. Pupils on this strand will need to have daily mental maths to help secure their maths learning. This will need to progress as follows: • Number bonds to 10, • Number bonds to 20, • Addition within 10,

needing support to achieve success. Mental maths teaching should be addressing gaps in knowledge and times tables rapid recall.	done correctly, it could provide opportunity for the pupil to make accelerated learning and plug the gaps in their learning. Teachers will have to refer to different year group curriculums and have a understanding of the calculation policy. Teachers should still be referring to the scheme guidance for support and look at different year groups. Pupils will need to access mental maths skills as outlined in strand 3.	• Number bonds to 50 • Single digit fact families • Addition within 20, • Counting in 2, 5 and 10's, • Number bonds to 100. When pupils progress beyond these mental maths skills, the teacher should address areas which they have found during their teaching. This could be along the lines of fact families for larger numbers, times tables, adding/subtracting multiples of 10, 100, 1000 etc. The learning for the 4 methods will be addressing phase 1-3 in the calculation policy.

The calculation (Appendix A) policy for Engage academy outlines the skills progression for addition, subtraction, multiplication and division. This document is to support and help staff and parents to support the pupils when calculation and the methods being taught are the same in all classes across school and at home. This will need to be referred to in addition to WRMH scheme when teaching methods to the pupils.

Curriculum overview

Reception Overview

Overview

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14
Autumn	Getting to Know You			Just Like Me!			It's Me 1 2 3!			Light and Dark			Consolidation	
Spring	Alive in 5!			Growing 6, 7, 8			Building 9 and 10			Consolidation				
Summer	To 20 and Beyond			First Then Now			Find My Pattern			On The Move				

Autumn

Week 1	Week 2	Week 3		Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Getting to Know You			Phase	Just Like Me!			It's Me 1 2 3!			Light and Dark		
Opportunities for settling in, introducing the areas of provision and getting to know the children.			Number	Match and Sort Compare Amounts			Representing 1, 2 & 3 Comparing 1, 2 & 3 Composition of 1, 2 & 3			Representing Numbers to 5. One More and Less.		
Key times of day, class routines. Exploring the continuous provision inside and out. Where do things belong? Positional language.			Measure, Shape and Spatial Thinking	Compare Size, Mass & Capacity Exploring Pattern			Circles and Triangles Positional Language			Shapes with 4 Sides. Time		

Spring

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9
Phase	Alive in 5!			Growing 6, 7, 8			Building 9 & 10		
Number	Introducing zero Comparing numbers to 5 Composition of 4 & 5			6, 7 & 8 Combining 2 amounts Making pairs			Counting to 9 & 10 Comparing numbers to 10 Bonds to 10		
Measure, Shape and Spatial Thinking	Compare Mass (2) Compare Capacity (2)			Length & Height Time			3d-shapes Spatial Awareness Patterns		

Summer

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Phase	To 20 and Beyond			First Then Now			Find my Pattern			On the Move		
Number	Building Numbers Beyond 10 Counting Patterns Beyond 10			Adding More Taking Away			Doubling Sharing & Grouping Even & Odd			Deepening Understanding Patterns and Relationships		
Spatial Thinking	Spatial Reasoning (1) Match, Rotate, Manipulate			Spatial Reasoning (2) Compose and Decompose			Spatial Reasoning (3) Visualise and Build			Spatial Reasoning (4) Mapping		

Year 1 Overview

Yearly overview

The yearly overview provides suggested timings for each block of learning, which can be adapted to suit different term dates or other requirements.

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number Place value (within 10)					Number Addition and subtraction (within 10)					Geometry Shape	Consolidation
Spring	Number Place value (within 20)			Number Addition and subtraction (within 20)			Number Place value (within 50)		Measurement Length and height		Measurement Mass and volume	
Summer	Number Multiplication and division			Number Fractions	Geometry Position and direction		Number Place value (within 100)		Measurement Money	Measurement Time		Consolidation

Year 2 Overview

Yearly overview

The yearly overview provides suggested timings for each block of learning, which can be adapted to suit different term dates or other requirements.

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number Place value				Number Addition and subtraction					Geometry Shape		
Spring	Measurement Money		Number Multiplication and division					Measurement Length and height		Measurement Mass, capacity and temperature		
Summer	Number Fractions			Measurement Time			Statistics		Geometry Position and direction		Consolidation	

Year 3 Overview

Yearly overview

The yearly overview provides suggested timings for each block of learning, which can be adapted to suit different term dates or other requirements.

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number Place value			Number Addition and subtraction					Number Multiplication and division A			
Spring	Number Multiplication and division B			Measurement Length and perimeter			Number Fractions A			Measurement Mass and capacity		
Summer	Number Fractions B		Measurement Money		Measurement Time			Geometry Shape		Statistics		Consolidation

Year 4 Overview

Yearly overview

The yearly overview provides suggested timings for each block of learning, which can be adapted to suit different term dates or other requirements.

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number Place value				Number Addition and subtraction			Measurement Area	Number Multiplication and division A			Consolidation
Spring	Number Multiplication and division B			Measurement Length and perimeter		Number Fractions				Number Decimals A		
Summer	Number Decimals B		Measurement Money		Measurement Time		Consolidation	Geometry Shape		Statistics	Geometry Position and direction	

Year 5 Overview

Yearly overview

The yearly overview provides suggested timings for each block of learning, which can be adapted to suit different term dates or other requirements.

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number Place value			Number Addition and subtraction		Number Multiplication and division A			Number Fractions A			
Spring	Number Multiplication and division B			Number Fractions B		Number Decimals and percentages			Measurement Perimeter and area		Statistics	
Summer	Geometry Shape			Geometry Position and direction		Number Decimals			Number Negative numbers	Measurement Converting units		Measurement Volume

Year 6 Overview

Yearly overview

The yearly overview provides suggested timings for each block of learning, which can be adapted to suit different term dates or other requirements.

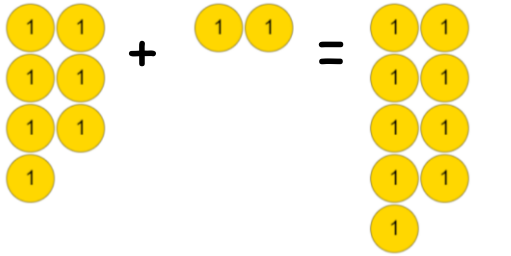
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number Place value		Number Addition, subtraction, multiplication and division					Number Fractions A		Number Fractions B		Measurement Converting units
Spring	Ratio		Algebra		Number Decimals		Number Fractions, decimals and percentages		Measurement Area, perimeter and volume		Statistics	
Summer	Geometry Shape			Geometry Position and direction	Themed projects, consolidation and problem solving							

Appendix A

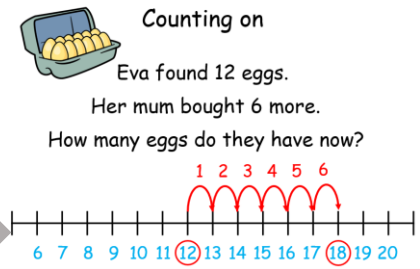
Addition

Phase 1: Using manipulatives (practical equipment). Biggest number first.

7 + 2 = 9

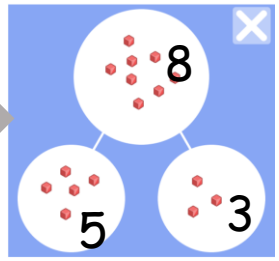


Phase 2: Counting on and 10 frames.



5 + 3 = 8

Phase 3: Part part whole models (pictorial first then using numbers) and bar models (representing he two parts that make a whole).



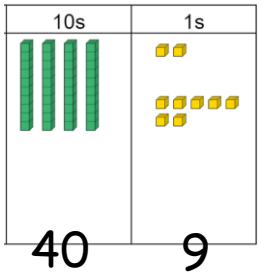
10	
6	4

6 + 4 = 10
4 + 6 = 10

Phase 4: Place value charts – use base 10 to support. (TO + O and TO + TO)

No re-grouping

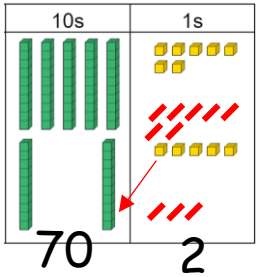
42 + 7 = 49



49

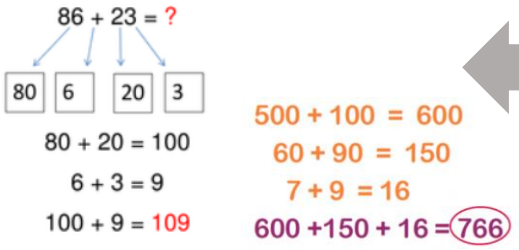
Re-grouping

57 + 15 = 72



72

Phase 5: Place value partitioning. Separating the numbers into their place value you to add before bringing it together.



Phase 6: Column method. Place value counters can be used to support this and show the exchange.

Non-exchange

	Th	H	T	O
	3	1	2	3
+	3	0	7	5
	6	1	9	8

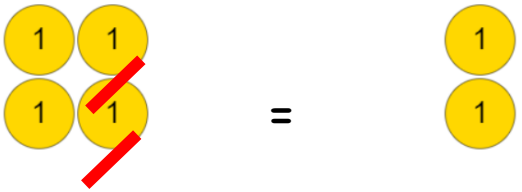
Exchange

	Th	H	T	O
	2	7	3	5
+		3	1	6
	3	0	5	1
	1		1	

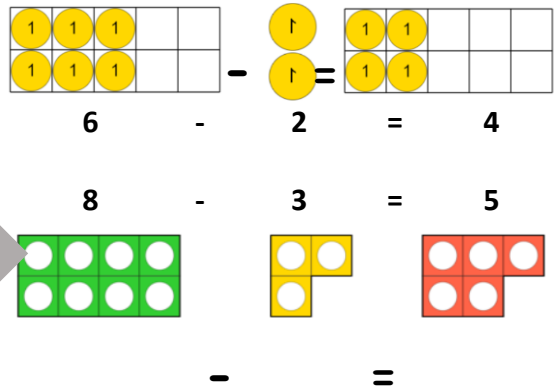
Subtraction

Phase 1: Manipulatives (practical equipment).

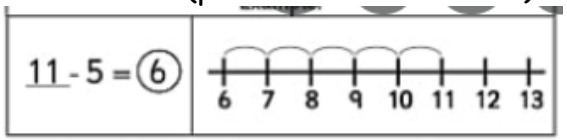
4 – 2 = 2



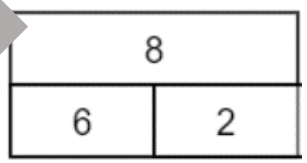
Phase 2: Pictorial and ten frame



Phase 3: Numberline (counting back) & bar model (parts to make a whole).



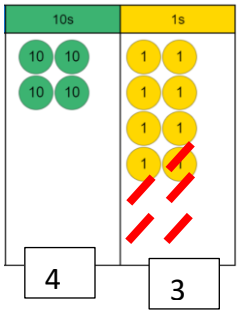
8 – 6 = 2 and 8 – 2 = 6



Phase 4: Place value frame use manipulatives to support (TO – O and TO – TO)

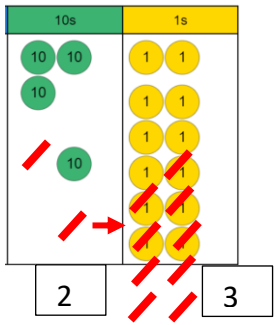
No exchange

48 – 5 = 43



Exchange

42 – 19 = 23



Phase 5: Place value partitioning

86 + 23 = ?

80 6 20 3

80 + 20 = 100

6 + 3 = 9

100 + 9 = 109

No exchange

425 - 143

With

Hundreds	Tens	Units
3~~4~~00	120	5
-100	40	3
200 +	80 +	2 = 282

Phase 6: Column method

No exchange

Th	H	T	O
7	4	3	8
7	2	0	6
0	2	3	2

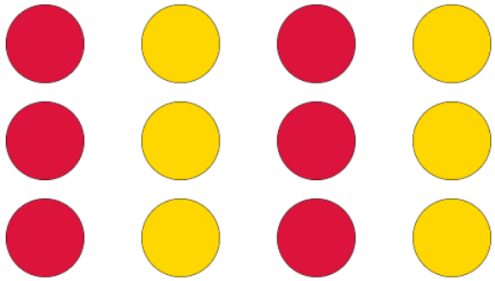
With exchange

Th	H	T	O
3	~~4~~ 3	~~0~~ 19	12
1	3	0	9
2	0	9	3

Multiplication

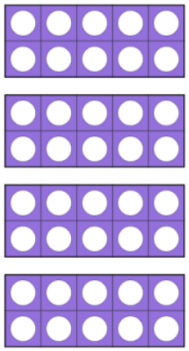
Phase 1: Recognising and making equal groups.

4 groups of 3

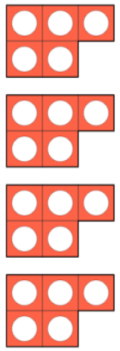


Phase 2: Counting in multiples (2's, 5's, 10's) with manipulatives if needed.

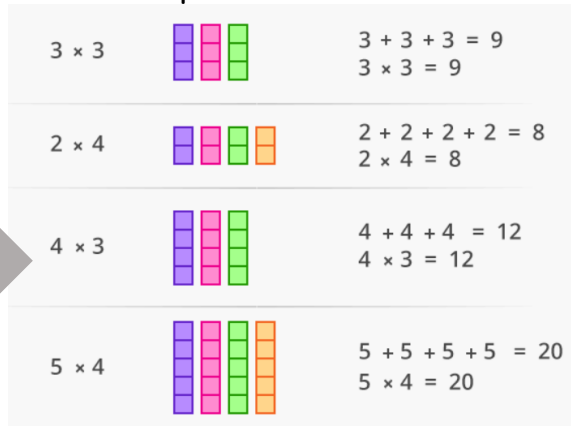
4 x 10 = 40



4 x 5 = 20

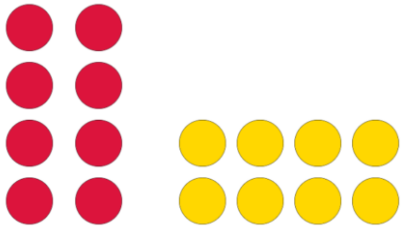


Phase 3: Repeat addition



Phase 4: Arrays showing commutative law.

2 lots of 4 and 4 lots of 2.



Phase 5: Grid method – partitioning the numbers. (TOxO , HTOxO and TOxTO)

×	40	+ 2
6	240	12

42 x 6 = 262

240 + 12 = 262

×	30	4
20	600	80
3	90	12

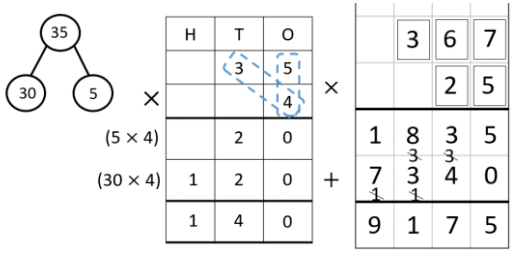
600 + 90 + 80 + 12 = 782

23 x 34 =

Phase 6: Formal method

367 x 25 =

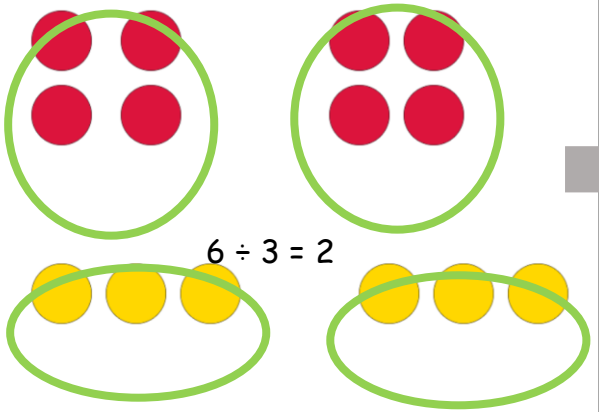
4 × 35 = 140



Division

Phase 1: Sharing using manipulatives and pictorially.

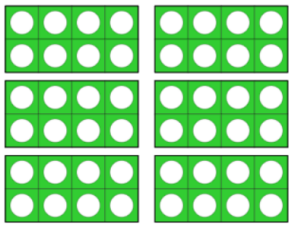
8÷4 = 2



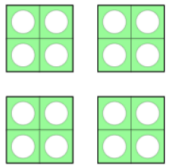
6 ÷ 3 = 2

Phase 2: Using multiple to count (eg 2's, 10's, 8's etc.)

48 ÷ 8 = 6



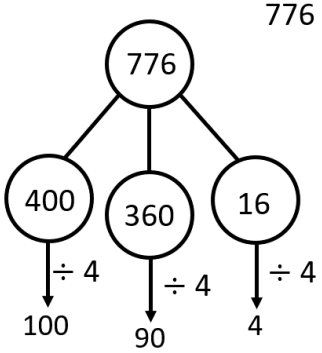
16 ÷ 4 = 4



Phase 3: Place value grouping without remainders

776 ÷ 4 = 194

776 − 400 = 376

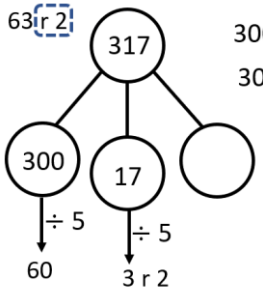


Phase 4: Place value grouping with remainders

317 ÷ 5 = 63 r 2

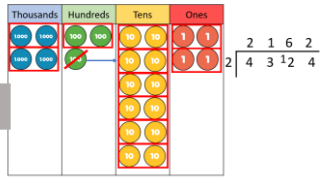
300 ÷ 10 = 30

30 × 2 = 60



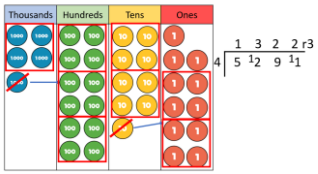
Phase 5: Short division (place value as support)

4,324 ÷ 2



No

5,291 ÷ 4 = 1,322 r3



With

Phase 6: Long division

4,320 ÷ 32 = 135

32	64	96	128	160	192

		1	3	5
32	4	3	2	0
−	3	2		
	1	1	2	
−		9	6	
		1	6	0
−		1	6	0
				0

No

1,000 ÷ 16 = 62 r8

16	32	48	64	80	96

2,000 ÷ 16

		0	6	2
16	1	0	0	0
−		9	6	
			4	0
−			3	2
				8

With