

ACE Mathematics Curriculum

Intent

At Altrincham CE Primary School, we have a culture of deep understanding, confidence and competence in maths – a culture that produces strong, secure learning and real progress. We strive to shape assured, happy and resilient mathematicians who relish the challenge of maths. We want our pupils to become independent, reflective thinkers, whose skills not only liberate them in maths but also support them across the curriculum.

Purpose (the reason it is taught)

Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject. (National Curriculum 2014)

Aims (desired outcomes)

At ACE, the aims of our Mathematics Curriculum are for our pupils to:

- become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils have conceptual understanding and are able to recall and apply their knowledge rapidly and accurately to problems;
- reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language;
- 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.

Implementation

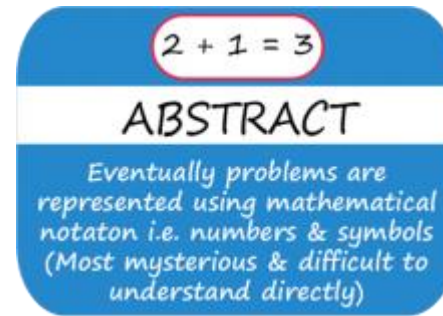
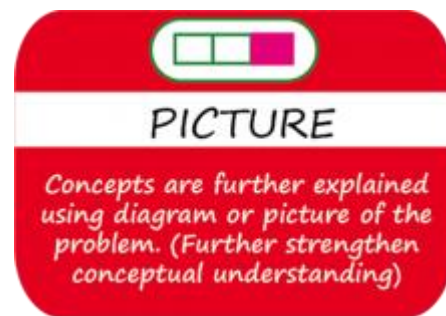
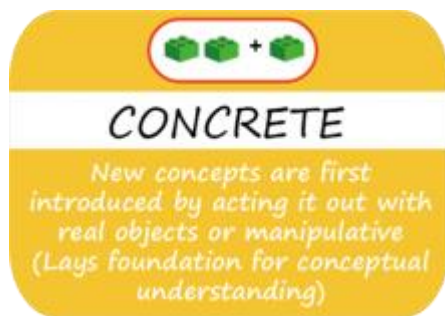
Strategies are in place within school to develop each of the key areas of mathematics, ensuring coverage of the National Curriculum 2014, and systematic coverage of key skills.

- In Reception, objectives are taken from the Early Learning Goals to fit with the topic of study.
- From Year 1 to Year 6, each class follows the White Rose Maths Scheme of Learning, ensuring coverage, progression, small steps, fluency, variation, problem solving and reasoning.
- A sequence of lessons will progress from developing fluency within an area and then ensuring this knowledge is embedded with a variety of representations. Following this, the children will apply their knowledge to problem solving, reasoning and explanation within that area.
- Within a lesson, children will be given opportunities to investigate areas using concrete, pictorial and abstract concepts.
- Children will be given a range of tasks to complete using a 'challenge by choice' strategy. These may include differentiated tasks, a range of resources, support.
- Each class has 'Maths First Aid Boxes', with a range of concrete resources available for children to freely access within a lesson.
- Teachers use a range of resources and strategies to deliver each lesson including active maths sessions, technology, and practical activities.
- Children will be regularly practicing their basic skills, number bonds and times tables. We have weekly arithmetic assessments to monitor fluency in these skills.
- A range of mathematical vocabulary is used within each lesson, specific to the area of study.
- Each class will have an ongoing, interactive Maths Working Wall containing mathematical vocabulary, models and images, sentence stems and key strategies to support learning.

At ACE, we use the White Rose Maths Hub schemes of learning. These schemes provide teachers with exemplification for maths objectives and are broken down into fluency, reasoning and problem solving, key aims of the National Curriculum. They support a mastery approach to teaching and learning and have number at their heart. They ensure teachers stay in the required key stage and support the ideal of depth before breadth. They support pupils working together as a whole group and provide plenty of time to build reasoning and problem solving elements into the curriculum.

Our Maths Framework has a problem based approach to learning where children are challenged appropriately, being introduced to new concepts using the CPA approach.

- Concrete
- Pictorial
- Abstract



Children are given the opportunity to apply their understanding to varied, real life contexts, developing fluency and a deeper understanding gained through open questioning and exploration, where reasoning is planned for.

Whole School Yearly Overviews and Progression:

EYFS

The children are assessed against the Development Matters Framework. It covers ages and stages from 30-50 months and 40-60 months. The children in Reception are working towards reaching The Early Learning Goals by the end of reception Year. Children take part in daily Maths Teaching, following The White Rose Maths Scheme and using the materials. The children have open ended Maths challenges, and the classroom is set up with continuous provision. For example, in our construction area, the children will be learning about shape, size, weight and measures. In the water area the children experience capacity and measures. The outdoor area is used for teaching Maths. In our outdoor sessions the children demonstrate their counting skills using ten frames and collecting natural materials. The children practice counting and number recognition skills daily with number songs and rhymes.

Reception



Scheme of learning

Supporting materials

	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 term	Getting to know you		Match, sort and compare <small>Free trial</small> VIEW	Talk about measure and patterns VIEW	It's me 1, 2, 3 VIEW				Circles and trian... VIEW	1, 2, 3, 4, 5 VIEW		Shapes with 4 si... VIEW
Spring term	Alive in 5 VIEW	Mass and capacity VIEW	Growing 6, 7, 8 VIEW	Length, height and time VIEW	Building 9 and 10 VIEW		Explore 3-D shapes VIEW					
Summer term	To 20 and beyond VIEW	How many now? VIEW	Manipulate, compose and decompose VIEW	Sharing and grouping VIEW	Visualise, build and map VIEW		Make connections VIEW	Consolidation				

Year 1 (v3)



Scheme of learning

Supporting materials

	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 term	<p>Number</p> <hr/> <p>Place value</p> <p>(within 10)</p> <p>VIEW</p> <p><i>Free trial</i></p>					<p>Number</p> <hr/> <p>Addition and subtraction</p> <p>(within 10)</p> <p>VIEW</p>					<p>Geometry</p> <hr/> <p>Shape</p> <p>VIEW</p>	<p>Consolidation</p>
Spring term	<p>Number</p> <hr/> <p>Place value</p> <p>(within 20)</p> <p>VIEW</p>	<p>Number</p> <hr/> <p>Addition and subtraction</p> <p>(within 20)</p> <p>VIEW</p>			<p>Number</p> <hr/> <p>Place value</p> <p>(within 50)</p> <p>VIEW</p>	<p>Measurement</p> <hr/> <p>Length and height</p> <p>VIEW</p>	<p>Measurement</p> <hr/> <p>Mass and volume</p> <p>VIEW</p>					
Summer term	<p>Number</p> <hr/> <p>Multiplication and division</p> <p>VIEW</p>		<p>Number</p> <hr/> <p>Fractions</p> <p>VIEW</p>	<p>Geometry</p> <hr/> <p>Position and dire...</p> <p>VIEW</p>	<p>Number</p> <hr/> <p>Place value</p> <p>(within 100)</p> <p>VIEW</p>	<p>Measurement</p> <hr/> <p>Money</p> <p>VIEW</p>	<p>Measurement</p> <hr/> <p>Time</p> <p>VIEW</p>		<p>Consolidation</p>			

Year 2 (v3)

Scheme of learning

Supporting materials

	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 term	<p>Number</p> <hr/> <p>Place value</p> <p>VIEW</p>				<p>Number</p> <hr/> <p>Addition and subtraction</p> <p>VIEW</p>				<p>Geometry</p> <hr/> <p>Shape</p> <p>VIEW</p>			
Spring term	<p>Measurement</p> <hr/> <p>Money</p> <p>VIEW</p>	<p>Number</p> <hr/> <p>Multiplication and division</p> <p>VIEW</p>				<p>Measurement</p> <hr/> <p>Length and height</p> <p>VIEW</p>	<p>Measurement</p> <hr/> <p>Mass, capacity and temperature</p> <p>VIEW</p>					
Summer term	<p>Number</p> <hr/> <p>Fractions</p> <p>VIEW</p>			<p>Measurement</p> <hr/> <p>Time</p> <p>VIEW</p>			<p>Statistics</p> <p>VIEW</p>		<p>Geometry</p> <hr/> <p>Position and direction</p> <p>VIEW</p>		<p>Consolidation</p>	

Year 3 (v3)

Scheme of learning

Supporting materials

	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 term	<p>Number</p> <hr/> <p>Place value</p> <p>VIEW</p>			<p>Number</p> <hr/> <p>Addition and subtraction</p> <p>VIEW</p>				<p>Number</p> <hr/> <p>Multiplication and division A</p> <p>VIEW</p>				
Spring term	<p>Number</p> <hr/> <p>Multiplication and division B</p> <p>VIEW</p>			<p>Measurement</p> <hr/> <p>Length and perimeter</p> <p>VIEW</p>			<p>Number</p> <hr/> <p>Fractions A</p> <p>VIEW</p>		<p>Measurement</p> <hr/> <p>Mass and capacity</p> <p>VIEW</p>			
Summer term	<p>Number</p> <hr/> <p>Fractions B</p> <p>VIEW</p>		<p>Measurement</p> <hr/> <p>Money</p> <p>VIEW</p>		<p>Measurement</p> <hr/> <p>Time</p> <p>VIEW</p>			<p>Geometry</p> <hr/> <p>Shape</p> <p>VIEW</p>		<p>Statistics</p> <p>VIEW</p>		<p>Consolidation</p>

Year 4 (v3)

Scheme of learning

Supporting materials

	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 term	<p>Number</p> <hr/> <p>Place value</p> <p>VIEW</p> <p>Free trial</p>				<p>Number</p> <hr/> <p>Addition and subtraction</p> <p>VIEW</p>		<p>Measurement</p> <hr/> <p>Area</p> <p>VIEW</p>		<p>Number</p> <hr/> <p>Multiplication and division A</p> <p>VIEW</p>				<p>Consolidation</p>	
Spring term	<p>Number</p> <hr/> <p>Multiplication and division B</p> <p>VIEW</p>			<p>Measurement</p> <hr/> <p>Length and perimeter</p> <p>VIEW</p>		<p>Number</p> <hr/> <p>Fractions</p> <p>VIEW</p>				<p>Number</p> <hr/> <p>Decimals A</p> <p>VIEW</p>				
Summer term	<p>Number</p> <hr/> <p>Decimals B</p> <p>VIEW</p>	<p>Measurement</p> <hr/> <p>Money</p> <p>VIEW</p>		<p>Measurement</p> <hr/> <p>Time</p> <p>VIEW</p>		<p>Consolidation</p>	<p>Geometry</p> <hr/> <p>Shape</p> <p>VIEW</p>		<p>Statistics</p> <hr/> <p>VIEW</p>	<p>Geometry</p> <hr/> <p>Position and direction</p> <p>VIEW</p>				

Year 5 (v3)



Scheme of learning

Supporting materials

	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 term	<p>Number</p> <hr/> <p>Place value</p> <p>VIEW</p> <p><i>Free trial</i></p>			<p>Number</p> <hr/> <p>Addition and subtraction</p> <p>VIEW</p>	<p>Number</p> <hr/> <p>Multiplication and division A</p> <p>VIEW</p>			<p>Number</p> <hr/> <p>Fractions A</p> <p>VIEW</p>				
Spring term	<p>Number</p> <hr/> <p>Multiplication and division B</p> <p>VIEW</p>			<p>Number</p> <hr/> <p>Fractions B</p> <p>VIEW</p>	<p>Number</p> <hr/> <p>Decimals and percentages</p> <p>VIEW</p>			<p>Measurement</p> <hr/> <p>Perimeter and area</p> <p>VIEW</p>	<p>Statistics</p> <p>VIEW</p>			
Summer term	<p>Geometry</p> <hr/> <p>Shape</p> <p>VIEW</p>			<p>Geometry</p> <hr/> <p>Position and direction</p> <p>VIEW</p>	<p>Number</p> <hr/> <p>Decimals</p> <p>VIEW</p>			<p>Number</p> <hr/> <p>Negative numbers</p> <p>VIEW</p>	<p>Measurement</p> <hr/> <p>Converting units</p> <p>VIEW</p>		<p>Measurement</p> <hr/> <p>Volume</p> <p>VIEW</p>	

Year 6 (v3)

Scheme of learning

Supporting materials

	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 term	<p>Number</p> <hr/> <p>Place value</p> <p>VIEW</p>	<p>Free trial</p>	<p>Number</p> <hr/> <p>Addition, subtraction, multiplication and division</p> <p>VIEW</p>				<p>Number</p> <hr/> <p>Fractions A</p> <p>VIEW</p>		<p>Number</p> <hr/> <p>Fractions B</p> <p>VIEW</p>		<p>Measurement</p> <hr/> <p>Converting units</p> <p>VIEW</p>	
Spring term	<p>Number</p> <hr/> <p>Ratio</p> <p>VIEW</p>	<p>Number</p> <hr/> <p>Algebra</p> <p>VIEW</p>	<p>Number</p> <hr/> <p>Decimals</p> <p>VIEW</p>	<p>Number</p> <hr/> <p>Fractions, decimals and percentages</p> <p>VIEW</p>	<p>Measurement</p> <hr/> <p>Area, perimeter and volume</p> <p>VIEW</p>	<p>Statistics</p> <p>VIEW</p>						
Summer term	<p>Geometry</p> <hr/> <p>Shape</p> <p>VIEW</p>	<p>Geometry</p> <hr/> <p>Position and direction</p> <p>VIEW</p>	<p>Themed projects, consolidation and problem solving</p> <p>VIEW</p>									

Calculation Policy:

This policy has been adapted from the White Rose Mathematics Hub Calculation Policy, with further material added. It is a working document and will be revised and amended as necessary. Influenced, inspired and informed by the work of leading maths researchers and practitioners across the world, White Rose Maths brings together a team of highly experienced and passionate maths teaching experts to guide, help and support us to make change happen in our school.

For written calculations, it is essential that there is a progression in our teaching which culminates in one method. The individual steps within the progression are important in scaffolding children's understanding with practical equipment, models and images used to support.

This Calculation Policy is divided into the following sections, for Year 1 through to Year 6:

- Addition
- Subtraction
- Times Tables
- Multiplication
- Division

*A glossary of key vocabulary is also included within this calculation policy.



The page features a decorative border with teal and white geometric shapes, including triangles and lines, framing the central content area.

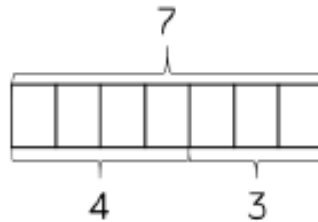
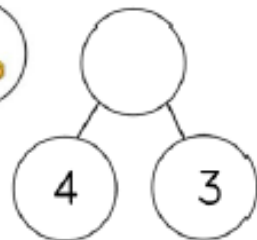
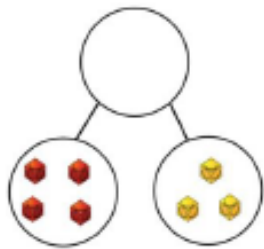
Addition

Skill	Year	Representations and models	
Add two 1-digit numbers to 10	1	Part-whole model Bar model Number shapes	Ten frames (within 10) Bead strings (10) Number tracks
Add 1 and 2-digit numbers to 20	1	Part-whole model Bar model Number shapes Ten frames (within 20)	Bead strings (20) Number tracks Number lines (labelled) Straws
Add three 1-digit numbers	2	Part-whole model Bar model	Ten frames (within 20) Number shapes
Add 1 and 2-digit numbers to 100	2	Part-whole model Bar model Number lines (labelled)	Number lines (blank) Straws Hundred square

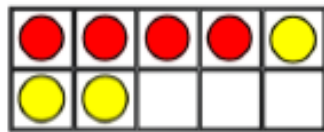
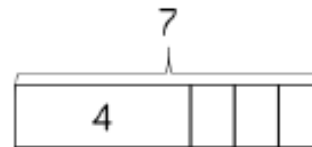
Skill	Year	Representations and models	
Add two 2-digit numbers	2	Part-whole model Bar model Number lines (blank) Straws	Base 10 Place value counters Column addition
Add with up to 3-digits	3	Part-whole model Bar model	Base 10 Place value counters Column addition
Add with up to 4-digits	4	Part-whole model Bar model	Base 10 Place value counters Column addition
Add with more than 4 digits	5	Part-whole model Bar model	Place value counters Column addition
Add with up to 3 decimal places	5	Part-whole model Bar model	Place value counters Column addition

Skill: Add 1-digit numbers within 10

Year: 1



$$4 + 3 = 7$$



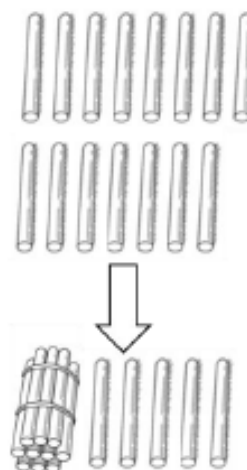
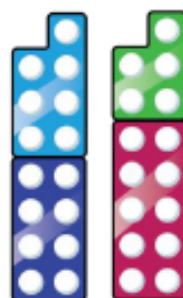
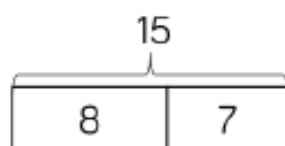
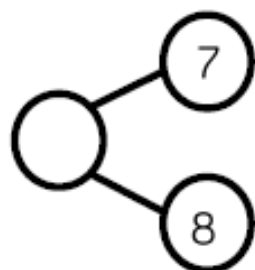
When adding numbers to 10, children can explore both aggregation and augmentation.

The part-whole model, discrete and continuous bar model, number shapes and ten frame support aggregation.

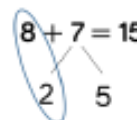
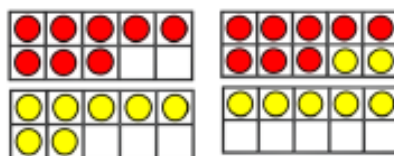
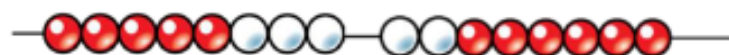
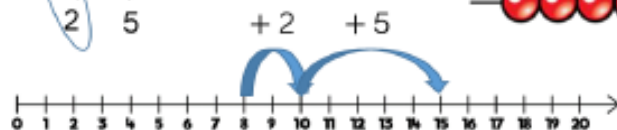
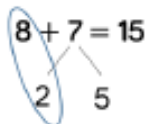
The combination bar model, ten frame, bead string and number track all support augmentation.

Skill: Add 1 and 2-digit numbers to 20

Year: 1/2



$$8 + 7 = 15$$

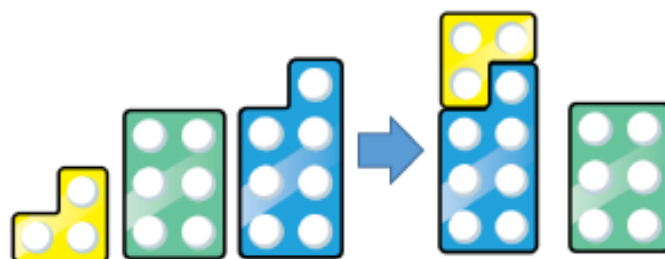
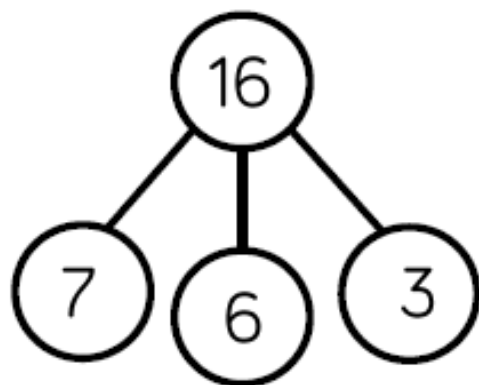


When adding one-digit numbers that cross 10, it is important to highlight the importance of ten ones equalling one ten.

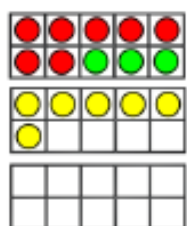
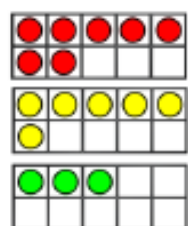
Different manipulatives can be used to represent this exchange. Use concrete resources alongside number lines to support children in understanding how to partition their jumps.

Skill: Add three 1-digit numbers

Year: 2

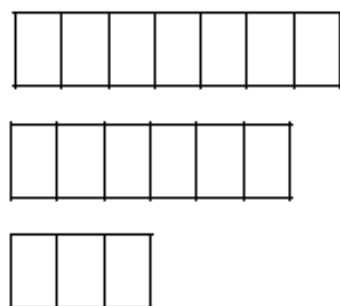


$$7 + 6 + 3 = 16$$



$$7 + 6 + 3 = 16$$

10



16

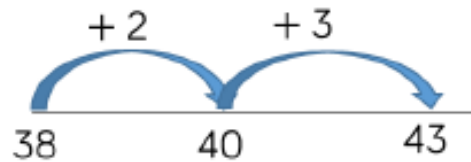
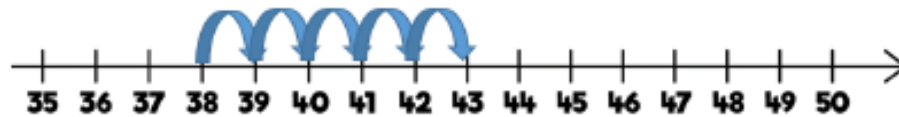
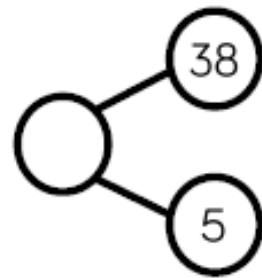
When adding three 1-digit numbers, children should be encouraged to look for number bonds to 10 or doubles to add the numbers more efficiently.

This supports children in their understanding of commutativity.

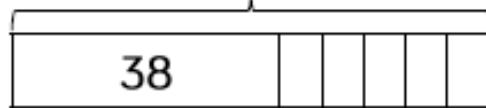
Manipulatives that highlight number bonds to 10 are effective when adding three 1-digit numbers.

Skill: Add 1-digit and 2-digit numbers to 100

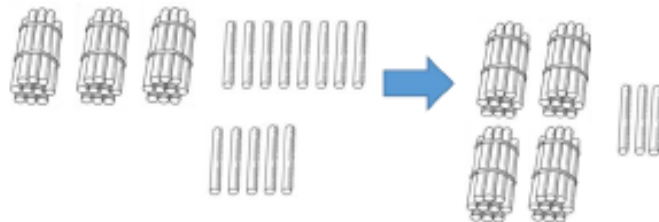
Year: 2/3



?



$$38 + 5 = 43$$



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

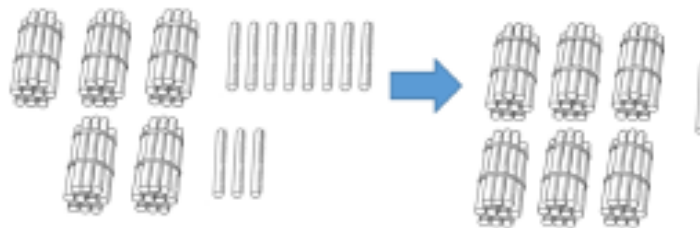
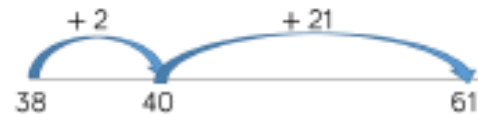
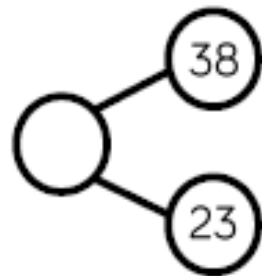
When adding single digits to a two-digit number, children should be encouraged to count on from the larger number.

They should also apply their knowledge of number bonds to add more efficiently e.g. $8 + 5 = 13$ so $38 + 5 = 43$.

Hundred squares and straws can support children to find the number bond to 10.

Skill: Add two 2-digit numbers to 100

Year: 2/3



?	
38	23

$$38 + 23 = 61$$

Tens	Ones
	●●●●●●●●
	●●●●

$$\begin{array}{r} 38 \\ + 23 \\ \hline 61 \\ 1 \end{array}$$

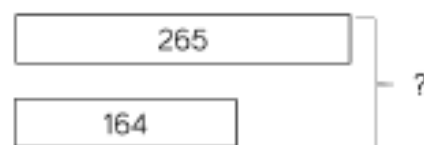
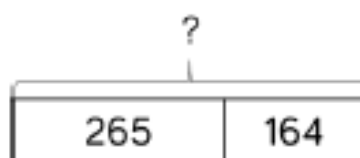
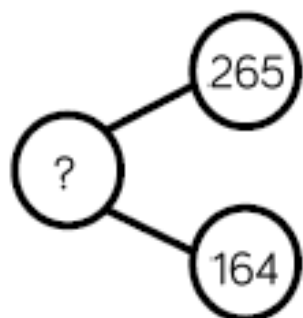
Tens	Ones
10 10 10	1 1 1 1 1 1 1 1
10 10	1 1 1

At this stage, encourage children to use the formal column method when calculating alongside straws, base 10 or place value counters. As numbers become larger, straws become less efficient.

Children can also use a blank number line to count on to find the total. Encourage them to jump to multiples of 10 to become more efficient.

Skill: Add numbers with up to 3 digits

Year: 3



$$265 + 164 = 429$$

Hundreds	Tens	Ones

$$\begin{array}{r} 265 \\ + 164 \\ \hline 429 \\ \hline 1 \end{array}$$

Hundreds	Tens	Ones

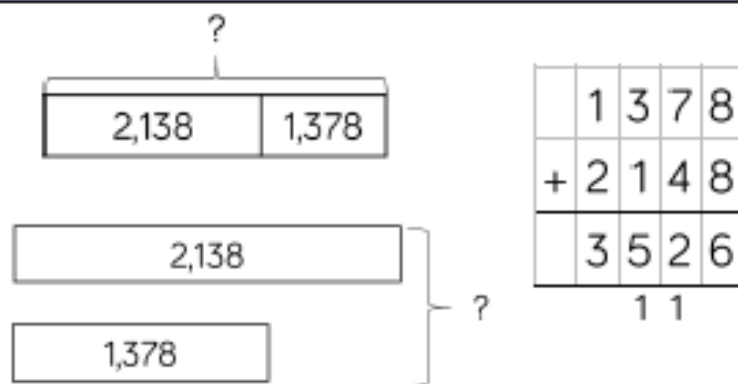
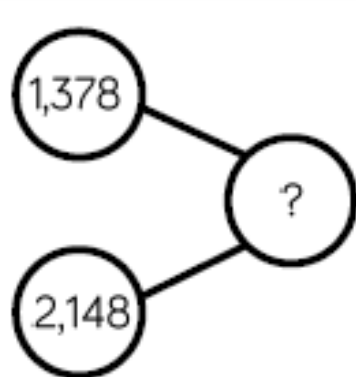
Base 10 and place value counters are the most effective manipulatives when adding numbers with up to 3 digits.

Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method.

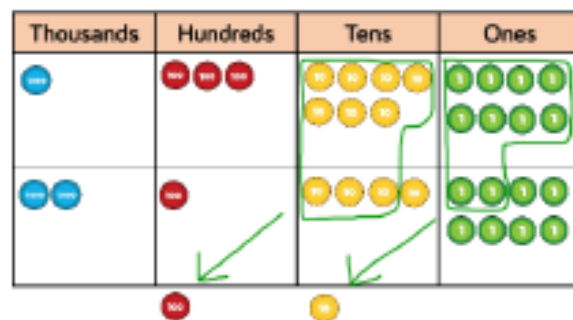
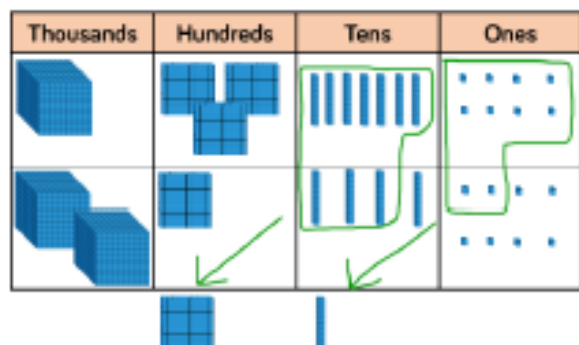
Plain counters on a place value grid can also be used to support learning.

Skill: Add numbers with up to 4 digits

Year: 4



$$1,378 + 2,148 = 3,526$$



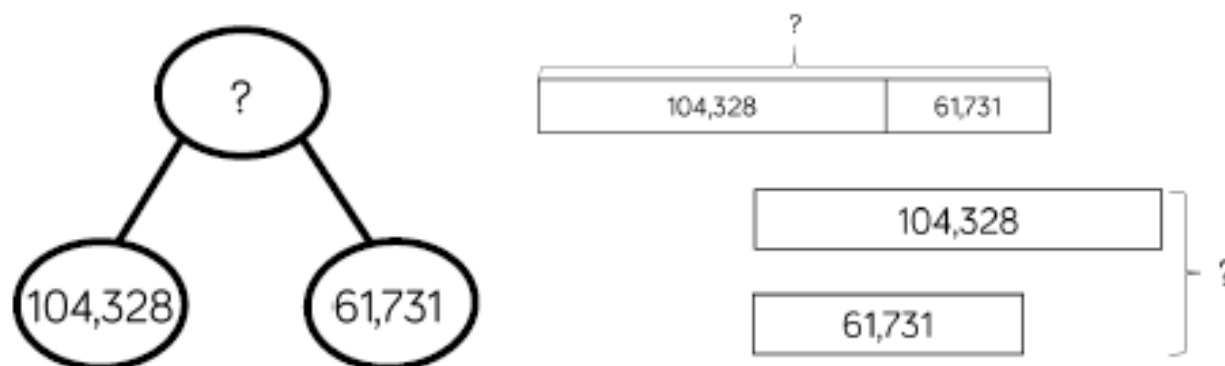
Base 10 and place value counters are the most effective manipulatives when adding numbers with up to 4 digits.

Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method.

Plain counters on a place value grid can also be used to support learning.

Skill: Add numbers with more than 4 digits

Year: 5/6



$$104,328 + 61,731 = 166,059$$

HTh	TTh	Th	H	T	O
100000		1000 1000 1000 1000	100 100 100	10 10	1 1 1 1 1 1 1 1
	10000 10000 10000 10000 10000 10000	1000	100 100 100 100 100 100 100	10 10 10	1

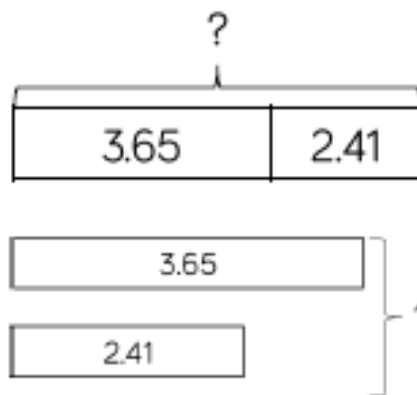
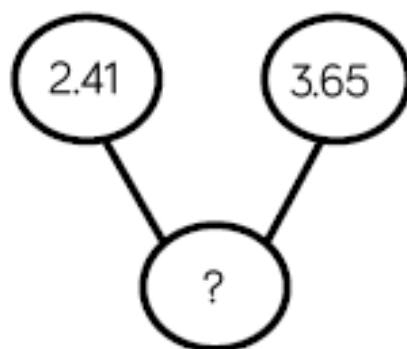
1	0	4	3	2	8
+	6	1	7	3	1
1	6	6	0	5	9
					1

Place value counters or plain counters on a place value grid are the most effective concrete resources when adding numbers with more than 4 digits.

At this stage, children should be encouraged to work in the abstract, using the column method to add larger numbers efficiently.

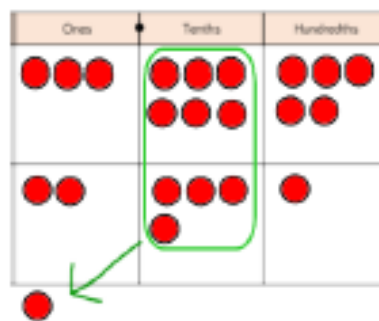
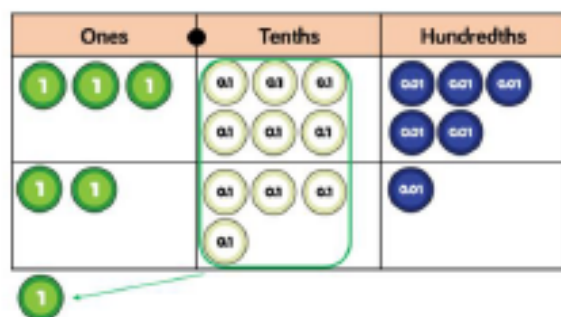
Skill: Add with up to 3 decimal places

Year: 5



$$\begin{array}{r} 3.65 \\ + 2.41 \\ \hline 6.06 \\ 1 \end{array}$$

$$3.65 + 2.41 = 6.06$$



Place value counters and plain counters on a place value grid are the most effective manipulatives when adding decimals with 1, 2 and then 3 decimal places.

Ensure children have experience of adding decimals with a variety of decimal places. This includes putting this into context when adding money and other measures.

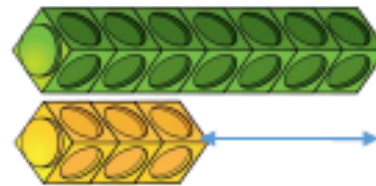
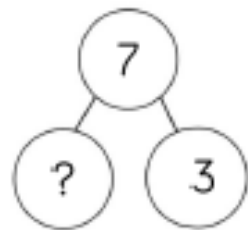
Subtraction

Skill	Year	Representations and models	
Subtract two 1-digit numbers to 10	1	Part-whole model Bar model Number shapes	Ten frames (within 10) Bead strings (10) Number tracks
Subtract 1 and 2-digit numbers to 20	1	Part-whole model Bar model Number shapes Ten frames (within 20)	Bead string (20) Number tracks Number lines (labelled) Straws
Subtract 1 and 2-digit numbers to 100	2	Part-whole model Bar model Number lines (labelled)	Number lines (blank) Straws Hundred square
Subtract two 2-digit numbers	2	Part-whole model Bar model Number lines (blank) Straws	Base 10 Place value counters

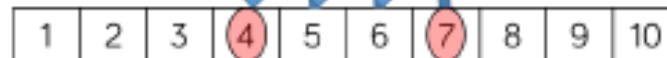
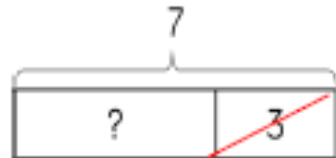
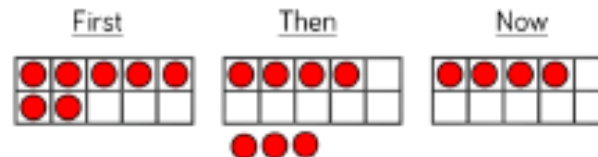
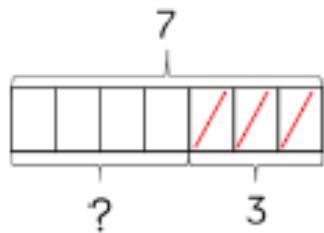
Skill	Year	Representations and models	
Subtract with up to 3-digits	3	Part-whole model Bar model	Base 10 Place value counters Column subtraction
Subtract with up to 4-digits	4	Part-whole model Bar model	Base 10 Place value counters Column subtraction
Subtract with more than 4 digits	5	Part-whole model Bar model	Place value counters Column subtraction
Subtract with up to 3 decimal places	5	Part-whole model Bar model	Place value counters Column subtraction

Skill: Subtract 1-digit numbers within 10

Year: 1



$$7 - 3 = 4$$



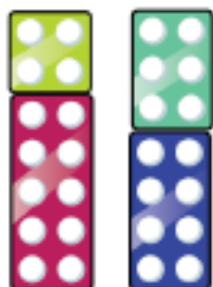
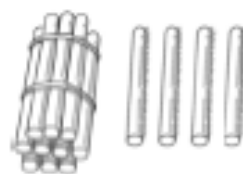
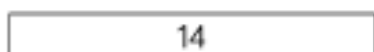
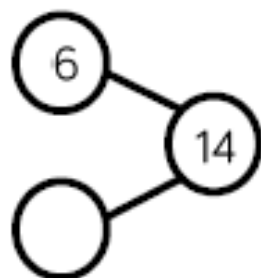
Part-whole models, bar models, ten frames and number shapes support partitioning.

Ten frames, number tracks, single bar models and bead strings support reduction.

Cubes and bar models with two bars can support finding the difference.

Skill: Subtract 1 and 2-digit numbers to 20

Year: 1/2

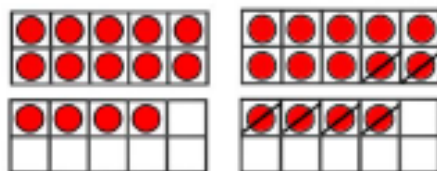
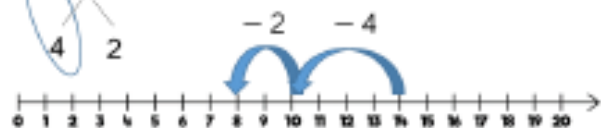


$$14 - 6 = 8$$



$$14 - 6 = 8$$

A number bond diagram for 14 - 6 = 8, with 14 in a circle, 6 to its left, and 8 to its right. A 4 is written below 14 and a 2 is written below 6.



$$14 - 6 = 8$$

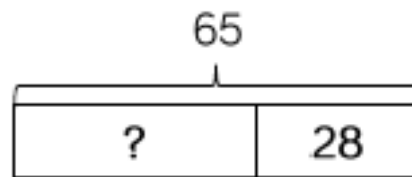
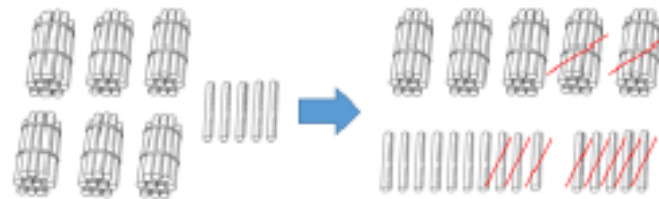
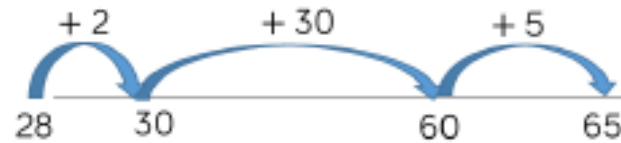
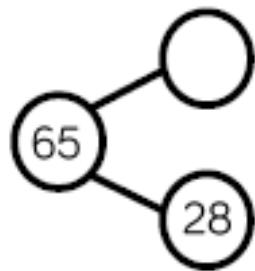
A number bond diagram for 14 - 6 = 8, with 14 in a circle, 6 to its left, and 8 to its right. A 4 is written below 14 and a 2 is written below 6.

When subtracting one-digit numbers that cross 10, it is important to highlight the importance of ten ones equalling one ten.

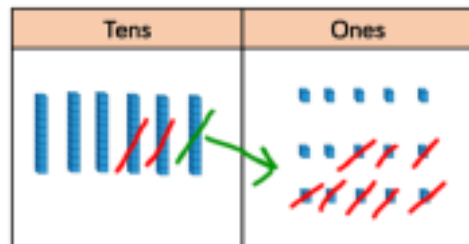
Children should be encouraged to find the number bond to 10 when partitioning the subtracted number. Ten frames, number shapes and number lines are particularly useful for this.

Skill: Subtract 1 and 2-digit numbers to 100

Year: 2



$$65 - 28 = 37$$



$$\begin{array}{r} 5 \overset{1}{\cancel{}} 65 \\ - 28 \\ \hline 37 \end{array}$$

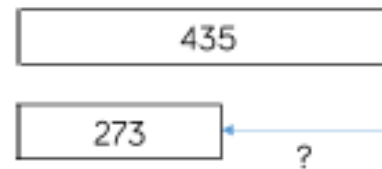
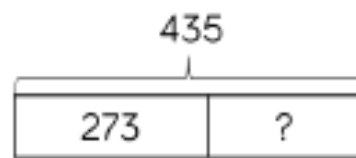
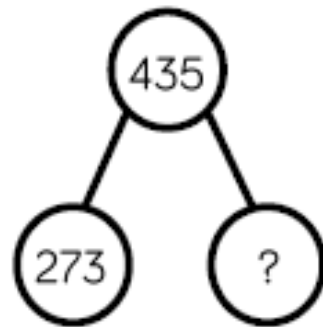


At this stage, encourage children to use the formal column method when calculating alongside straws, base 10 or place value counters. As numbers become larger, straws become less efficient.

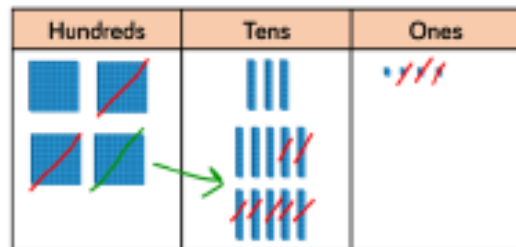
Children can also use a blank number line to count on to find the difference. Encourage them to jump to multiples of 10 to become more efficient.

Skill: Subtract numbers with up to 3 digits

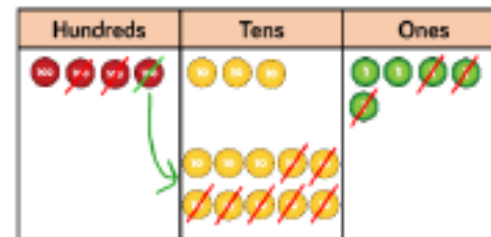
Year: 3



$$435 - 273 = 262$$



$$\begin{array}{r} ^3 ^1 \\ 435 \\ - 273 \\ \hline 262 \end{array}$$



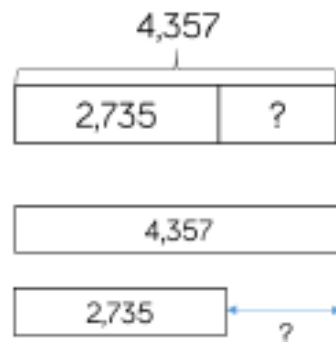
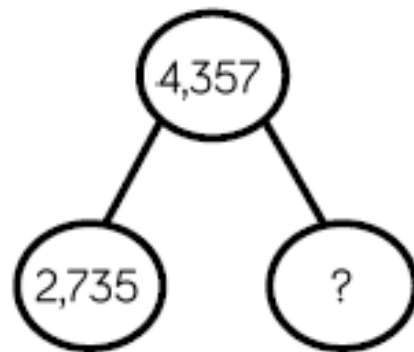
Base 10 and place value counters are the most effective manipulative when subtracting numbers with up to 3 digits.

Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method.

Plain counters on a place value grid can also be used to support learning.

Skill: Subtract numbers with up to 4 digits

Year: 4



$$\begin{array}{r} \\ 4357 \\ - 2735 \\ \hline 1622 \end{array}$$

$$4,357 - 2,735 = 1,622$$

Thousands	Hundreds	Tens	Ones

Thousands	Hundreds	Tens	Ones

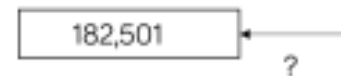
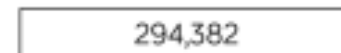
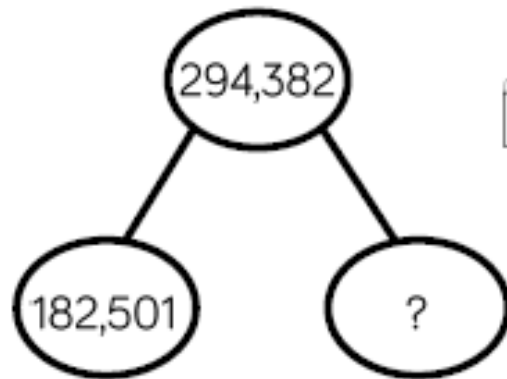
Base 10 and place value counters are the most effective manipulatives when subtracting numbers with up to 4 digits.

Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method.

Plain counters on a place value grid can also be used to support learning.

Skill: Subtract numbers with more than 4 digits

Year: 5/6



$$294,382 - 182,501 = 111,881$$

HTh	TTh	Th	H	T	O

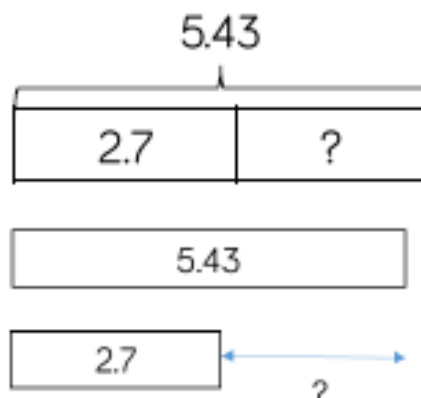
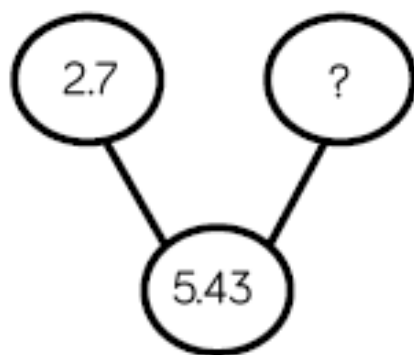
	2	9	³ / 3	¹ / 3	8	2
-	1	8	2	5	0	1
	1	1	1	8	8	1

Place value counters or plain counters on a place value grid are the most effective concrete resource when subtracting numbers with more than 4 digits.

At this stage, children should be encouraged to work in the abstract, using column method to subtract larger numbers efficiently.

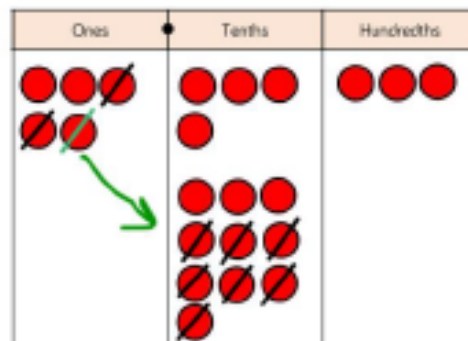
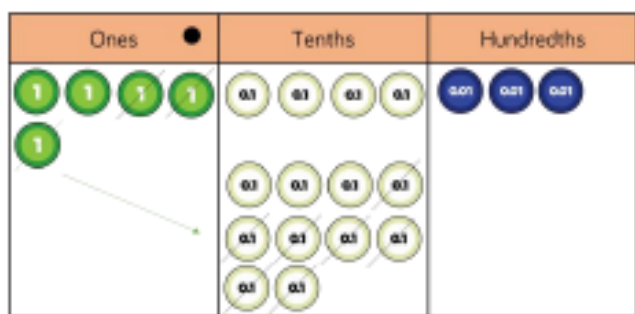
Skill: Subtract with up to 3 decimal places

Year: 5



$$\begin{array}{r} 4 \quad 1 \\ 5.43 \\ - 2.7 \\ \hline 2.73 \end{array}$$

$$5.43 - 2.7 = 2.73$$



Place value counters and plain counters on a place value grid are the most effective manipulative when subtracting decimals with 1, 2 and then 3 decimal places.

Ensure children have experience of subtracting decimals with a variety of decimal places. This includes putting this into context when subtracting money and other measures.

Glossary

Addend - A number to be added to another.

Aggregation - combining two or more quantities or measures to find a total.

Augmentation - increasing a quantity or measure by another quantity.

Commutative - numbers can be added in any order.

Complement - in addition, a number and its complement make a total e.g. 300 is the complement to 700 to make 1,000

Difference - the numerical difference between two numbers is found by comparing the quantity in each group.

Exchange - Change a number or expression for another of an equal value.

Minuend - A quantity or number from which another is subtracted.

Partitioning - Splitting a number into its component parts.

Reduction - Subtraction as take away.

Subitise - Instantly recognise the number of objects in a small group without needing to count.

Subtrahend - A number to be subtracted from another.

Sum - The result of an addition.

Total - The aggregate or the sum found by addition.

Times Tables

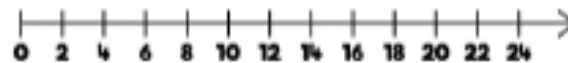
Skill	Year	Representations and models	
Recall and use multiplication and division facts for the 2-times table	2	Bar model Number shapes Counters Money	Ten frames Bead strings Number lines Everyday objects
Recall and use multiplication and division facts for the 5-times table	2	Bar model Number shapes Counters Money	Ten frames Bead strings Number lines Everyday objects
Recall and use multiplication and division facts for the 10-times table	2	Hundred square Number shapes Counters Money	Ten frames Bead strings Number lines Base 10

Skill	Year	Representations and models
Recall and use multiplication and division facts for the 3-times table	3	Hundred square Number shapes Counters Bead strings Number lines Everyday objects
Recall and use multiplication and division facts for the 4-times table	3	Hundred square Number shapes Counters Bead strings Number lines Everyday objects
Recall and use multiplication and division facts for the 8-times table	3	Hundred square Number shapes Bead strings Number tracks Everyday objects
Recall and use multiplication and division facts for the 6-times table	4	Hundred square Number shapes Bead strings Number tracks Everyday objects

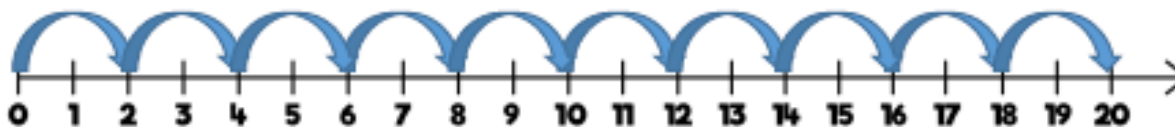
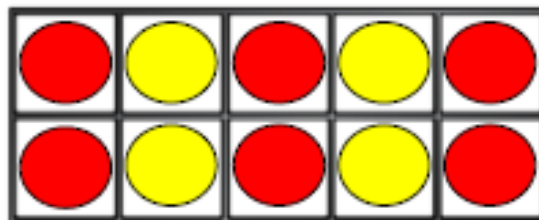
Skill	Year	Representations and models	
Recall and use multiplication and division facts for the 7-times table	4	Hundred square Number shapes	Bead strings Number lines
Recall and use multiplication and division facts for the 9-times table	4	Hundred square Number shapes	Bead strings Number lines
Recall and use multiplication and division facts for the 11-times table	4	Hundred square Base 10	Place value counters Number lines
Recall and use multiplication and division facts for the 12-times table	4	Hundred square Base 10	Place value counters Number lines

Skill: 2 times table

Year: 2



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50



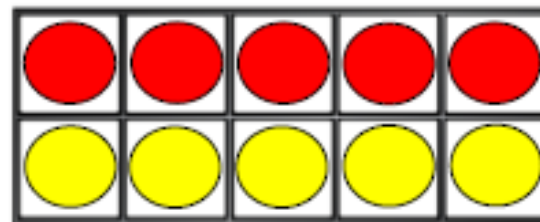
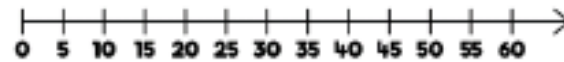
Encourage daily counting in multiples both forwards and backwards. This can be supported using a number line or a hundred square.

Look for patterns in the two times table, using concrete manipulatives to support. Notice how all the numbers are even and there is a pattern in the ones.

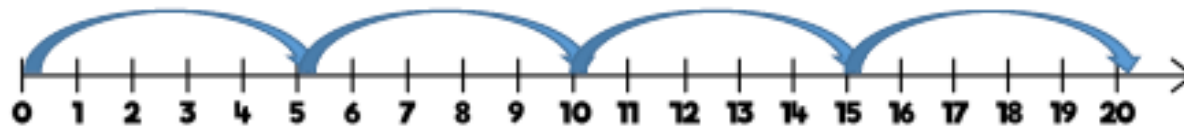
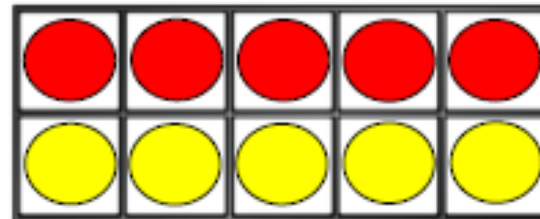
Use different models to develop fluency.

Skill: 5 times table

Year: 2



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

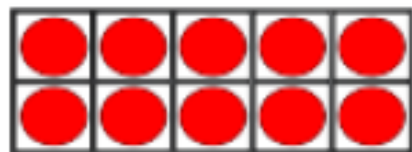
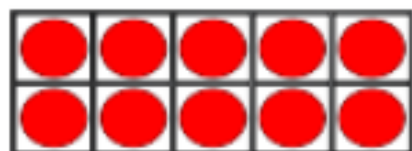
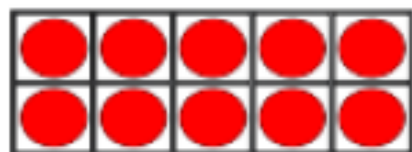
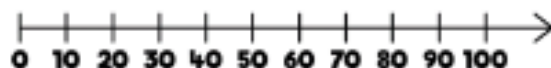


Encourage daily counting in multiples both forwards and backwards. This can be supported using a number line or a hundred square.

Look for patterns in the five times table, using concrete manipulatives to support. Notice the pattern in the ones as well as highlighting the odd, even, odd, even pattern.

Skill: 10 times table

Year: 2



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

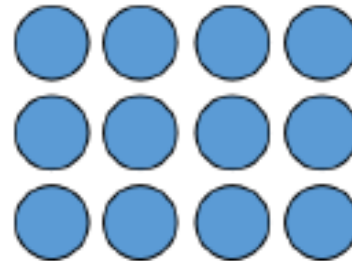


Encourage daily counting in multiples both forwards and backwards. This can be supported using a number line or a hundred square.

Look for patterns in the ten times table, using concrete manipulatives to support. Notice the pattern in the digits- the ones are always 0, and the tens increase by 1 ten each time.

Skill: 3 times table

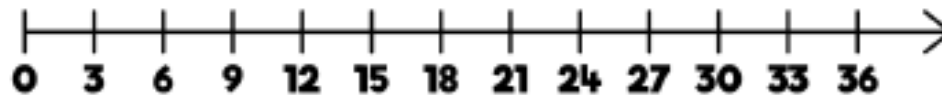
Year: 3



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50



3 6 9 12

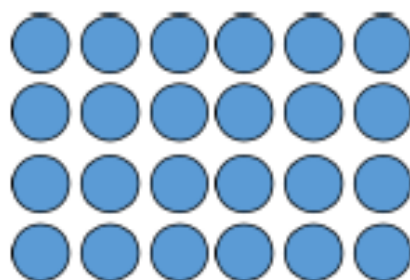


Encourage daily counting in multiples both forwards and backwards. This can be supported using a number line or a hundred square.

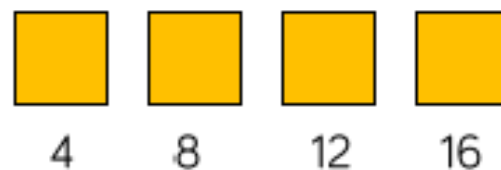
Look for patterns in the three times table, using concrete manipulatives to support. Notice the odd, even, odd, even pattern using number shapes to support. Highlight the pattern in the ones using a hundred square.

Skill: 4 times table

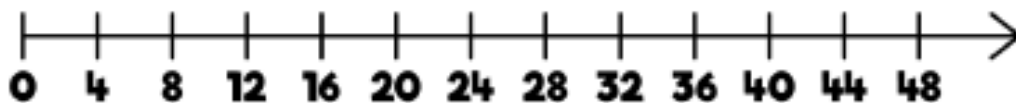
Year: 3



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50



4	8	12	16	20
24	28	32	36	40
44	48	52	56	60



Encourage daily counting in multiples, supported by a number line or a hundred square. Look for patterns in the four times table, using manipulatives to support. Make links to the 2 times table, seeing how each multiple is double the twos. Notice the pattern in the ones within each group of five multiples. Highlight that all the multiples are even using number shapes to support.

Skill: 8 times table

Year: 3



8

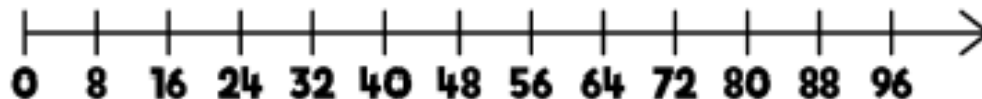
16

24

32

8	16	24	32	40
48	56	64	72	80

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



Encourage daily counting in multiples, supported by a number line or a hundred square. Look for patterns in the eight times table, using manipulatives to support. Make links to the 4 times table, seeing how each multiple is double the fours. Notice the pattern in the ones within each group of five multiples. Highlight that all the multiples are even using number shapes to support.

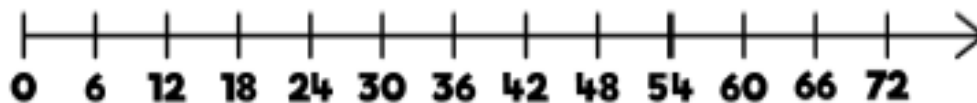
Skill: 6 times table

Year: 4



6	12	18	24	30
36	42	48	54	60
66	72	78	84	90

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



Encourage daily counting in multiples, supported by a number line or a hundred square. Look for patterns in the six times table, using manipulatives to support. Make links to the 3 times table, seeing how each multiple is double the threes. Notice the pattern in the ones within each group of five multiples. Highlight that all the multiples are even using number shapes to support.

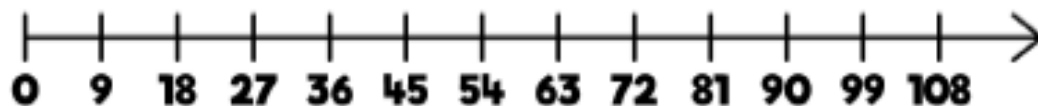
Skill: 9 times table

Year: 4



9	18	27	36	45
54	63	72	81	90

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



Encourage daily counting in multiples both forwards and backwards. This can be supported using a number line or a hundred square. Look for patterns in the nine times table, using concrete manipulatives to support. Notice the pattern in the tens and ones using the hundred square to support as well as noting the odd, even pattern within the multiples.

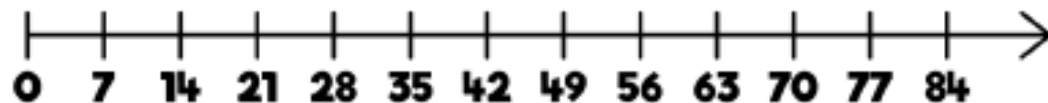
Skill: 7 times table

Year: 4



7	14	21	28	35
42	49	56	63	70

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



Encourage daily counting in multiples both forwards and backwards, supported by a number line or a hundred square.

The seven times table can be trickier to learn due to the lack of obvious pattern in the numbers, however they already know several facts due to commutativity.

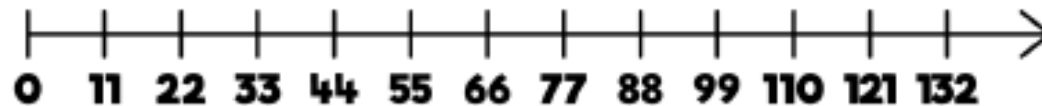
Children can still see the odd, even pattern in the multiples using number shapes to support.

Skill: 11 times table

Year: 4

11	22	33	44	55	66
77	88	99	110	121	132

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



Encourage daily counting in multiples both forwards and backwards. This can be supported using a number line or a hundred square.

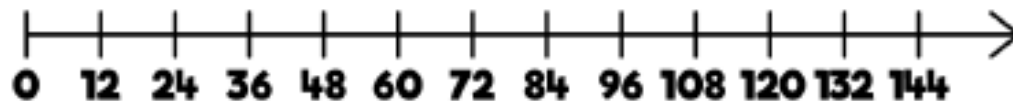
Look for patterns in the eleven times table, using concrete manipulatives to support. Notice the pattern in the tens and ones using the hundred square to support. Also consider the pattern after crossing 100

Skill: 12 times table

Year: 4

12	24	36	48	60
72	84	96	108	120
132	144			

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



Encourage daily counting in multiples, supported by a number line or a hundred square. Look for patterns in the 12 times table, using manipulatives to support. Make links to the 6 times table, seeing how each multiple is double the sixes. Notice the pattern in the ones within each group of five multiples. The hundred square can support in highlighting this pattern.

A decorative border with teal and white geometric shapes, including triangles and rectangles, surrounds the central white area.

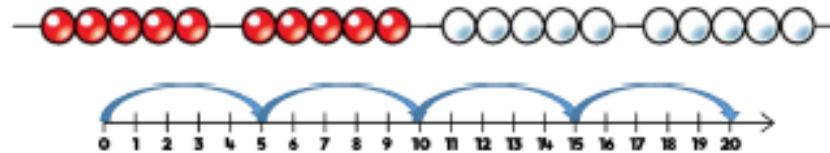
Multiplication

Skill	Year	Representations and models	
Solve one-step problems with multiplication	1/2	Bar model Number shapes Counters	Ten frames Bead strings Number lines
Multiply 2-digit by 1-digit numbers	3/4	Place value counters Base 10	Short written method Expanded written method
Multiply 3-digit by 1-digit numbers	4	Place value counters Base 10	Short written method
Multiply 4-digit by 1-digit numbers	5	Place value counters	Short written method

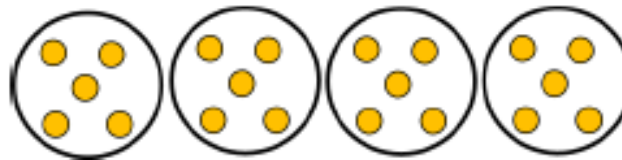
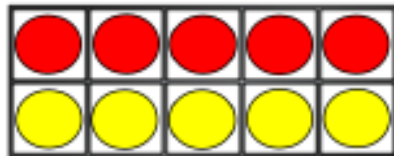
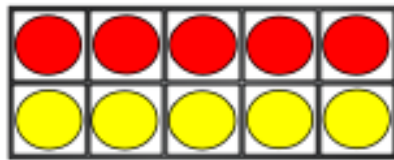
Skill	Year	Representations and models	
Multiply 2-digit by 2-digit numbers	5	Place value counters Base 10	Short written method Grid method
Multiply 2-digit by 3-digit numbers	5	Place value counters	Short written method Grid method
Multiply 2-digit by 4-digit numbers	5/6	Formal written method	

Skill: Solve 1-step problems using multiplication

Year: 1/2



One bag holds 5 apples.
How many apples do 4 bags hold?



$$5 + 5 + 5 + 5 = 20$$

$$4 \times 5 = 20$$

$$5 \times 4 = 20$$

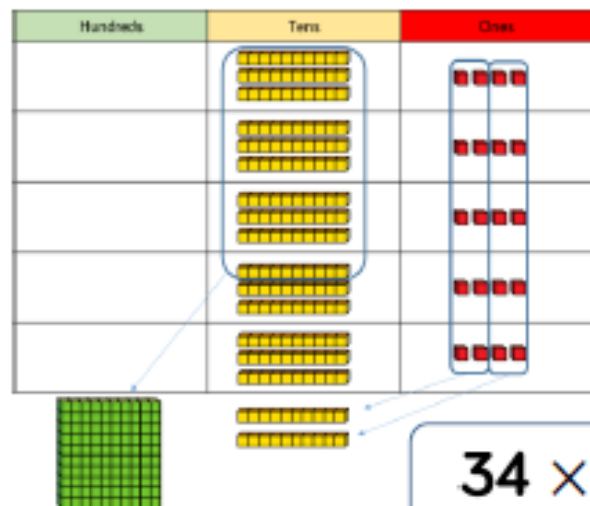
Children represent multiplication as repeated addition in many different ways.

In Year 1, children use concrete and pictorial representations to solve problems. They are not expected to record multiplication formally.

In Year 2, children are introduced to the multiplication symbol.

Skill: Multiply 2-digit numbers by 1-digit numbers

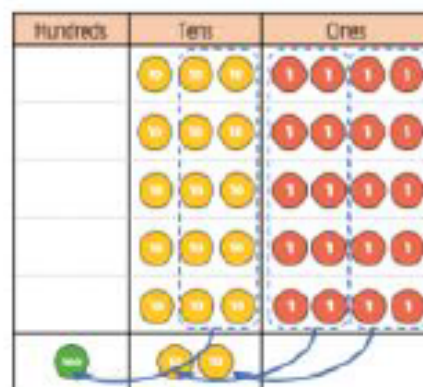
Year: 3/4



	H	T	O	
		3	4	
x			5	
		2	0	(5 × 4)
+	1	5	0	(5 × 30)
	1	7	0	

$$34 \times 5 = 170$$

	H	T	O	
		3	4	
x			5	
	1	7	0	
	1	2		

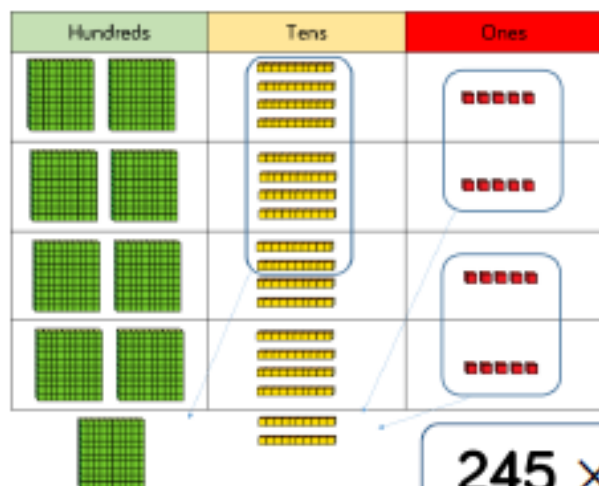


Teachers may decide to first look at the expanded column method before moving on to the short multiplication method.

The place value counters should be used to support the understanding of the method rather than supporting the multiplication, as children should use times table knowledge.

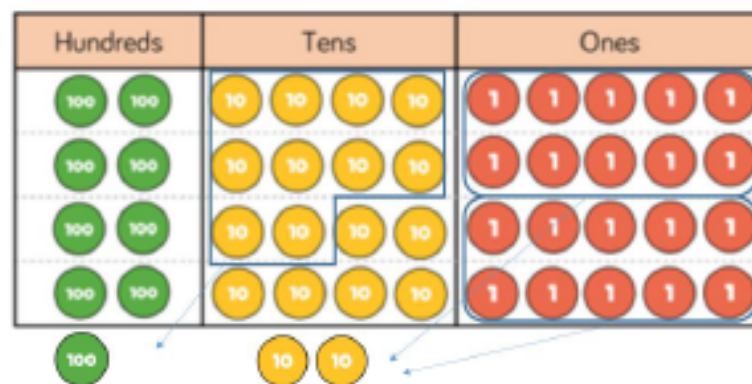
Skill: Multiply 3-digit numbers by 1-digit numbers

Year: 3/4



	H	T	O
	2	4	5
x			4
	9	8	0
	1	2	

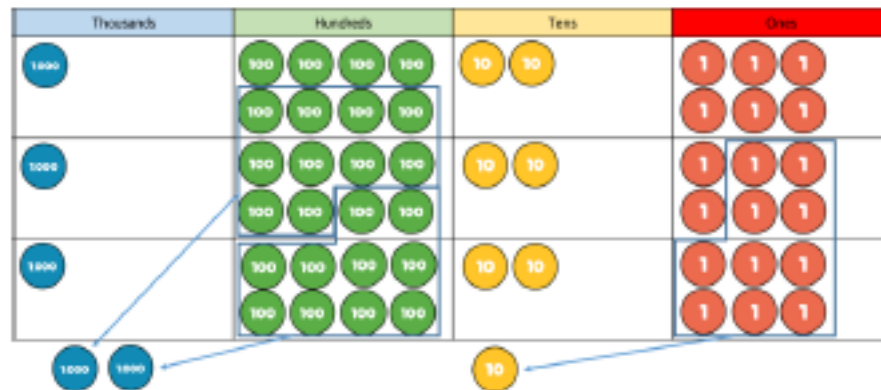
$$245 \times 4 = 980$$



When moving to 3-digit by 1-digit multiplication, encourage children to move towards the short, formal written method. Base 10 and place value counters continue to support the understanding of the written method. Limit the number of exchanges needed in the questions and move children away from resources when multiplying larger numbers.

Skill: Multiply 4-digit numbers by 1-digit numbers

Year: 5



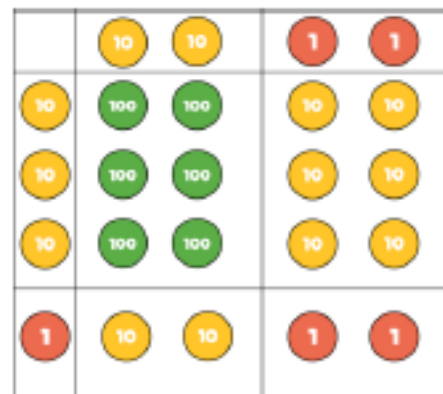
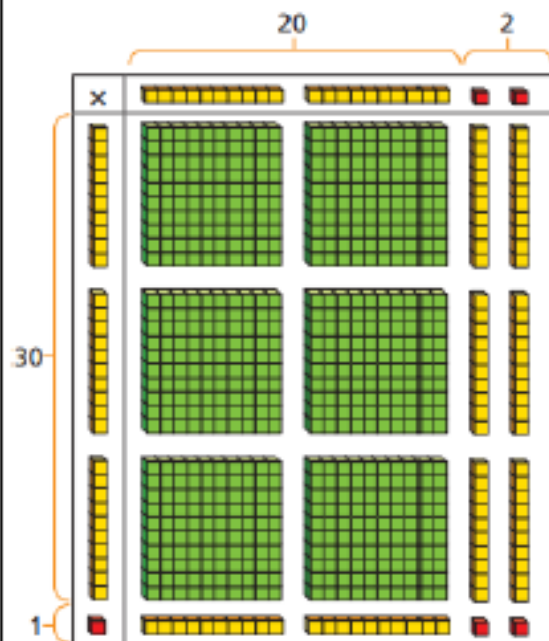
$$1,826 \times 3 = 5,478$$

	Th	H	T	O
	1	8	2	6
x				3
	5	4	7	8
	2		1	

When multiplying 4-digit numbers, place value counters are the best manipulative to use to support children in their understanding of the formal written method. If children are multiplying larger numbers and struggling with their times tables, encourage the use of multiplication grids so children can focus on the use of the written method.

Skill: Multiply 2-digit numbers by 2-digit numbers

Year: 5



×	20	2
30	600	60
1	20	2

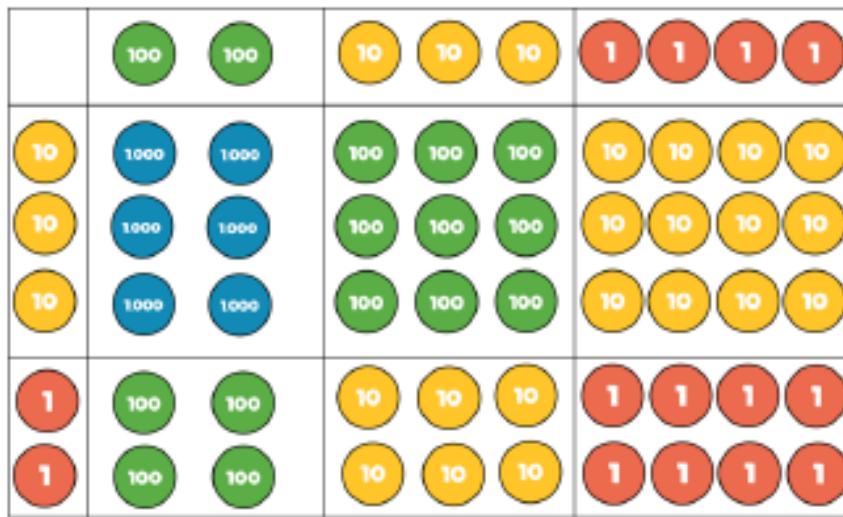
	H	T	O
		2	2
×		3	1
		2	2
	6	6	0
	6	8	2

$$22 \times 31 = 682$$

When multiplying a multi-digit number by 2-digits, use the area model to help children understand the size of the numbers they are using. This links to finding the area of a rectangle by finding the space covered by the Base 10. The grid method matches the area model as an initial written method before moving on to the formal written multiplication method.

Skill: Multiply 3-digit numbers by 2-digit numbers

Year: 5



	Th	H	T	O
		2	3	4
x			3	2
		4	6	8
17	10	2	0	
7	4	8	8	

x	200	30	4
30	6,000	900	120
2	400	60	8

$$234 \times 32 = 7,488$$

Children can continue to use the area model when multiplying 3-digits by 2-digits. Place value counters become more efficient to use but Base 10 can be used to highlight the size of numbers.

Encourage children to move towards the formal written method, seeing the links with the grid method.



Division

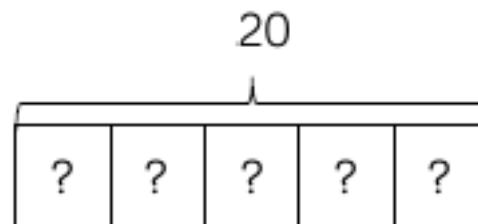
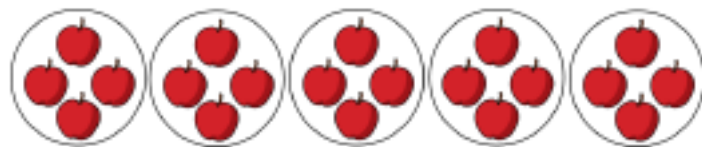
Skill	Year	Representations and models
Solve one-step problems with division (sharing)	1/2	Bar model Real life objects Arrays Counters
Solve one-step problems with division (grouping)	1/2	Real life objects Number shapes Bead strings Ten frames Number lines Arrays Counters
Divide 2-digits by 1-digit (no exchange sharing)	3	Straws Base 10 Bar model Place value counters Part-whole model
Divide 2-digits by 1-digit (sharing with exchange)	3	Straws Base 10 Bar model Place value counters Part-whole model

Skill	Year	Representations and models	
Divide 2-digits by 1-digit (sharing with remainders)	3/4	Straws Base 10 Bar model	Place value counters Part-whole model
Divide 2-digits by 1-digit (grouping)	4/5	Place value counters Counters	Place value grid Written short division
Divide 3-digits by 1-digit (sharing with exchange)	4	Base 10 Bar model	Place value counters Part-whole model
Divide 3-digits by 1-digit (grouping)	4/5	Place value counters Counters	Place value grid Written short division

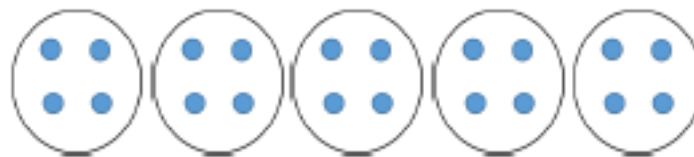
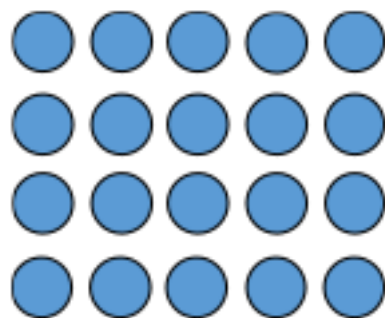
Skill	Year	Representations and models	
Divide 4-digits by 1-digit (grouping)	5	Place value counters Counters	Place value grid Written short division
Divide multi-digits by 2-digits (short division)	6	Written short division	List of multiples
Divide multi-digits by 2-digits (long division)	6	Written long division	List of multiples

Skill: Solve 1-step problems using multiplication (sharing)

Year: 1/2



There are 20 apples altogether.
They are shared equally between 5 bags.
How many apples are in each bag?



$$20 \div 5 = 4$$

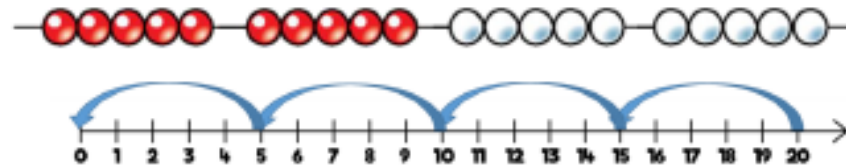
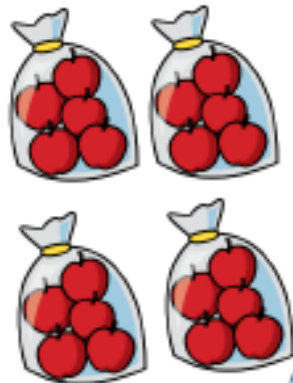
Children solve problems by sharing amounts into equal groups.

In Year 1, children use concrete and pictorial representations to solve problems. They are not expected to record division formally.

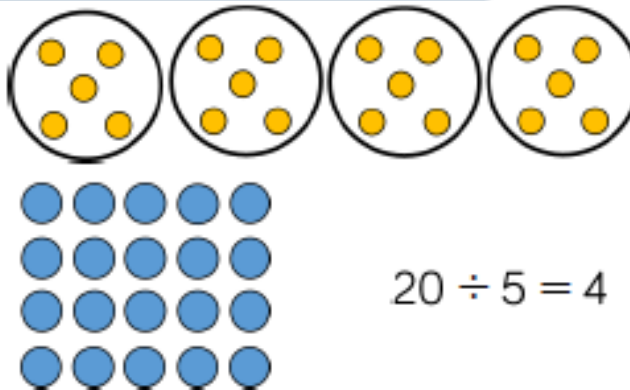
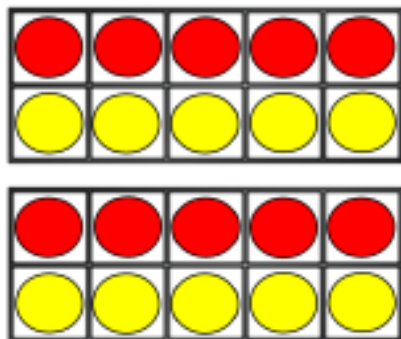
In Year 2, children are introduced to the division symbol.

Skill: Solve 1-step problems using division (grouping)

Year: 1/2



There are 20 apples altogether.
They are put in bags of 5.
How many bags are there?



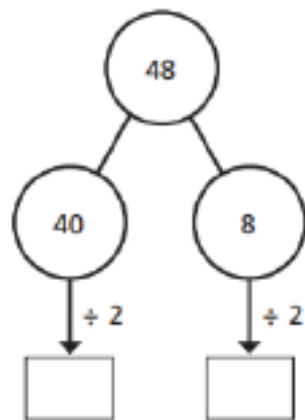
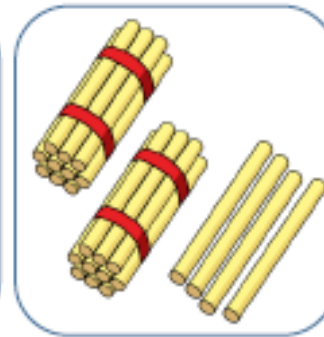
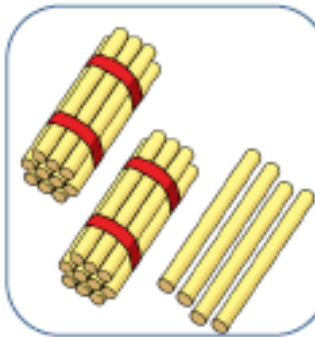
$$20 \div 5 = 4$$

Children solve problems by grouping and counting the number of groups. Grouping encourages children to count in multiples and links to repeated subtraction on a number line. They can use concrete representations in fixed groups such as number shapes which helps to show the link between multiplication and division.

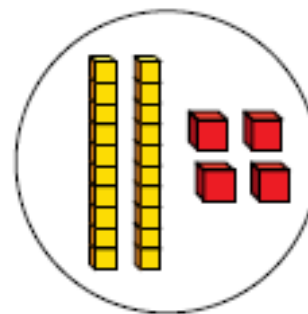
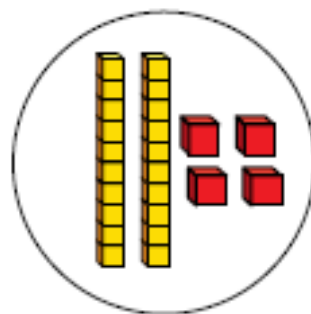
Skill: Divide 2-digits by 1-digit (sharing with no exchange)

Year: 1/2

Tens	Ones
10 10	1 1 1 1
10 10	1 1 1 1



$$48 \div 2 = 24$$



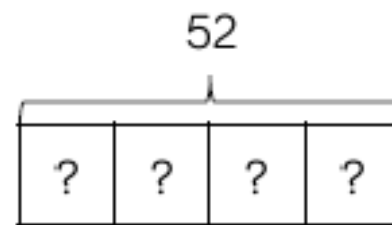
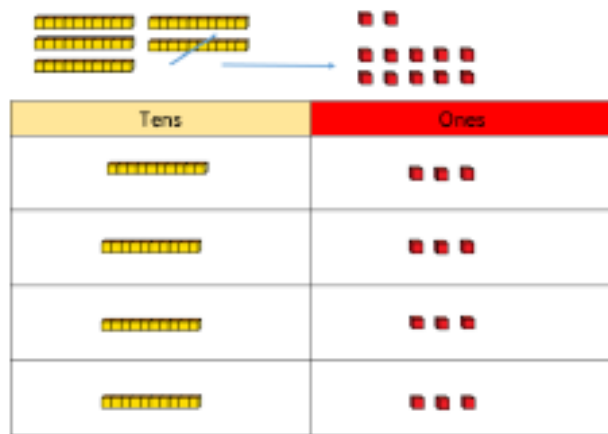
When dividing larger numbers, children can use manipulatives that allow them to partition into tens and ones.

Straws, Base 10 and place value counters can all be used to share numbers into equal groups.

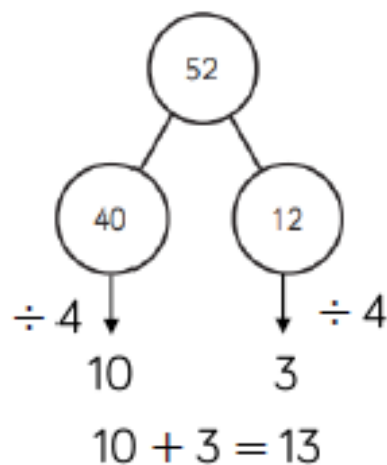
Part-whole models can provide children with a clear written method that matches the concrete representation.

Skill: Divide 2-digits by 1-digit (sharing with exchange)

Year: 3/4



$$52 \div 4 = 13$$











When dividing numbers involving an exchange, children can use Base 10 and place value counters to exchange one ten for ten ones. Children should start with the equipment outside the place value grid before sharing the tens and ones equally between the rows.

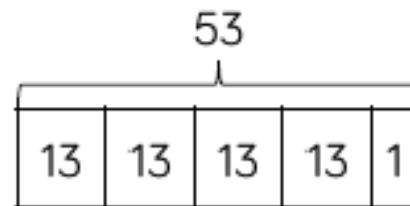
Flexible partitioning in a part-whole model supports this method.

Skill: Divide 2-digits by 1-digit (sharing with remainders)

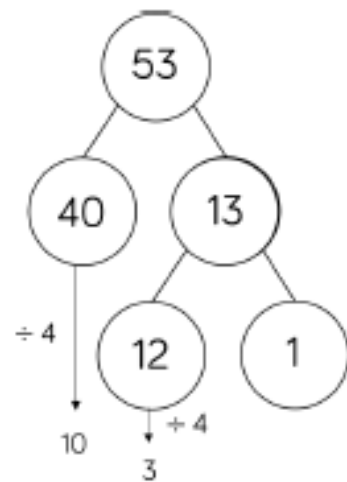

Year: 3/4












Tens	Ones
	
	
	
	



$$53 \div 4 = 13 \text{ r}1$$

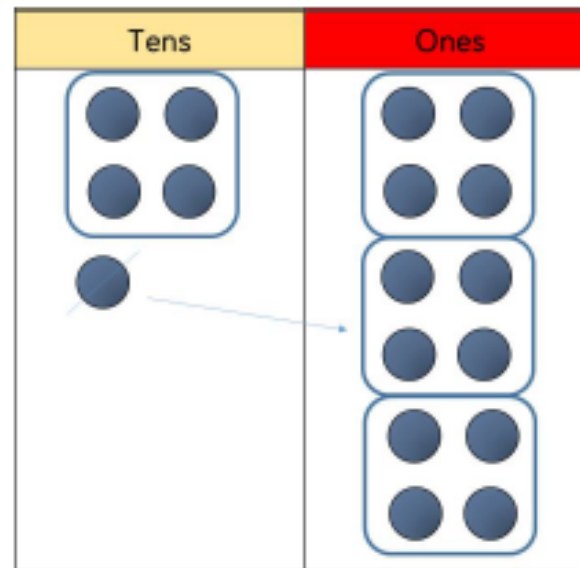
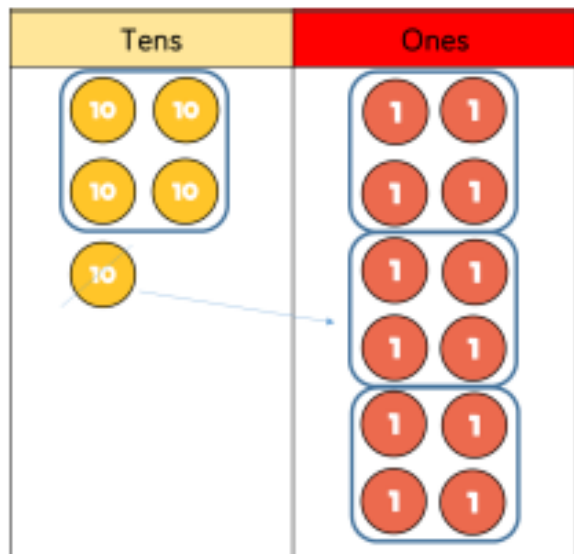
Tens	Ones
	
	
	
	



When dividing numbers with remainders, children can use Base 10 and place value counters to exchange one ten for ten ones. Starting with the equipment outside the place value grid will highlight remainders, as they will be left outside the grid once the equal groups have been made. Flexible partitioning in a part-whole model supports this method.

Skill: Divide 2-digits by 1-digit (grouping)

Year: 4/5



$$52 \div 4 = 13$$

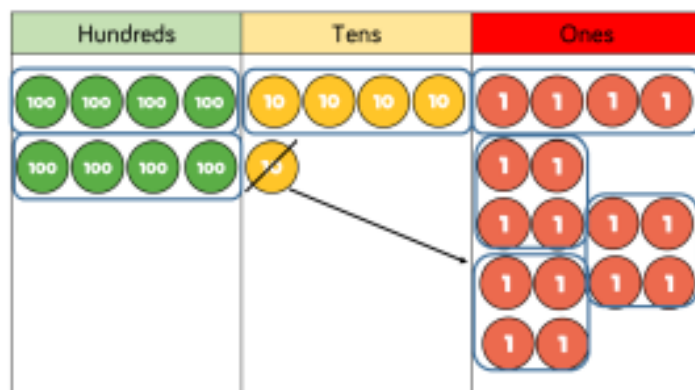
When using the short division method, children use grouping. Starting with the largest place value, they group by the divisor.

Language is important here. Children should consider 'How many groups of 4 tens can we make?' and 'How many groups of 4 ones can we make?'

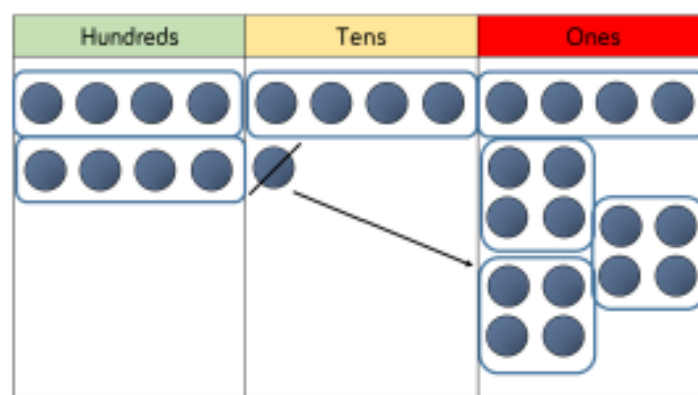
Remainders can also be seen as they are left ungrouped.

Skill: Divide 3-digits by 1-digit (grouping)

Year: 5



		2	1	4
	4	8	5	16



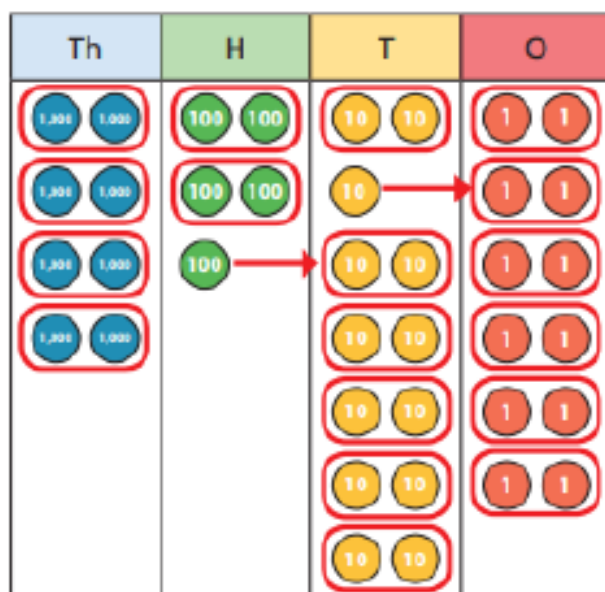
$$856 \div 4 = 214$$

Children can continue to use grouping to support their understanding of short division when dividing a 3-digit number by a 1-digit number.

Place value counters or plain counters can be used on a place value grid to support this understanding. Children can also draw their own counters and group them through a more pictorial method.

Skill: Divide 4-digits by 1-digit (grouping)

Year: 5



	4	2	6	6
2	8	5	13	12

$$8,532 \div 2 = 4,266$$

Place value counters or plain counters can be used on a place value grid to support children to divide 4-digits by 1-digit. Children can also draw their own counters and group them through a more pictorial method.

Children should be encouraged to move away from the concrete and pictorial when dividing numbers with multiple exchanges.

Skill: Divide multi digits by 2-digits (short division)

Year: 6

		0	3	6
	12	4	⁴ 3	⁷ 2

$$432 \div 12 = 36$$

$$7,335 \div 15 = 489$$

	0	4	8	9
15	7	⁷ 3	¹³ 3	¹³ 5

15	30	45	60	75	90	105	120	135	150
----	----	----	----	----	----	-----	-----	-----	-----

When children begin to divide up to 4-digits by 2-digits, written methods become the most accurate as concrete and pictorial representations become less effective. Children can write out multiples to support their calculations with larger remainders. Children will also solve problems with remainders where the quotient can be rounded as appropriate.

Skill: Divide multi-digits by 2-digits (long division)

Year: 6

		0	3	6
1	2	4	3	2
	-	3	6	0
			7	2
	-		7	2
				0

(x30)

$$12 \times 1 = 12$$

$$12 \times 2 = 24$$

$$12 \times 3 = 36$$

$$12 \times 4 = 48$$

$$12 \times 5 = 60$$

(x6)

$$12 \times 6 = 72$$

$$12 \times 7 = 84$$

$$12 \times 8 = 96$$

$$12 \times 9 = 108$$

$$12 \times 10 = 120$$

$$432 \div 12 = 36$$

$$7,335 \div 15 = 489$$

	0	4	8	9
15	7	3	3	5
-	6	0	0	0
	1	3	3	5
-	1	2	0	0
		1	3	5
-		1	3	5
				0

(x400)

$$1 \times 15 = 15$$

$$2 \times 15 = 30$$

$$3 \times 15 = 45$$

(x80)

$$4 \times 15 = 60$$

$$5 \times 15 = 75$$

(x9)

$$10 \times 15 = 150$$

Children can also divide by 2-digit numbers using long division.

Children can write out multiples to support their calculations with larger remainders.

Children will also solve problems with remainders where the quotient can be rounded as appropriate.

Skill: Divide multi digits by 2-digits (long division)

Year: 6

$$372 \div 15 = 24 \text{ r}12$$

			2	4	r	1	2
1	5	3	7	2			
	-	3	0	0			
			7	2			
	-		6	0			
			1	2			

- $1 \times 15 = 15$
- $2 \times 15 = 30$
- $3 \times 15 = 45$
- $4 \times 15 = 60$
- $5 \times 15 = 75$
- $10 \times 15 = 150$

When a remainder is left at the end of a calculation, children can either leave it as a remainder or convert it to a fraction. This will depend on the context of the question.

Children can also answer questions where the quotient needs to be rounded according to the context.

			2	4	$\frac{4}{5}$
1	5	3	7	2	
	-	3	0	0	
			7	2	
	-		6	0	
			1	2	

$$372 \div 15 = 24 \frac{4}{5}$$

Glossary

Array – An ordered collection of counters, cubes or other item in rows and columns.

Commutative – Numbers can be multiplied in any order.

Dividend – In division, the number that is divided.

Divisor – In division, the number by which another is divided.

Exchange – Change a number or expression for another of an equal value.

Factor – A number that multiplies with another to make a product.

Multiplicand – In multiplication, a number to be multiplied by another.

Partitioning – Splitting a number into its component parts.

Product – The result of multiplying one number by another.

Quotient – The result of a division

Remainder – The amount left over after a division when the divisor is not a factor of the dividend.

Scaling – Enlarging or reducing a number by a given amount, called the scale factor

Additional IT resources linked to our mathematics curriculum include:

Times Tables Rock Stars

Times Tables Rock Stars is a carefully sequenced programme of regular times tables practice and is an integral part of our Maths Framework. TTRS is a highly engaging way for children to learn their times tables and our children love it!



Following the successful embedding of TT Rock Stars from Y2, we have trialled and implemented their sister site NumBots for our younger pupils.

Impact:

Learning outcomes are closely monitored to ensure that they reflect a sound understanding of the identified key knowledge. Teachers intervene in a timely manner to clarify misconceptions and revisit areas of learning if necessary. We know the importance of children learning at a level that is appropriate to their needs. This helps them become confident learners who have a good number sense with a range of strategies to draw upon. Through the teaching at ACE, we ensure children have a positive growth mindset and this, along with their number sense means that the children can tackle new learning with confidence. They are able to communicate their understanding and reasoning using mathematical language. Our learners embrace challenge and have a resilient attitude that helps them persevere and enjoy their learning. The outcomes of pupils, are monitored by the class teacher, subject lead and SLT through assessment and marking, tracking, book scrutiny and pupil interviews.

Assessment:

Assessment is ongoing throughout each maths topic, enabling the teacher clarify misconceptions quickly. Summative assessment takes different forms but may include a knowledge-based test, a maths reasoning or problem solving activity where children demonstrate their learning. The ethos of the curriculum is one where we are embedding a depth and mastery of the learning objectives. Assessing children's depth of knowledge and ability to apply this into other contexts is our priority. We currently use a variety of ways to assess the children in maths throughout the year. Some of the assessment materials we use are:

- White Rose Maths
- SATs tests
- TT Rock star analysis tools
- Rising Stars Weekly Arithmetic Tests

The levels the children are working at are entered on to Tracking System on a half termly basis, for both Teacher assessments and formal test data, and those are analysed by SLT. Assessment is regarded as an integral part of teaching and learning and is a continual

process. At ACE, we strive to make our assessment purposeful, allowing us to match the correct level of work to the needs of the pupils. Information for assessment is gathered in various ways: talking to children, observing their work, marking etc. These assessments are used to plan future work, to ensure pupils are both challenged and supported. Teachers will indicate to children their next steps and learning targets on a regular basis in their books. Children who receive intervention programmes, such as 'The White Rose National Tutoring Programme', will be recorded in their APPS and passed up to the next teacher. This will enable their progress to be tracked and a decision made as to the impact of the intervention programme.

Monitoring and Evaluation:

The Maths Lead, alongside the Head Teacher, is responsible for monitoring and evaluating curriculum progress. This is done through book scrutiny, planning scrutiny, learning walks, lesson observations, pupil interviews, staff discussions and audit of resources.

Review:

The mathematics policy will be continuously updated, and reflected upon, in our practice throughout the school year.

May 2024