Kislingbury Primary School

Calculation Policy

A Working Document

Last Update: April 2020

Introduction:

- At Kislingbury Primary School we have adopted our calculation policy from the White Rose Hub's calculation document and other PDET school members' policies and adapted it for our school needs.
- This policy is a statement of aims, principles and strategies for the teaching and learning of calculation in mathematics at Kislingbury Primary School.
- This policy has been developed by the mathematics co-ordinator and reviewed by the senior leadership and staff team at Kislingbury.
- This policy is not only for the use of staff at our school, but also for parents, carers, visitors and any other supported of our children's learning.
- The policy is designed to meet with the aims of the 2014 Primary curriculum and provide a consistent calculation approach across the school giving all pupils the opportunity to make informed choices about methods they can use.
- The overall calculation strategy in all year groups is to move from concrete to pictorial and then abstract. Mental strategies will be woven into lessons in collaboration with the CPA method (Concrete: using physical resources, Pictorial: solving problems through picture representation, Abstract: using a written formal method).

ADDITION

ADDITION

KISLINGBURY C.E. PRIMARY SCHOOL

Foundation Stage

addends

21 + 52 = 73

sum

Key Vocab: add, more, sum, make, total, How much more is...? One more, altogether.

Counting fluency: To count forwards and backwards in steps in 1s, 2s, 5s and 10s.

addends

21 + 52 = 73

sum

Objective	Concrete	Pictorial	Abstract
To find one more than a given number up to 20.	Use physical objects to add one object to find the whole.  Modelled using counters for the Part Whole Method. 	Use pictorial representations to add one object to find the whole.  Modelled using Part- Whole with numbers recorded. 	Record as a written calculation. 6 + 1 = 7 1 + 6 = 7 7 = 6 + 1 7 = 1 + 6
To use objects to add two single-digit numbers.	Use physical objects to add two single objects to find the whole.  Modelled using counters for the Part Whole Method.  Modelled using a Bead String 	Use pictorial representations to add two single objects to find the whole. Modelled using the Part Whole Method with numbers  Modelled using a Number Line 	Record as a written calculation. 5 + 3 = 8 3 + 5 = 8 8 = 5 + 3 8 = 3 + 5

ADDITION

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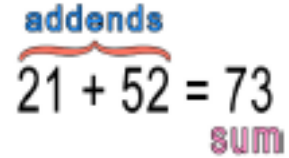
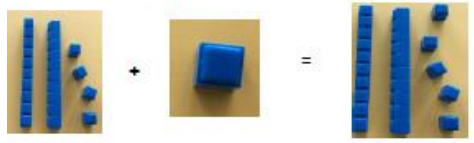
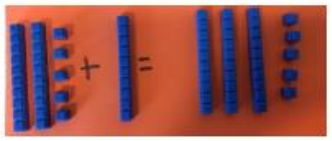
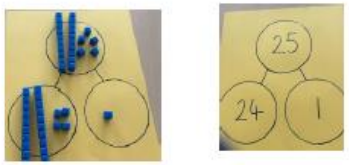
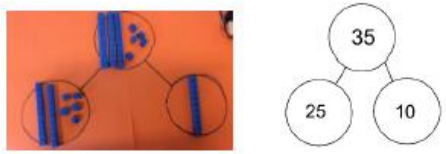
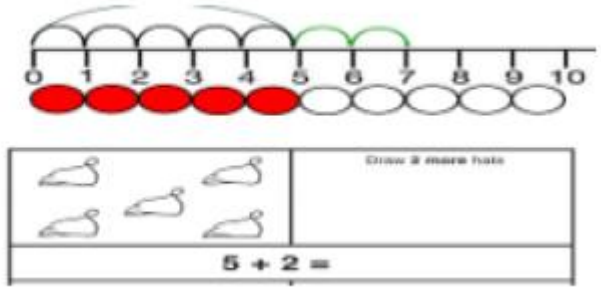
Year 1

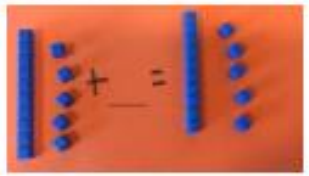
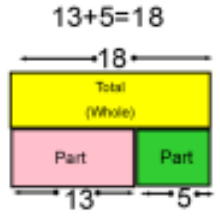
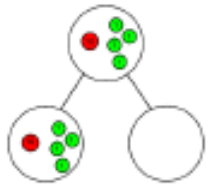


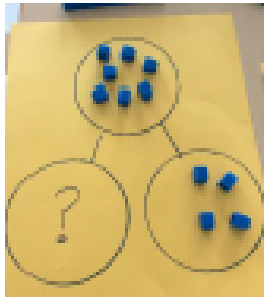
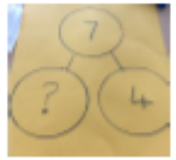
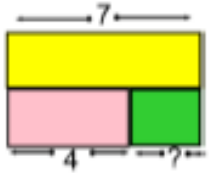
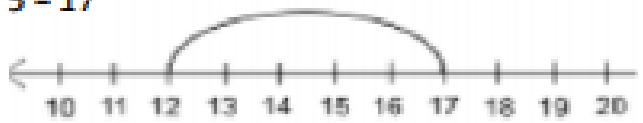
Key Vocab: addition, add, more, and, makes, sum, total, altogether, count on, one more, two more...etc, how many more to make? How many more is,,,than?

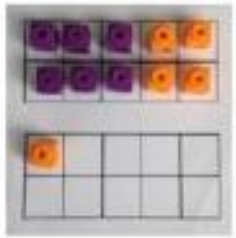
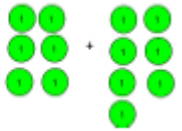
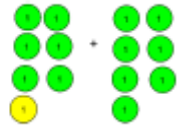
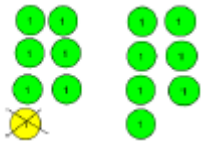
addends
21 + 52 = 73
sum

Counting fluency: To count forwards and backwards in steps 2s, 5s and 10s.

Objective	Concrete	Pictorial	Abstract
To find one more than a given number up to 100. To find 10 more than a given number up to 100.	Use physical objects to add one or ten more than a given number. 1 more than 25 is 26 Modelled Using Base 10  10 more than 25 is 35 Modelled using Base 10 	Use pictorial representations to add. 1 more than 25 is 26 Modelled using the Part-Whole method with Base 10 then numbers  10 more than 25 is 35 Modelled using the Part-Whole method with Base 10 then numbers 	Record as a written calculation. 24 + 1 = 25 1 + 24 = 25 25 = 24 + 1 25 = 1 + 24
To represent and use number bonds and related subtraction facts within 20.	Use physical objects to find related number facts. Number beads 2 more than 5 5+2=7 	Use pictorial representations to show related number facts. 2 more than 5 5+2=7 	Emphasis should be on the language. *'1 more than 5 is equal to 6.'* *'2 more than 5 is 7.'* *'8 is 3 more than 5.'*

Objective	Concrete	Pictorial	Abstract
To add two single-digit numbers.	Use physical objects to add two single objects to find the whole.  Modelled using counters for the Part Whole Method. 5+3 = 8  Modelled using a Bead String 5+3 = 8 	Use pictorial representations to add two single digits to find the whole. Modelled using the Part Whole Method with numbers 5+3 = 8  Modelled using a Number Line 	Record as a written calculation. 5 + 3 = 8 3 + 5 = 8 8 = 5 + 3 8 = 3 + 5
To add a one digit and two digit number to 20, including zero.	Use physical objects to add one digit and two digit numbers to find a whole. 5 + 13 = 18  15 + 0 = 15 	Use pictorial representations to add one digit and two digit numbers to find a whole. Modelled using the Bar Model Children will represent the problem in a bar model. They will then use their knowledge of addition to help solve the problem.  Part-Whole method with counters 15 + 0 = 15 	Record as a written calculation. 13 + 5 = 18 5 + 13 = 18 18 = 5 + 13 18 = 13 + 5 15 + 0 = 15 0 + 15 = 15 15 = 0 + 15 15 = 15 + 0

Objective	Concrete	Pictorial	Abstract
To solve one step problems that include addition.	Use physical objects to solve one step problems. Modelled using Part Whole with Base 10 7 = ? + 4 	Use pictorial representations to solve one step problems. Modelled using Part-Whole with numbers 7 = ? + 4  Modelled using the Bar Model  Children would then go on to solve it using their knowledge of addition.	Record as a written calculation. 7 = ___ + 4
To start at the bigger number and count on.	Use physical objects to count on from a number. 12+5= 17 Modelled using a bead string  Start with the larger number on the bead string and then count on to the smaller number 1 by 1 to find the answer.	Use pictorial representations to count on from a number. Modelled using a number line 12 + 5 = 17  Start at the larger number on the number line and count on in ones or in one jump to find the answer.	Record as a written calculation. 12 + 5 = 17 5 + 12 = 17 Put the larger number in your head and count on the smaller number to find your answer.

Objective	Concrete	Pictorial	Abstract
To regroup to make 10	Use physical objects to regroup to make 10. Use physical objects to regroup to make 10.  6 + 5 = 11  Start with the bigger number and use the smaller number to make 10. Use ten frames.	Use pictorial representations to regroup to make 10.  3 + 9 = Use pictures or a number line. Regroup or partition the smaller number using the part part whole model to make 10. 9 + 5 = 14 1 4 +1 +4	Record as a written calculation. 7 + 4 = 11 *If I am at seven, how many more do I need to make 10?* *How many more do I need now to make it to 11?*
To add near doubles.	Use physical objects to add near doubles. 5 + 7  Step 1- Make the calculation.  Step 2- Adjust the 6 to a 7 by adding 1.  Step 3- Add them to find the total.  Step 4- Subtract the 1, which was previously added, from the total to find the final answer.	Use pictorial representations to add near doubles. 6 + 7 =  Adjust 6 by adding 1 to make it 7.  Find the answer to double 7 = 14 Remember to subtract the 1 that was added to find the final answer, 14-1= 13 	Record as a written calculation. 6 + 7 = 13 7 + 6 = 13 13 = 7 + 6 13 = 6 + 7

ADDITION

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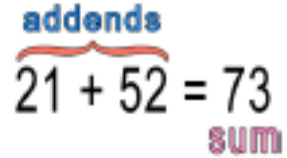
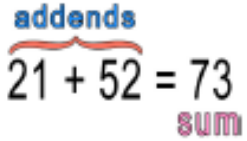
Year 2

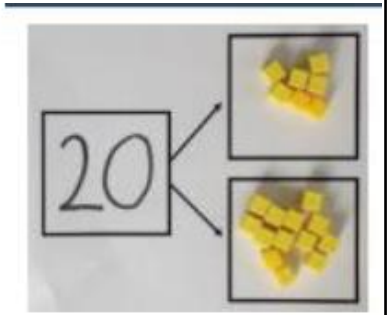
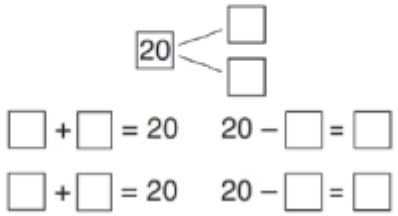
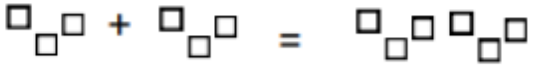
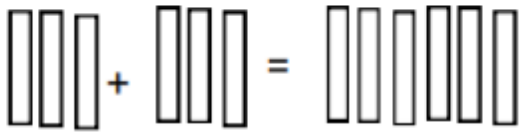
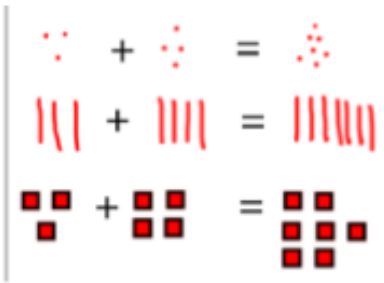


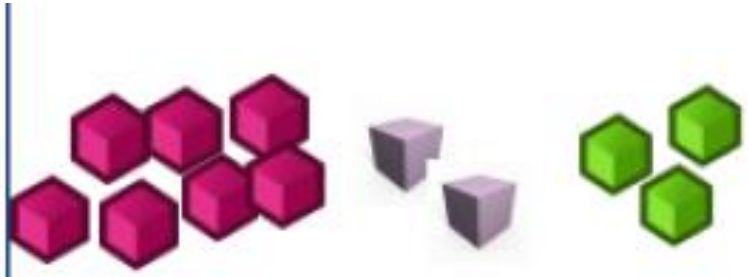
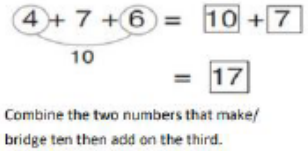
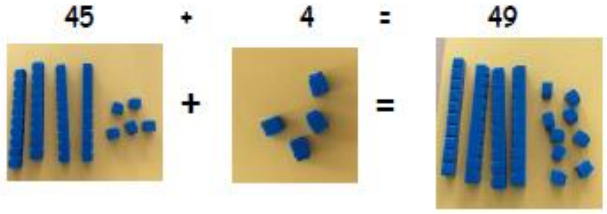
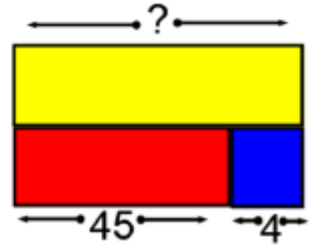
Key Vocab: addition, add, more, and, makes, sum, total, altogether, double, count on, one more, two more, hundred more....etc, how many more to make? How many more is,,,than? How much more is...?

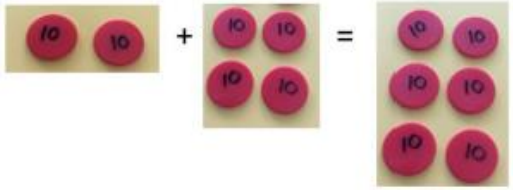
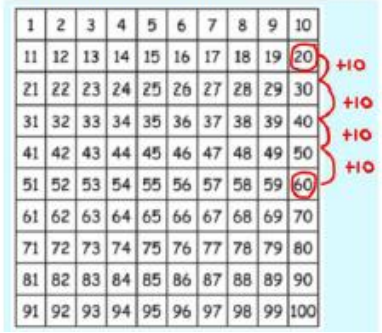
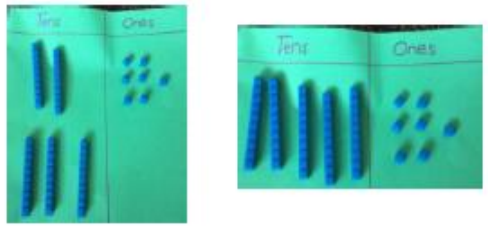
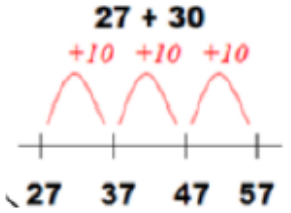


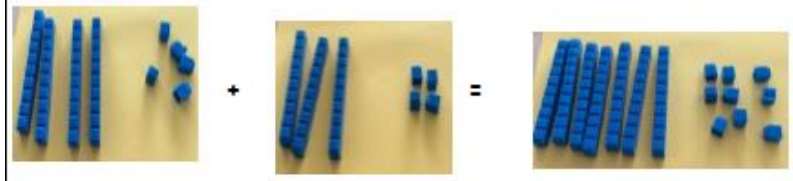
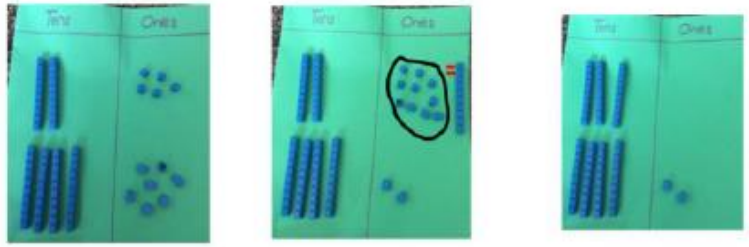
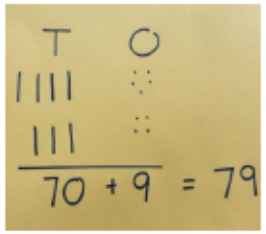
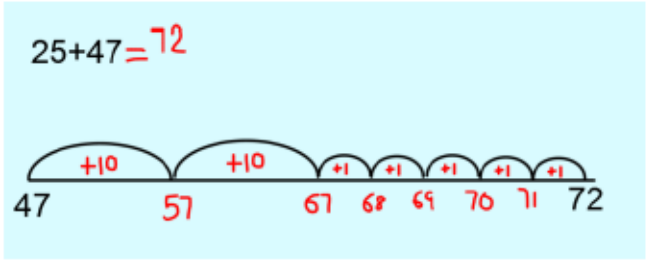
Counting fluency: To count forwards and backwards in steps 2s, 3s, 4s, 5s and 10s.

Mental Maths Skill	Example
To add 9 to a 2 digit number by adjusting.	Make the number with the base ten equipment, then add 10. You then subtract 1 because 10 is actually one more than 9. For 23 + 9 you would add 10 to 23 = 33 then subtract 1 = 32. Children should begin to do this mentally.
To add near doubles.	When the numbers are very close in value, adjust one of the numbers to make it the same and then use knowledge of partitioning to double and subtract 1. For 22 + 23 you would double 20 (40) and double 3 (6) = 46 then subtract 1 = 45.

Objective	Concrete	Pictorial	Abstract
To recall and use addition facts to 20 fluently.	Use physical objects to represent each part of calculation. Then use this to show related addition facts. Modelled using part whole method. Children explore ways of making number bonds by moving the concrete objects around. 20 = 7+ 13 	Use pictorial representations to explore addition facts to 20. Modelled using the part whole method with structured number sentences to show relation facts. 	Record as a written calculation. ? + 1 = 20 1 + ? = 20 20 - 1 = ? 20 - ? = 1
To derive and use related facts up to 100.	Use physical objects to show related facts up to 100 Modelled using Base 10 e.g. 3 + 3 =6  so... 30 + 30 = 60 	Use pictorial representations to show related facts up to 100. Children show their thinking using jottings to record their mathematical calculations. 3 + 3 =6 30 + 30 = 60 300+300 = 600 	Record as a written calculation. 3 + 4 = 7 leads to... 30 + 40 = 70 leads to... 300 + 400 = 700

Objective	Concrete	Pictorial	Abstract
To add three 1 digit numbers to 100.	Use physical objects to add three 1 digit numbers to 100.  Combine to make 10 first if possible, or bridge 10 then add third digit	Use pictorial representations to add three 1 digit numbers to 100. Modelled using images Children find the numbers that make 10 to aid the adding skills.  Regroup and draw representation. 	Record as a written calculation. Children are encouraged to add the numbers that make ten before adding the final number.  Combine the two numbers that make/ bridge ten then add on the third.
To add a two digit number and ones up to 100.	Use physical objects to add a two digit number and ones up to 100. Children would use equipment for example, Base 10 to help them show their mathematical thinking.  	Use pictorial representations to add a two digit number and ones up to 100. Use the Bar Model method to show number correspondence in order to find the whole. Using the Bar Model to add 45+4=?  	Record as a written calculation. 45 + 4 = 49 Explore related facts 45 + 4 = 49 4 + 45 = 49 49 - 45 = 4 49 - 4 = 45

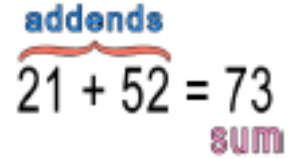
Objective	Concrete	Pictorial	Abstract
To add multiples of 10	Use physical objects to add multiples of 10 · Using place value counters to add Children use concrete apparatus to show number sentences. Children then combine to find their answer. 20 + 40 = 60 	Use pictorial representations to add multiples of 10 · Using a Hundred Square Children circle the smallest number on the 100 square. They then add the larger multiple of 10 by jumping down in steps of 10. 20+40=60 	Record as a written calculation. 40 + 20 = 60 20 + 40 = 60 60 = 40 + 20 60 = 20 + 40 40 + ?? = 60 ?? + 20 = 60
To add a two digit number and tens up to 100.	Use physical objects to add a two digit number and tens up to 100. Children represent the calculation using base 10 or place value grids and counters. When finding totals, they add the ones first, then the tens to find the whole. Modelled using Base 10 27 + 30 = 57 	Use pictorial representations to add a two digit number and tens up to 100. Using a 100 Square Children circle the non-multiple of 10 then add the multiples of 10 by jumping down the hundred square.  Modelled using a number line Start with the non-multiple of 10 and jump in tens. 27 + 30 = 57 	Record as a written calculation. 27 + 10 = 37 27 + 20 = 47 27 + ? = 57

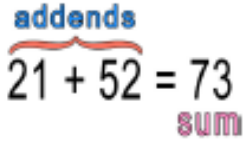
Objective	Concrete	Pictorial	Abstract
To add two digit numbers to 100 (including bridging through 10)	Use physical objects to add two digit numbers to 100 (including bridging through 10) Modelled using Base 10 45+34=79  25 + 47 = 72  25+47= Children will need to exchange 10(1s) for 1 (10). 72 When children bridge through 10, they will need to exchange 10 ones for 1 ten.	Use pictorial representations to add two digit numbers to 100 (including bridging through 10) 45+34=79  Modelled using a number line Start with the largest number and partition the second. Add the tens first then the ones. It is important that the children record their workings underneath. To find the answer, children count the numbers inside each jump.  	Record as a written calculation. 45 + 34 9 (5+4) 70 (40+30) 79 Begin to use more condensed method of column addition. 2 5 + 4 7 7 2 1

ADDITION

KISLINGBURY C.E. PRIMARY SCHOOL

Year 3

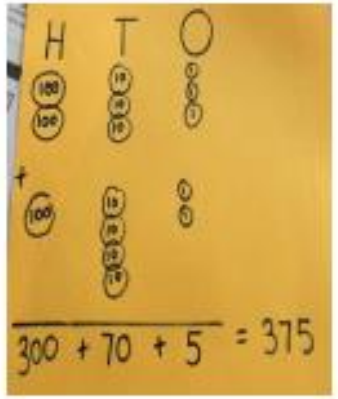
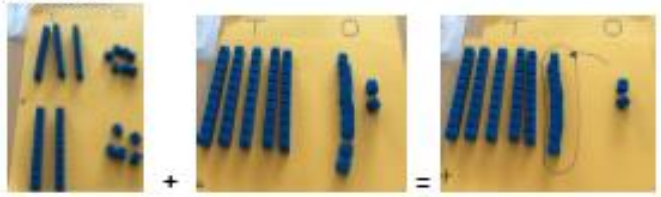
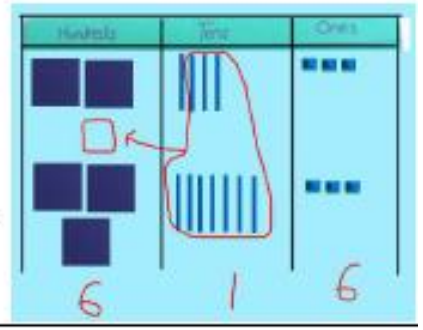
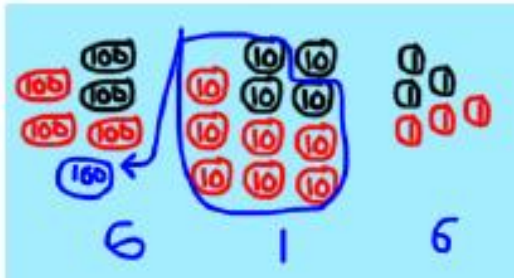


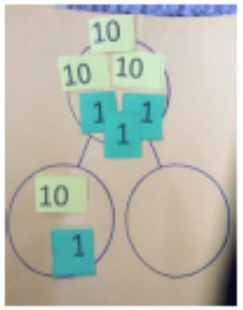
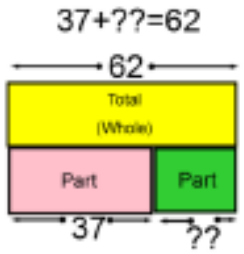
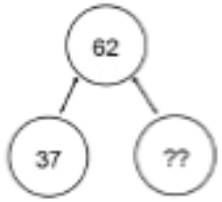


Key Vocab: addition, columnar addition, add, more, and, makes, sum, total (of), altogether, increased by, double, near double, count on, one more, two more, hundred more....etc, inverse, commutative law, how many more to make? How many more is,,,than? How much more is...?

Counting fluency: To count forwards and backwards in steps 2s, 3s, 4s, 5s, 6s, 8s , 10s and 100s from any given number.

Mental Maths Skill	Example
Add three small numbers	7 + 13 + 5 Look for number bonds first eg 13 + 7 = 20 +5 + 25 or add two numbers and then add the final one.
Add a three digit number and ones.	234 + 4 = simply add the ones = 238 234 + 7 = use number bonds to ten to partition. 234 + 6 = 240 + 1 +241.
Add a three digit number and tens.	456 + 30 = simply add the tens = 486 456 + 60 = use number bonds to hundred to partition 456 + 50 = 506 + 10 = 516
Add a three digit number and hundreds.	353 + 400 = simply add hundreds = 753 353 + 800 = use number bonds to thousand to partition 353 + 700 = 1053 + 100 =1153
Add a two digit number to a 3 digit tens number.	630 + 23 = simply add tens = 653 630 + 84 = use number bonds 630 + 70 = 700 + 10 + 4 = 714
Add pairs of 2 digit numbers.	45 + 33 = simply add columns = 78 45 + 36 = use number bonds 40 + 30 = 70 and 5 + 6 = 11 and 70 + 11 = 81
Add to any three digit number to make the next ten or hundred.	326 + ? = 330 look for number bonds. 326 + 4 = 330. 457 + ? = 500 use number bonds 457 + 3 = 460 + 40 = 500.
Add near doubles	15 + 17 = 15 + 15 = 30 + 2 = 32 70 + 80 = 80 + 80 = 160 – 10 = 150
Add near multiples of 10 and 100.	23 + 9 = 23 + 10 = 33 – 1= 32 234 + 99 = 234 + 100 = 334 – 1 = 333

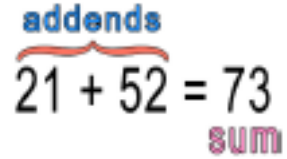
Objective	Concrete	Pictorial	Abstract
To add numbers up to 3 digits using formal written methods – no regrouping.	Use physical objects to add numbers up to 3 digits using formal written methods . Modelled using Base 10 and place value counters- Add the ones first then the tens. 233+142=375  	Use pictorial representations to add add numbers up to 3 digits using formal written methods . 233+142=375  	Record as a written calculation. 233 +142 5 (3+2) 70 (30+40) 300 (200+100) 375 Condensed columnar addition 233 + 142 375
To add numbers up to 3 digits using formal written methods – with regrouping	Use physical objects to add numbers up to 3 digits Modelled using Base 10 and place value counters- Add the ones together first then the tens. 37+25=62  Modelled using Base 10 Children to understand that the highest amount in each column is 9 so sometimes exchange into the next column is necessary. Children know to exchange ten 1s for a ten and ten 10s for a hundred. 243+ 373 = 616  	Use pictorial representations to add numbers up to 3 digits 37+25  243 +373= 616  	Record as a written calculation. Condensed columnar addition Carry below the line when bridging. 37 +25 62 1 2 4 3 + 3 7 3 6 1 6 1

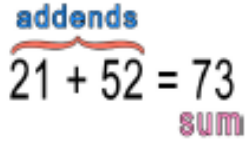
Objective	Concrete	Pictorial	Abstract
To solve addition problems including missing numbers.	Use physical objects to solve addition problems including missing numbers. . Children will need to solve problems that are incomplete using their knowledge of inverse operations. 33= ? + 11 11+ ? = 33 ? + 11 =33 The missing number can be presented in multiple places. **Modelled using the Part Whole Method**  	Use pictorial representations to solve addition problems including missing numbers. . **Modelled using the Bar Model** Use the bar model, children will make sense of the problem before solving it.  **Modelled using the Part Whole method** Children use their knowledge of inverse operations to solve missing number problems effectively.  	Record as a written calculation. 37+??=62

ADDITION

KISLINGBURY C.E. PRIMARY SCHOOL

Year 4

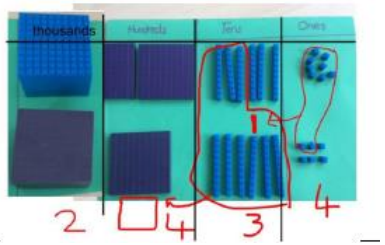
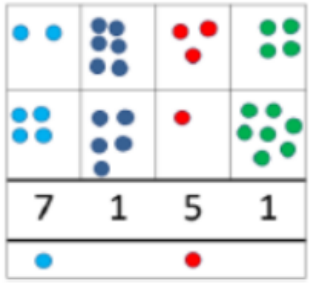
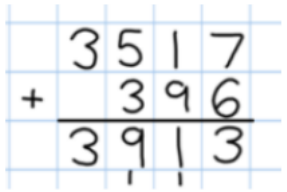
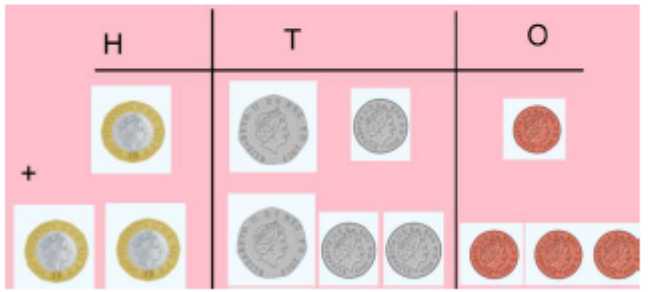
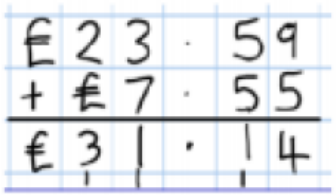




Key Vocab: addition, columnar addition, add, more, and, makes, sum, total (of), altogether, extra, in all, combined, increased by, double, near double, count on, one more, two more, hundred more....etc, inverse, commutative law, how many more to make? How many more is,,,than? How much more is...?

Counting fluency: To count forwards and backwards in steps 2s, 3s, 4s, 5s, 6s, 8s , 9s, 10s, 11s, 12s, 100s and 1000s from any given number.

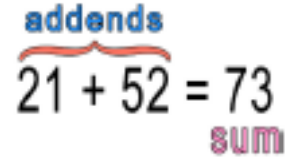
Mental Maths Skill	Example
Add four digit numbers to ones	2344 + 4 = simply add the ones = 2349 2344 + 7 = use number bonds to partition. 2344 + 6 = 2350 + 1 = 2351.
Add a four digit number and tens.	4564 + 30 = simply add the tens = 4596 4564 + 60 = use number bonds to partition 4564 + 40 = 4604 + 20 = 4624
Add a four digit number and hundreds.	3532 + 400 = simply add hundreds = 3932 3532 + 700 = use number bonds to partition 3532 + 500 = 4032 + 200 = 4232
Add a four digit number and thousands.	3532 + 2000 = simply add thousands = 5532 3532 + 8000 = use number bonds to partition 3532 + 7000 = 10532 + 2000 = 12532
Add any pair of 3 digit multiples of ten.	630 + 230 = simply add = 850 630 + 280 = use number bonds 630 + 200 = 830 + 70 = 900 + 10 = 910
Add near doubles of 10, 100, 1000	4553 + 39 = 4553 + 40 = 4593 − 1 = 4592 4553 + 199 = 4553 + 200 = 4753 − 1 = 4752 4553 + 1999 = 4553 + 2000 = 6553 − 1 = 6552
Add near doubles of 2 or 3 digit numbers.	28 + 27 = double 28 + 20 + 20 = 40 + 16 = 56 − 1 = 55
Add to decimal fraction with ones and tenths to make the next whole.	0.4 + ? = 1.0 Use number bonds to 10. 4 + 6 = 10. 0.4 + 0.6 = 1

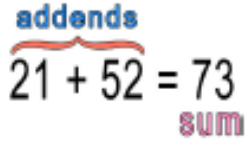
Objective	Concrete	Pictorial	Abstract
To add numbers up to 4 digits.	Use physical objects to add numbers up to 4 digits. **Modelled using Base 10** Children to understand that the highest amount in each column is 9 so sometimes exchange into the next column is necessary. Children understand that they can exchange ten 1s for a ten and ten 10s for a hundred and ten 100s for a thousand. Children begin to understand multi exchange where exchange is needed in more than one column. 1268+ 1166 = 2434  	Use pictorial representations to add numbers up to 4 digits. Children will use images to represent the place value. If exchanging is needed, this will be shown below the line. This leads to greater understanding when using the formal written method as the children know what the digit below the line represents. 2634 + 4517 = 7151  The blue dot represents 1000 and the red dot represents 100.	Record as a written calculation. Condensed columnar addition Carry below the line 3517 + 396 = 3913 
To solve simple measure and money problems up to two decimal places.	Use physical objects to solve simple measure and money problems up to two decimal places. Use physical objects to solve simple measure and money problems. Children will gather then organise the amount required. Using the place value chart, children will then solve the calculation. €1.55 + €3.18=€4.73  	Use pictorial representations to solve simple measure and money problems up to two decimal places. Use pictorial representations to solve simple measure and money problems. Using pictorial representations of money, children to solve up additions involving numbers with up to two decimal places. €1.31 + €2.43= €3.74  	Record as a written calculation. Condensed columnar addition Children should line the decimals correctly under one another, considering place value. 

ADDITION

KISLINGBURY C.E. PRIMARY SCHOOL

Year 5

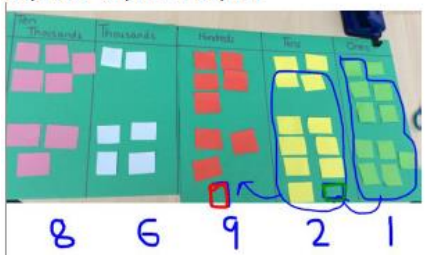
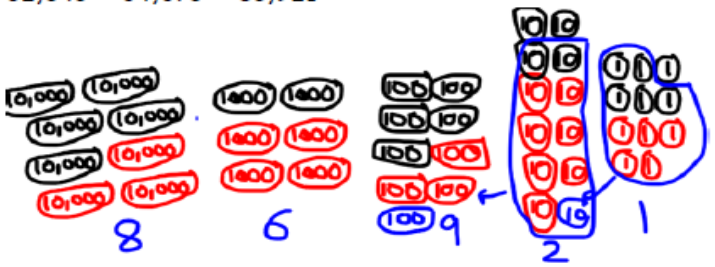
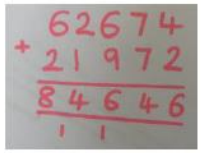
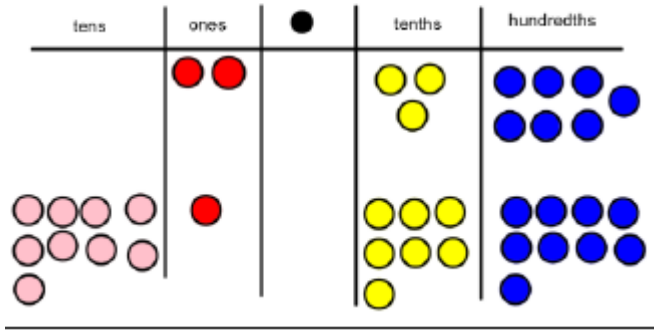
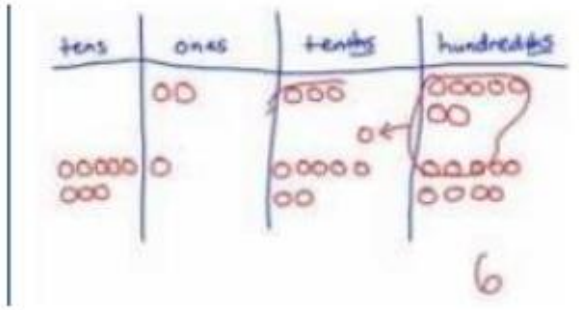




Key Vocab: addition, columnar addition, add, more, and, makes, sum, total (of), altogether, extra, in all, combined, increased by, double, near double, count on, one more, two more, hundred more....etc, inverse, commutative law, how many more to make? How many more is,,,than? How much more is...?

Counting fluency: To count forwards and backwards in steps 2s, 3s, 4s, 5s, 6s, 7s, 8s , 9s, 10s, 11s, 12s, 100s and 1000s from any given starting

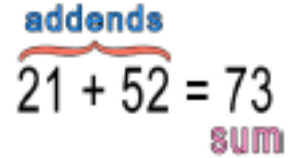
Mental Maths Skill	Example
Add any pairs of four digit multiples of 100	2300 + 4100 = simply add the hundreds and thousands = 6400 4300 + 7800 = use number bonds to partition. 4000 + 7000 = 11000 and 300 + 800 = 1100 + 11000 = 12100
Add near multiples of 10, 100, 1000, 10,000	4564 + 28 = add 30 = 4594 -2 = 4592 4564 + 397 = 4564 + 400 = 4964 – 3 = 4961 4564 + 2994 = 4564 + 3000 = 7564 – 6 = 7557
Add tenths to a 1 digit whole number and tenths.	3.4 + 0.3 = simply add tenths = 3.7 3.4 + 0.8 = number bonds to partition = 3.4 + 0.6 = 4.0 + 0.2 = 4.2
Add one digit whole numbers and tenths.	3.4 + 2.3 = simply add columns = 5.7 3.4 + 1.7 = make x10 bigger= 34 + 17 = 51 = 5.1
Add two digit numbers with tenths and hundreths	0.34 + 0.23 = simply add = 0.57 0.34 + 0.78 = make 10x bigger= 34 + 78 + 112 = 1.12
Add to a decimal fraction with units and tenths to make the next whole	3.4 + ? = 4 = number bonds to 10= 4 to 10 = 6. 3.4 + 0.6 = 4
Add near doubles of decimals.	2.7 + 2.8 = near double 28 + 28 = 56 -1 = 55 =5.5

Objective	Concrete	Pictorial	Abstract
To add numbers with more than 4 digits.	Use physical objects to add numbers with more than 4 digits. **Modelled using place value counters** Children to understand that the highest amount in each column is 9 so sometimes exchange into the next column is necessary. Children understand that they can exchange ten 1s for a ten, ten 10s for a hundred, ten 100s for a thousand, ten 1000s for a ten thousand. Children understand multi exchange where exchange is needed in more than one column. 52,546 + 34,375 = 86,921  	Use pictorial representations to add numbers with more than 4 digits. Using different pictorial representations for the values, the children show exchanges and understand the place value. This leads to greater understanding when using the formal written method as the children know what the digit below the line represents. 52,546 + 34,375 = 86,921  	Record as a written calculation. Condensed columnar addition Carry below the line. Children to solve calculation involving multiple exchanges.  6584 + 5848 12432 111
To add numbers with up to two decimals places.	Use physical objects to add numbers with up to two decimals places. Modelled using place value charts and counters 2.37 + 91.79 = 94.16  	Use pictorial representations to add numbers with up to two decimals places.. Children will use jottings to help them represent the calculation. They add each column starting first from the furthest column to the right and carry below the line when needed. 2.37 + 81.79 = 84.16  	Record as a written calculation. Condensed columnar addition Children should line decimals up correctly, including examples when there are different number of decimal places. 72.8 + 54.6 127.4 1 1 0.04 + 9.9

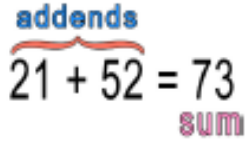
ADDITION

KISLINGBURY C.E. PRIMARY SCHOOL

Year 6

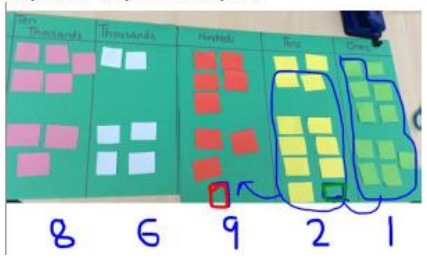
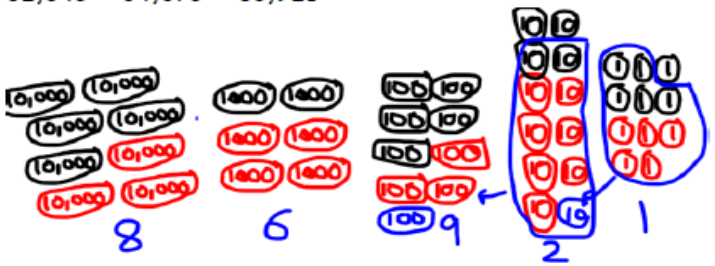
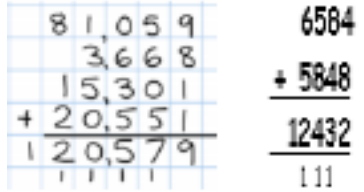
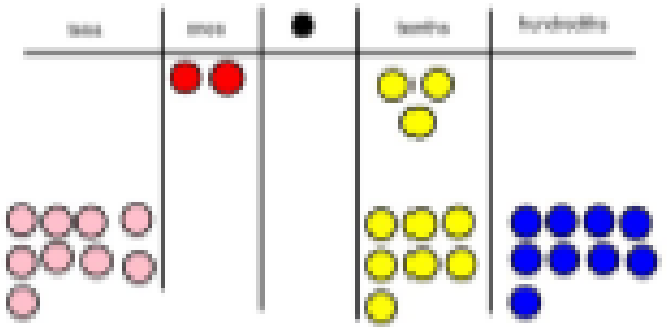
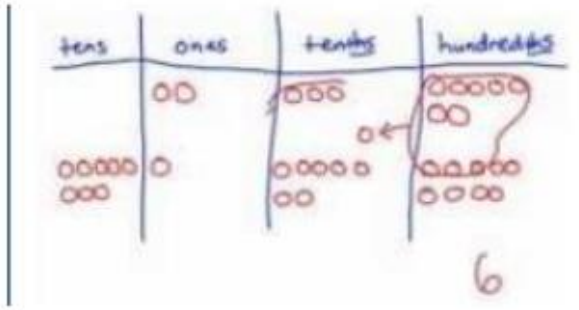
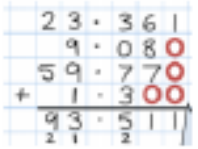


Key Vocab: addition, columnar addition, add, more, and, makes, sum, total (of), altogether, extra, in all, combined, increased by, double, near double, count on, one more, two more, hundred more....etc, inverse, commutative law, how many more to make? How many more is,,,than? How much more is...?



Counting fluency: To count forwards and backwards in steps 2s, 3s, 4s, 5s, 6s, 7s, 8s , 9s, 10s, 11s, 12s, 100s , 1000s and 10,000 from any given starting number.

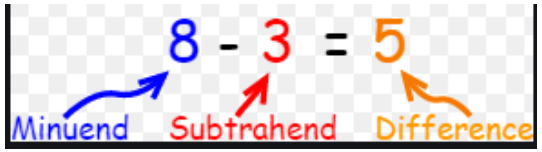
Mental Maths Skill	Example
Add a four digit multiple of 100 to 4 digit number.	2334 + 4100 = simply add the hundreds and thousands = 6434 2334 + 1800 = use number bonds to partition. 2334 + 1000 = 3334 + 500 = 3834 +300 = 4134
Add large numbers	345,000 + 234, 000 = simply add columns = 579,000 345,000 + 276,000 = use number bonds to partition = 300,000 + 200,000 = 500,000, 40, 000 + 70,000 = 110,000, 5,000+6000 = 11,000 + 110,000 = 121,000+ 500,000 = 621,000
Add near mulitples of 0.01, 0.1, 10, 100, 1000	3.9 + 2.4 = 4 + 2.4 = 6.4 – 0.1 =6.3 2.32 + 3.98 = 2.32 + 4 = 6.32 – 0.02 = 6.3
Add several 1 digit whole numbers and tenth	2.3 + 4.5 + 3.6 = 23 + 45 = 68 + 36 = 104 = 10.4
Add decimals with different numbers of places	0.23 + 4.5 = 0.23 + 4.50 = add columns = 4.73
Add to any number with two decimal places and make the next tenth or whole number.	2.43 + ? = 2.5= 2.43 + 0.06 = 2.50 = 2.5 4.45 + ? = 6 = 4.45 + 0.05 = 4.5 + 0.5 + 5 + 1 = 6 so 1 + 0.5 + 1.5 + 0.05 + 1.55
Ass to any number with three decimal places to make the next tenth or whole	2.433 + ? = 3 = either use above or 1000 knowledge = 3000 – 2433 = 567 so 2.433 + 0.567 = 3 2.433 + ? = 2.5 either use above or 1000 knowledge = 2500 – 2433 = 67 so 2.433 + 0.067 = 2.5

Objective	Concrete	Pictorial	Abstract
To add numbers with increasing value	Use physical objects to add numbers with increasing value. **Modelled using place value counters** Children to understand that the highest amount in each column is 9 so sometimes exchange into the next column is necessary. Children understand that they can exchange ten 1s for a ten, ten 10s for a hundred, ten 100s for a thousand, ten 1000s for a ten thousand. Children understand multi exchange where exchange is needed in more than one column. 52,546 + 34,375 = 86,921  	Use pictorial representations to add numbers with increasing value. . Using different pictorial representations for the values, the children show exchanges and understand the place value. This leads to greater understanding when using the formal written method as the children know what the digit below the line represents. 52,546 + 34,375 = 86,921  	Record as a written calculation. 
To add with increasing complexity, including adding money, measure.	Use physical objects to add with increasing complexity, including adding money, measure. Using counters and a place value chart 1.30 + 80.79 = 82.09 	Use pictorial representations to add with increasing complexity, including adding money, measure. .. Children will use jottings to help them represent the calculation. They add each column starting first from the furthest column to the right and carry below the line when needed. 2.37 + 81.79 = 84.16  	Record as a written calculation. Insert zeros for place holders. 

SUBTRACTION

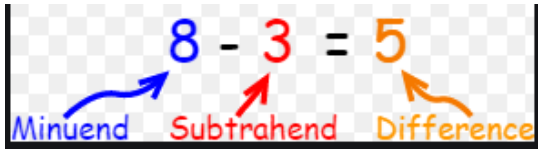
SUBTRACTION

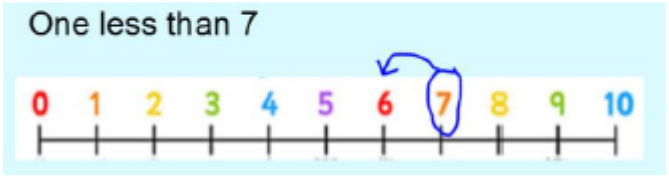
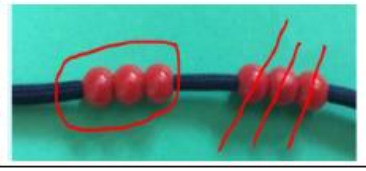
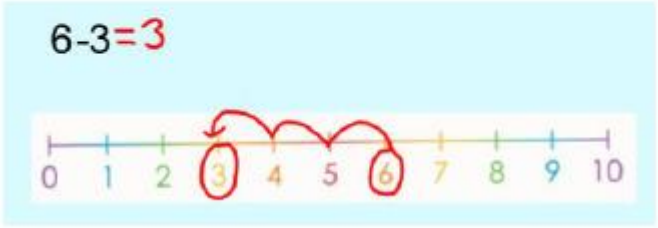
Foundation Stage



Key Vocab: take away, difference between, how many are left/left over?, How many are gone?, one less, two less, ten less, how many fewer is .... Than...? How much less is.....? Minuend, subtrahend, difference

Counting fluency: To count forwards and backwards in steps in 1s, 2s, 5s and 10s.

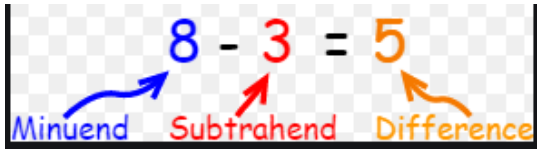


Objective	Concrete	Pictorial	Abstract
To find one less than a number	Use physical objects to one less than a number 	Use pictorial representations to one less than a number **Modelled on a number line** Circle the biggest number in the number sentence and count back one on the number line to find the solution. 	Record as a written calculation. 7 - 1 = 6
To subtract two single digit numbers.	Use physical objects to subtract two single digit numbers. 6 - 3 = 3   	Use pictorial representations to subtract two single digit numbers. **Modelled on a number line** Circle the biggest number in the number sentence and count back in ones on the number line to find the solution. 	Record as a written calculation. 6 - 3 = 3

SUBTRACTION

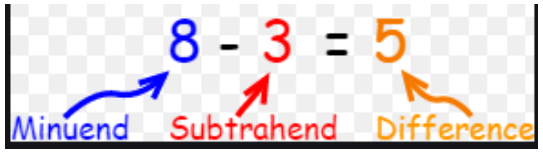
KISLINGBURY C.E. PRIMARY SCHOOL

Year 1



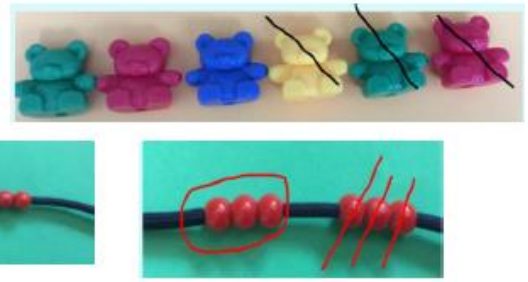
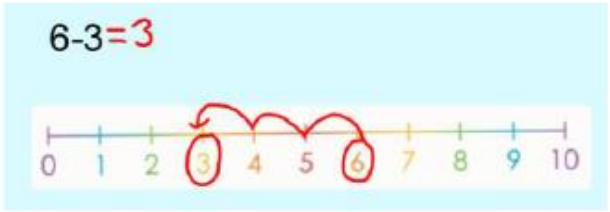
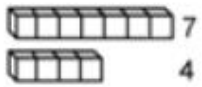
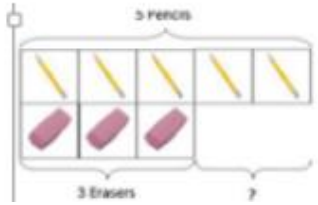
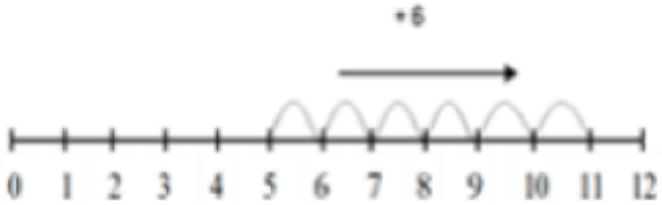
Key Vocab: take away, difference between, how many are left/left over?, How many are gone?, one less, two less, ten less, how many fewer is .... Than...? How much less is.....? Minuend, subtrahend, difference

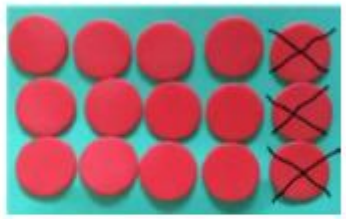
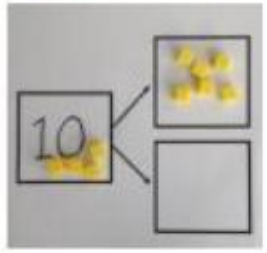
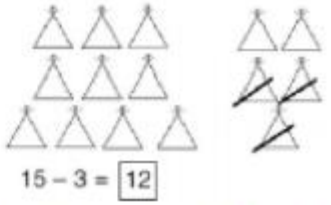
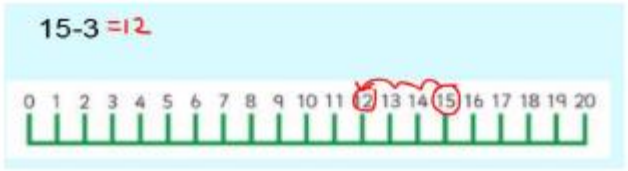
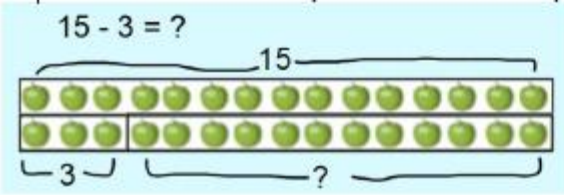
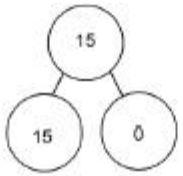
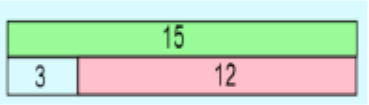
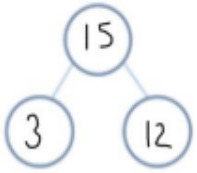
Counting fluency: To count forwards and backwards in steps in 1s, 2s, 5s and 10s.

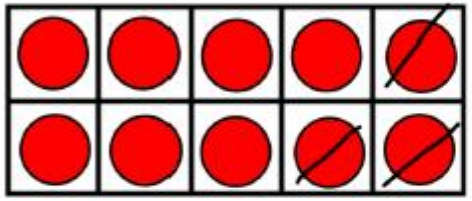


Objective	Concrete	Pictorial	Abstract
To find one less than a number	Use physical objects **Modelled using counters** **One less than 16** Use physical objects and find the solution (difference) by taking away one object from the group (minuend), counting backwards. 	Use pictorial representations **Number line** Circle the biggest number (minuend) in the number sentence and count back one (subtrahend) on the number line to find the solution (difference). 16-1 	Record as a written calculation. 16-1=15
To find ten less than a number.	Use physical objects **Modelled using Base 10** **Ten less than 35**  **Step 1-** Make the number (minuend) using base 10 or concrete resources.  **Step 2-** Take 10 (subtrahend) away. **Step 3-** Calculate the final answer by counting how many are left (difference).	Use pictorial representations  **Modelled using 100 square** **35 - 10 = 25** **Step 1-** Circle the number you are starting at (minuend) e.g. 35 **Step 2-** Count back 10 (subtrahend). **Step 3-** The tenth number you land on is your answer (difference) e.g. 25	Record as a written calculation. 35 - 10 = 25

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

Objective	Concrete	Pictorial	Abstract
To subtract two single digit numbers.	Use physical objects Use a range of physical objects, including number beads. Children will find the solution (difference) by making the number (minuend) first then removing several objects from the whole. 6 - 3 = 3 	Use pictorial representations **Modelled on a number line** Circle the biggest number (minuend) in the number sentence and count back in ones (subtrahend) on the number line to find the solution (difference). 	Record as a written calculation. 6 - 3 = 3
To find the difference between two numbers	Use physical objects Children begin to compare amounts by representing with objects.  'Seven is 3 more than four' 'I am 2 years older than my sister' Children use objects to represent problems using the bar model. 	Use pictorial representations Number line- counting on Find the difference by counting on from the smaller number (subtrahend) to the bigger number (minuend). 11 - 5 = 6 	Apply to word problems. Hannah has 12 sweets and her sister has 5 sweets. How many more sweets does Hannah have than her sister?

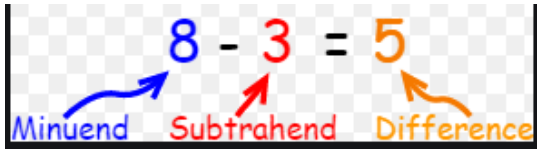
Objective	Concrete	Pictorial	Abstract
To subtract one digit and two digit numbers to 20, including zero.	Use physical objects. Use a range of phsical objects (counters, bead strings) and find a solution (difference) by removing several objects from the group (minuend), counting backwards. **15 - 3 = 12**  Use of physical objects to subtract numbers using the part whole model to model. **10 - 6 = 4**  **15 - 0 = 15** 	Use pictorial representations. **15 - 3 = 12** Children represent pictorially by drawing objects and crossing out to show what has been taken away.  <u>Number line- counting back</u> Circle the biggest number (minuend) in the number sentence and count back in ones on the number line to find the difference.  <u>Bar model</u> Use the bar model to represent the model pictorially.  <u>Part-Whole Model</u> **15-0=15**  	Record as a written calculation. Record as a written calculation. **15-3=12** Understand subtraction verbally. ***Put 15 in your head, count back 3, what number are you at?*** Use the bar model or part whole model to find all related addition and subtraction facts   15=3+12 15=12+3 15-3=12 15-12=3 Record as a written calculation. **15 - 0 = 15**

Objective	Concrete	Pictorial	Abstract
To subtract ones from 10 and 20	Use physical objects. **Modelled using uni-fix cubes** 10 - 3 = 7  **Step 1-** Make the bigger number (minuend). **Step 2-** take away the smaller number (subtrahend).  **Step 3-** count how many are left to find out the difference. Modelled using Base 10 20-6= 14  Make the number sentence using Base 10. To find the difference, exchange one ten for 10 ones and subtract the smaller number (subtrahend). Add up how much is left to find the difference.	Use pictorial representations. **Modelled using the tens frame** Using a tens frame or pictorial representations, children will count out 10 or 20 counters/pictorial representations and either take them away or cross them out. 10 - 3 = 7  **Modelled using a pixctorial representation** 20 - 6 = 14 	Record as a written calculation. 10 - 3 = 7 20 - 6 = 14

SUBTRACTION

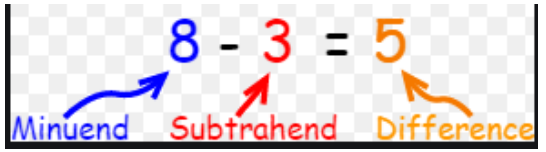
KISLINGBURY C.E. PRIMARY SCHOOL

Year 2

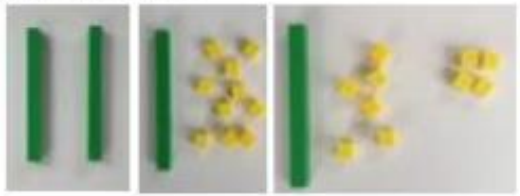
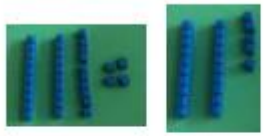
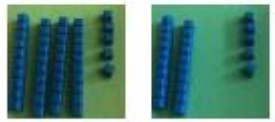
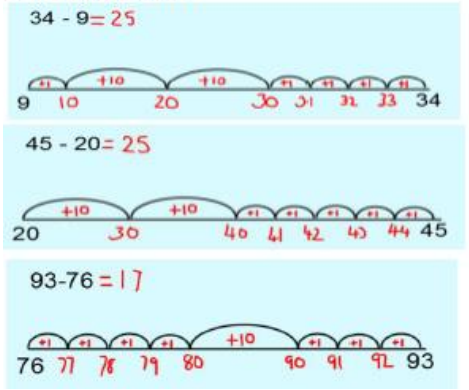


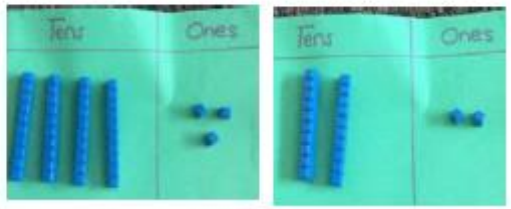
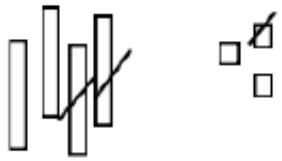
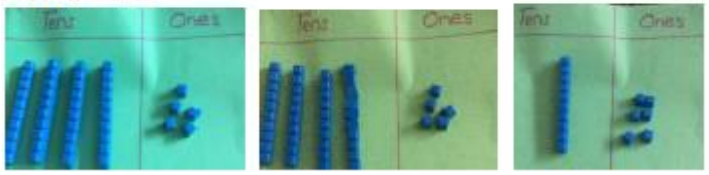
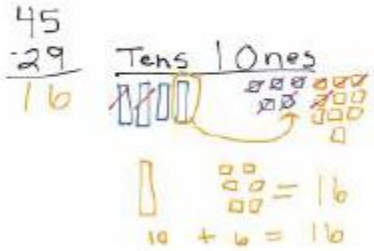
Key Vocab: take away, difference between, how many are left/left over?, How many are gone?, one less, two less, ten less, hundred less, how many fewer is .... Than...? How much less is.....? Tens boundary, Minuend, subtrahend, difference

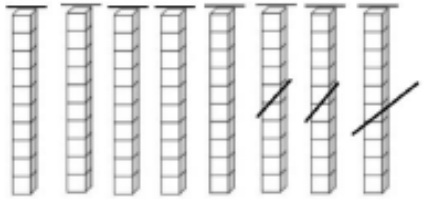
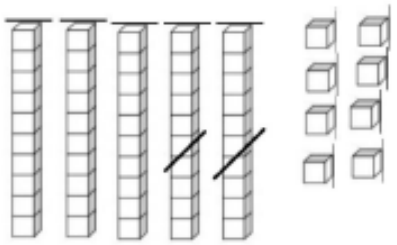
Counting fluency: To count forwards and backwards in steps in 1s, 2s, 3s, 4s, 5s and 10s.

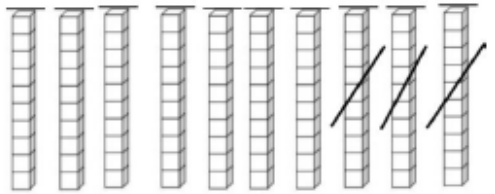
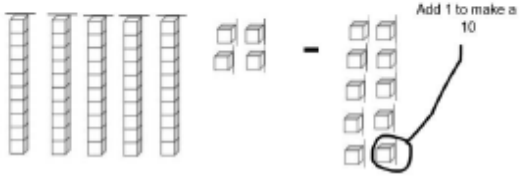
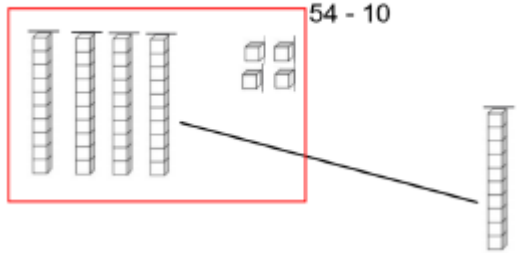
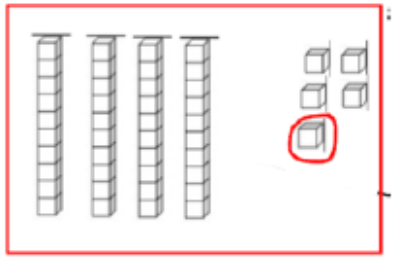


Mental Maths Skill	Example
To subtract 9 to a 2 digit number by adjusting.	Make the number with the base ten equipment, then subtract 10. You then add 1 because 9 is actually one less than 10. Children should begin to do this mentally. For 34 - 9 you would subtract 10 = 24 then add 1 = 25

Objective	Concrete	Pictorial	Abstract
To regroup a ten in to ten ones	Use physical objects Use base 10 to show how to exchange a ten into ten ones in order to subtract the ones. 20 - 4= 16 	Use pictorial representations Children represent pictorially by drawing objects in groups of ten and crossing out to show what has been taken away. 20 - 4 = 16 	Record as a written calculation. 20-4=16
To subtract number, using objects, pictures and mentally including: - 2 digit and ones - 2 digit and tens - Two 2 digits	Use physical objects to find ten less than a number. Use the base ten to represent the numbers (minuend) then use knowledge of exchanging tens for ten ones to subtract the subtrahend. 34-9= 25  45-20= 25  93-76= 17 	Use pictorial representations to find ten less than a n **Modelled using a number line or 100 square** Count back from largest (minuend) to smallest (subtrahend) number to find the difference. 34-9=25  45-20=25  93-76=17 	Record as a written calculation. Record by drawing their own number line. Children count up from the smallest (subtrahend) to largest (minuend) number. Children would first count on to the next ten and then the rest. 

Objective	Concrete	Pictorial	Abstract
To use partitioning to subtract two digit numbers.	Use physical objects Use base 10 to make the number (minuend). Take away the ones then the tens to find the difference. 43 - 21 = 22 	Use pictorial representations Children draw pictorial representations and cross off the ones then the tens. 43-21 = 22 	Record as a written calculation. Formal Written Method Partition each number then subtract the bottom number (subtrahend) from the top number (minuend), starting with the ones. 43- 21 = 22 43 = 40 + 3 21 = 20 + 1 20 +2 = 22
To use partitioning to subtract two digit numbers with regrouping	Use physical objects Use base 10 to make the number (minuend) then regroup by exchanging a ten for ten ones where necessary so that you can subtract the subtrahend. 45-29= 16 	Use pictorial representations Children draw pictorial representations to show the regrouping in order to find how many are left. 45 - 29 = 16 	Record as a written calculation. Formal Written Method Partition each number then subtract the bottom number (subtrahend) from the top number (minuend), starting with the ones. Exchange tens for ones then recombine to find the solution. 45 - 29 = 16 45 = 30 + 15 29 = 20 + 9 10 +6 =16

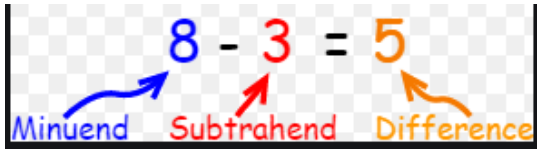
Objective	Concrete	Pictorial	Abstract
To subtract tens from the tens number up to 100	Use physical objects Base 10 70 – 20 = 50 Use base 10 to make the number (minuend). The take away the number of tens (subtrahend) required and regroup to find the difference.	Use pictorial representations **Modelled using pictorial representations of Base 10** **80 - 30 = 50**  Children would cross out how many tens they are subtracting and count how many they have left to find the difference.	Record as a written calculation. 70- 20 = 50
To subtract tens from a 2 digit number	Use physical objects Base 10 78 – 30 = 48 Use base 10 to make the number (minuend). The take away the number of tens (subtrahend) required and regroup to find the difference.	Use pictorial representations **Modelled using pictorial representations of Base 10** **58 - 20 = 28**  Children would cross out how many tens they are subtracting and count how many they have left to find the difference.	Record as a written calculation. 78 -30 = 48

Objective	Concrete	Pictorial	Abstract
To derive related facts up to 100	Use physical objects Modelled using base 10. 10 – 4 = 6 100 – 40 = 60	Use pictorial representations **Modelled using pictorial representations of Base 10** **10 - 3 = 7**  **100 - 30 = 70.** 	Record as a written calculation. 10 – 4 = 6 100 – 40 = 60
To subtract 9 from a 2 digit number by adjusting	Use physical objects Modelled using base 10. 37 – 9 = 28	Use pictorial representations **Modelled using pictorial representations of Base 10** **54 - 9 = 45** Step 1- Add 1 to the 9 to make 10.  Step 2- Subtract 10 from the minuend.  Step 3- Now add the 1 back odd to find the difference.  **54-9 = 45**	Record as a written calculation. 37 – 9 = 28

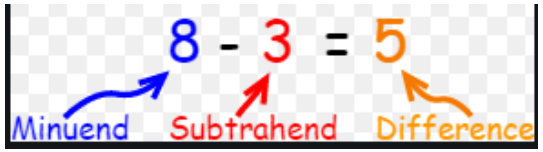
SUBTRACTION

KISLINGBURY C.E. PRIMARY SCHOOL

Year 3

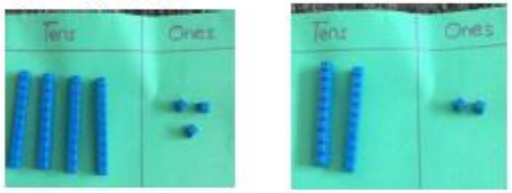
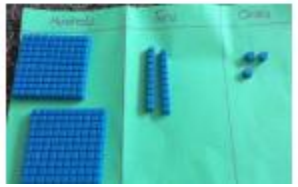
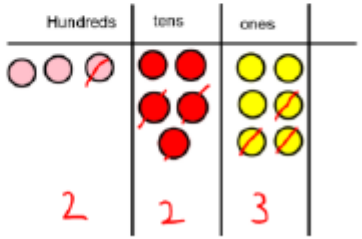


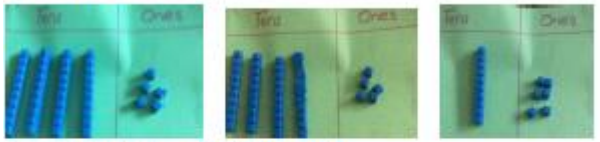
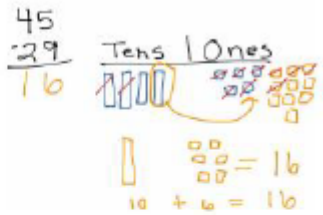
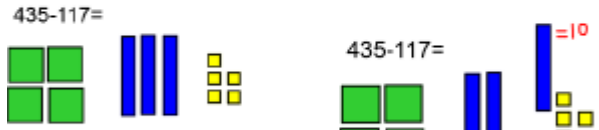
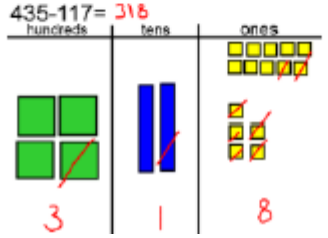
Key Vocab: take away, difference between, how many are left/left over?, How many are gone?, one less, two less, ten less, hundred less, how many fewer is .... Than...? How much less is.....? Tens boundary hundreds boundary, Minuend, subtrahend, difference

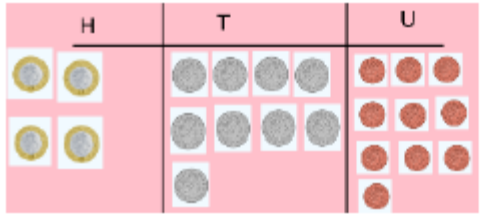
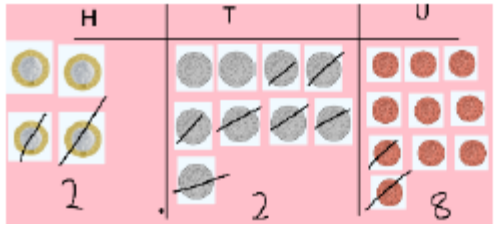
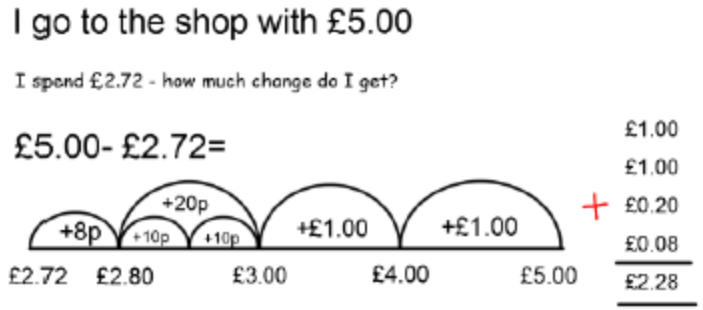


Counting fluency: To count forwards and backwards in steps in 1s, 2s, 3s, 4s, 5s, 6s, 8s, 10s and 100s from any given number.

Mental Maths Skill	Example
Subtract three digit and ones.	236 – 3 simply subtract the ones. 236 – 8 partition the 8 into 6 and 2. 236- 6 = 230 – 2 = 228
Subtract three digit and tens	236 – 20 simply subtract the tens. 236 – 50 partition the 50 into 30 and 20. 236- 30 = 206 – 20 = 286. Alternatively count back in tens.
Subtract three digit and hundreds	536 – 200 simply subtract the hundreds. Alternatively count back in hundreds.
Subtract ones from a 3 digit ten	250 -6 Use place values to solve. 10 – 6 = 4 so 50 – 6 = 44 and add on 200 = 244. Or count back in ones.
Subtract a 2 digit number from a multiple of ten including crossing boundaries.	80 – 34. Place value knowledge of number bonds to tens 10 -4 = 6. Partition 34 into 30 and 4. 80 – 30 = 50 -4 46. Or work out the difference from 34. 34 to 40 = 6, 40 to 80 =40, 40 + 6 = 46.
Subtract a 2 digit number from a 2 digit number including crossing boundaries.	83 – 51 simply subtract the columns. 83 – 27. Partition the 7 into 3 and 4. 83 – 3 = 80 – 4 = 76. Then subtract tens 76 – 20 = 56. Or the other way around. Or count forward. 27 to 30 = 3, 30 to 80 = 50, 80 to 83 = 3, 3 + 50 + 3 = 56
Subtract near multiples of 10 and 100 and adjust	45 – 9 Subtract 10 and add 1, 45 – 10 = 45 + 1 = 46 455 – 99 Subtract 100 and add 1, 455 – 100 = 355 + 1 = 456

Objective	Concrete	Pictorial	Abstract
To subtract 2 and 3 digit numbers without exchange.	Use physical objects Use base 10 to make the number (minuend) then take away the ones, tens then the hundreds to find the difference. **43 - 21 = 22**  **356 - 133= 223**  	Use pictorial representations Children draw pictorial representations to show the regrouping in order to find how many are left. **43-21=22**  **56 - 133= 223**  	Record as a written calculation. Written Method (expanded method) Partition each number then subtract the bottom number (minuend) from the top number (subtrahend), starting with the ones. **43- 21 = 22** 43 = 40 + 3 21 = 20 + 1 20 +2 = 22 **356 - 133= 223** 356 = 300 + 50 + 6 133= 100 + 30 + 3 200+20 +3 =223 Formal Written Method (condensed method) Children begin to use a condensed columnar method of subtraction. 43 - 21 = 22 365 - 133 = 232

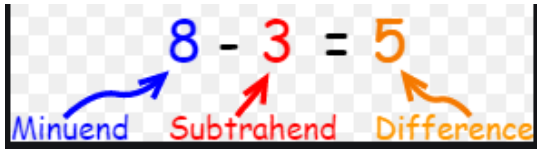
Objective	Concrete	Pictorial	Abstract
To subtract 2 and 3 digit numbers with exchange.	Use physical objects Use base 10 to make the number (minuend) then regroup by exchanging a ten for ten ones and a hundred for ten tens where necessary so that you can subtract the subtrahend. **45-29=16**  Step 1: Make the minuend Step 2: Exchange 1 ten for 10 ones. Step 3: Subtract two tens and 9 ones. **435 - 117 = 318**  Step 1: Make the minuend Step 2: Exchange 1 ten for 10 ones. Step 3: Subtract one hundred,1 ten and 7 ones.	Use pictorial representations Children draw pictorial representations to show the regrouping in order to find the difference. **45 - 29 = 16**  **435-117= 318** Step 1: Step 2:  Step 3: 	Record as a written calculation. Written Method (expanded) Partition each number then subtract the bottom number from the top, starting with the ones. Exchange tens for ones then recombine to find the solution. **45 - 29** 45 = 40 + 5 29 = 20 + 9 10 + 6 = 16 **435-117=318** 435 = 400 + 30 + 5 117 = 100 + 10 + 7 300 + 10 + 8 = 318 Formal Written Method (condensed method) Children begin to use a condensed columnar method of subtraction with exchange in one column. 45 − 29 = 16 435 − 117 = 318

Objective	Concrete	Pictorial	Abstract
To subtract amounts of money to give change	Use physical objects Use base money to make the number (minuend) then regroup by exchanging a ten for ten ones and a hundred for ten tens where necessary so that you can subtract to find the difference. **£5-2.72** Step 1: Make the Number  Step 2: Exchange  Step 3: Subtract to solve  	Use pictorial representations Children draw pictorial representations to show the regrouping in order to find how many are left, this can be in the form of a number line. **Modelled using a number line.** Children start with the smallest number (subtrahend) and add to the nearest tenth, then nearest 1, until you reach the biggest number (minuend). Children will then need to add the jumps to calculate the change.  	Record as a written calculation. Formal written method Children complete subtractions involving decimals which are presented in word problem format. They use zeros for place holders and know that decimal points should line up under each other. 

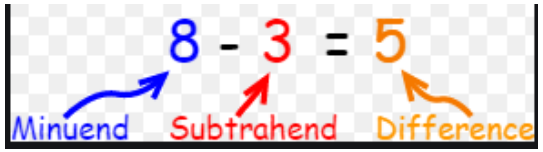
SUBTRACTION

KISLINGBURY C.E. PRIMARY SCHOOL

Year 4

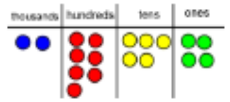
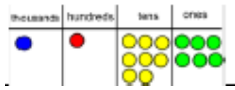
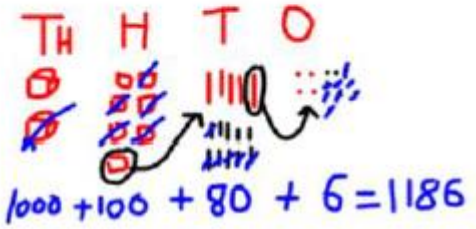
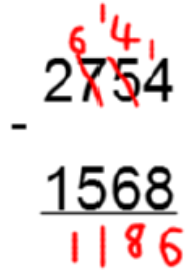


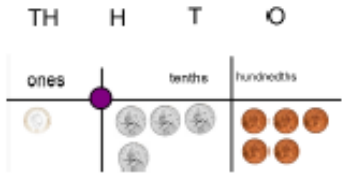
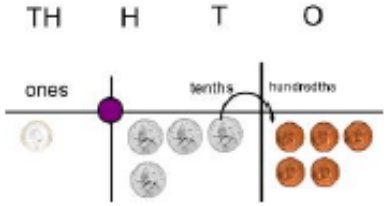
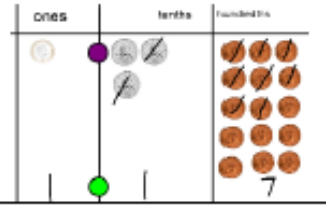
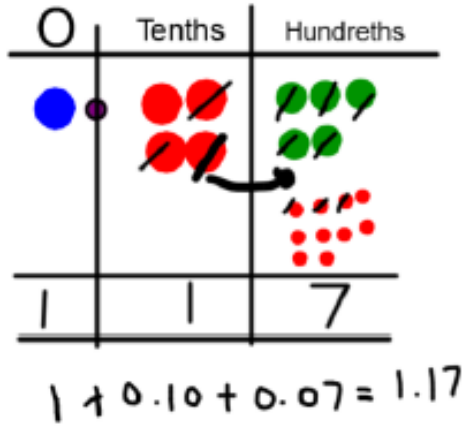
Key Vocab: take away, difference between, how many are left/left over?, How many are gone?, one less, two less, ten less, hundred less, how many fewer is .... Than...? How much less is.....? Tens boundary hundreds boundary, Minuend, subtrahend, difference



Counting fluency: To count forwards and backwards in steps in 1s, 2s, 3s, 4s, 5s, 6s, 8s, 10s and 100s from any given number.

Mental Maths Skill	Example
Subtract a 4 digit and ones, including crossing boundaries	2366 – 3 simply subtract the ones. 2366 – 8 partition the 8 into 6 and 2. 2366- 6 = 2360 – 2 = 2358
Subtract a 4 digit number and tens including crossing boundaries	2365 – 20 simply subtract the tens. 2365 – 80 partition the 80 into 60 and 20. 2365 - 60 = 2305 – 20 = 2285. Alternatively count back in tens.
Subtract a 4 digit number and hundreds crossing boundaries	5362 – 200 simply subtract the hundreds. 5362 – 400. Partition into 300 and 100. 5362 – 300 = 5062 – 100 = 4962 Alternatively count back in hundreds.
Subtract a 4 digit number and thousands crossing boundaries	5523 - 3000 Use place values to solve.
Subtract a 3 digit number from a multiple of ten including crossing boundaries.	485 – 140. Place value knowledge of number bonds to tens 400 – 100/80 – 40/5 -0 = 345. 445 – 180. Partition. 445 – 100 = 345 / 80 into 40 and 40 = 345 – 40 = 305 – 40 = 265 Or count up.
Subtract a 3 digit multiple of 10 from a 4 digit number	3000 – 340. Either count up or 3000 – 300 = 2700 – 40 = 2630.
Subtract a 2/3 digit number from a 2/3 digit number.	345 – 24. Simply subtract columns. 543 – 261 = count up or partition 261 into 200/60/1 and subtract.
Subtract near multiples of 10, 100 and 1000 and adjust.	234 – 29. Subtract 30 add 1. 234 – 199. Subtract 200 add 1. 2345 – 1999. Subtract 2000 add 1.

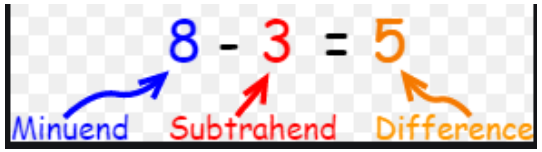
Objective	Concrete	Pictorial	Abstract
To subtract numbers with up to 4 digits using a formal written method.	Use physical objects Use base 10 to make the number (minuend) then regroup by exchanging a ten for ten ones, a hundred for ten tens or a thousands for ten hundreds where necessary so that you can subtract the subtrahend. **2754-1568=1186**  Step 1: Make the minuend.  Step 2: Exchange 1 ten for 10 ones.  Step 3: Subtract one hundred,1 ten and 7 ones.	Use pictorial representations Children draw pictorial representations to show the regrouping in order to find the difference. **2754 - 1568= 1186**  	Record as a written calculation. Formal written method Children use a condensed method of subtraction, including examples with multiples exchanges. **2754- 1568 = 1186** 

Objective	Concrete	Pictorial	Abstract
To subject numbers with up to 4 digits using a formal written method, including decimals to two decimal places.. To subtract amounts of money to give change- adapted from year 3.	Use physical objects Use the place value counters to make the number (minuend) then regroup by exchanging, where necessary: a thousand for ten hundreds, a hundred for ten tens, a ten for ten ones, a one for ten tenths and ten tenths for a hundredth so that you can subtract. **£1.45-28p=£1.17** Step 1: Make the number  Step 2: Exchange *because you can't subtract 8 from 5. Children will need to exchange 10p for 10x1p.  Step 3: Subtract to solve  	Use pictorial representations Children draw pictorial representations to show the regrouping in order to find the difference. £1.45-28p=£1.17  1 + 0.10 + 0.07 = 1.17	Record as a written calculation. Formal written method Children complete subtractions involving decimals which are presented in word problem format. They use zeros for place holders and know that decimal points should line up under each other. **Bella spends 28p in the shop.** **She spends £1.45 of her pocket money. How much change will she receive?** £1.45 - 28p £1.^{3}4^{1}5 - .28 £1.17

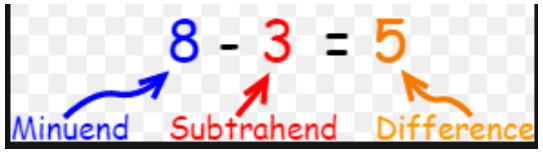
SUBTRACTION

KISLINGBURY C.E. PRIMARY SCHOOL

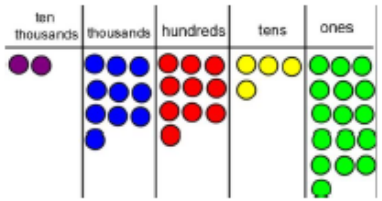
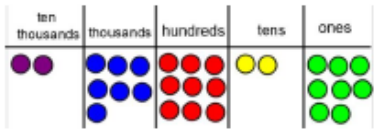
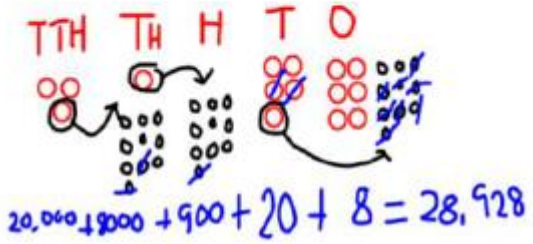
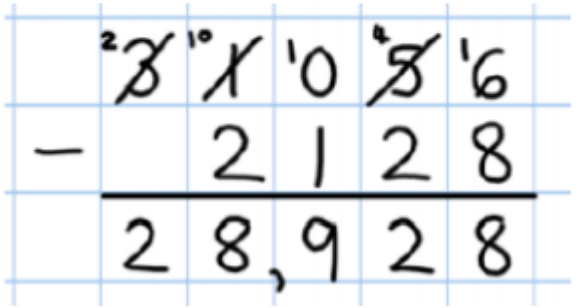
Year 5

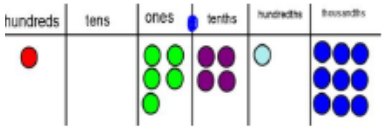
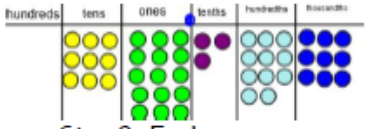
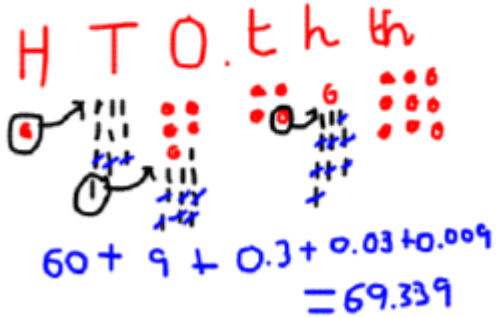
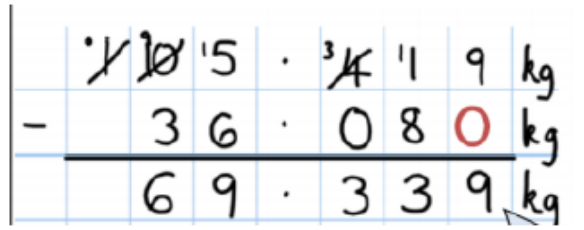


Key Vocab: subtract, take away, difference between, how many are left/left over?, How many are gone?, one less, two less, ten less, hundred less, how many fewer is .... Than...? How much less is.....? Tens boundary, hundreds boundary, ones boundary, tenths boundary, inverse, Minuend, subtrahend, difference **Counting fluency:** To count forwards and backwards in steps in 1s, 2s, 3s, 4s, 5s, 6s, 7s, 8s, 9s, 10s, 11s, 12s, 100s and 1000s from any given number.



Mental Maths Skill	Example
Subtract a 4/5 digit multiple of 100	3500 – 1200 = simply subtract place value = 2400. 6300 – 2800= make 100 time smaller = 63 – 28 = 35 x 100 = 3500 or count up. 2800 to 3000 = 200, 3000 to 6000 = 3000 and 6000 to 6300 = 300 = 200 + 3000 + 300 = 3500.
Subtract near multiples of 10, 100, 1000, 10,000 and adjust.	3455 – 68 Subtract the nearest 10 (70) then add 2. 3455 – 698 Subtract the nearest 100 (700) and add 2. 5455 – 3996 Subtract nearest 1000 (4000) and add 4.
Subtract tenths from a 1 digit whole number and tenths	3.4 - 0.3 = simply subtract tenths = 3.1 3.4 - 0.8 = number bonds to partition = 3.4 - 0.4 = 3.0 - 0.4 = 2.6
Subtract two 1 digit whole numbers from tenths	3.4 - 2.3 = simply subtract columns = 1.1 3.4 - 1.7 = make x10 bigger= 34 - 17 = 17 = 1.7
Subtract 2 digit numbers with tenths and hundredths	0.34 - 0.23 = simply subtract = 0.11 0.34 - 0.18 = make 10x bigger= 34 - 18 = 16 = 0.16
Subtract a 1 digit whole number and tenths from a whole number.	6 – 3.2 Count on from 3.2. 3.2 to 4 = 0.8, 4 to 6 = 2 = 2.8

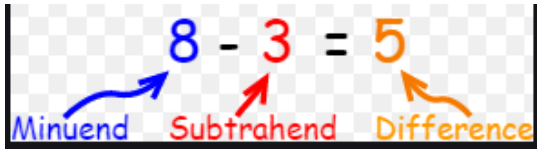
Objective	Concrete	Pictorial	Abstract
To subtract numbers with more than 4 digits.	Use physical objects Use the place value counters to make the number (minuend) then regroup by exchanging, where necessary: a thousand for ten hundreds, a hundred for ten tens, a ten for ten ones, a one for ten tenths and ten tenths for a hundredth so that you can subtract. 31056 - 2128 = 28,928  Step 1- Make the number.  Step 2- Exchange.  Step 3- Subtract to solve.	Use pictorial representations Children draw pictorial representations to show the regrouping in order to find how many are left. 31056 - 2128 = 28,928  	Record as a written calculation. Formal written method Children use a condensed method of subtraction including those with different numbers of digits. 31056 - 2128 = 28,928 

Objective	Concrete	Pictorial	Abstract
To solve problems involving measure using decimal notation up to three decimals places.	Use physical objects Use the place value counters to make the number then regroup by exchanging, where necessary: a thousand for ten hundreds, a hundred for ten tens, a ten for ten ones, a one for ten tenths, a hundredths for ten tenths and a thousandth for ten hundredths. **105.419kg - 36.080kg**  Step one- Make the number.  Step 2- Exchange.  Step 3- Subtract to solve.	Use pictorial representations Children draw pictorial representations to show the regrouping in order to find the difference. **105.419kg - 36.080kg**  	Record as a written calculation. Formal written method Children complete subtractions involving decimals which are presented in word problem format. They use zeros for place holders and know that decimal points should line up under each other. **105.419kg - 36.080kg** 

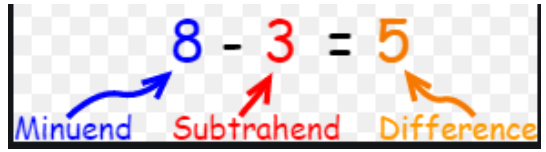
SUBTRACTION

KISLINGBURY C.E. PRIMARY SCHOOL

Year 6

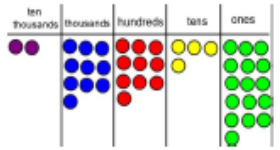
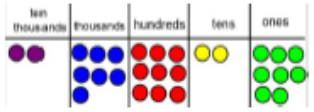
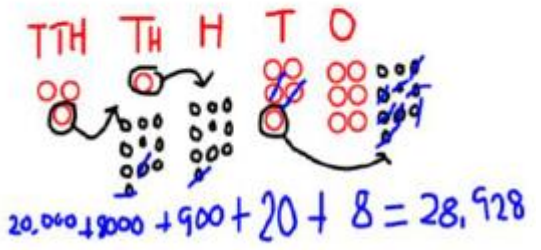
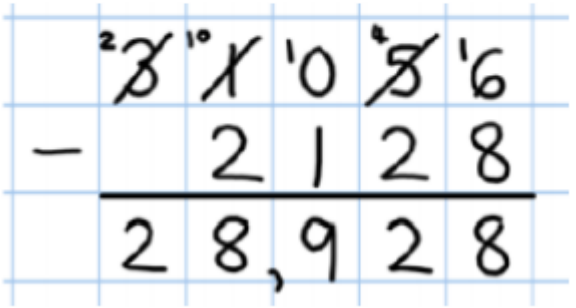


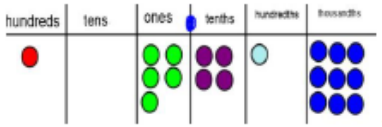
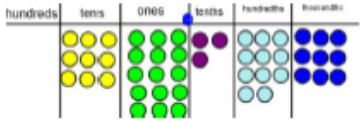
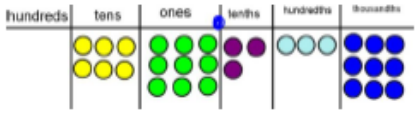
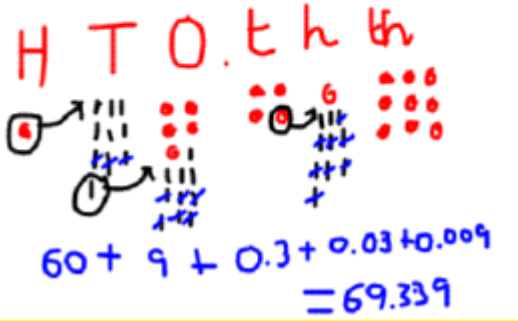
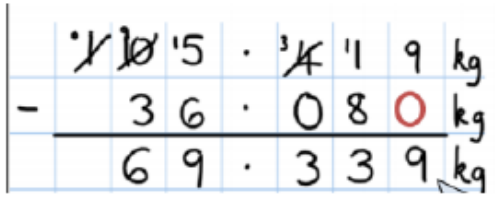
Key Vocab: subtract, take away, difference between, how many are left/left over?, How many are gone?, one less, two less, ten less, hundred less, how many fewer is .... Than...? How much less is.....? Tens boundary, hundreds boundary, ones boundary, tenths boundary, inverse, Minuend, subtrahend, difference



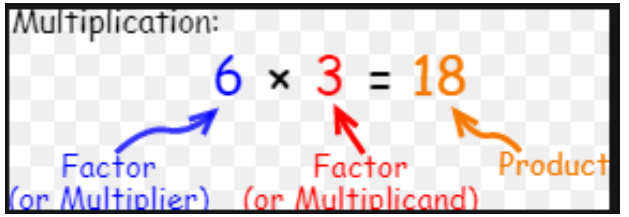
Counting fluency: To consolidate counting forwards and backwards in steps in 1s, 2s, 3s, 4s, 5s, 6s, 7s, 8s, 9s, 10s, 11s, 12s, 100s and 1000s from any given number.

Mental Maths Skill	Example
Subtract large numbers	22 334 – 11 200 = simply add the hundreds and thousands = 11134 52 334 - 3830 = use number bonds to partition. 52 334 – 30 = 52304 – 800 = 52504 – 3000 = 49304
Subtract near multiples of 0.01, 0.1, 10, 100, 100 then adjust.	5.6 – 2.8 Subtract the nearest whole number (3) and add 0.2 = 2.8 5.84 – 2.97 Subtract the nearest whole number (3) and add 0.03) = 2.87
Subtract decimals with different number of places	0.67 – 0.4 use place value knowledge to subtract correct column = 0.27 or x100= 67 – 40 = 27 = 0.27
Subtract any number with up to three decimal places from a whole number.	12 – 0.667 count on from 0.667. So 0.667 to 0.670 = 0.003, 0.670 to 0.700 is 0.030, 0.700 to 1 is 0.300, 1 to 12 is 11 and so 11 + 0.300 + 0.30 + 0.003 = 11.333 or see how far 667 is from 1000 = 333 = 0.333 to 1 then 11 to 12 = 11.333

Objective	Concrete	Pictorial	Abstract
To subtract numbers with increasingly large and complex numbers.	Use physical objects Use the place value counters to make the number (minuend) then regroup by exchanging, where necessary: a thousand for ten hundreds, a hundred for ten tens, a ten for ten ones, a one for ten tenths and ten tenths for a hundredth so that you can subtract. **31056 - 2128 = 28,928**  Step 1- Make the number  Step 2- Exchange.  Step 3- Subtract to solve.	Use pictorial representations Children draw pictorial representations to show the regrouping in order to find how many are left. **31056 - 2128 = 28,928**  	Record as a written calculation. Formal written method Children use a condensed method of subtraction including those with different numbers of digits. **31056 - 2128 = 28,928** 

Objective	Concrete	Pictorial	Abstract
To solve problems involving the conversion of measures up to 3 decimal places.	Use physical objects Use the place value counters to make the number then regroup by exchanging, where necessary: a thousand for ten hundreds, a hundred for ten tens, a ten for ten ones, a one for ten tenths, a hundredths for ten tenths and a thousandth for ten hundredths. **105.419 kg - 36080g** As this is a mixed measure problem, children would first convert so they are working with the same unit. **105.419kg - 36.080kg**  Step one- Make the number.  Step 2- Exchange.  Step 3- Subtract to solve.	Use pictorial representations Children draw pictorial representations to show the regrouping in order to find the difference. **105.419kg - 36.080kg**  	Record as a written calculation. Formal written method Children complete subtractions involving decimals which are presented in word problem format. They use zeros for place holders and know that decimal points should line up under each other. They convert measures so that they are working with the same unit. **105.419 kg - 36080g** would convert into **105.419kg - 36.080kg** 

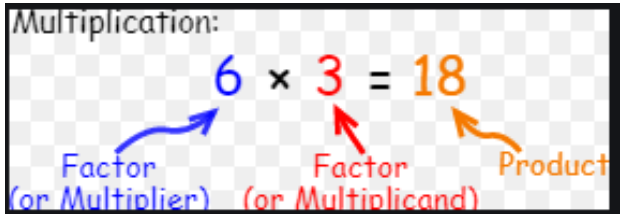
MULTIPLICATION



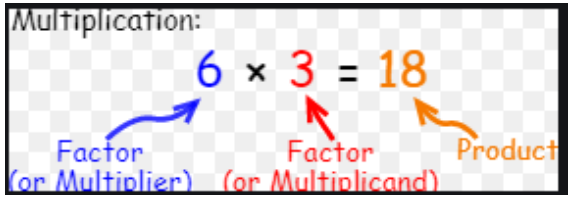
MULTIPLICATION

KISLINGBURY C.E. PRIMARY SCHOOL

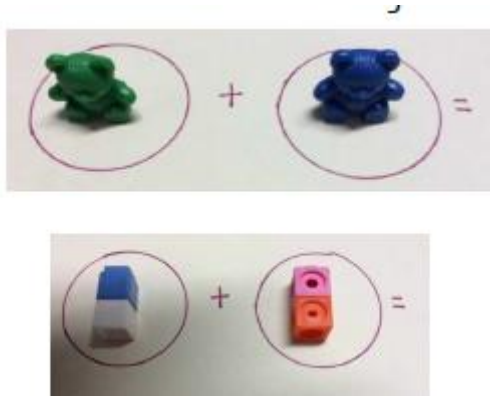
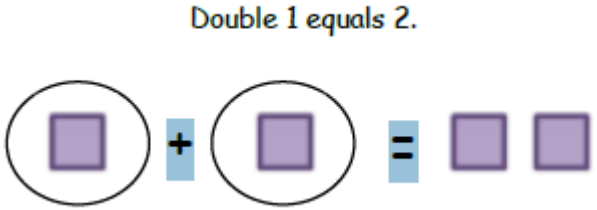
Foundation Stage



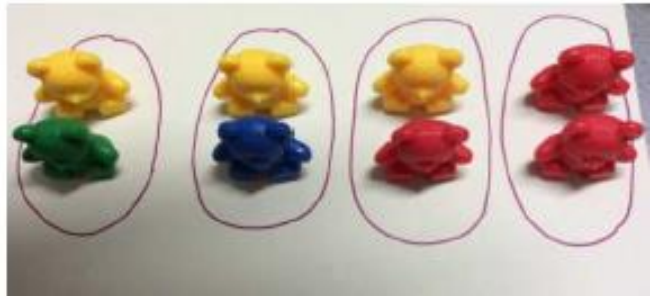
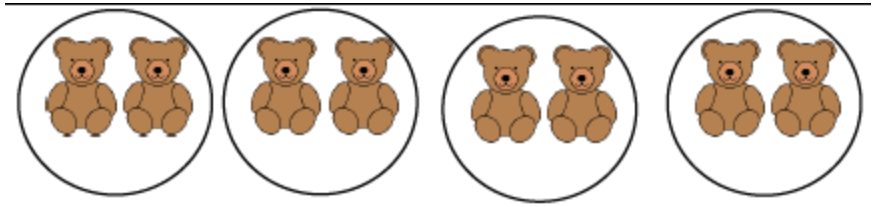
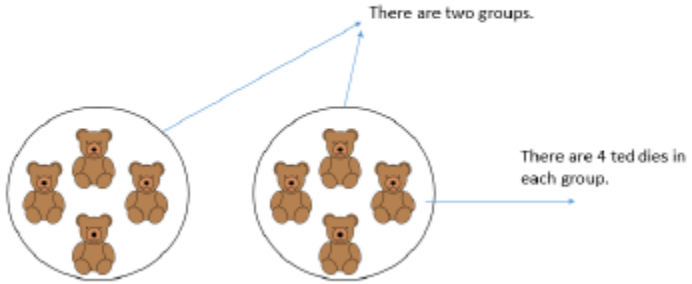
Key Vocab: doubling, halving, sharing, equal amounts,
Times tables: To introduce counting in steps of 2s, 5s and 10s.



This is an early learning goal

Objective	Concrete	Pictorial	Abstract
To be able to double numbers	Use physical objects to be able to double numbers 	Use pictorial representations to be able to double numbers 	1 + 1 = 2 **Stem Sentence:** Double 1 equals 2

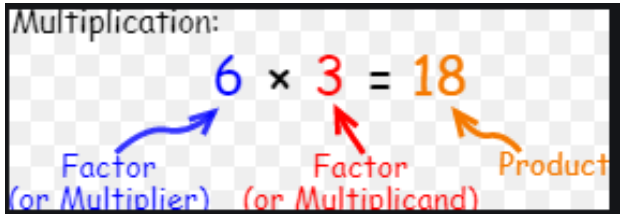
These is an exceeding early learning goal

Objective	Concrete	Pictorial	Abstract
To count in steps of 2s, 5s and 10s.	Use physical objects to count in steps of 2s, 5s and 10s. 	Use pictorial representations to count in steps of 2s, 5s and 10s.  Children will verbally say their number sequence aloud to demonstrate their understanding.	2, 4, 6, 8... 10, 20, 30, 40... 5, 10, 15, 20, 25, 30...
To experience equal groups of objects.	Use physical objects to experience equal groups of objects. Children will experience equal groups of objects. Children will be encouraged to count the groups, then count how many objects are in a group. E.g. 2 x 4= 	Use pictorial representations to experience equal groups of objects. Children will have images of equal groups to solve multiplication sentences by counting how many are in each equal group. 	2 x 4 = 8 **Stem Sentence:** I know there are **2** groups with **4** in each group.

MULTIPLICATION

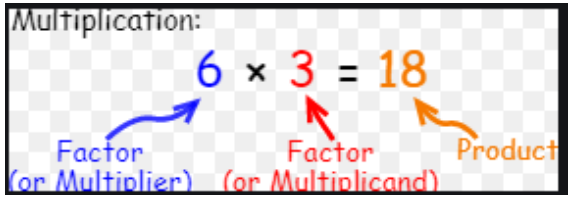
KISLINGBURY C.E. PRIMARY SCHOOL

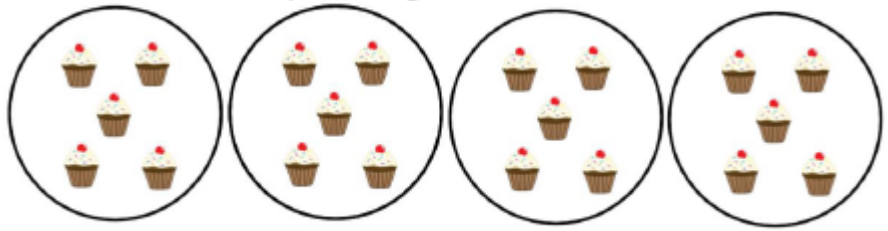
Year 1

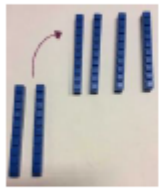
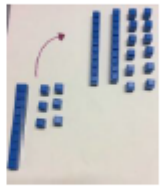
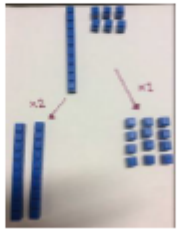
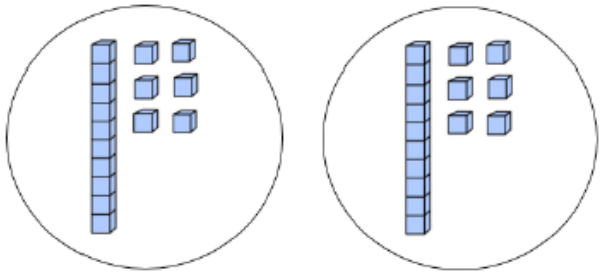
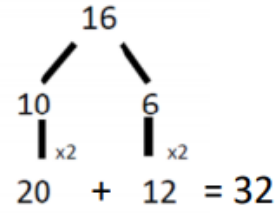


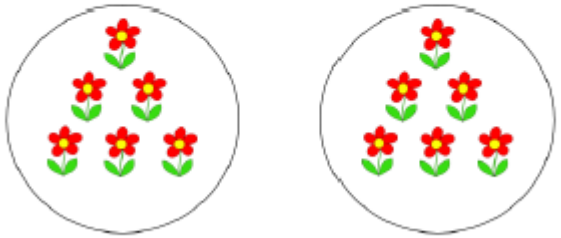
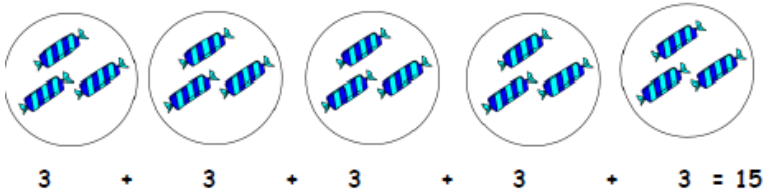
Key Vocab: multiplication, multiply, multiplied by multiple, grouping, doubling, array,

Times tables: To count in steps of 2s, 5s and 10s.



Objective	Concrete	Pictorial	Abstract
To count in steps of 2, 5 and 10s	Use physical objects to count in steps of 2, 5 and 10s Children will be able to use concrete resources to count in steps of 2, 5 and 10. 	Use pictorial representations to count in steps of 2, 5 and 10s Children will verbally say their number sequence aloud to demonstrate their understanding. Children would begin to count aloud and write numbers to match the sequence. E.g. 0, 5, 10, 15, 20... 	Children will be able to count aloud in sequences, starting at different points. Children will be able to write sequences with multiples of numbers 2, 4, 6, 8... 10, 20, 30, 40... 5, 10, 15, 20, 25, 30...

Objective	Concrete	Pictorial	Abstract
To double numbers up to 20	Use physical objects to double numbers up to 20 Children will demonstrate knowledge of doubling through concrete resources, including uni-fix cubes.  Double 20 equals 40.  Double 16 equals 32 When beginning to double more complex numbers, children will need to explore partitioning the whole number into tens and ones, using base 10, and double the tens and then the ones, before recombinging to find the total. 	Use pictorial representations to double numbers up to 20 Children will be able to use jottings and picture representations to show demonstration of doubling.  **Double 16 equals 32**	Children will learn to partition a number and then double each part before recombining it back together.  **Stem Sentence:** Double 1 equals 2

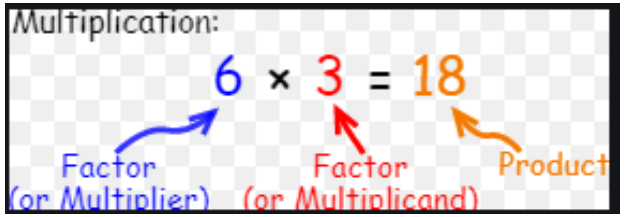
Objective	Concrete	Pictorial	Abstract
To make equal groups and count the total.	Use physical objects to make equal groups and count the total. Children will use concrete resources to make equal groups.   **Stem Sentence:** I know there are **2** groups with **6** in each group.	Use pictorial representations to make equal groups and count the total. Children will draw jottings and have pictorial representations to demonstrate knowledge of equal groups. 2 x 6 = 12  I know there are 2 groups and in each group there are 6 flowers.	2 x 6 = 12 **Stem Sentence:** I know there are **2** groups with **6** in each group.
To understand multiplication as repeated addition	Use physical objects to understand multiplication as repeated addition Children will be able to use a range of concrete resources to add equal groups.  	Use pictorial representations to understand multiplication as repeated addition Children will use pictorial representations, including the use of a number line to solve problems. There are 3 sweets in 1 bag. How many sweets are in 5 bags altogether?  3 + 3 + 3 + 3 + 3 = 15  0 2 4 6 8 10	Children will be able to write addition number sentences to describe pictures or objects. 3 + 3 + 3 + 3 + 3 = 15

Objective	Concrete	Pictorial	Abstract
To understand multiplication as arrays	Use physical objects to understand multiplication as arrays Children will create arrays using concrete objects, which they then can describe what it represents e.g. 2 lots of 5, 3 lots of 10.  	Use pictorial representations to understand multiplication as arrays Children will draw their own pictorial representations and will have the visually provided to show understanding of arrays. 2 lots of 5  3 lots of 2. 	3 x 2 = 6 2 x 5 = 10

MULTIPLICATION

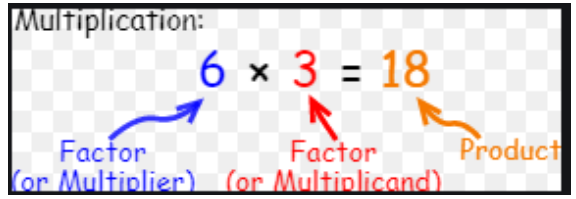
KISLINGBURY C.E. PRIMARY SCHOOL

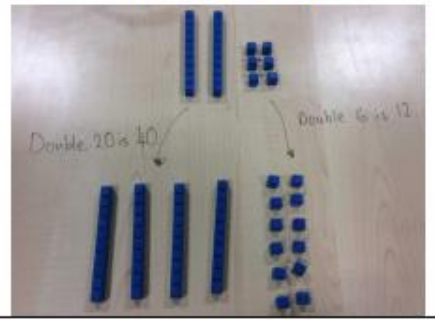
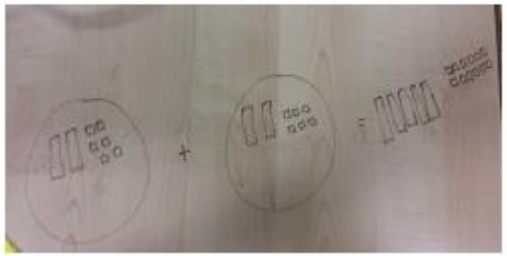
Year 2

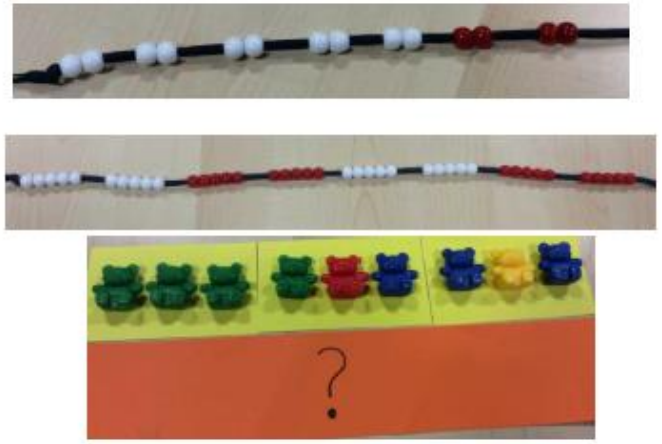
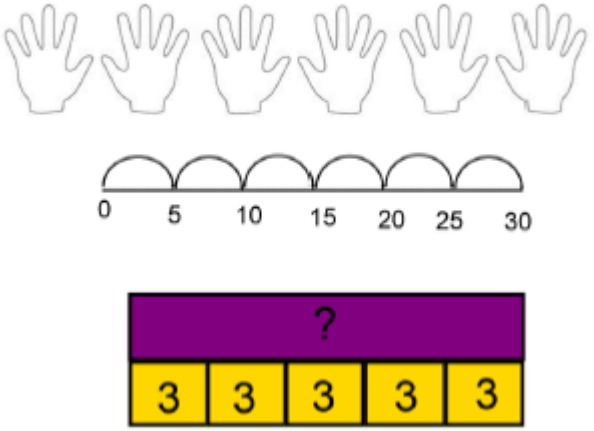


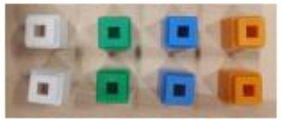
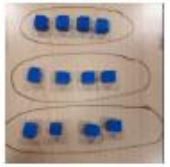
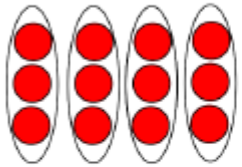
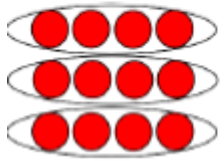
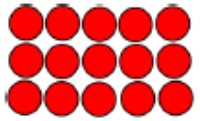
Key Vocab: multiplication, multiply, multiplied by multiple, grouping, doubling, array, row, column, groups of, times once, twice, three times...ten times, repeated addition, one each, two each, three each...ten each, equal groups of, multiplication table, multiplication fact,

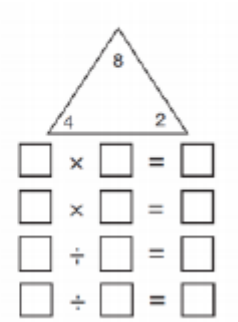
Times tables: To count in steps of 2s, 3s, 5s and 10s.

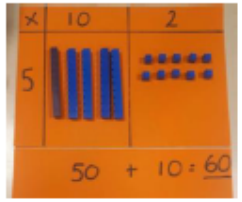
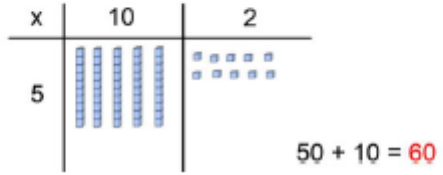


Objective	Concrete	Pictorial	Abstract
To double numbers up to 100	Use physical objects to double numbers up to 100 Model using base 10 to partition a number and then double the ones and the tens. Double 26 is 52  	Use pictorial representations to double numbers up to 100 Draw pictures and representations to show how to double numbers. Double 26 is 52 	Partition a number and then double each part before recombining back together. 26 20 6 x2 x2 40 + 12 = 52

Objective	Concrete	Pictorial	Abstract
To count in multiples of 2s, 3s, 5s and 10s (repeated addition)	Use physical objects to count in steps of 2, 5 and 10s Count the groups as children are skip counting, children may use their fingers as they are skip counting. Use bar models. 	Use pictorial representations to count in steps of 2, 5 and 10s Number lines, counting sticks and bar models should be used to show representation of counting in multiples. 	Count in multiples of a number aloud. Write sequences with multiples of numbers. 0, 2, 4, 6, 8, 10 0, 3, 6, 9, 12, 15 0, 5, 10, 15, 20, 25 , 30 4 x 3 = ☐

Objective	Concrete	Pictorial	Abstract
To show that multiplication is commutative	Use physical objects to show that multiplication is commutative Children will create arrays using a variety of concrete resources, including cubes and counters.   Pupils should understand that an array can represent different equations and that, as multiplication is commutative, the order of the multiplication does not affect the answer   4 x 3 = 12 3 x 4 = 12	Use pictorial representations to show that multiplication is commutative Children will use a range of pictures to represent arrays to show different calulations and show commuatativity.  4 x 3 =12  3 x 4 = 12	Children will write the different multiplication sentences to show the commutative law. 12 = 3 x 4 12 = 4 x 3 Children will also be able to use an array to write multiplication number sentences and reinforce repeated addition.  3 + 3 + 3 + 3 + 3= 15 5 x 3 = 15 5 + 5 + 5 = 15 3 x 5 = 15

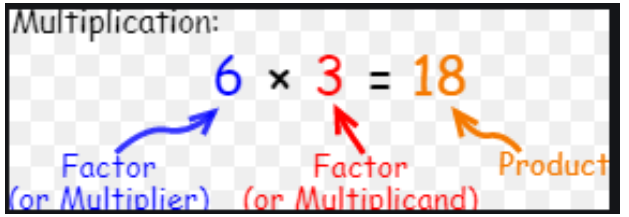
Objective	Concrete	Pictorial	Abstract
To use related multiplication facts using the inverse for the 2, 3, 5 and 10 times tables. Teach alongside division.	Children will use concrete resources, including cubes to represent arrays. These will then form part of the learning process to explain number related facts and begin to write these in number form. 2 x 4 =8 4 x 2 = 8 8 ÷ 2 = 4 8 ÷ 4 = 2 	Children will use pictorial representations to solve missing number facts that demonstrate related facts. 	Children will show all 8 related number sentences to demonstrate related facts. 2 x 4 = 8 4 x 2 = 8 8 ÷ 2 = 4 8 ÷ 4 = 2 8 = 2 x 4 8 = 4 x 2 2 = 8 ÷ 4 4 = 8 ÷ 2

Objective	Concrete	Pictorial	Abstract
To begin to use the grid method to solve multiplication problems.	Children will be introduced to the grid method by using arrays to demonstrate the links. 12 x 5 = 60 **Step 1**: Partition the number into tens and ones, e.g. 12 = 10 and 2 and place the multiplier to the side. **Step 2**: times the multiplicand by the multiplier. E.g. 10 x 5 and 2 x 5 and record the answers in base 10 in the boxes. **Step 3**: Add both answers to find the total for multiplication sentence. E.g. 50 + 10 = 60 	Children can represent their work with place value counters or base 10 in a way that they understand. They can draw the counters (using colours to show different amounts or just use the circles in the different columns) or base 10 like shown below. 12 x 5 = 60 	Start with multiplying by one digit numbers and showing the clear addition alongside the grid. 12 x 5 = 60 x | 10 | 2 5 | 50 | 10 50 + 10 = 60

MULTIPLICATION

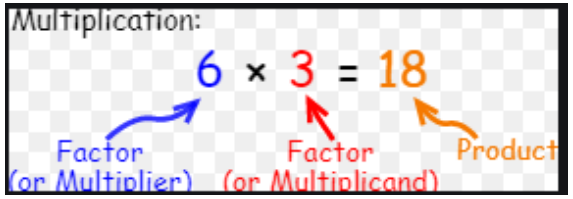
KISLINGBURY C.E. PRIMARY SCHOOL

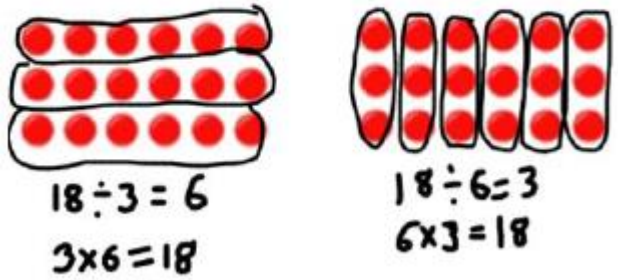
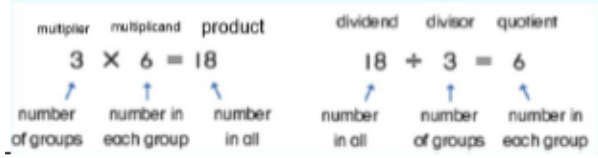
Year 3

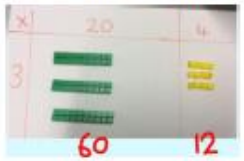
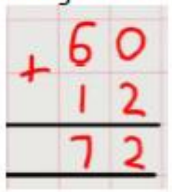
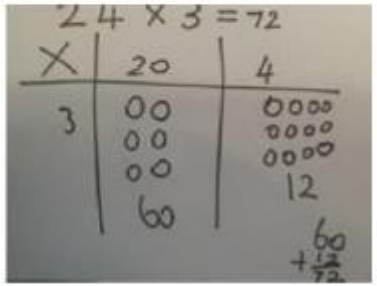
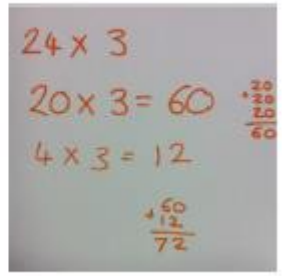
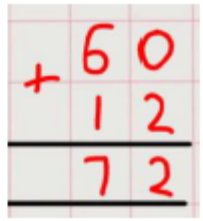


Key Vocab: multiplication, multiply, multiplied by multiple, grouping, doubling, array, row, column, groups of, times once, twice, three times...ten times, repeated addition, one each, two each, three each...ten each, equal groups of, multiplication table, multiplication fact, factor, product,

Times tables: To count in steps of 2s, 3s, 4s, 5s, 8s and 10s. Also 50 and 100.



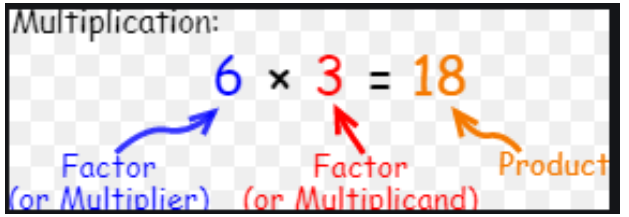
Objective	Concrete	Pictorial	Abstract
To use related multiplication facts using the inverse for the 2, 3,4 5, 8 and 10 times tables.	Children understand the link between multiplication and division and use physical objects to find related facts. 3 x 6= 18 18 ÷ 3 = 6 6 x 3 = 18 18 ÷ 6 = 3 	Children represent an array pictorially then find the associated multiplication and division facts by sorting into equal groups. 	Children apply their understanding of inverse relationships to write related multiplication and division statements. 3 x 6 = 18 18 = 3 x 6 6 x 3 = 18 18 = 6 x 3 18 ÷ 3 = 6 6= 18 ÷ 3 18 ÷ 6 = 3 3= 18 ÷ 6 They use associated vocabulary correctly and know what each number represents in the calculation. 

Objective	Concrete	Pictorial	Abstract
To use a formal written method of multiplication (grid method). 2 digit x 1 digit	Children use partitioning to multiply numbers using the grid method. They partition the multiplicand and multiply each part by the multiplier. Children use base ten and place value counters to represent arrays of the partitioned number. **24 x 3 = 72** Use of unit cubes  use of base 10  Use of place value counters  finding the total 	Children show their understanding by represent the calculation in the grid using their own pictorial representation. **24 x 3 =72**  Children use jottings to partition the multiplicand and multiply each part by the multiplier. 	**Formal Method** The children use the grid method for larger numbers. They multiply numbers by first partitioning the multiplicand and then multiplying each part by the multiplier. In year 3 children are expected to multiply 2-digit by a 1 digit number. **24 x 3 = 72** | X | 20 | 4 | | 3 | 60 | 12 |  Children apply their knowledge of multiplication to word problems. *There are 5 balloons in a packet. There are 18 packets in a box. How many balloons are there altogether in a box?*

MULTIPLICATION

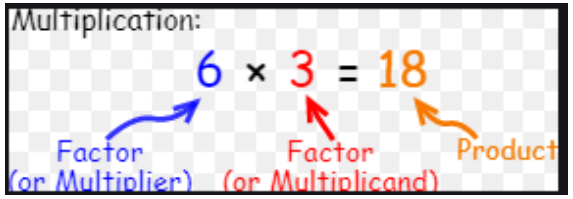
KISLINGBURY C.E. PRIMARY SCHOOL

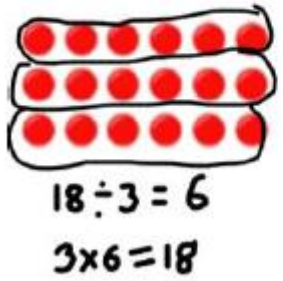
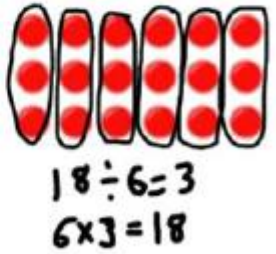
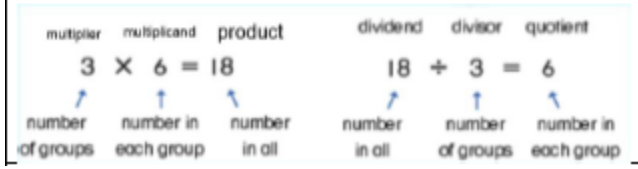
Year 4

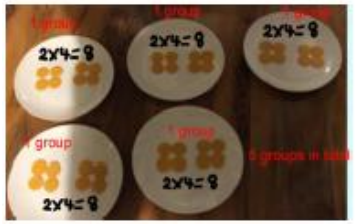
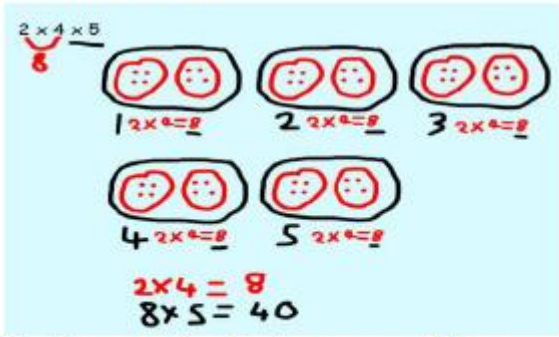
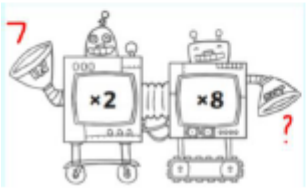


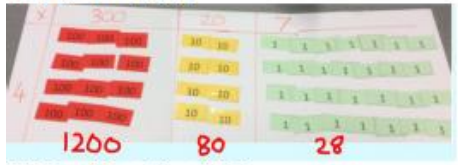
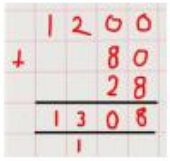
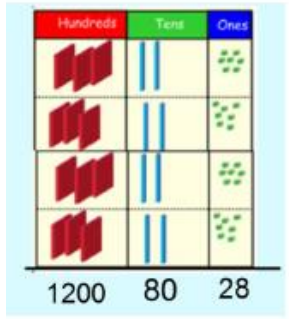
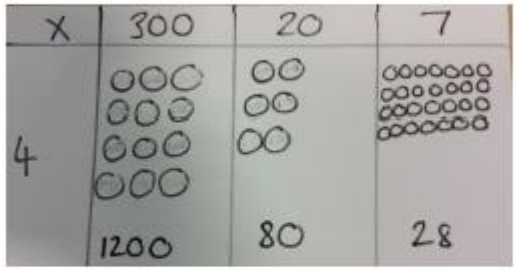
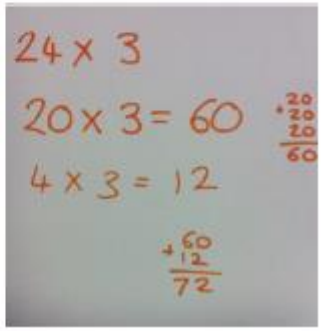
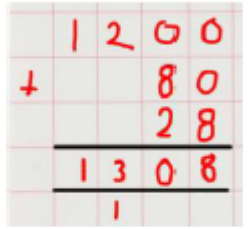
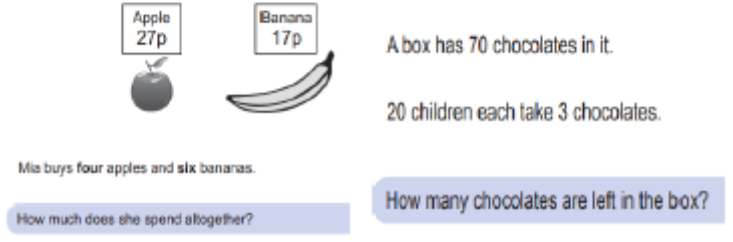
Key Vocab: multiplication, multiply, multiplied by multiple, grouping, doubling, array, row, column, groups of, times once, twice, three times...ten times, repeated addition, one each, two each, three each...ten each, equal groups of, multiplication table, multiplication fact, factor, product, inverse, square, squared, cube, cubed, distributive law

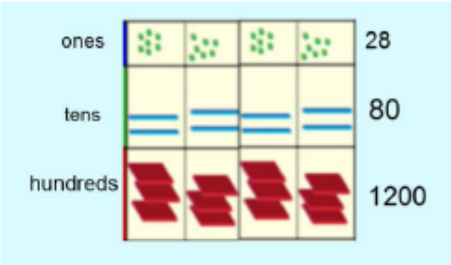
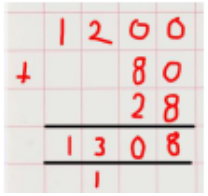
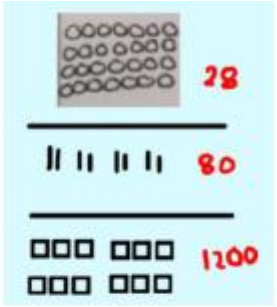
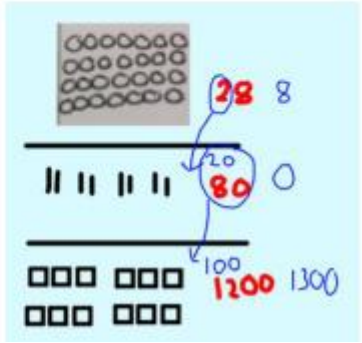
Times tables: To know all times tables up to 12– will be nationally tested.



Objective	Concrete	Pictorial	Abstract
To recall multiplication and division facts for multiplication tables up to 12 x 12	Children continue to deepen their understanding of the link between multiplication and division and use physical objects to find related facts. 3 x 6= 18 18 ÷ 3 = 6  6 x 3 = 18 18 ÷ 6 = 3 	Children represent an array pictorially then find the associated multiplication and division facts by sorting into equal groups.  18÷3=6 3x6=18  18÷6=3 6x3=18	Children apply their understanding of inverse relationships to write related multiplication and division statements. 3 x 6 = 18 18 = 3 x 6 6 x 3 = 18 18 = 6 x 3 18 ÷ 3 = 6 6= 18 ÷ 3 18 ÷ 6 = 3 3= 18 ÷ 6 They use associated vocabulary correctly and know what each number represents in the calculation.  multiplier multiplicand product 3 × 6 = 18 number of groups / number in each group / number in all dividend divisor quotient 18 ÷ 3 = 6 number in all / number of groups / number in each group

Objective	Concrete	Pictorial	Abstract
To multiply and divide mentally, including: multiplying by 0 and 1 and multiplying together 3 numbers.	Children multiply and divide numbers by zero and one. They understand the meaning of the calculation and the need of equal sized groups.  6 x 2 = 12 6 x 1 = 6 6 x 0 = 0 Children use objects to calculate totals when three numbers are multiplied together. 2 x 4 x 5 = 40 	Children show their understanding of multiplying by 0 and 1 by drawing representations.  Children use objects to calculate totals when three numbers are multiplied together. 2 x 4 x 5 = 40  Or they may decide to represent it as 2 x (4 x 5) 2 x (20) = 40	Children understand how to multiply by 1 and 0 and apply to word problems. 1 x 83 = 76 x 1 = 4567 x 0= 0 x 23 = *Jack earns £12 a week on his paper round. He did not work for one week whilst he was on holiday. How much did he earn?* Children solve number puzzles using the knowledge of multiplying 3 single digit numbers.  Make the target number 30 by using three of the digits below. 7 5 3 4 6 2 ____ x ____ x ____ = 30

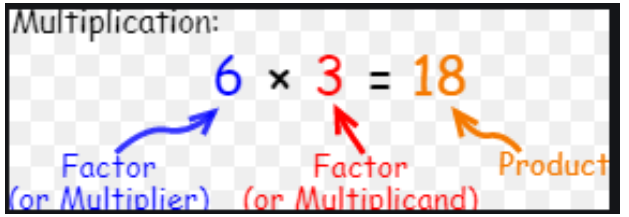
Objective	Concrete	Pictorial	Abstract
To use a formal written method of multiplication (grid method). 3 digit x 1 digit	Children recap the grid method introduced in Year 3 and represent calculations using the place value counters and base ten equipment. They first partition the multiplicand then multiply each part by the multiplier. 327 x 4 = 1308   1200 + 80 + 28 = 1308  1200 + 80 + 28 = 1308	Children show their understanding by represent the calculation in the grid using their own pictorial representation. 327 x 4 = 1308  Children use jottings to partition the multiplicand and multiply each part by the multiplier.  	**Formal Method** The children continue to use the grid method using partitioning to multiply each part. In year 4 children are expected to multiply 3-digit by a 1 digit number. 327 x 4 = 1308  X | 300 | 20 | 7 4 | 1200 | 80 | 28 1200 + 80 + 28 = 1308 Children apply their knowledge of multiplication to worded problems. 

Objective	Concrete	Pictorial	Abstract
To use a formal written method of multiplication (short multiplication). 3 digit x 1 digit	Children represent calculations using the place value counters and base ten equipment and move towards using a columnar method. They begin by multiplying the ones, then the tens then the hundreds before finding the total. **327 x 4= 1308** 7 x 4= 28 20 x 4= 80 300 x 4 = 1200   	Children represent the calculation by drawing pictorial representations. They partition the multiplicandthen multiply each part by the multiplier. **327 x 4 = 1308**  Children understand the place value and can exchange between columns which leads to the formal condensed method. **327 x 4 = 1308**  	**Formal Method** In year 4 children are expected to multiply a 3-digit by a 1 digit number. Children apply their knowledge of the grid method begin to record in a columnar form. At this stage they still partition the multiplicand and multiply each part by the multiplier. 327 x 4 28 80 1200 1308 Children then move on to using the condensed method of short multiplication. They carry below the line. 3 2 7 x 4 1 3 0 8 1 2

MULTIPLICATION

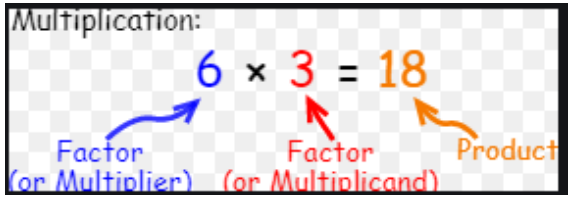
KISLINGBURY C.E. PRIMARY SCHOOL

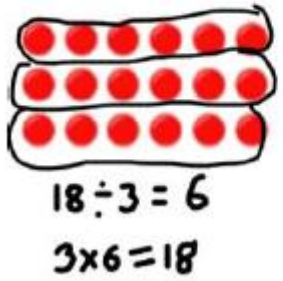
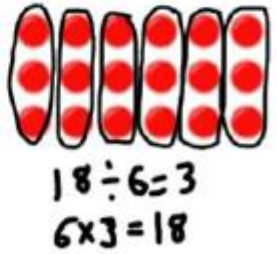
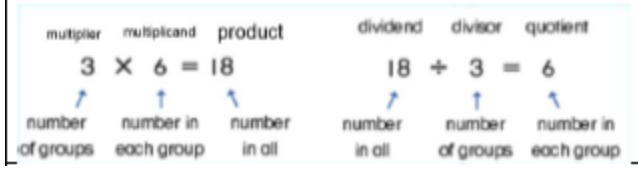
Year 5

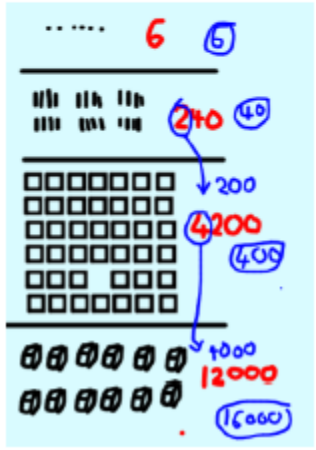
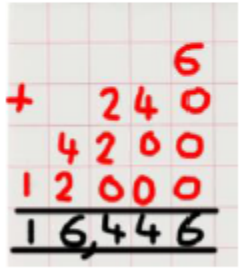


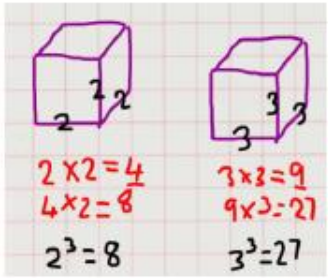
Key Vocab: multiplication, multiply, multiplied by multiple, grouping, doubling, array, row, column, groups of, times once, twice, three times...ten times, repeated addition, one each, two each, three each...ten each, equal groups of, multiplication table, multiplication fact, factor, product, inverse, square, squared, cube, cubed, distributive law

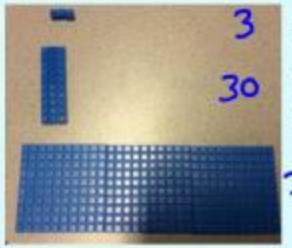
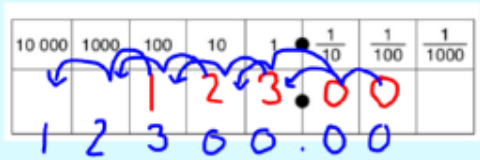
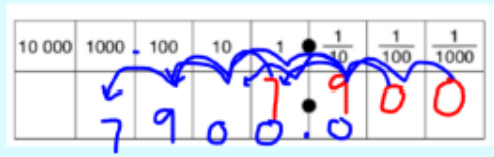
Times tables: To know all times tables up to 12.

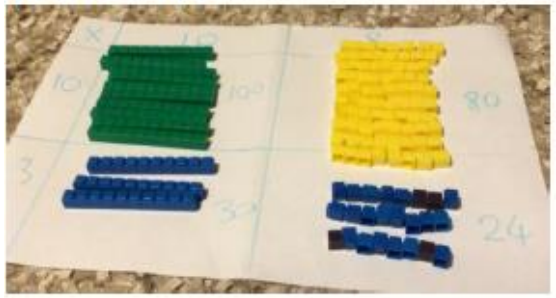
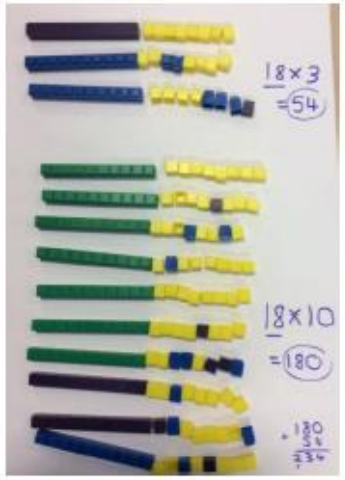
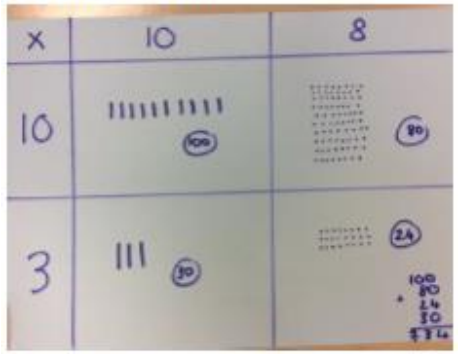
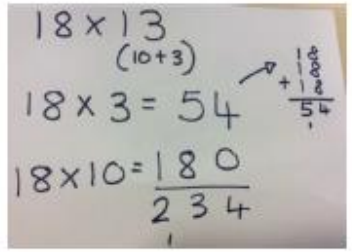
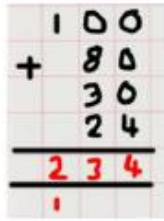
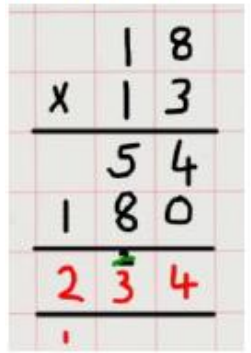
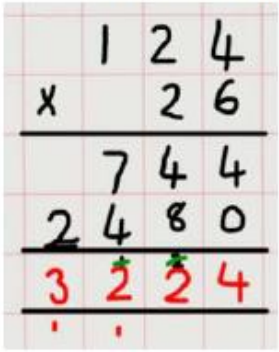


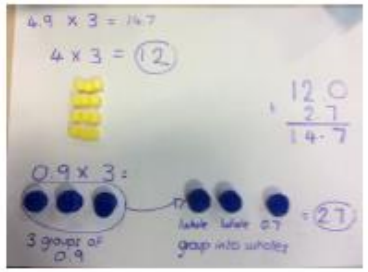
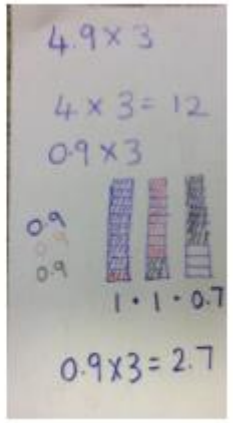
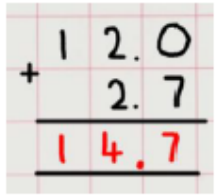
Objective	Concrete	Pictorial	Abstract
To recall multiplication and division facts for multiplication tables up to 12 x 12	Children continue to deepen their understanding of the link between multiplication and division and use physical objects to find related facts. 3 x 6= 18 18 ÷ 3 = 6  6 x 3 = 18 18 ÷ 6 = 3 	Children represent an array pictorially then find the associated multiplication and division facts by sorting into equal groups.  18÷3 = 6 3x6=18  18÷6=3 6x3=18	Children apply their understanding of inverse relationships to write related multiplication and division statements. 3 x 6 = 18 18 = 3 x 6 6 x 3 = 18 18 = 6 x 3 18 ÷ 3 = 6 6= 18 ÷ 3 18 ÷ 6 = 3 3= 18 ÷ 6 They use associated vocabulary correctly and know what each number represents in the calculation.  multiplier multiplicand product 3 × 6 = 18 number of groups / number in each group / number in all dividend divisor quotient 18 ÷ 3 = 6 number in all / number of groups / number in each group

Objective	Concrete	Pictorial	Abstract
To use a formal written method of multiplication (short multiplication). 4 digit x 1 digit	Children represent calculations using the place value counters and base ten equipment. They solve in a columnar form and begin by multiplying the ones, then the tens then the hundreds then the thousands before finding the total. **2741 x 6 = 16,446** 1 x 6= 6 40 x 6= 240 700 x 6= 4,200 2000 x 6= 12,000 	Children represent the calculation by drawing pictorial representations. They partition the multiplicandthen multiply each part by the multiplier They understand the place value and can confidently exchange between columns. This leads to the condensed method.   	**Formal Method** In year 5 children are expected to multiply numbers up to a 4-digit by a 1 digit number. The children continue to use the condensed method of short multiplication but with larger numbers. The number is carried underneath between columns. 342 x 7 becomes 3 4 2 × 7 2 3 9 4 2 1 2741 x 6 becomes 2 7 4 1 × 6 1 6 4 4 6 4 2

Objective	Concrete	Pictorial	Abstract
To recognise and use square numbers and cube numbers	Children use resources to explore squared and cubed numbers. **Square numbers**  4 9 16 **Cubed numbers**  8 27	Children represent squared and cubed numbers pictorially. They use the correct notation for squared (^{2}) and cubed (^{3}). 2^2 1 2 3 4 2 x 2 = 4 3^2 1 2 3 4 5 6 7 8 9 3 x 3 = 9 4^2 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 4 x 4 = 16  	Children can find and recognise squared and cubed numbers and use the correct notation for squared (^{2}) and cubed (^{3}). 2^2 or 2 x 2 = 4 3^2 or 3 x 3 = 9 4^2 or 4 x 4 = 16 $1^3 = 1 \times 1 \times 1 = 1$ $2^3 = 2 \times 2 \times 2 = 8$ $3^3 = 3 \times 3 \times 3 = 27$ $4^3 = 4 \times 4 \times 4 = 64$

Objective	Concrete	Pictorial	Abstract
To multiply whole numbers and those involving decimals by 10, 100 and 1000.	Children use resources to understand what 10, 100 and 1000 times bigger looks like.  30 is ten times bigger than 3. 300 is ten times bigger than 30. 300 is one hundred times bigger than 3.	Children use place value grids to multiply numbers by 10, 100 and 1000s. They understand the movement of the digits on the place value grid. **Multiplying** X 10 digits move LEFT **1** space X 100 digits move LEFT **2** spaces X 1000 digits move LEFT **3** spaces 123 x 100= 12300  They apply this knowledge to decimal numbers. 7.9 x 1000= 7900  	Children apply their knowledge of place value to multiply numbers by 10, 100 and 1000, including decimal numbers. 34 x 100= 3400 1234x 1000= 1234000 5.6 x 10 = 56 12.367 x 100 = 1236.7 They apply their knowledge to word and number puzzles. Complete these calculations. 15 × 100 = ☐ ☐ × 10 = 1500 *Breen Airways charges £1600 for a return flight to Australia. King Airlines is ten times cheaper. How much do King Airlines charge?*

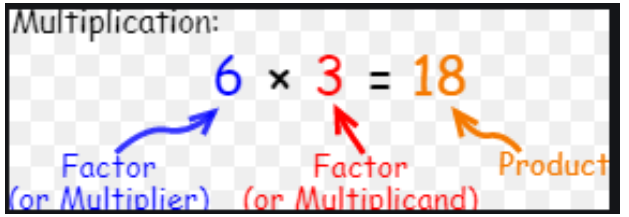
Objective	Concrete	Pictorial	Abstract
To use a formal written method of multiplication (long multiplication). 4 digit x 2 digit	Children represent calculations using the place value counters using the grid method. **18 x 13 = 234**  **18 x 13 = 234** Children then solve in a columnar form. They begin by multiplying the ones, then the tens, the hundreds then the thousands before finding the total. 	Children will first use their knowledge of place value to partition the multiplicand and multiplier. They then show their understand pictorially in a grid method. **18 x 13 = 234**  Children then move towards the columnar method by representing each stage with jottings. Children are encouraged to multiply the ones first.  **18 x 13 = 234**	Children will first secure their understanding using the grid method. 18 x 13 = 234 | X	10	8
---	---	---
10	100	80
3	30	24	  They will then move on to a more condensed method of long multiplication. **18 x 13= 234**  **124 x 26 = 3224** 

Objective	Concrete	Pictorial	Abstract
To use a formal written method of multiplication to multiply numbers up to 2 decimal places (grid method). decimals x 1 digit	Children represent calculations using the place value counters and base ten equipment. They partition the decimal number and multiply by the multiplier. They then find the total. **4.9 x 3 = 14.7** 	Children continue to multiply decimal numbers by partitioning the decimal number. They draw pictorial representations and use jottings to find the total. **4.9 x 3 = 14.7** 	Using the grid method, children will be able to multiply decimals with one decimal place by a single digit number. They should know that the decimal points line up under each other and place holders are added. **4.9 x 3= 14.7** X | 4 | 0.9 3 | 12 | 2.7 

MULTIPLICATION

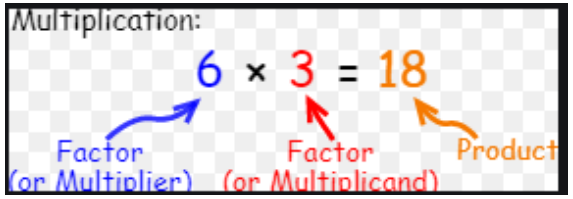
KISLINGBURY C.E. PRIMARY SCHOOL

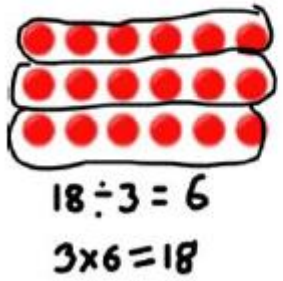
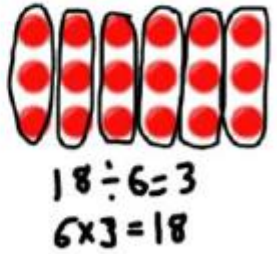
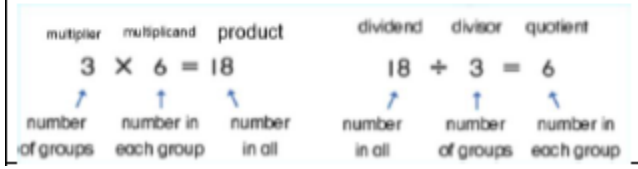
Year 6

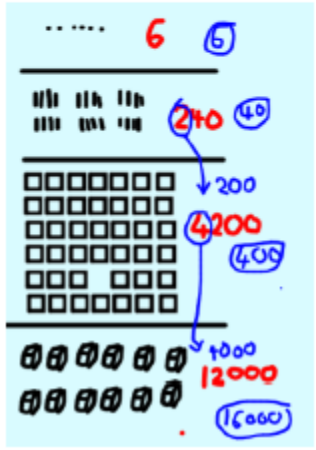
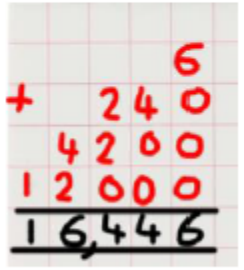


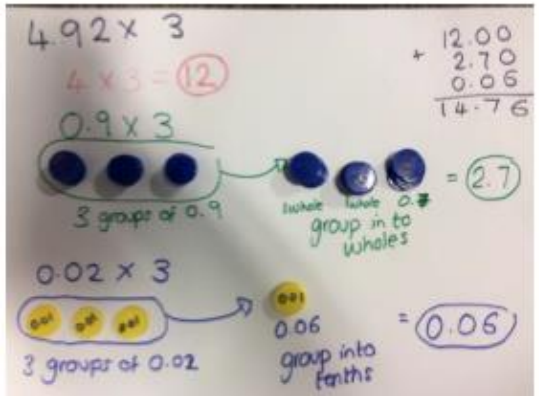
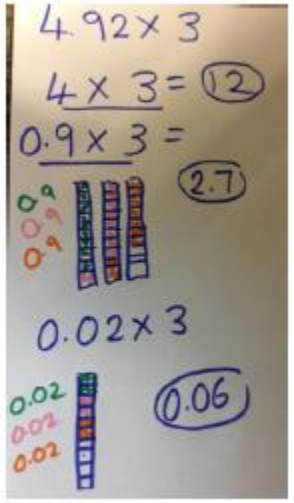
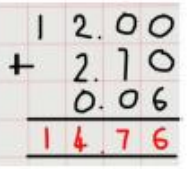
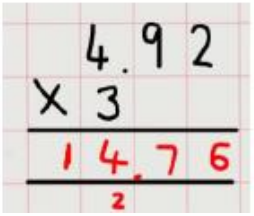
Key Vocab: multiplication, multiply, multiplied by multiple, grouping, doubling, array, row, column, groups of, times once, twice, three times...ten times, repeated addition, one each, two each, three each...ten each, equal groups of, multiplication table, multiplication fact, factor, product, inverse, square, squared, cube, cubed, distributive law

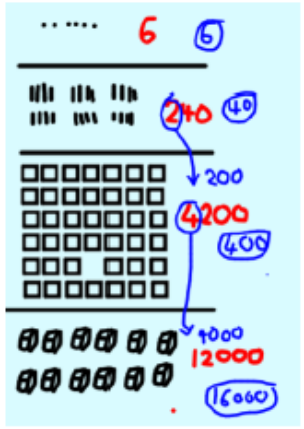
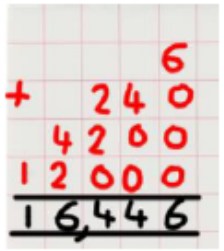
Times tables: To know all times tables up to 12.

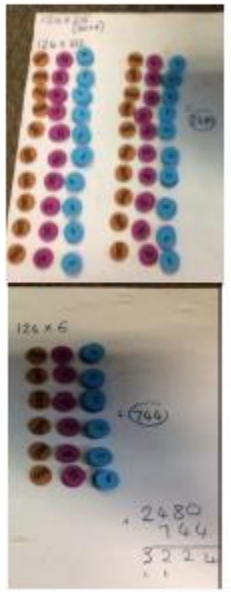
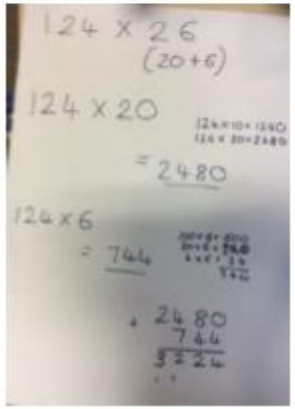


Objective	Concrete	Pictorial	Abstract
To recall multiplication and division facts for multiplication tables up to 12 x 12	Children continue to deepen their understanding of the link between multiplication and division and use physical objects to find related facts. 3 x 6= 18 18 ÷ 3 = 6  6 x 3 = 18 18 ÷ 6 = 3 	Children represent an array pictorially then find the associated multiplication and division facts by sorting into equal groups.  18÷3 = 6 3x6=18  18÷6=3 6x3=18	Children apply their understanding of inverse relationships to write related multiplication and division statements. 3 x 6 = 18 18 = 3 x 6 6 x 3 = 18 18 = 6 x 3 18 ÷ 3 = 6 6= 18 ÷ 3 18 ÷ 6 = 3 3= 18 ÷ 6 They use associated vocabulary correctly and know what each number represents in the calculation.  multiplier multiplicand product 3 × 6 = 18 number of groups / number in each group / number in all dividend divisor quotient 18 ÷ 3 = 6 number in all / number of groups / number in each group

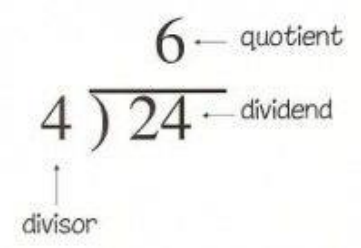
Objective	Concrete	Pictorial	Abstract
To use a formal written method of multiplication (short multiplication). 4 digit x 1 digit	Children represent calculations using the place value counters and base ten equipment. They solve in a columnar form and begin by multiplying the ones, then the tens then the hundreds then the thousands before finding the total. **2741 x 6 = 16,446** 1 x 6= 6 40 x 6= 240 700 x 6= 4,200 2000 x 6= 12,000 	Children represent the calculation by drawing pictorial representations. They partition the multiplicandthen multiply each part by the multiplier They understand the place value and can confidently exchange between columns. This leads to the condensed method.   	**Formal Method** In year 5 children are expected to multiply numbers up to a 4-digit by a 1 digit number. The children continue to use the condensed method of short multiplication but with larger numbers. The number is carried underneath between columns. 342 x 7 becomes 3 4 2 × 7 2 3 9 4 2 1 2741 x 6 becomes 2 7 4 1 × 6 1 6 4 4 6 4 2

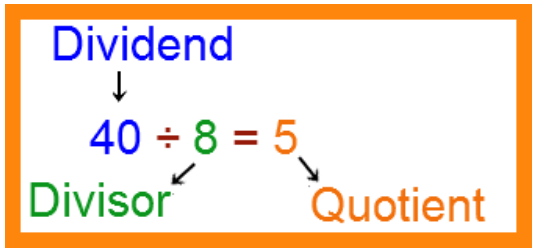
Objective	Concrete	Pictorial	Abstract
To use a formal written method of multiplication to multiply numbers up to 2 decimal places (grid method). decimals x 1 digit	Children represent calculations using the place value counters and base ten equipment. They partition the decimal number and multiply by the multiplier. They then find the total. **4.92 x 3 = 14.76** 	Children continue to multiply decimal numbers by partitioning the decimal number. They draw pictorial representations and jottings to find the total. **4.92 x 3 = 14.76**  use	**Formal method** Using the grid method, children will be able to multiply decimals with up to two decimal places by a single digit number. They should know that the decimal points line up under each other and zeros are added at place holders. **4.92 x 3** | X | 4 | 0.9 | 0.02 | | --- | --- | --- | --- | | **3** | 12 | 2.7 | 0.06 |  Children will move onto using the condensed method. 

Objective	Concrete	Pictorial	Abstract
To use a formal written method of multiplication (short method). Multi-digits x 1 digit	Children represent calculations using the place value counters and base ten equipment. They solve in a columnar form and begin by multiplying the ones, then the tens then the hundreds then the thousands before finding the total. **2741 x 6 = 16,446** 1 x 6= 6 40 x 6= 240 700 x 6= 4,200 2000 x 6= 12,000 	Children represent the calculation by drawing pictorial representations. They partition the multiplicandthen multiply each part by the multiplier They understand the place value and can confidently exchange between columns. This leads to the condensed method.   	**Formal Method** In year 6 children are expected to multiply multi digit numbers by a 1 digit number. The children continue to use the condensed method of short multiplication. The number is carried underneath. 342 x 7 becomes 3 4 2 × 7 2 3 9 4 2 1 2741 x 6 becomes 2 7 4 1 × 6 1 6 4 4 6 4 2

Objective	Concrete	Pictorial	Abstract
To use a formal written method of multiplication (long method). Multi-digit x 2 digit	Children represent calculations using the place value counters using the grid method. **124 x 26 = 3224**  They then solve calculations in a columnar form and begin by multiplying the ones, the tens then the hundreds then the thousands before finding the total. **124 x 26 = 3224** 	Children will first use their knowledge of place value to partition the multiplicand and multiplier. They then show their understand pictorially in a grid method. **124 x 26 = 3224**  **124 x 26 = 3224** Children then move towards the columnar method by representing each stage with jottings. Children are encouraged to multiply the ones first. 	**Formal Method** In year 6 children are expected to multiply multi digit numbers by a 2 digit number. The children are introduced to long multiplication. The number is carried underneath. **124 x 26 = 3224** **Step 1**· Multiply the multiplier by the multiplicand. Start with the ones, multiply 6 by 4 (24). Write the 4 in the ones column and carry the 20 below the line. **Step 2**· Multiply the 6 by 20 (120) and add the 2 (122). Cross off the carried 20. Write the 4 in the tens column and carry the 100 below the line. **Step 3**· Multiply the 6 by 100 (600) and add the 100 (700). Cross off the carried 100. Write the 7 in the hundreds. **Step 4**· Move to the tens column on the multiplier and start a new line. Multiply the 20 by 4 (80) and record. **Step 5**· Multiply the 20 by 20 (400) and record. Then multiply the 20 by the 100 (200) and record. **Step 6**· Total the numbers. **4 digit x 2 digit** **1234 x 16 = 19,744**

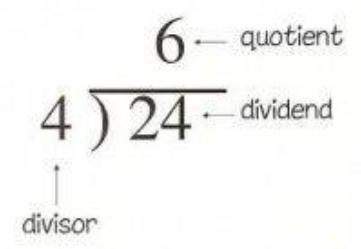
DIVISION

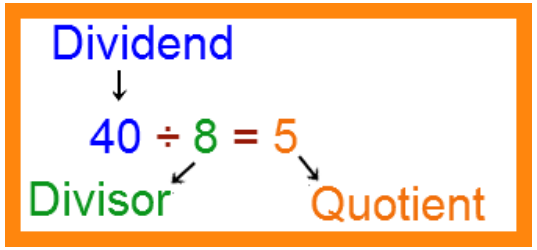

6 — quotient
4) 24 — dividend
divisor


Dividend
40 ÷ 8 = 5
Divisor
Quotient

DIVISION

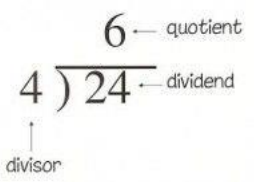
Foundation Stage

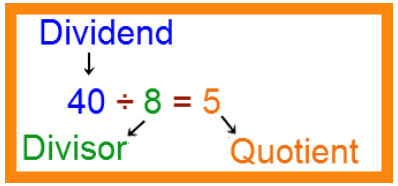




Key Vocab: sharing, halving, number patterns

.

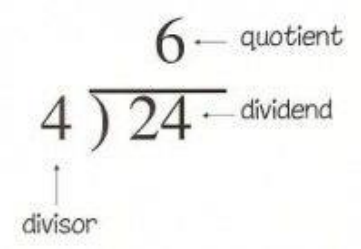


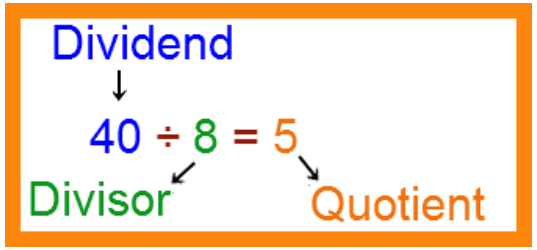


Objective	Concrete	Pictorial	Abstract
To begin to divide by sharing	Children will use a range of resources to share concrete resources to begin to demonstrate understanding. Children will start with an even number and will need to share this out equally in a given group. e.g. 10 ÷ 2 = 5 	Children will understand equal groups and share items out in play and problem solving. They will count in 2s and 10s and later in 5s. **Step 1**· Count how many you have. **Step 2**· Share them equally so each group has the same amount. **Step 3**· Count how many are in each group. 	Children will begin to experiment with writing division number sentences using the division symbol. 10 ÷ 2 = 5

DIVISION

Year 1





Key Vocab: sharing, halving, number patterns, division, dividing, grouping, sharing, array, equal grouping, equal sharing.

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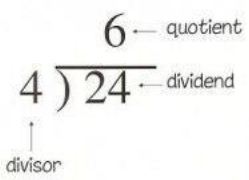
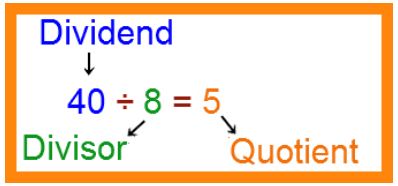
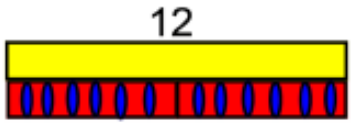
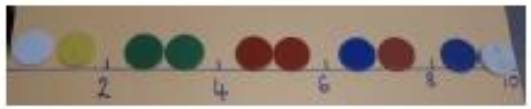
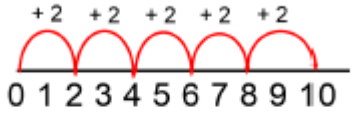
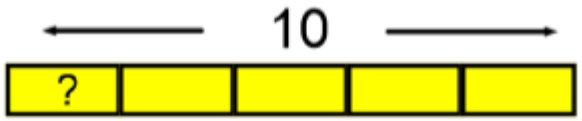


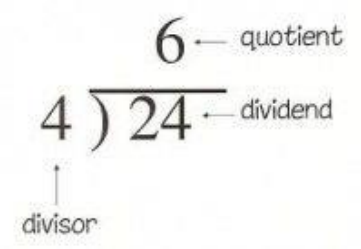


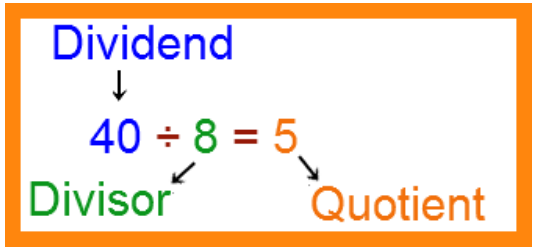
Objective	Concrete	Pictorial	Abstract
To divide by sharing. To half a number up to 20.	Children will use concrete resources, including uni-fix cubes to share into equal groups. Children will also be able to half a number up to 20 by sharing into equal groups.   Stem Sentence: I know there are 2 groups so I can share 12 counters which will equal 6 in each group.	Children will draw jottings and have pictorial representations to demonstrate knowledge of sharing into equal groups. 12 ÷ 2 = 6  I know there are 2 groups and in each group there are 6 flowers. 12 ÷ 2 = 6 	Children will be introduced to word problems to solve division problems. 6 sweets are shared between 2 people. How many do they have each? 12 ÷ 2 = 6 Stem Sentence: I know 12 divided equally between 2 groups' equals 6.

Objective	Concrete	Pictorial	Abstract
To divide by grouping.	Children will begin to solve division problems, which require sorting objects and quantities into 2s, 4s, 5s and 10s. Children will use concrete resources such as cubes, counters or objects to aid understanding. 10 ÷ 5 = 2   	Children will use number lines to show grouping. 10 ÷ 2 = 5  Children will also experiment dividing by grouping using the bar model. The children will be given a number or picture representatives. This will represent the whole. They then need to split the whole into the number of groups they are dividing by and work out how many would be in each group. e.g. 10 ÷ 5 = 2  	There are 10 flower bulbs. Plant 2 in each pot. How many pots are there? 10 ÷ 2 = 5 There are 10 flower bulbs. Plant 5 in each pot. How many pots are there? 10 ÷ 5 = 2

DIVISION

Year 2





Key Vocab: sharing, halving, number patterns, division, dividing, grouping, sharing, array, equal grouping, equal sharing, repeated addition

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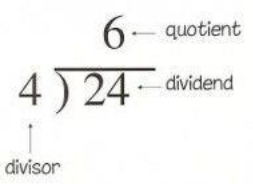
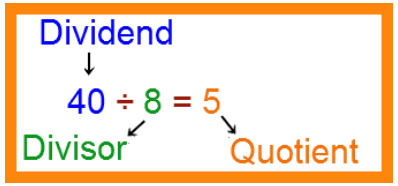
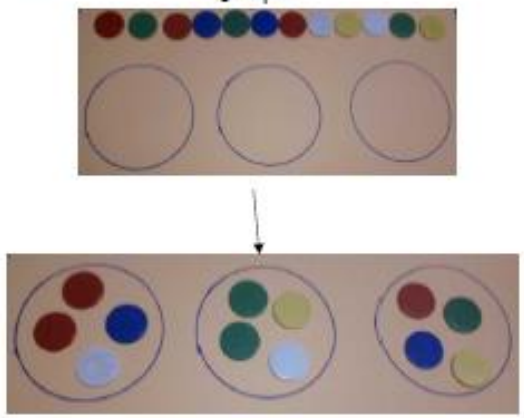
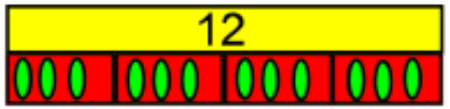
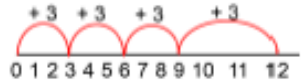
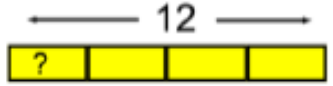
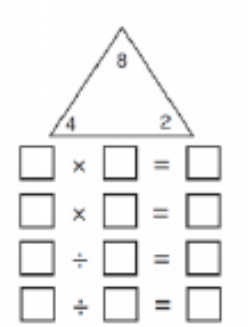




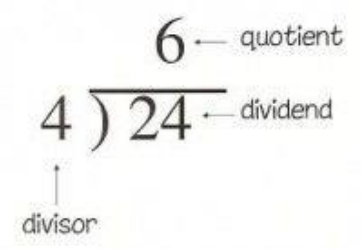
Objective	Concrete	Pictorial	Abstract
To divide by sharing.	Children will use a range of concrete resources, including cubes to share objects and quantities into equal groups. I have 12 cubes, can you share them equally into 3 groups? 	Children will use pictures and shapes to share quantities. 12 ÷ 3 = 4  Children will also be able to use the bar model to show and support their understanding. e.g. 12 ÷ 4 = 3 	Children will be writing division number sentence using the divide symbol. 12 ÷ 3 = 4 12 ÷ 4 = 3

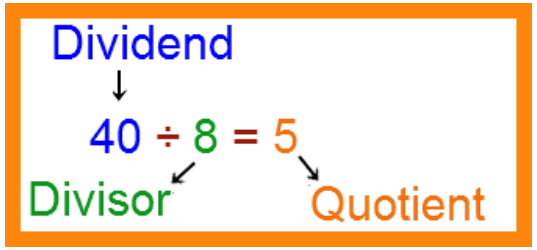
Objective	Concrete	Pictorial	Abstract
To divide by grouping. (repeated addition)	Children will begin to solve division problems, which require sorting objects and quantities into 2s, 4s, 5s and 10s. Children will use concrete resources such as cubes, counters or objects to aid understanding.  	Children will use number lines to show grouping  Children will dividing by grouping using the bar model. The children will be given a number or picture representatives. This will represent the whole. They then need to split the whole into the number of groups they are dividing by and work out how many would be in each.  	There are 12 flower bulbs. Plant 3 in each pot. How many pots are there? 12 ÷ 3 = 4 There are 12 flower bulbs. Plant 4 in each pot. How many pots are there? 12 ÷ 4 = 3

Objective	Concrete	Pictorial	Abstract
To use related multiplication and division facts using the inverse for the 2, 3, 5 and 10 xtable.	Children will use concrete resources, including cubes to represent arrays. These will then form part of the learning process to explain number related facts and begin to write these in number form. 2 x 4 =8 4 x 2 = 8 8 ÷ 2 = 4 8 ÷ 4 = 2 	Children will use pictorial representations to solve missing number facts that demonstrate related facts. 	Children will show all 8 related number sentences to demonstrate related facts. 2 x 4 = 8 4 x 2 = 8 8 ÷ 2 = 4 8 ÷ 4 = 2 8 = 2 x 4 8 = 4 x 2 2 = 8 ÷ 4 4 = 8 ÷ 2

DIVISION

Year 3





Key Vocab: sharing, halving, number patterns, division, dividing, grouping, sharing, array, equal grouping, equal sharing, repeated addition, groups of times, divided by, divide into left, left over, remainder grouping, column, division fact, equal groups of...

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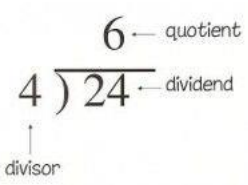
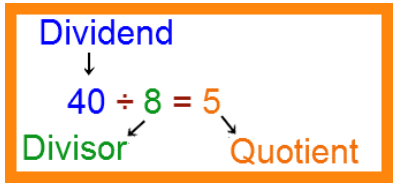
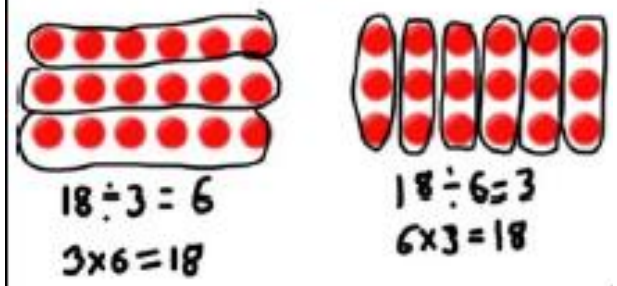
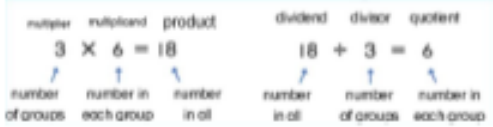
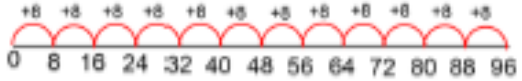
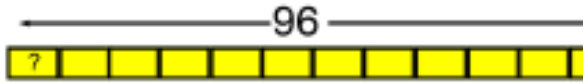
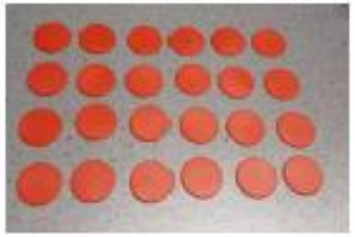
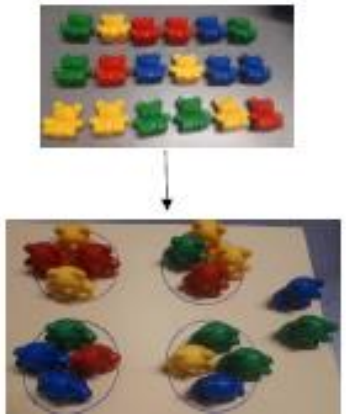
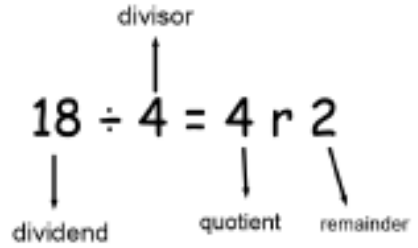




Objective	Concrete	Pictorial	Abstract
To recall multiplication and division facts for the multiplication tables up to 12 x 12.	Children continue to deepen their understanding of the link between multiplication and division and use physical objects to find related facts. 3 x 6= 18 18 ÷ 3 = 6  6 x 3 = 18 18 ÷ 6 = 3 	Children represent an array pictorially then find the associated multiplication and division facts by sorting into equal groups. 	Children apply their understanding of inverse relationships to write related multiplication and division statements. 3 x 6 = 18 6 x 3 = 18 18 ÷ 3 = 6 18 ÷ 6 = 3 18 = 3 x 6 18 = 6 x 3 6= 18 ÷ 3 3= 18 ÷ 6 They use associated vocabulary correctly and know what each number represents in the calculation. 

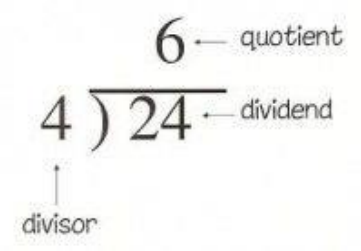
Objective	Concrete	Pictorial	Abstract
To use grouping to divide (repeated addition)	Children will use concrete resources, including place value counters to divide by grouping. 96÷8=12 Step 1: Use place value counters to create the dividend.  Step 2: Look at the divisor, this explains the number of groups you will need. E.g. 8. The children will need to exchange 1 ten for 10 ones.  Step 3: Children will need to share out the remaining number so each group is equal. 	Children will continue to use repeated addition on the number line but will work with increasingly large numbers. 96 ÷ 8 = 12 Children will count on from in 8s from 0 until they reach 96.  Children will also continue to use the bar model to support their understanding.  	There are 96 footballs. Each player needs 8 footballs. How many players are there? 96 ÷ 8 = 12 There are 96 footballs. Each player needs 12 footballs. How many players are there? 96 ÷ 12 = 8 **How many groups 8 are in 96?** **How many groups of 12 are in 96?**

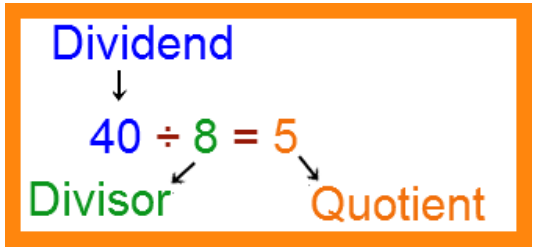
Objective	Concrete	Pictorial	Abstract
To use arrays to divide	Children will link division to multiplication by using arrays. They will begin writing numbers sentences to show what they can create.  6 x 4 = 24 4 x 6 = 24 24 ÷ 6 = 4 24 ÷ 4 = 6	Children will draw or be given a pictorial representation of an array. They will circle the array to split it into groups to make multiplication and division sentences. 24 ÷ 6 = 4  STEM: I know 24 ÷ 6 = 4 because 6 groups of 4 equals 24	Children will find the inverse of multiplication and division sentences by creating linking number sentences. 6 x 4 = 24 4 x 6 = 24 24 ÷ 6 = 4 24 ÷ 4 = 6

Objective	Concrete	Pictorial	Abstract
To divide with whole numbers and represent remainders.	Children will use a range of concrete resources to divide between groups and see what is left over. 18 ÷ 4 = 4 r 2 	Children will use a number line to jump forward in equal jumps. They will then see how many more they need to jump to find the remainder. 18 ÷ 4 = 4 r 2 	Children will complete written division number sentences using the division symbol and r to represent the remainder. 

DIVISION

Year 4





Key Vocab: sharing, halving, number patterns, division, dividing, grouping, sharing, array, equal grouping, equal sharing, repeated addition, groups of times, divided by, divide into left, left over, remainder grouping, column, division fact, equal groups of..., factors, multiples,

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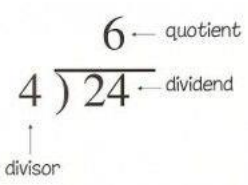

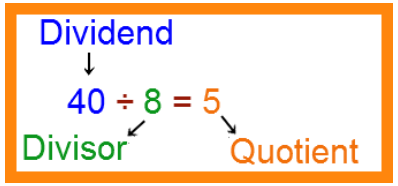

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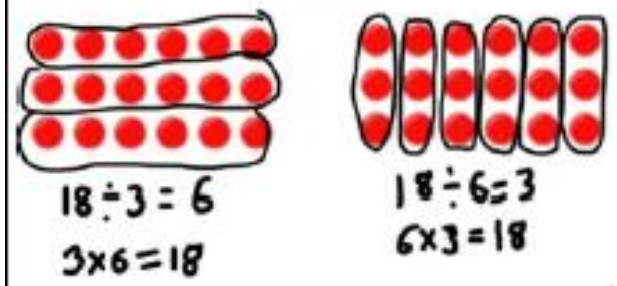
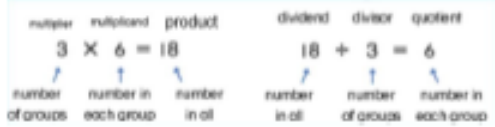
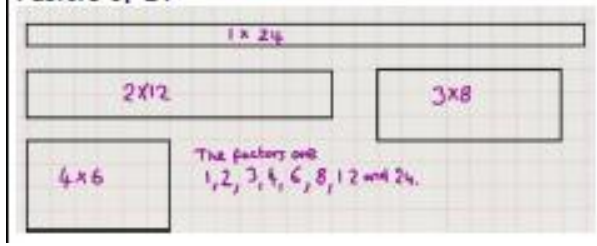
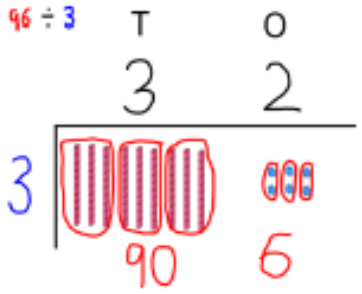
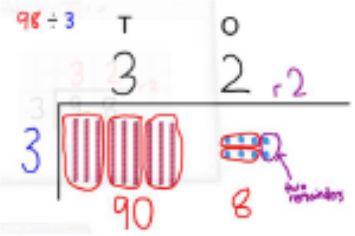
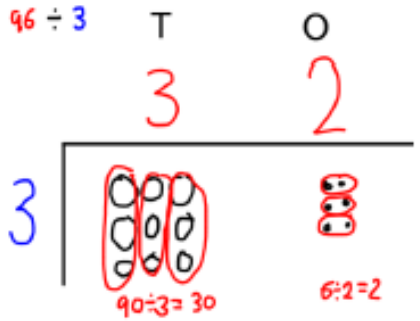
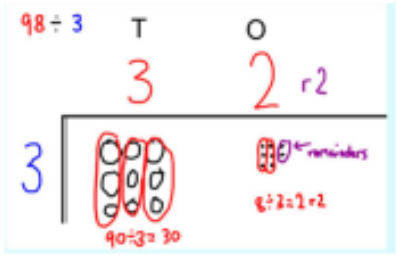
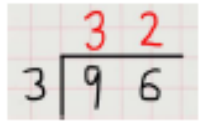
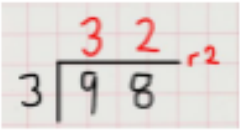
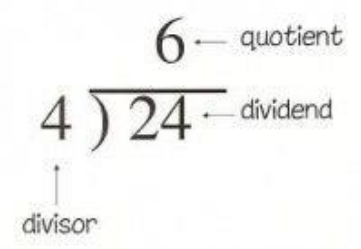
To recall multiplication and division facts for the multiplication tables up to 12 x 12.	Children continue to deepen their understanding of the link between multiplication and division and use physical objects to find related facts. 3 x 6= 18 18 ÷ 3 = 6  6 x 3 = 18 18 ÷ 6 = 3 	Children represent an array pictorially then find the associated multiplication and division facts by sorting into equal groups. 	Children apply their understanding of inverse relationships to write related multiplication and division statements. 3 x 6 = 18 6 x 3 = 18 18 ÷ 3 = 6 18 ÷ 6 = 3 18 = 3 x 6 18 = 6 x 3 6= 18 ÷ 3 3= 18 ÷ 6 They use associated vocabulary correctly and know what each number represents in the calculation. 

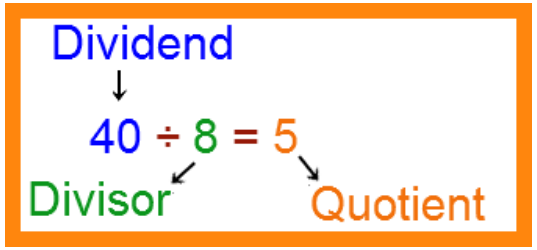
Objective	Concrete	Pictorial	Abstract
To recognise and use factor pairs and commutativity in mental calculations.	Children use physical objects to create arrays to support their understanding of factors. Factors of 24  	Children investigate finding all factors of a number by drawing arrays. Factors of 24  	Children use their knowledge of multiplication and division facts to find factors of numbers. Factors of 24 1 x 24 = 24 2 x 12= 24 3 x 8 = 24 4 x 6 = 24

Objective	Concrete	Pictorial	Abstract
To use formal written method of short division. 2/3 digit divided by 1 digit (no remainders) 2/3 digit divided by 1 digit (simple remainders)	Children represent division calculations using concrete materials such as base 10 and place value counters. The children partition the dividend and put inside the bus stop then divide each part by the divisor. The quotient is then recorded on the top line.  They begin to explore calculations involving simple remainders. 98÷ 3 = 32 r2  	Children represent division calculations using informal jottings and pictorial representations.  They begin to explore calculations involving simple remainders. 98÷ 3 = 32 r2  	In Year 4 children divide numbers up to 3 digits by a 1 digit numbers with exact answers. The children are introduced to the bus stop method as a formal written method. 96 ÷ 3= 32  Once children have a secure understanding, they begin to understand how to record calculations with simple remainders. 98÷ 3 = 32 r2  Children apply their knowledge of division to word problems. *Arron has 77 seeds. He plants 4 seeds in each plant pot. How many pots does he need?*

DIVISION

Year 5





Key Vocab: sharing, halving, number patterns, division, dividing, grouping, sharing, array, equal grouping, equal sharing, repeated addition, groups of times, divided by, divide into left, left over, remainder grouping, column, division fact, equal groups of..., factors, multiples, prime numbers, composite numbers

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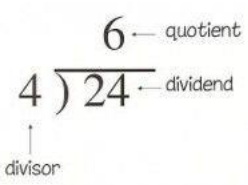
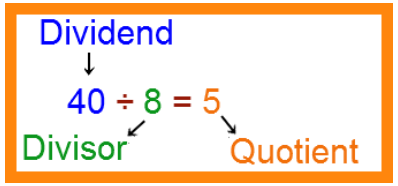
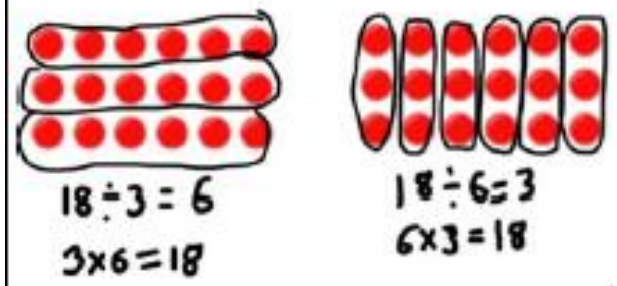
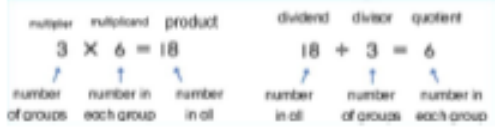
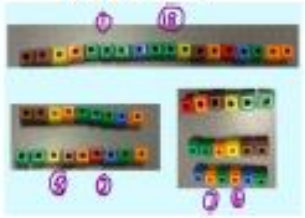
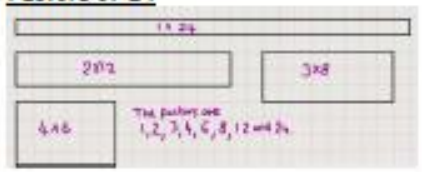
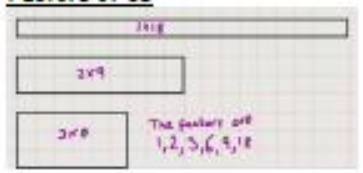
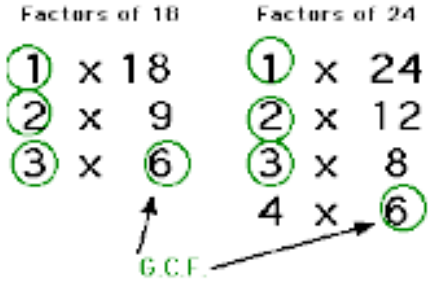
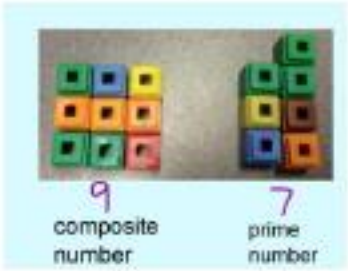
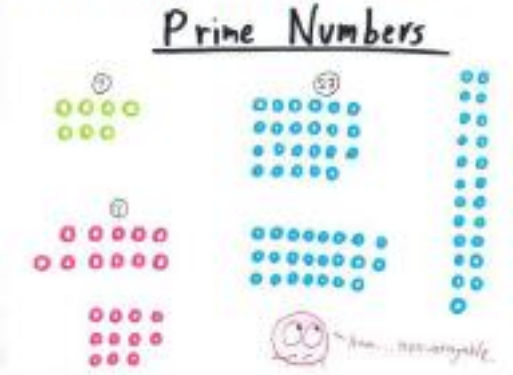
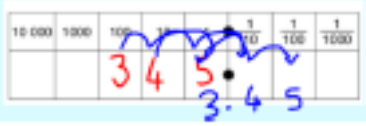


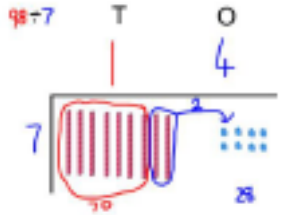
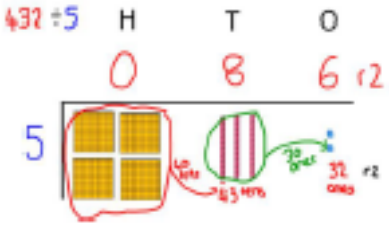
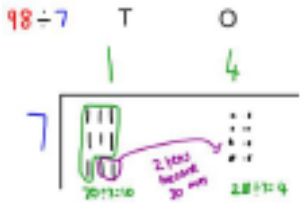
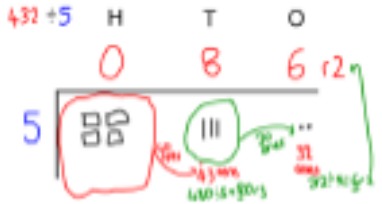


Objective	Concrete	Pictorial	Abstract
To recall multiplication and division facts for the multiplication tables up to 12 x 12.	Children continue to deepen their understanding of the link between multiplication and division and use physical objects to find related facts. 3 x 6= 18 18 ÷ 3 = 6  6 x 3 = 18 18 ÷ 6 = 3 	Children represent an array pictorially then find the associated multiplication and division facts by sorting into equal groups. 	Children apply their understanding of inverse relationships to write related multiplication and division statements. 3 x 6 = 18 6 x 3 = 18 18 ÷ 3 = 6 18 ÷ 6 = 3 18 = 3 x 6 18 = 6 x 3 6= 18 ÷ 3 3= 18 ÷ 6 They use associated vocabulary correctly and know what each number represents in the calculation. 

Objective	Concrete	Pictorial	Abstract
To recognise and use factor pairs of a number and find common factors of two numbers.	Children use physical objects to create arrays to support their understanding of factors. **Find the common factors of 18 and 24** Factors of 24  Factors of 18  The common factors are 1, 2, 3 and 6.	Children investigate finding factors by drawing arrays to find all solutions. They then find factors which belong to both numbers. **Find the common factors of 18 and 24** Factors of 24  Factors of 18  The common factors are 1, 2, 3 and 6.	Children use multiplication and division facts to find factors of numbers. **Find the common factors of 18 and 24**  The common factors are 1, 2, 3 and 6. This three-digit number has 2 and 7 as factors. 2 9 4 Write another three-digit number which has 2 and 7 as factors.

Objective	Concrete	Pictorial	Abstract
To establish whether a number up to 100 is prime and recall prime numbers up to 19	Children find prime numbers and composite (non-prime numbers) by using arrays. They understand that composite numbers form arrays and prime numbers cannot be arranged into arrays.  	Children use jottings and pictorial representations to investigate composite and prime numbers.  	Children use their knowledge of multiples and factors to find the prime numbers up to 100. They eliminate numbers that have factors other than 1.They can recall all prime numbers up to 19. 

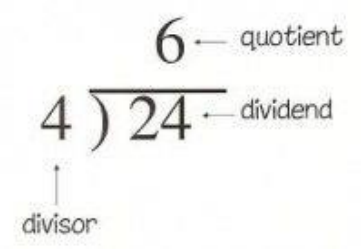
Objective	Concrete	Pictorial	Abstract
To divide whole numbers and those involving decimals by 10, 100, 1000	Children use resources to understand what 10, 100 and 1000 times bigger looks like.  3 is ten times smaller than 30. 30 is ten times smaller than 300. 3 is one hundred times smaller than 3.	Children use place value grids to divide numbers by 10, 100 and 1000s. They understand the movement of the digits on the place value grid. **Dividing** ÷ 10 digits move RIGHT 1 space ÷ 100 digits move RIGHT 2 spaces ÷ 1000 digits move RIGHT 3 spaces 345 ÷ 100 = 3.45  They apply this knowledge to decimal numbers. 4.12 ÷ 10 = 0.412 	Children apply their knowledge of place value to divide numbers by 10, 100 and 1000, including decimal numbers. 3450 ÷ 10 = 345 345 ÷ 100 = 3.45 2.67 ÷ 10 = 0.267 12.7 ÷ 1000 = 0.0127 They apply their understanding to more complex number puzzles and word problems. Circle the number that is 10 times greater than nine hundred and seven. 9,700 907 9,007 970 9,070 Write the missing number to make this division correct. 75 ÷ ☐ = 7.5 *A PS4 is on for sale at a tenth of its original price. It usually costs £450.90. How much is it at the sales?*

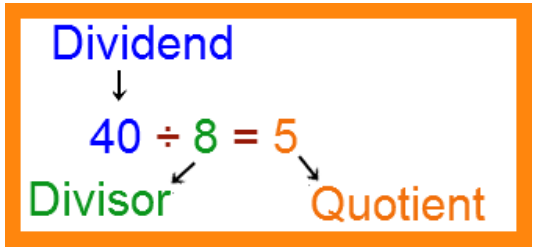
Objective	Concrete	Pictorial	Abstract
To use a formal written method of short division (bus stop) Numbers up to 4 digit divided by 1 digit (with remainders)	Children represent division calculations using concrete materials such as base 10 and place value counters. The children partition the dividend and put inside the bus stop then divide each part by the divisor. The quotient is then recorded on the top line. The children work with numbers that involve remainders. **98 ÷ 7= 14**  **432÷5 = 86 r2**  	Children represent division calculations using informal jottings and pictorial representations. The children recognise remainders. **98 ÷ 7= 14**  **432÷5 = 86 r2**  	In Year 5 children divide numbers up to 4 digits by a 1 digit number, including calculations involving remainders. The children continue to use the bus stop method as a formal method of written calculation. 98 ÷ 7 becomes 1 4 7 9 8 Answer: 14 432 ÷ 5 becomes 8 6 r2 5 4 3 2 Answer: 86 remainder 2 Children are expected to interpret non-integar answers by expressing results as fractions (432÷5 = 86 $\frac{2}{5}$), decimals (432÷5 = 86.4) or by rounding (432÷5 = 86.4 ≈ 86 sweets) according to the context. Children apply their knowledge using word problems and number puzzles.  Write in the missing digit. The answer does not have a remainder. 2 6 3 □ 8

DIVISION

KISLINGBURY C.E. PRIMARY SCHOOL

Year 6





Key Vocab: sharing, halving, number patterns, division, dividing, grouping, sharing, array, equal grouping, equal sharing, repeated addition, groups of times, divided by, divide into left, left over, remainder grouping, column, division fact, equal groups of..., factors, multiples, prime numbers, composite numbers

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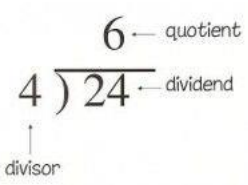
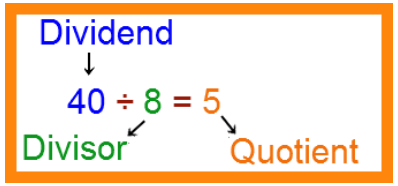
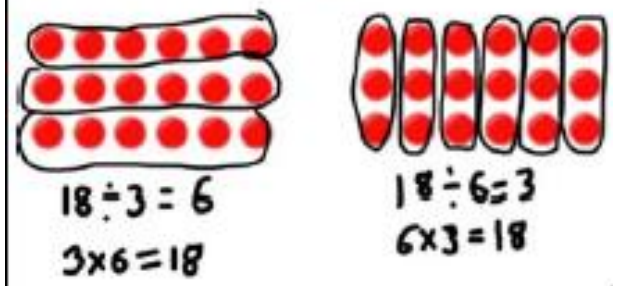
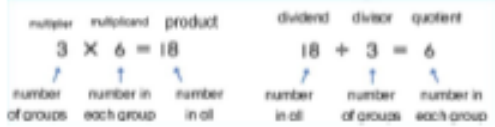
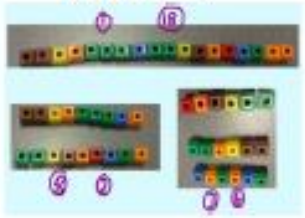
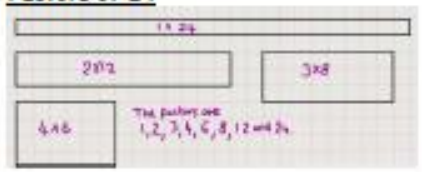
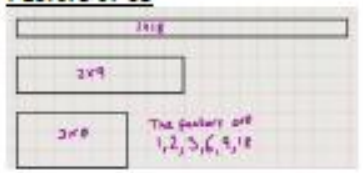
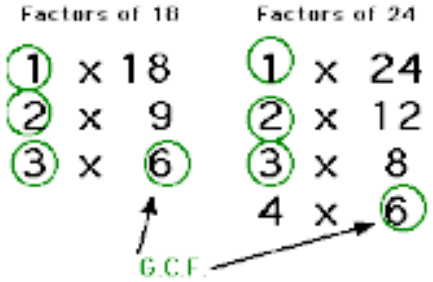
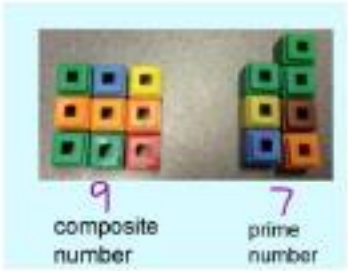
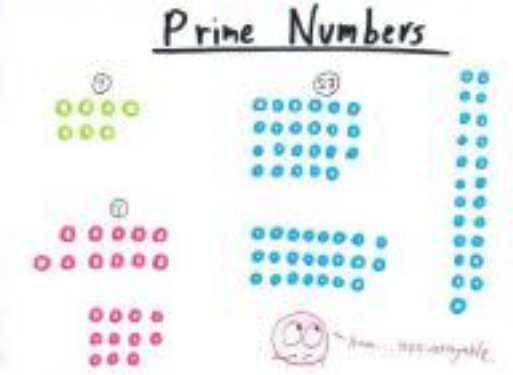
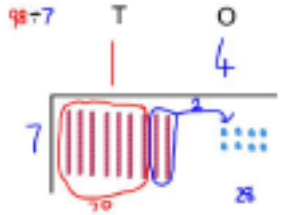
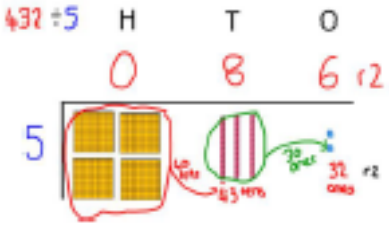
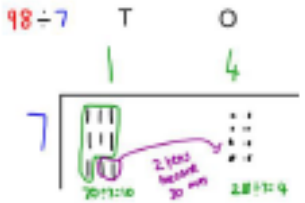
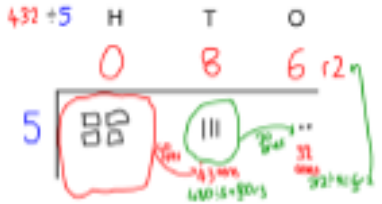


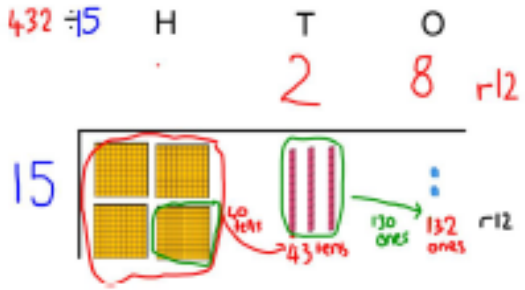
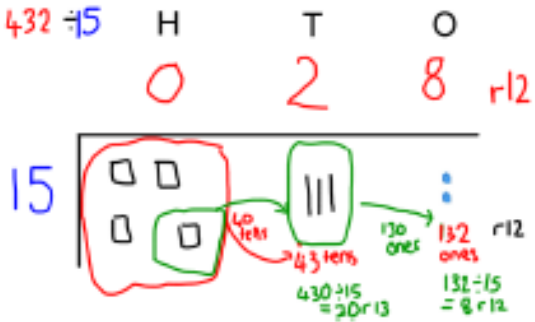
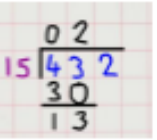
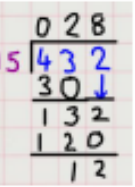
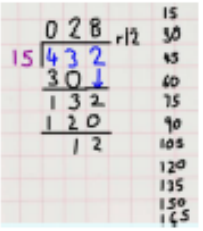


Objective	Concrete	Pictorial	Abstract
To recall multiplication and division facts for the multiplication tables up to 12 x 12.	Children continue to deepen their understanding of the link between multiplication and division and use physical objects to find related facts. 3 x 6= 18 18 ÷ 3 = 6  6 x 3 = 18 18 ÷ 6 = 3 	Children represent an array pictorially then find the associated multiplication and division facts by sorting into equal groups. 	Children apply their understanding of inverse relationships to write related multiplication and division statements. 3 x 6 = 18 6 x 3 = 18 18 ÷ 3 = 6 18 ÷ 6 = 3 18 = 3 x 6 18 = 6 x 3 6= 18 ÷ 3 3= 18 ÷ 6 They use associated vocabulary correctly and know what each number represents in the calculation. 

Objective	Concrete	Pictorial	Abstract
To recognise and use factor pairs of a number and find common factors of two numbers.	Children use physical objects to create arrays to support their understanding of factors. **Find the common factors of 18 and 24** Factors of 24  Factors of 18  The common factors are 1, 2, 3 and 6.	Children investigate finding factors by drawing arrays to find all solutions. They then find factors which belong to both numbers. **Find the common factors of 18 and 24** Factors of 24  Factors of 18  The common factors are 1, 2, 3 and 6.	Children use multiplication and division facts to find factors of numbers. **Find the common factors of 18 and 24**  The common factors are 1, 2, 3 and 6. This three-digit number has 2 and 7 as factors. 2 9 4 Write another three-digit number which has 2 and 7 as factors.

Objective	Concrete	Pictorial	Abstract
To establish whether a number up to 100 is prime and recall prime numbers up to 19	Children find prime numbers and composite (non-prime numbers) by using arrays. They understand that composite numbers form arrays and prime numbers cannot be arranged into arrays.  	Children use jottings and pictorial representations to investigate composite and prime numbers.  	Children use their knowledge of multiples and factors to find the prime numbers up to 100. They eliminate numbers that have factors other than 1.They can recall all prime numbers up to 19. 

Objective	Concrete	Pictorial	Abstract
To use a formal written method of short division (bus stop) Numbers up to 4 digit divided by 1 digit (with remainders)	Children represent division calculations using concrete materials such as base 10 and place value counters. The children partition the dividend and put inside the bus stop then divide each part by the divisor. The quotient is then recorded on the top line. The children work with numbers that involve remainders. **98 ÷ 7= 14**  **432÷5 = 86 r2**  	Children represent division calculations using informal jottings and pictorial representations. The children recognise remainders. **98 ÷ 7= 14**  **432÷5 = 86 r2**  	In Year 6 children divide larger numbers by a 1 digit number with calculations involving remainders. The children continue to use the bus stop method as a formal method of written calculation. 98 ÷ 7 becomes 1 4 7 | 9 2 8 Answer: 14 432 ÷ 5 becomes 8 6 r2 5 | 4 3 3 2 Answer: 86 remainder 2 Children are expected to interpret non-integar answers by expressing results as fractions (432÷5 = 86 $\frac{2}{5}$), decimals (432÷5 = 86.4) or by rounding (432÷5 = 86.4 ≈ 86 sweets) according to the context. Children apply their knowledge using word problems and number puzzles. *Sharon buys a pack of 24 cans of lemonade for £6. How much does each can cost?* Write the missing number. 70 ÷ ☐ = 3.5 Write the missing number in each calculation. 25 ÷ ☐ = 3 remainder 4

Objective	Concrete	Pictorial	Abstract
To use a formal written method of long division (bus stop) Divide larger numbers by 2 digit numbers (involving remainders)	Children represent division calculations using concrete materials such as base 10 and place value counters. The children partition the dividend and put inside the bus stop then divide each part by the divisor. The quotient is then recorded on the top line. 	Children represent division calculations using informal jottings and pictorial representations. 	The children use the bus stop method as a formal method of written calculation. They use their understanding of the pictorial and concrete stages to understand the value of each number. **432 ÷ 15 = 28 r12.** **Step one**· Children will put the calculation into the bus stop grid and list their multiples of the divisor.  **Step 2**· Start with the hundreds. The divisor doesn't divide into 4 so combine the 4 hundred with the 3 tens (430). Use the multiples of 15 to calculate the nearest multiple. Two x 15 is 30. Record this underneath, put the 2 on the top then subtract.  **Step 3**· The divisor does divide into 13 so combine the 13 tens with the 2 ones (132). Use the multiples of 15 to calculate the nearest multiple. 8 x 15 is 120. Record this underneath, put the 8 on the top then subtract.  **Step 4**· The number left is your remainder, record this with your answer 432 ÷ 15 = 28 r12.  Children are expected to interpret non-integar answers by expressing results as fractions (432÷15 = $28\frac{12}{15}$ = $28\frac{4}{5}$), decimals (432÷15 = 28.8) or by rounding (432÷15 = 28.8 ≈ 29 cars) according to the context.