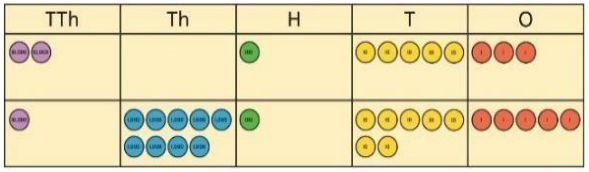
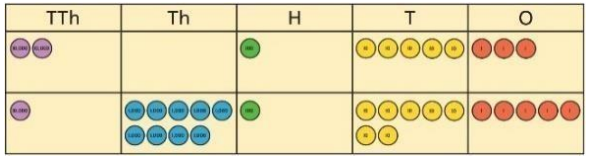
Primary 6

	Concrete	Pictorial	Abstract
Primary 6 Addition			
Add numbers with more than 4 digits **Video P6-01**	Use place value equipment to represent addition problems with more than 4 digits. Regrouping where necessary. Using alongside written methods to support.	Children can use pictorial representations of bar models to represent their understanding of addition questions: 20153 | 19175 ?	Use a formal column addition method, including regrouping. TTh Th H T O 2 0 ^{1}1 5 3 + 1 9 1 7 5 3 9 3 2 8
	20153 + 19175 =  https://mathsbot.com/manipulatives/placeValueCounters • 3 ones and 5 ones is 8 ones • 5 tens and 7 tens is 12 tens, this needs regrouping for 1 hundred and 2 tens • 1 hundred and 1 hundred is 2 hundreds and 1 hundreds regrouped from the tens is 3 hundreds • 0 thousands and 9 thousands is 9 thousands • 2 ten thousands and 1 ten thousands is 3 ten thousands	Children can use pictorial representations of place value counters and place value columns to support their understanding of addition problems. Regrouping where necessary. Using alongside written methods to support.  	• 3 ones and 5 ones is 8 ones • 5 tens and 7 tens is 12 tens, this needs regrouping for 1 hundred and 2 tens • 1 hundred and 1 hundred is 2 hundreds and 1 hundred regrouped from the tens is 3 hundreds • 0 thousands and 9 thousands is 9 thousands • 2 ten thousands and 1 ten thousands is 3 ten thousands **Support children's understanding further, can they explain what the digit 7 represents?**

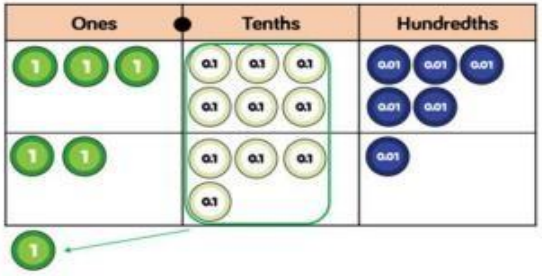
Add numbers with up to 3 decimal places

Video P6-02

Use place value equipment to represent additions involving decimals including problems involving measure and money. Regrouping where necessary.

Using alongside written methods to support.

3.65 + 2.41 =

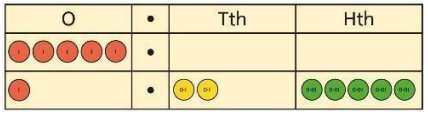


https://mathsbot.com/manipulatives/placeValueCounters

- 5 hundredths and 1 hundredth is 6 hundredths
- 6 tenths and 4 tenths is 10 tenths, this needs regrouping for 1 one
- 3 ones and 2 ones is 5 ones, and 1 one regrouped from the tenths is 6 ones

Include examples where the number of digits in each addend is different:

Using alongside written methods to support.



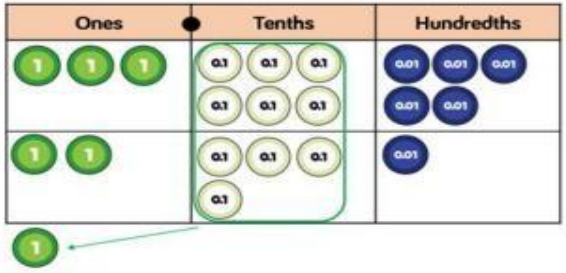
	O	·	Tth	Hth
	5	·	0	0
+	1	·	2	5
	6	·	2	5

Children can use pictorial representations of bar models to represent their understanding of addition questions involving decimals:

3.65	2.41
?	

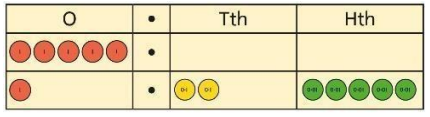
Children can use pictorial representations of place value counters and place value columns to support their understanding of addition problems involving decimals. Regrouping where necessary.

Using alongside written methods to support.



Include examples where the number of digits in each addend is different:

Using alongside written methods to support.



	O	·	Tth	Hth
	5	·	0	0
+	1	·	2	5
	6	·	2	5

Use a formal column addition method, including regrouping.

O	.	t	h
$^{1}3$	.	6	5
2	.	4	1
6	.	0	6

- 5 hundredths and 1 hundredth is 6 hundredths
- 6 tenths and 4 tenths is 10 tenths, this needs regrouping for 1 one
- 3 ones and 2 ones is 5 ones, and 1 one regrouped from the tenths is 6 ones

Support children's understanding further, can they explain what the digit 4 represents?

Include examples where the number of digits in each addend is different, using place holding zeros to support this when using written methods:

	O	·	Tth	Hth
	5	·	0	0
+	1	·	2	5
	6	·	2	5

Use estimation to support calculations.

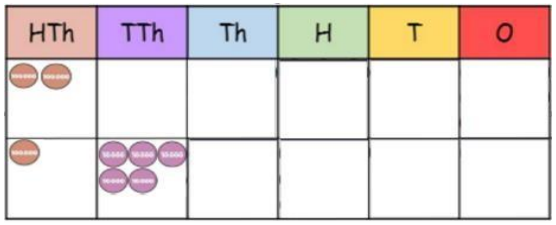
Video P6-03

Use approximation and estimation to check whether answers are reasonable.

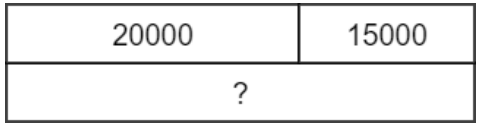
Use place value equipment to represent estimated addition problems.

Using alongside written methods to support.

20153 + 14865 =
"I will use 20000 + 15000 to estimate my answer."



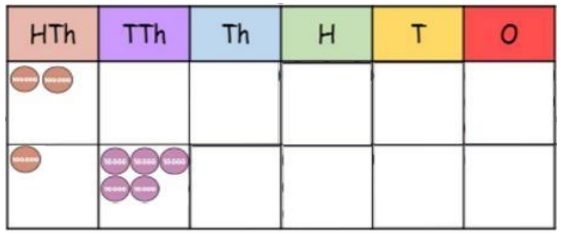
Children can use pictorial representations of bar models to represent their understanding of addition questions using approximation and estimation:



Children can use pictorial representations of place value counters and place value columns to support their understanding of addition problems using approximation and estimation:

Using alongside written methods to support.

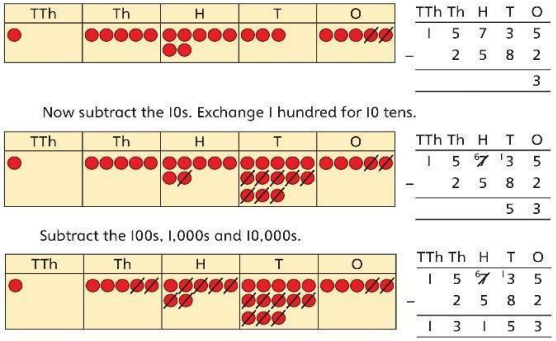
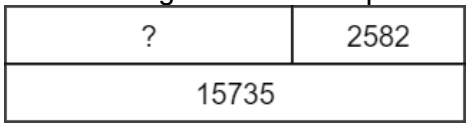
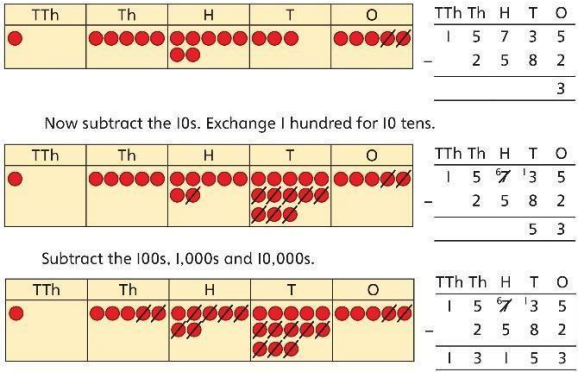
20153 + 14865 =
"I will use 20000 + 15000 to estimate my answer."



Use formal column method when approximating and estimating to check whether answers are reasonable.

20153 + 14865 =
"I will use 20000 + 15000 to estimate my answer."

TTh	Th	H	T	O
2	0	0	0	0
+ 1	5	0	0	0
3	5	0	0	0

	Concrete	Pictorial	Abstract
Primary 6 **Subtraction**			
Subtract numbers with more than 4 digits **Video P6-04**	Use place value equipment to represent subtraction problems with more than 4 digits. Regrouping where necessary. Using alongside written methods to support. https://mathsbot.com/manipulatives/placeValueCounters *15,735 − 2,582 = 13,153*  • 5 ones subtract 2 ones is 3 ones • 3 ones subtract 8 ones is not possible, therefore you must regroup 1 hundred for 10 tens • 13 tens subtract 8 tens is 5 tens • 6 hundreds subtract 5 hundreds is 1 hundred • 5 thousands subtract 2 thousands is 3 thousands • 1 ten thousand subtract 0 ten thousands is 1 ten thousands	Children can use pictorial representations of bar models to represent their understanding of subtraction problems:  Use pictorial representations of place value equipment on a place value grid to complete subtraction problems with more than 4 digits. Regrouping where necessary. Using alongside written methods to support. *15,735 − 2,582 = 13,153*  	Use formal column subtraction methods, including regrouping. *15,735 − 2,582 = 13,153*

	TTh	Th	H	T	O
	1	5	~~7~~ 6	^{1}3	5
−	0	2	5	8	2
	1	3	1	5	3

• 5 ones subtract 2 ones is 3 ones
• 3 ones subtract 8 ones is not possible, therefore you must regroup 1 hundred for 10 tens
• 13 tens subtract 8 tens is 5 tens
• 6 hundreds subtract 5 hundreds is 1 hundred
• 5 thousands subtract 2 thousands is 3 thousands
• 1 ten thousand subtract 0 ten thousands is 1 ten thousands

Support children's understanding further, can they explain what the digit 1 represents? |

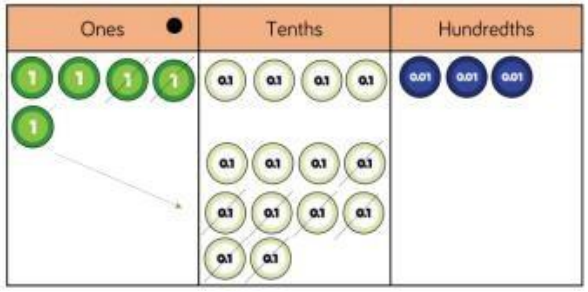
Subtract numbers with up to 3 decimal places

Video P6-05

Use place value equipment to represent subtraction problems involving decimals including problems involving measure and money. Regrouping where necessary.

Using alongside written methods to support.

5.43 – 2.7 = *5.43 – 2.70*



- 3 hundredths subtract 0 hundredths is 3 hundredths
- 4 tenths subtract 7 tenths is not possible, therefore you must regroup 1 one for 10 tenths
- 14 tenths subtract 7 tenths is 7 tenths
- 4 ones subtract 2 ones is 2 ones

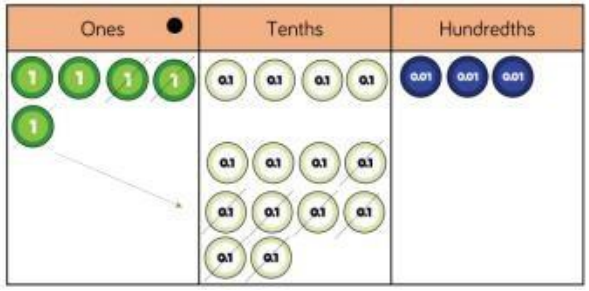
Children can use pictorial representations of bar models to represent their understanding of subtraction problems involving decimals:

?	2.70
5.43	

Children can use pictorial representations of place value counters and place value columns to support their understanding of subtraction problems involving decimals. Regrouping where necessary.

Using alongside written methods to support.

5.43 – 2.7 = *5.43 – 2.70*

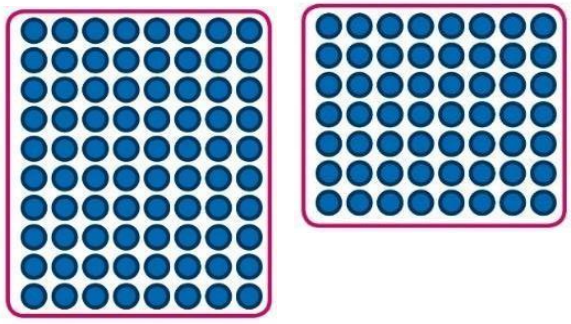
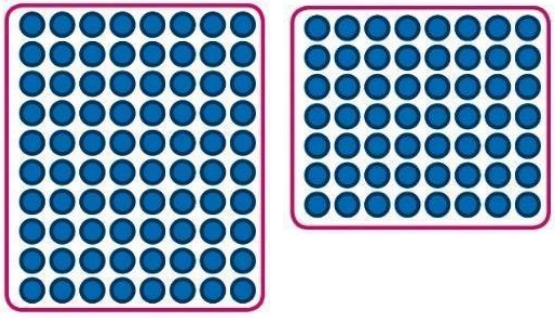


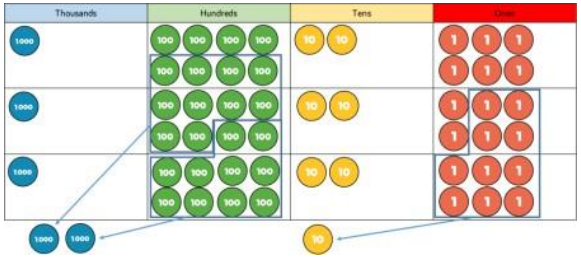
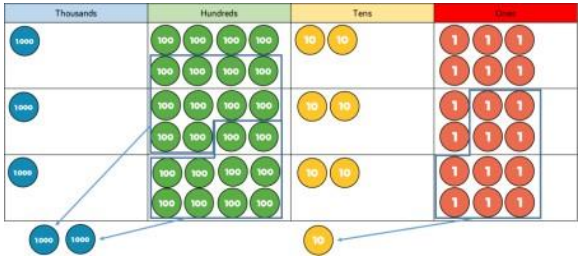
Use a formal column subtraction method, including regrouping.

	O	.	t	h
	~~5~~ 4	.	^{1}4	3
-	2	.	7	
	2	.	7	3

- 3 hundredths subtract 0 hundredths is 3 hundredths
- 4 tenths subtract 7 tenths is not possible, therefore you must regroup 1 one for 10 tenths
- 14 tenths subtract 7 tenths is 7 tenths
- 4 ones subtract 2 ones is 2 ones

Support children's understanding further, can they explain what the digit 7 represents?

	Concrete	Pictorial	Abstract
Primary 6 **Multiplication**			
Multiply up to 4 digit numbers by a 1 digit number **Video P6-06**	Use place value equipment to represent multiplication problems of up to a 4-digit number multiplied by a 1-digit number. Using alongside written methods to support understanding. Use equipment to explore partitioning to multiply efficiently. *8 x 17 =*  8 × 10 = 80 8 × 7 = 56 80 + 56 = 136 *8 x 17 = 136*	Children can use pictorial representations of place value counters to support their understanding of partitioning to solve multiplication problems. Using alongside written methods to support understanding. *8 x 17 =*  8 × 10 = 80 8 × 7 = 56 80 + 56 = 136 8 x 17 = 136	Use a formal method of short multiplication, including regrouping. Th H T O 2 1 8 1 2 6 × 3 5 4 7 8 • 6 ones multiplied by 3 is 18 ones, 10 ones must be regrouped for 1 ten • 2 tens multiplied by 3 is 6 tens, plus the 1 regrouped ten is 7 tens • 8 hundreds multiplied by 3 is 24 hundreds, 20 hundreds must be regrouped for 2 thousands • 1 thousand multiplied by 3 is 3 thousands, plus the 2 regrouped thousands is 5 thousand

	Use place value counters and place value columns to represent multiplication problems. *1826 x 3 = 5478*  • 6 ones multiplied by 3 is 18 ones, 10 ones must be regrouped for 1 ten • 2 tens multiplied by 3 is 6 tens, plus the 1 regrouped ten is 7 tens • 8 hundreds multiplied by 3 is 24 hundreds, 20 hundreds must be regrouped for 2 thousands • 1 thousand multiplied by 3 is 3 thousands, plus the 2 regrouped thousands is 5 thousand	Use pictorial representations of place value counters and place value columns to represent multiplication problems. *1826 x 3 = 5478*  	

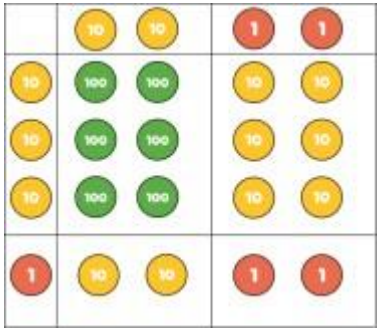
Multiply up to 4 digit numbers by a 2-digit number

Video P6-07

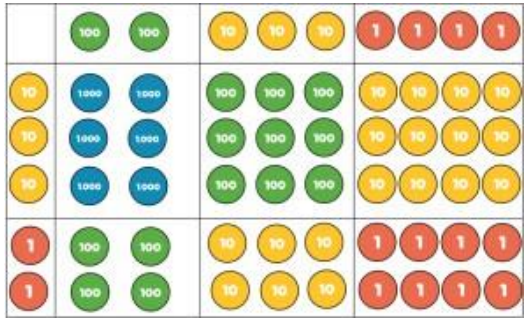
Use place value equipment to represent multiplication problems of up to a 4-digit number multiplied by a 2-digit number. Using alongside written methods to support understanding.

Use place value counters and place value columns to represent multiplication problems.

31 x 22 = 682



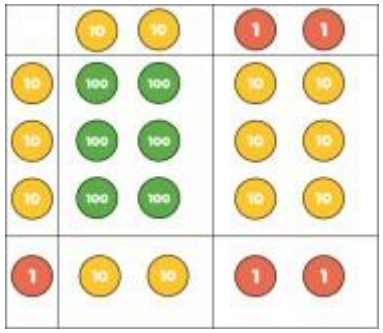
234 x 32 = 7488



Children can use pictorial representations of place value counters/base ten and place value columns to support their understanding of multiplication problems

Using alongside written methods to support understanding.

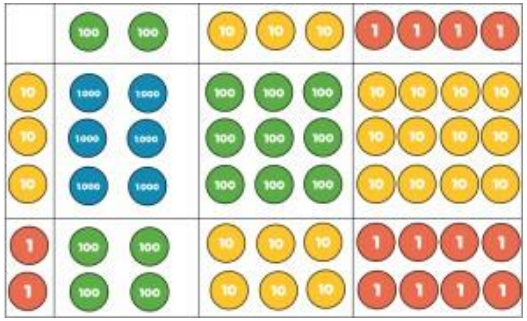
31 x 22 = 682



In writing this would take the form of grid method:

×	20	2
30	600	60
1	20	2

234 x 32 = 7488



In writing this would take the form of grid method:

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

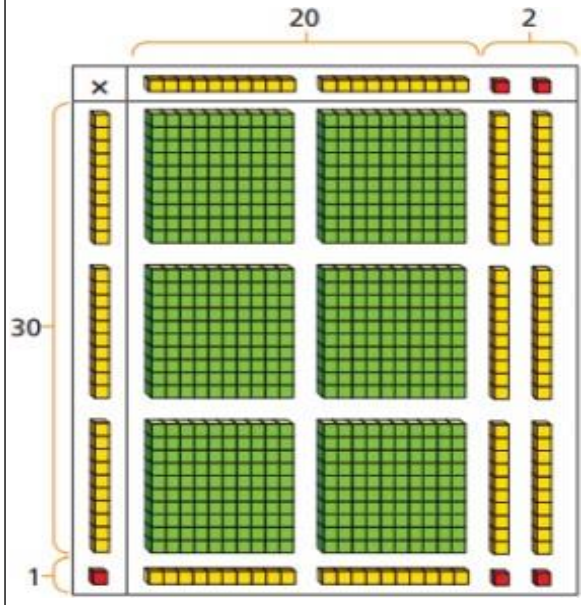
Use a formal method of long multiplication, including regrouping.

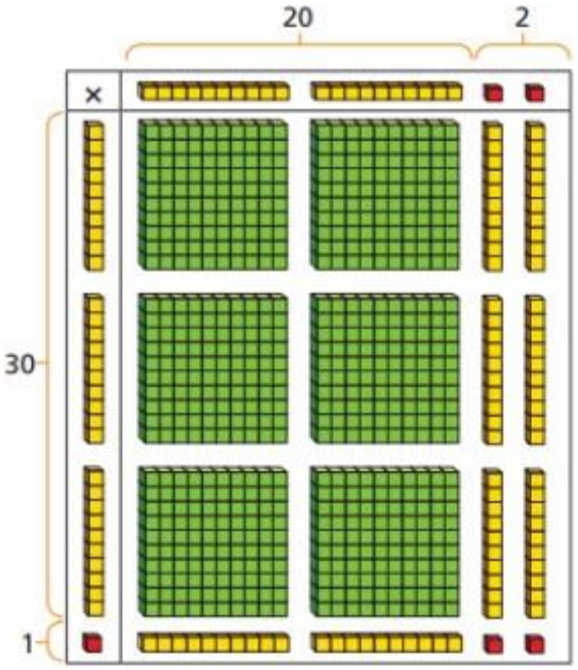
31 x 22 = 682

	H	T	O	
		2	2	
×		3	1	
		2	2	(x1)
+	6	6	0	(x30)
	6	8	2	

Use base ten equipment and place value columns to represent multiplication problems.

31 x 22 = 682

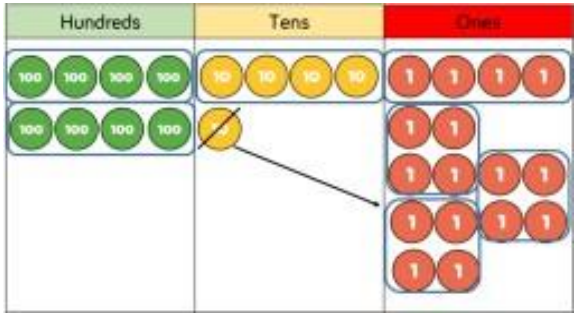
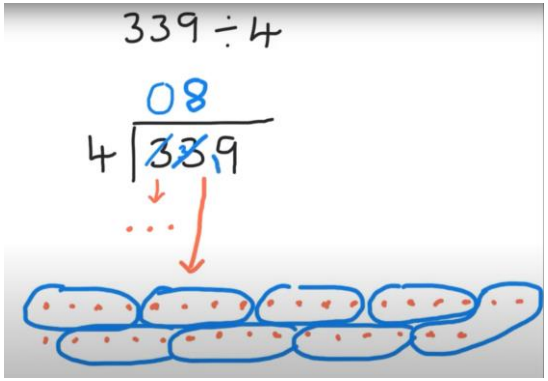
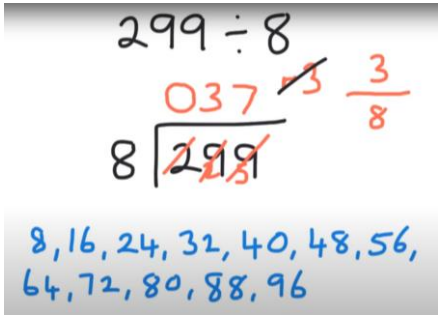


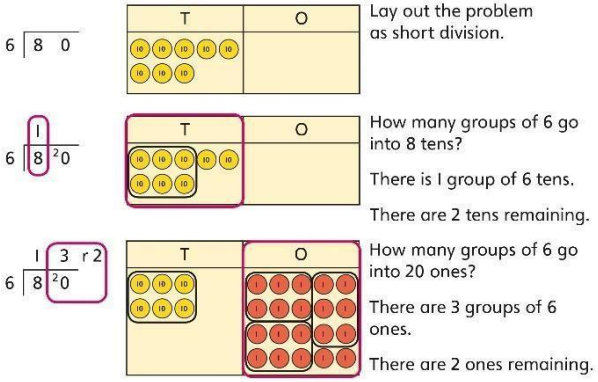
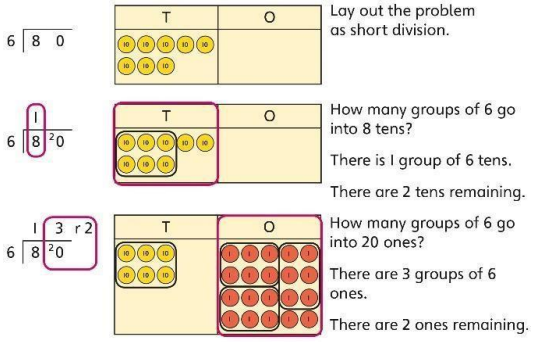
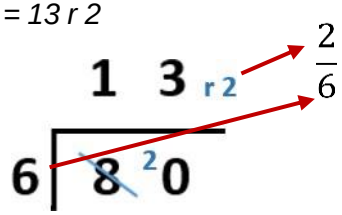


- 2 ones multiplied by 1 one is 2 ones
- 2 tens multiplied by 1 one is 2 tens
- 2 ones multiplied by 3 tens is 6 tens
- 2 tens multiplied by 3 tens is 6 hundreds
- Add together workings to get final product

	Th	H	T	O
		$^{1}2$	$^{1}3$	4
×			3	2
		4	6	8
+	7	0	2	0
	7	4	8	8

	TTh	Th	H	T	O
	~~2~~	^{1}~~5~~ 2	~~3~~ 7	^{1}~~7~~ 3	9
×				2	8
	2	^{1}1	9	1	2
+	5	4	7	8	0
	7	6	6	9	2

	Concrete	Pictorial	Abstract
Primary 6 **Division**			
Divide numbers up to 4 digits by a 1 digit number – grouping **Video P6-08**	Use place value equipment to represent division problems of up to a 4-digit number divided by a 1-digit number. Regrouping where necessary. Using alongside written methods to support understanding. ***856 ÷ 4 = 214***  • There are 2 groups of 4 hundreds • There is 1 group of 4 tens, with 1 ten remaining • The remaining ten needs to be regrouped for 10 ones. • There are now 16 ones. There are 4 groups of 4 ones.	Use pictorial representations to begin written calculations. Each number is represented by **dots** which are then circled and put into groups (in this example, groups of 4). The dots left ungrouped are the remainder that are carried forward and put **in front of** the next number. 	Use the formal written method of short division to divide up to 4-digit numbers by a 1- digit number. 1. Children will be taught to list multiples of the divisor (in this case 8) underneath the bus stop / short division calculation.  2. When dividing each digit of the dividend (the number being divided), children should find the multiple written below that is the **closest** to this number **but note that it must not be larger.** 3. In the example above, '24' is the closest multiple of 8 to 29, that is not larger. 4. This leaves a difference of 5 (29-24) that is then carried forward and placed in front of the next digit of the dividend. 5. Keep going until the calculation is complete. 6. If left with a remainder this can then be turned into a fraction. The remainder (in this example, 3) becomes the numerator (top number) and the divisor (the number you are dividing by- in this example, 8) becomes the denominator (bottom number).

	Use place value equipment to represent division questions when interpreting remainders. Using alongside written methods to support understanding. *80 ÷6 = 13 r 2*  	Children can use pictorial representations of place value equipment on a place value grid to represent division questions when interpreting remainders. Using alongside written methods to support understanding. *80 ÷6 = 13 r 2*  	Use the formal written method of short division to divide up to 4-digit numbers by a 1- digit number when interpreting remainders. *80 ÷6 = 13 r 2*  If left with a remainder this can then be turned into a fraction. The remainder (in this example, 2) becomes the numerator (top number) and the divisor (the number you are dividing by- in this example, 6) becomes the denominator (bottom number).