Dereham Junior Academy

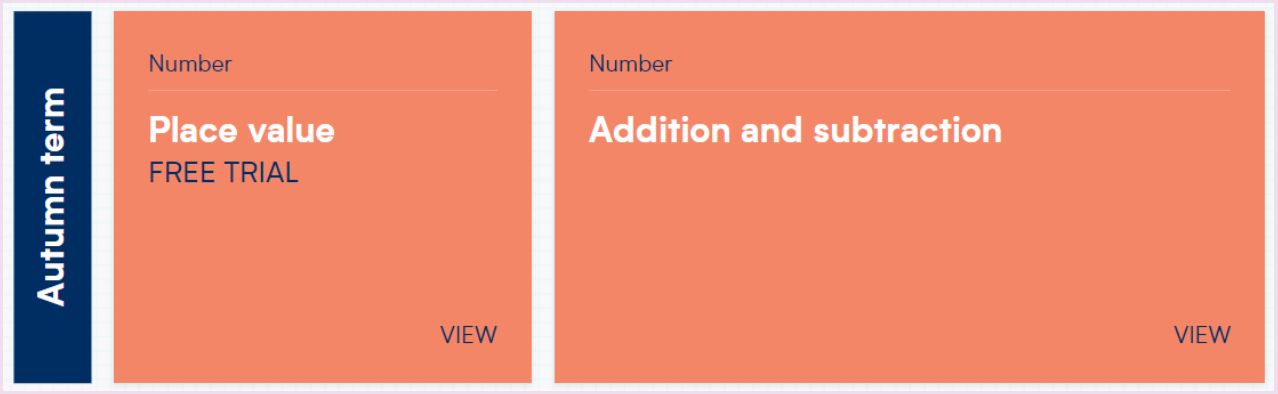
Addition and Subtraction

Taught in blocks

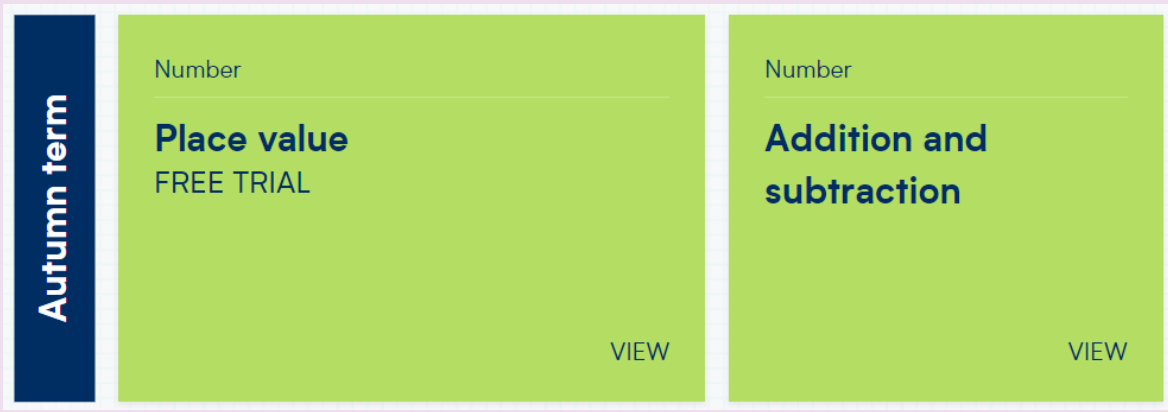
Generally follow ‘White Rose’

Overviews (MTPs) – Website

Year 3



Year 4



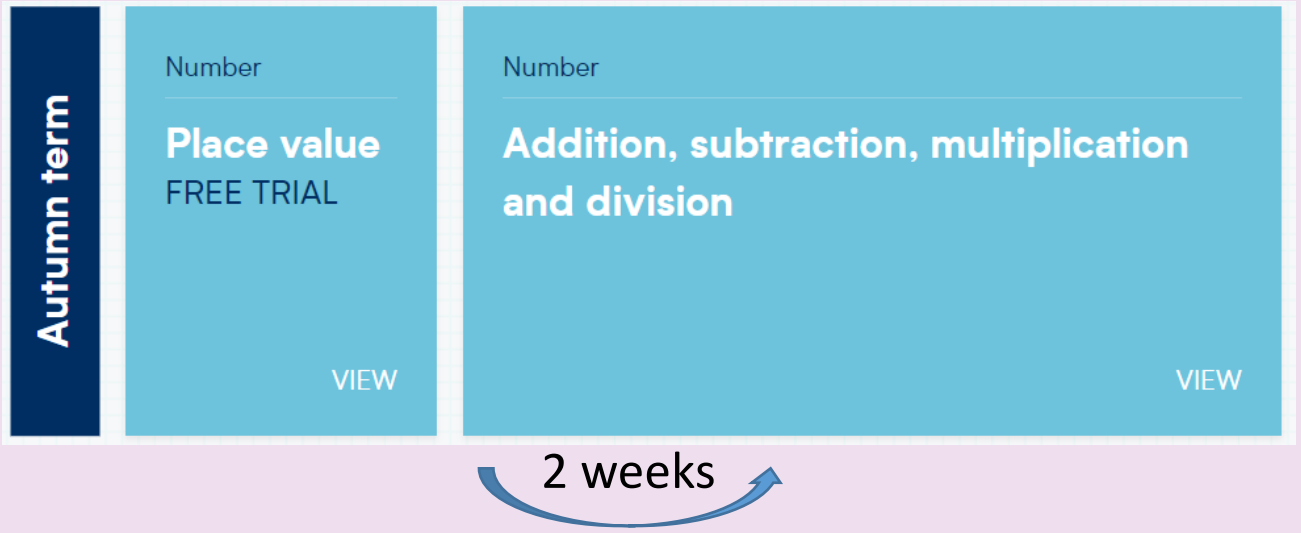
Revisit – starters/mini maths

Different contexts/units of work

Arithmetic Ninjas (Y6)

Year 5

Year 6

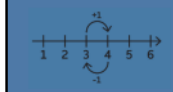
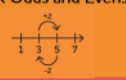
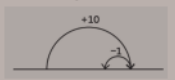
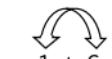


Number Sense

Addition Grid Facts

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

[Summary of strategies](#) video

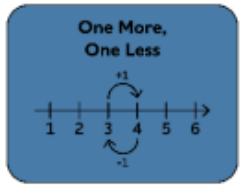
One More, One Less 	When we add one, we get the next counting number. When we subtract one, we get the previous counting number (e.g. 5 – 1 = 4).	**Number Neighbours: Spot the Difference** 	Adjacent numbers have a difference of 1. Adjacent odds and evens have a difference of 2. Spot number neighbours (adjacent, odds or evens) to solve subtractions of adjacent numbers (e.g. 5 – 4 = 1), of adjacent odds (e.g. 9 – 7 = 2) or adjacent evens (e.g. 6 – 4 = 2)
Two More, Two Less: Think Odds and Evens 	If we add two to a number, we go from odd to next odd or even to next even. If we subtract two from a number, we go from odd to previous odd or even to previous even.	**7 Tree and 9 Square** 	Use these visual images to remember addition and subtractions fact families that children can find tricky. For example, visualising the 7 tree helps remember that 7 – 3 = 4. Visualising the 9 square helps remember that 3 + 6 = 9.
Number 10 Fact Families 	Go beyond just recalling the pairs of numbers that add to 10. Make sure that we can also spot additions and subtractions which we can use number bonds to 10 to solve.	**Ten and A Bit** 	The numbers 11 – 20 are made up of 'Ten and a Bit'. Recognising and understanding the 'Ten and a Bit' structure of these numbers enables addition and subtraction facts involving their constituent parts (e.g. 3 + 10 = 13, 17 – 7 = 10, 12 – 10 = 2).
Five and A Bit 	The numbers 6, 7, 8 and 9 are made up of 'five and a bit'. This can be shown on hands, and supports decomposition of these numbers into their five and a bit parts (e.g. 5 + 3 = 8, 9 – 5 = 4).	**Make Ten and Then** 	Additions which cross the 10 boundary can be calculated by 'Making Ten' first, and then adding on the remaining amount (e.g. 8 + 6 can be calculated by thinking '8 + 2 = 10 and 4 more makes 14'). The same strategy can be applied to subtractions through 10.
Know about 0 	When we add 0 to or subtract 0 from another number, the total remains the same. If we subtract a number from itself, the difference is 0.	**Adjust It** 	Any addition and subtraction can be calculated by adjusting from a fact you know already, (e.g. 6 + 9 is one less than 6 + 10).
Doubles and Near Doubles 	Memorise doubles of numbers to 10, using a visual approach. Then use these known double facts to calculate near doubles and hidden doubles. Once we know 6 + 6 = 12 then 6 +7 and 5 + 7 is easy.	**Swap It**  1 + 6	When the order of two numbers being added (addends) is exchanged the total remains the same. E.g. 1 + 8 = 8 + 1. Sometimes reversing the order of the two addends makes addition easier to think about conceptually.

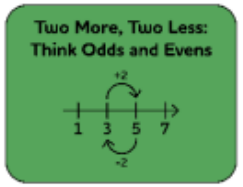
https://numbersensemaths.com/teacher-portal/nff/stages/stage-5/make-10-and-then-addition

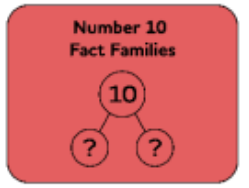
Subtraction Grid Facts

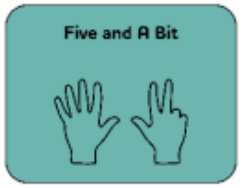
–	0	1	2	3	4	5	6	7	8	9	10
0	0 – 0										
1	1 – 0	1 – 1									
2	2 – 0	2 – 1	2 – 2								
3	3 – 0	3 – 1	3 – 2	3 – 3							
4	4 – 0	4 – 1	4 – 2	4 – 3	4 – 4						
5	5 – 0	5 – 1	5 – 2	5 – 3	5 – 4	5 – 5					
6	6 – 0	6 – 1	6 – 2	6 – 3	6 – 4	6 – 5	6 – 6				
7	7 – 0	7 – 1	7 – 2	7 – 3	7 – 4	7 – 5	7 – 6	7 – 7			
8	8 – 0	8 – 1	8 – 2	8 – 3	8 – 4	8 – 5	8 – 6	8 – 7	8 – 8		
9	9 – 0	9 – 1	9 – 2	9 – 3	9 – 4	9 – 5	9 – 6	9 – 7	9 – 8	9 – 9	
10	10 – 0	10 – 1	10 – 2	10 – 3	10 – 4	10 – 5	10 – 6	10 – 7	10 – 8	10 – 9	10 – 10
11		11 – 1	11 – 2	11 – 3	11 – 4	11 – 5	11 – 6	11 – 7	11 – 8	11 – 9	11 – 10
12			12 – 2	12 – 3	12 – 4	12 – 5	12 – 6	12 – 7	12 – 8	12 – 9	12 – 10
13				13 – 3	13 – 4	13 – 5	13 – 6	13 – 7	13 – 8	13 – 9	13 – 10
14					14 – 4	14 – 5	14 – 6	14 – 7	14 – 8	14 – 9	14 – 10
15						15 – 5	15 – 6	15 – 7	15 – 8	15 – 9	15 – 10
16							16 – 6	16 – 7	16 – 8	16 – 9	16 – 10
17								17 – 7	17 – 8	17 – 9	17 – 10
18									18 – 8	18 - 9	18 – 10
19										19 - 9	19 - 10
20											20 - 10

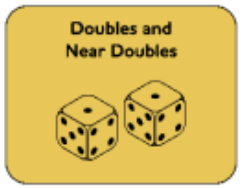
Calculation Strategies

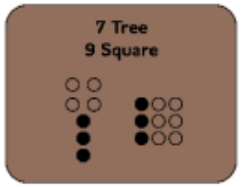


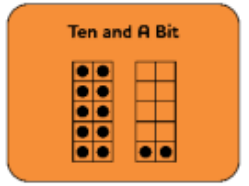


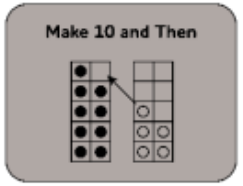


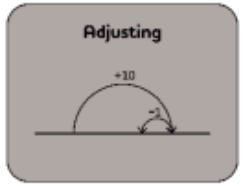


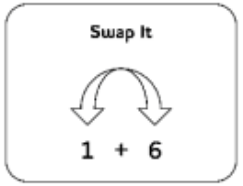




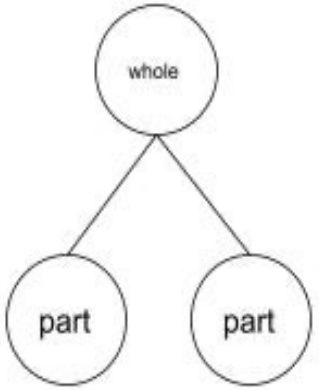








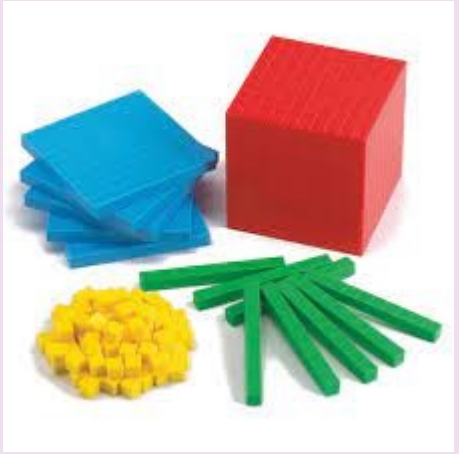
Models and Manipulatives

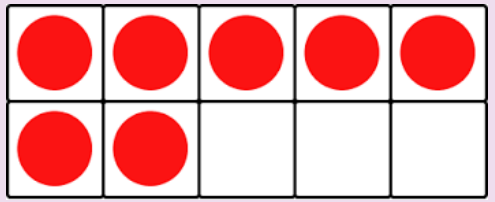


Whole	
Part	Part

Bar model

Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones





[mathsbot]

Addition – sequence of learning

total

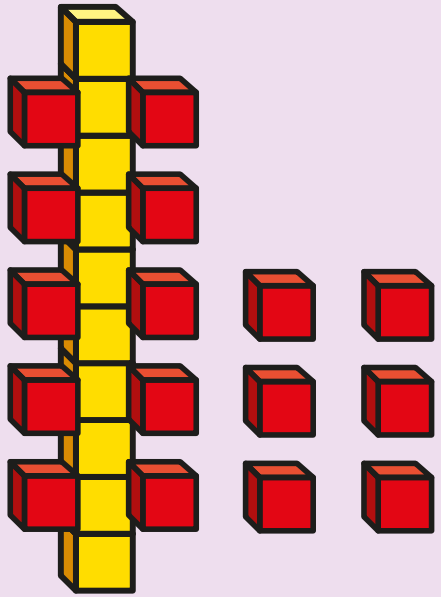
sum

add

exchange

partition

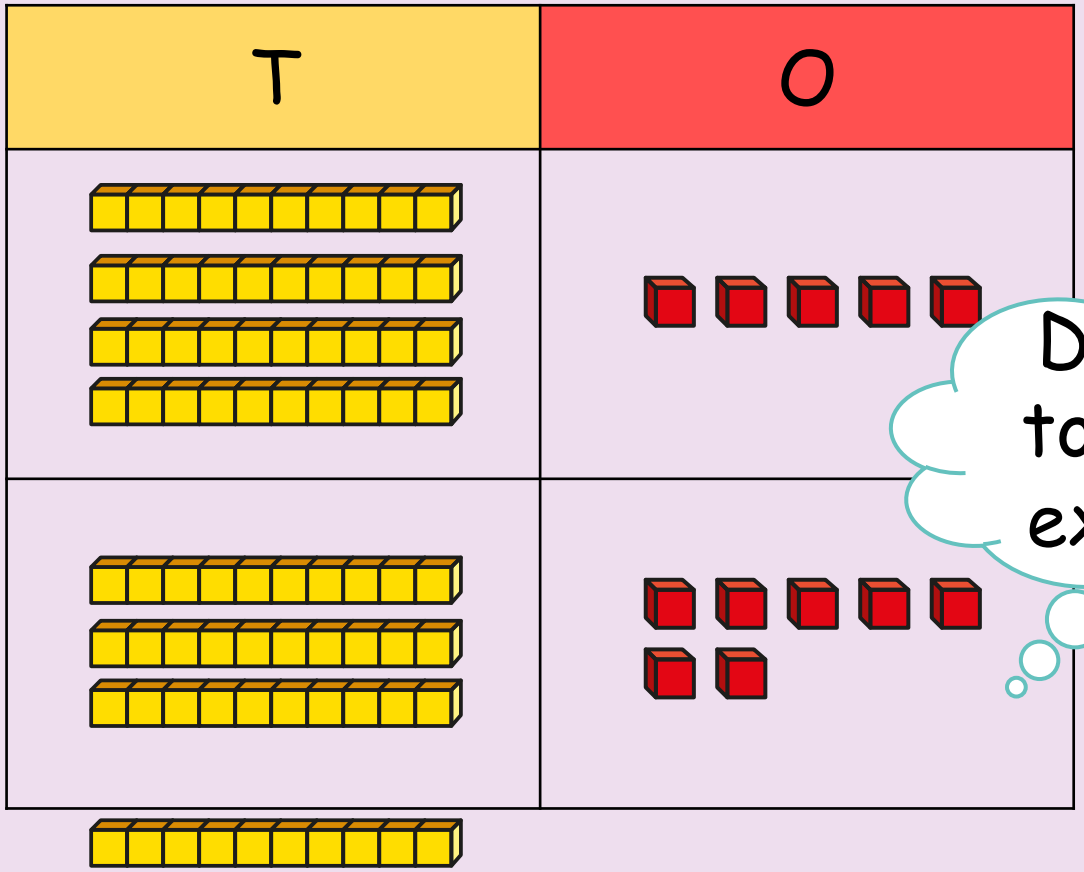
Complete the sentence.



16 ones = 1 ten and 6 ones

How do you know when to exchange?

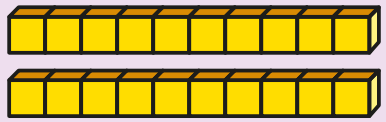
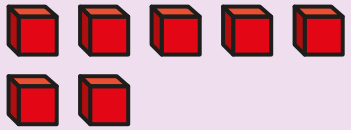
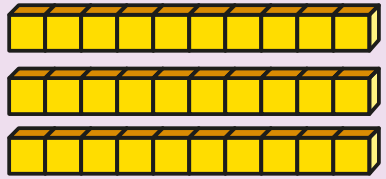
Use base 10 to calculate 45 + 37



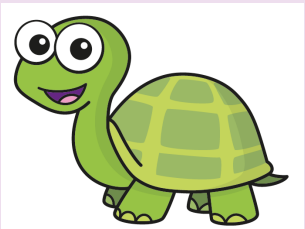
There are 8 tens and 2 ones.

45 + 37 = 82

Tiny is calculating 27 + 36 $27 + 36 = 63$

T	O
	
	
	

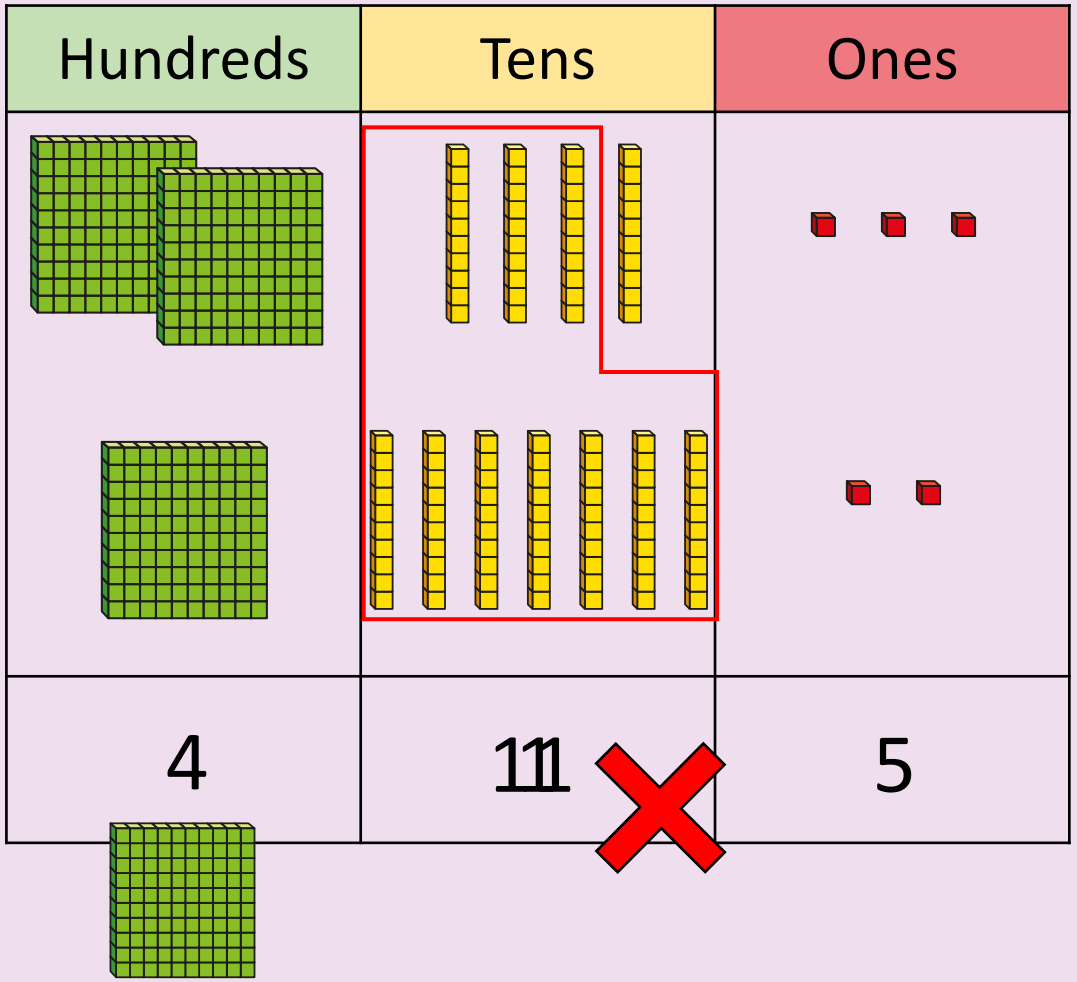
There are 5 tens and 13 ones.
$27 + 36 = 513$



Do you agree with Tiny?

No – Tiny needs to exchange.

$$243 + 172 = 415$$



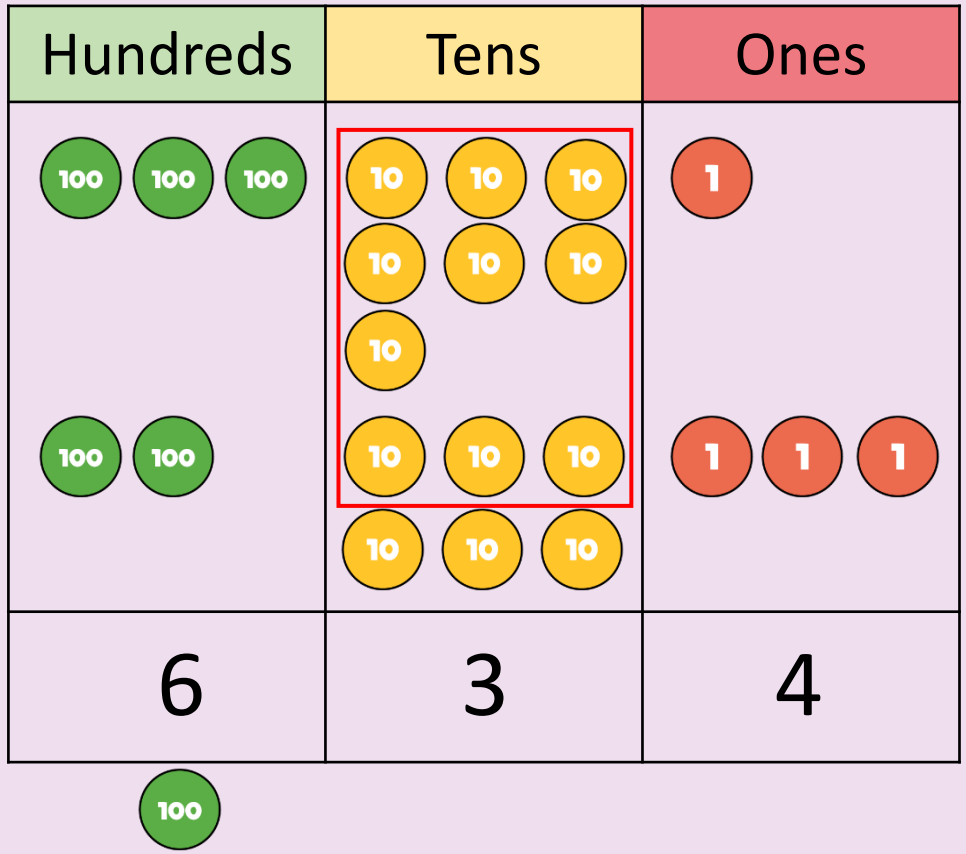
	H	T	O	
	2	4	3	
+	1	7	2	
	4	1	5	
	1			

Aim for Year 3

Dexter scores 371 points in a game.

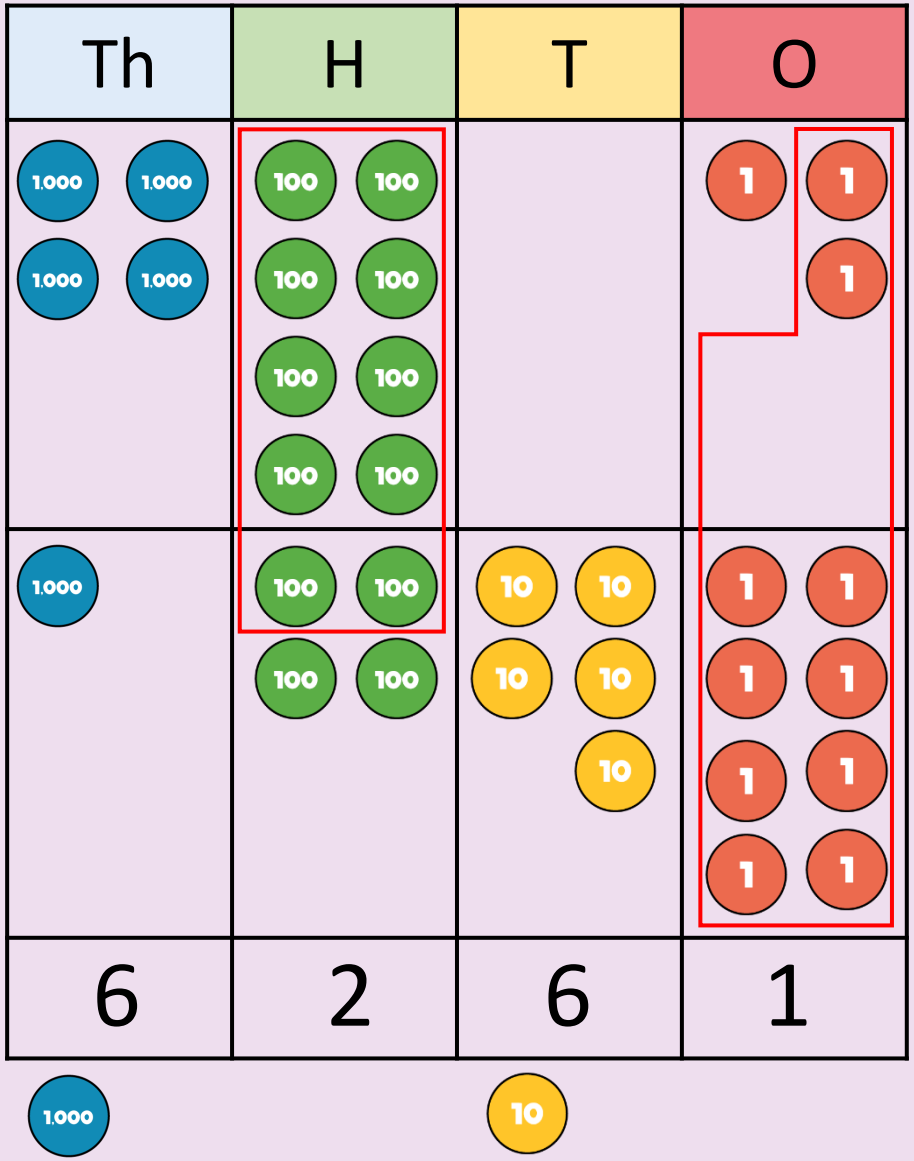
Rosie scores 263 points.

How much do they score altogether? 634



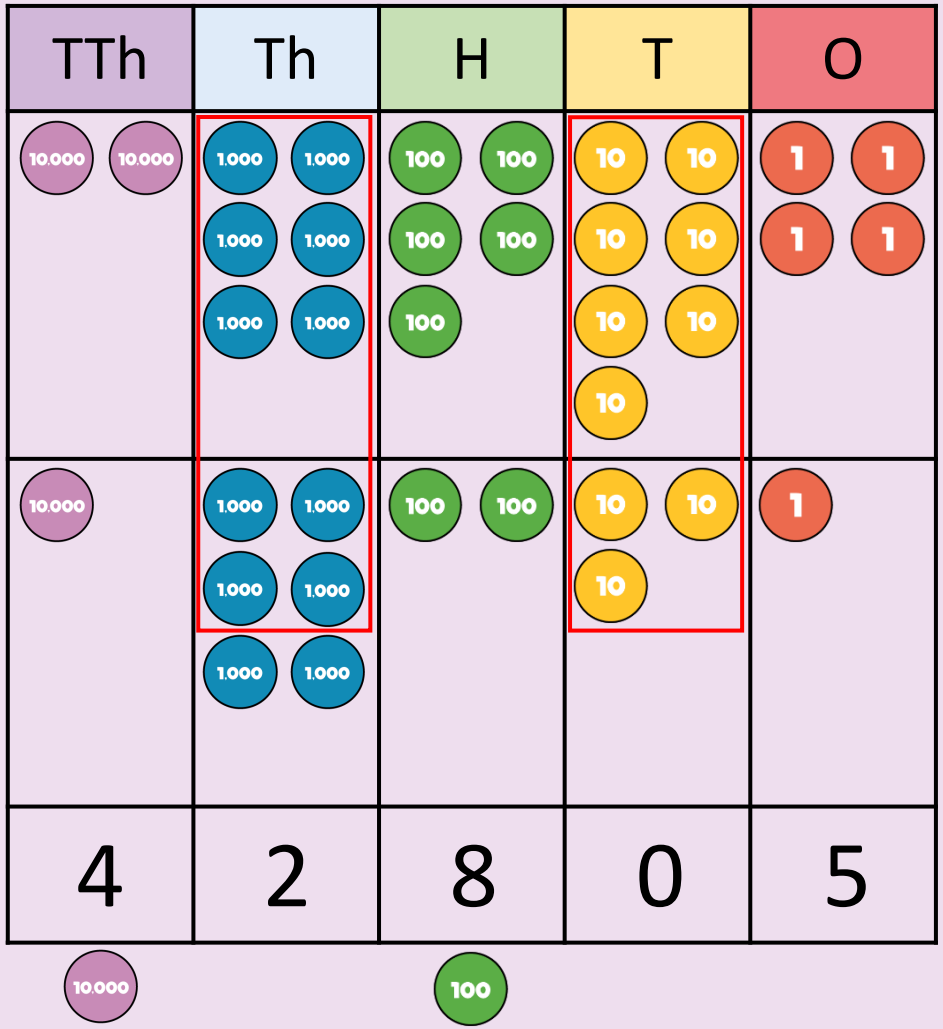
	H	T	O	
	3	7	1	
+	2	6	3	
	6	3	4	
	1			

Aim for Year 3



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

Aim for Year 4



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

Aim for Year 5

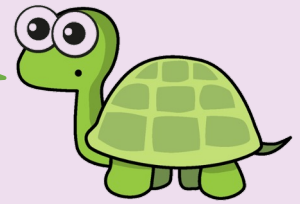
		3	4	7	2	6	
	+	2	5	6	1		
		6	0	3	8	7	
		1	1				

Not lined up place value columns correctly

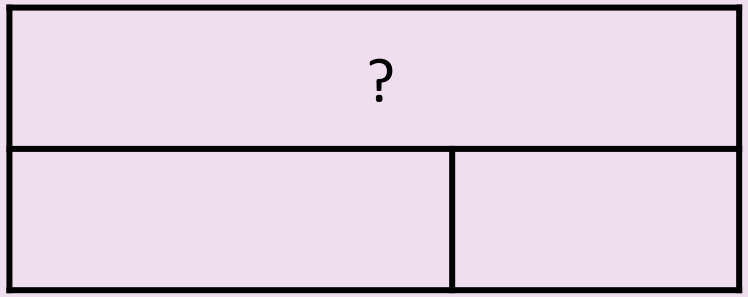
		3	4	7	2	6	
	+		2	5	6	1	
		3	6	2	8	7	
			1				

Forgotten to add on the exchange

I do not think they are correct.



530,542 − 346,221 = 184,321



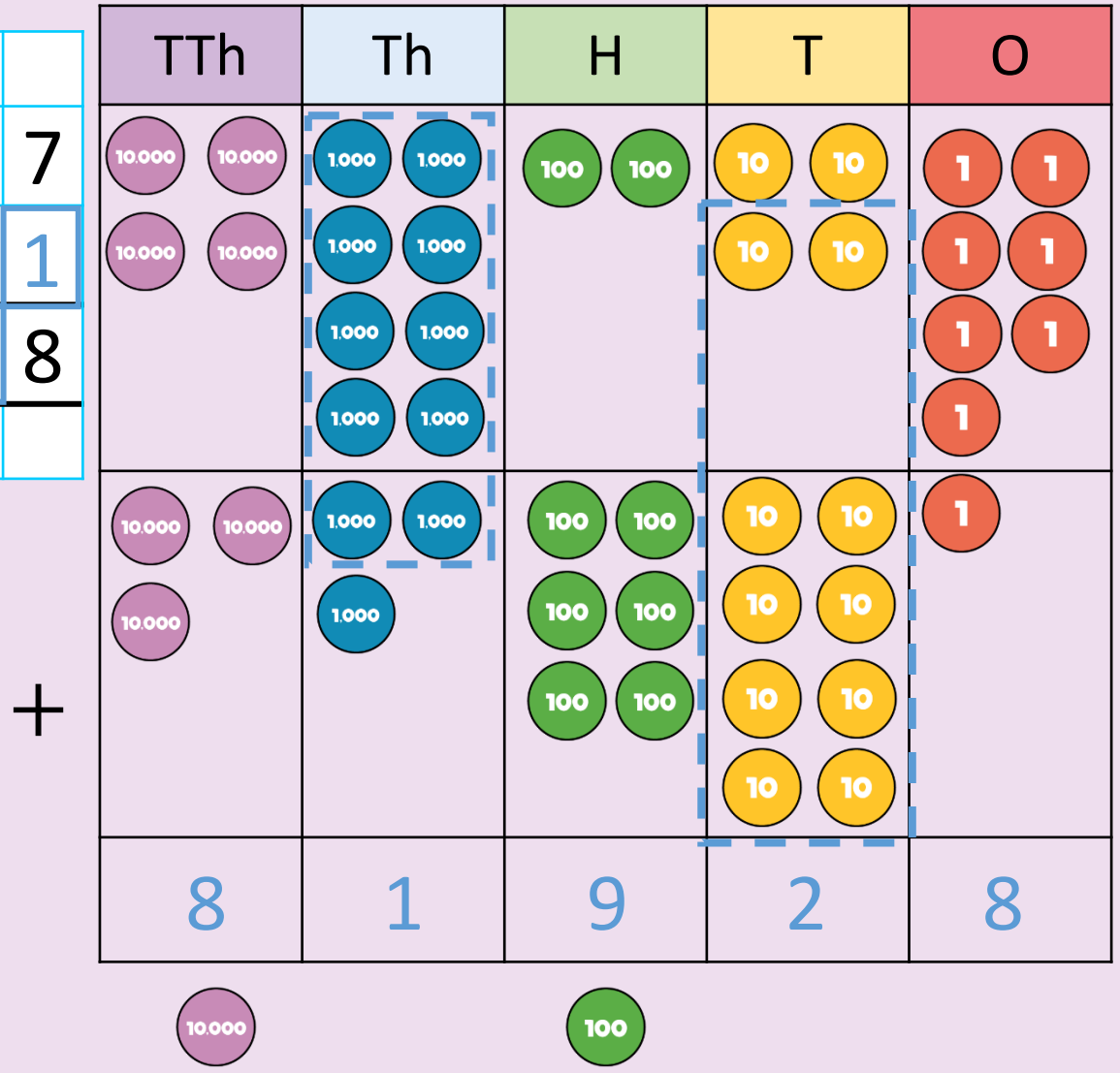
		Hth	TTh	Th	H	T	O	
		3	4	6	2	2	1	
	+	1	8	4	3	2	1	
		5	3	0	5	4	2	
		1	1					

Part + part = whole

Whole − part = part

Aim for Year 6

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



Aim for Year 5/6

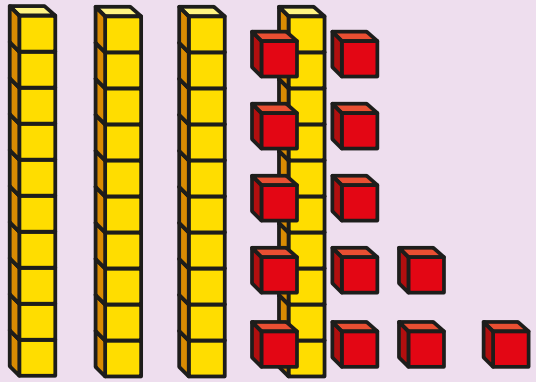
Subtraction – sequence of learning

difference

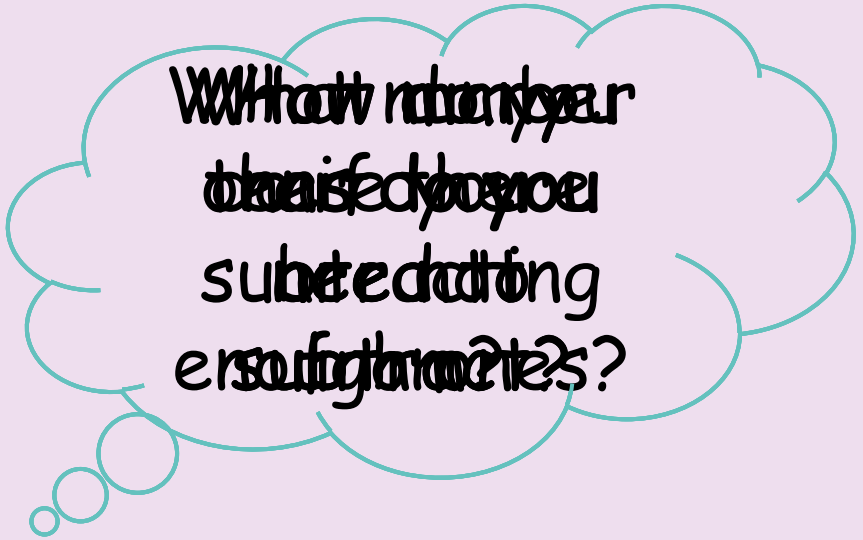
exchange

partition

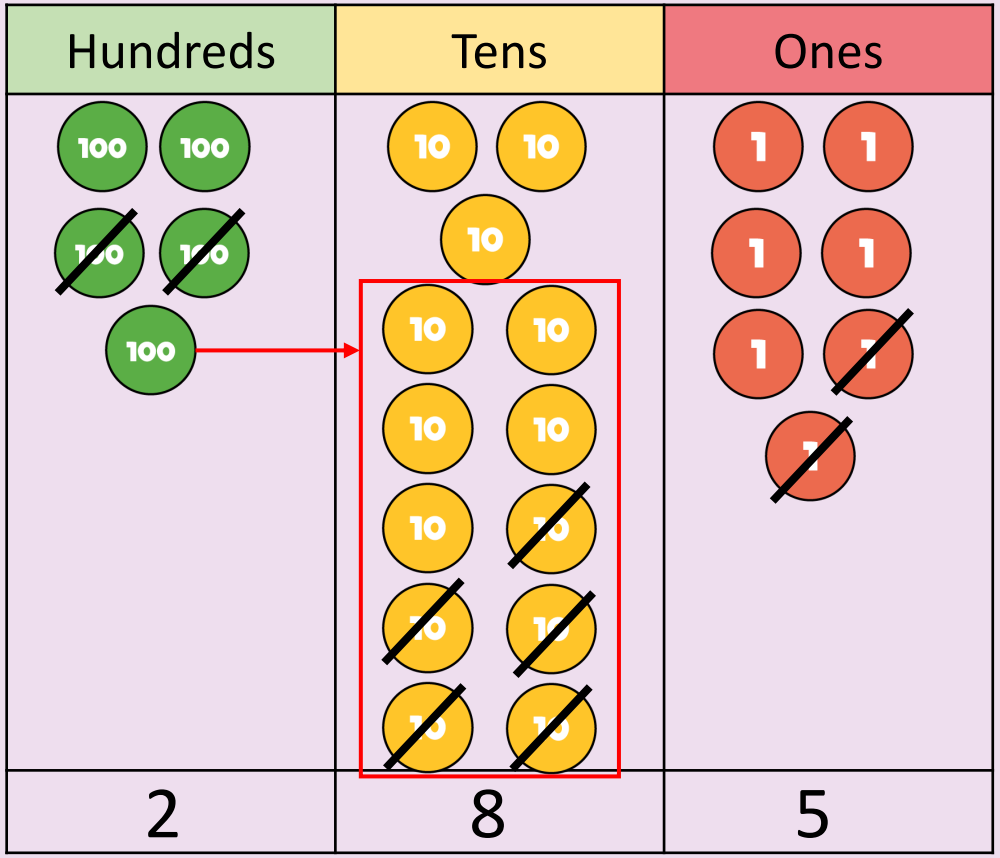
Use base 10 to calculate 43 − 16



43 − 16 = 27



$537 - 252 = 285$



	H	T	O	
	$^{4}\not{5}$	$^{1}3$	7	
−	2	5	2	
	2	8	5	

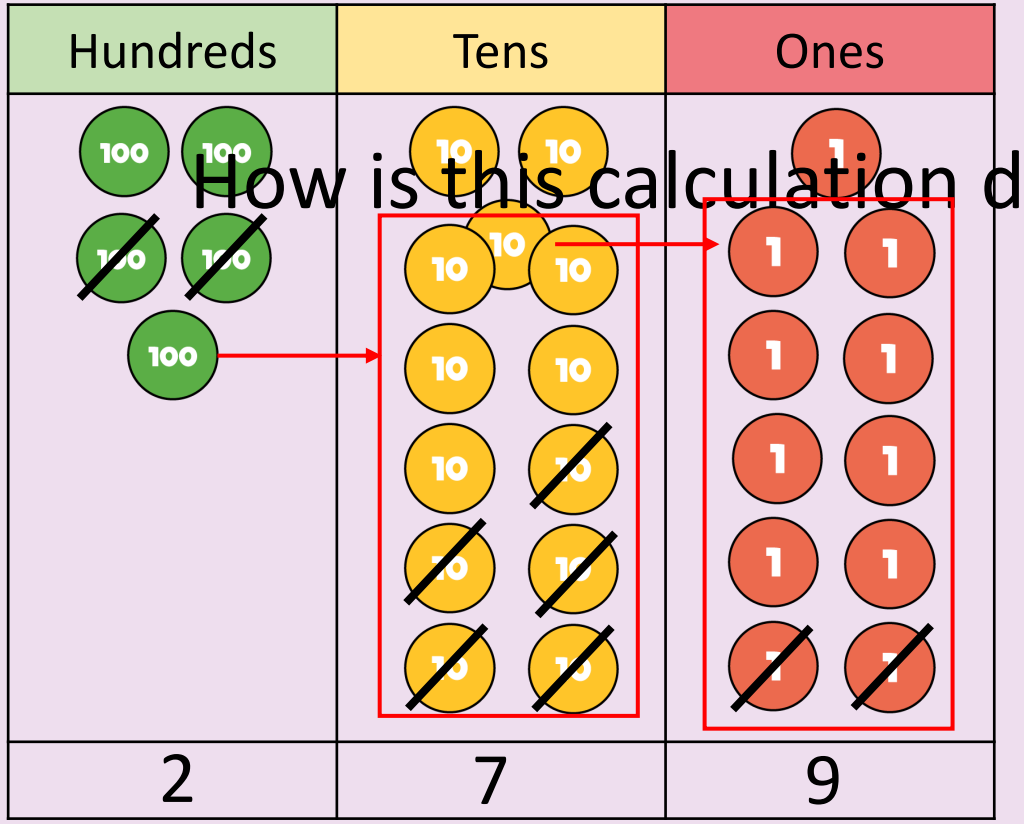
4 hundreds subtract 2 hundreds is equal to 2 hundreds.

13 tens subtract 5 tens is equal to 8 tens.

7 ones subtract 2 ones is equal to 5 ones.

Aim for Year 3

$$531 - 252 = 279$$



How is this calculation different?

	H	T	O	
	$^{4}\not{5}$	$^{12}\not{3}$	$^{1}1$	
−	2	5	2	
	2	7	9	

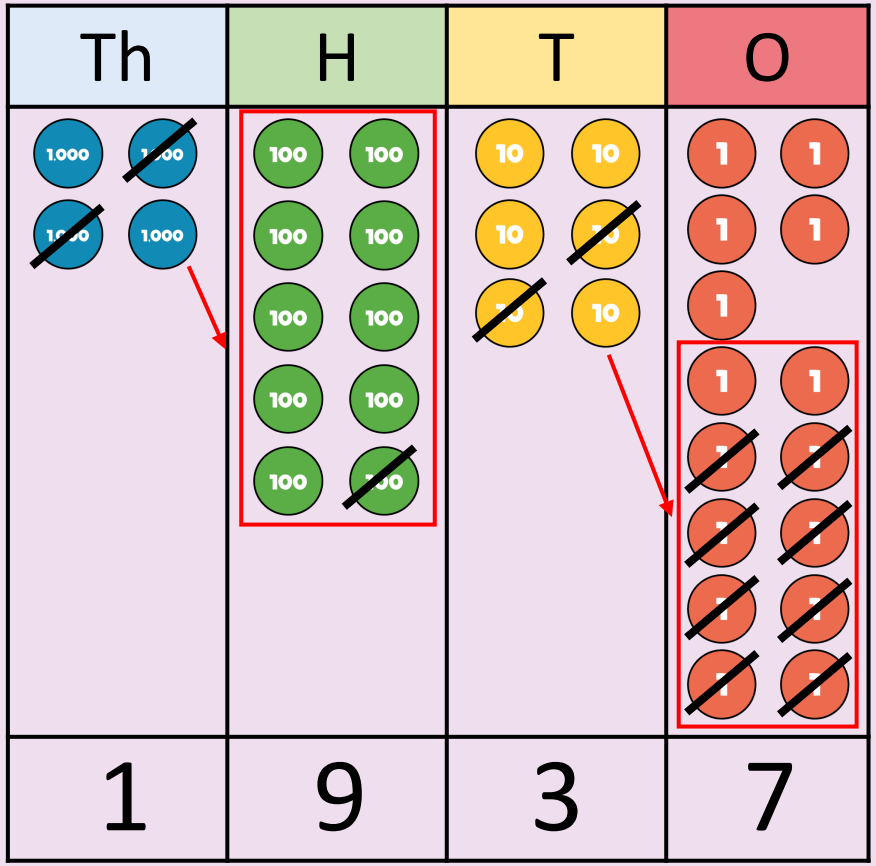
I exchanged 1 hundred for 10 tens.

I then exchanged 1 ten for 10 ones.

_2_ hundreds _7_ tens _9_ ones.

Aim for Year 3

$$4{,}065 - 2{,}128 = 1{,}937$$

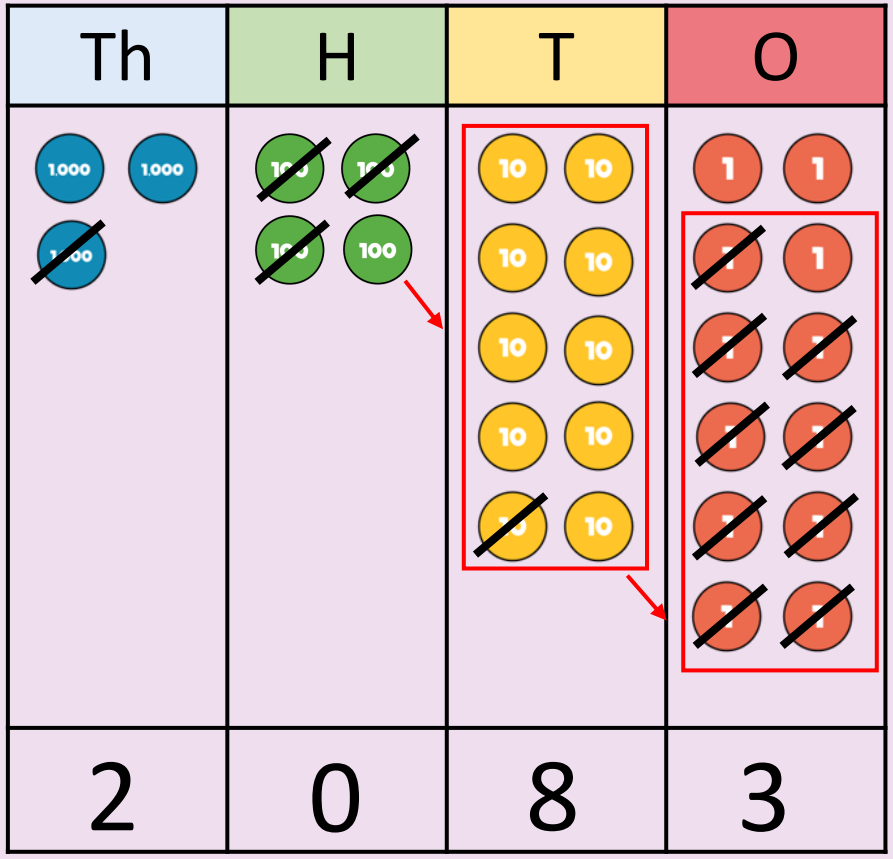


		$^{3}\not{4}\,^{1}0\,^{5}\not{6}\,^{1}5$			
−	2	1	2	8	
	1	9	3	7	

There are not enough hundreds tens , so I need to exchange 1 thousand ten for 10 hundreds units

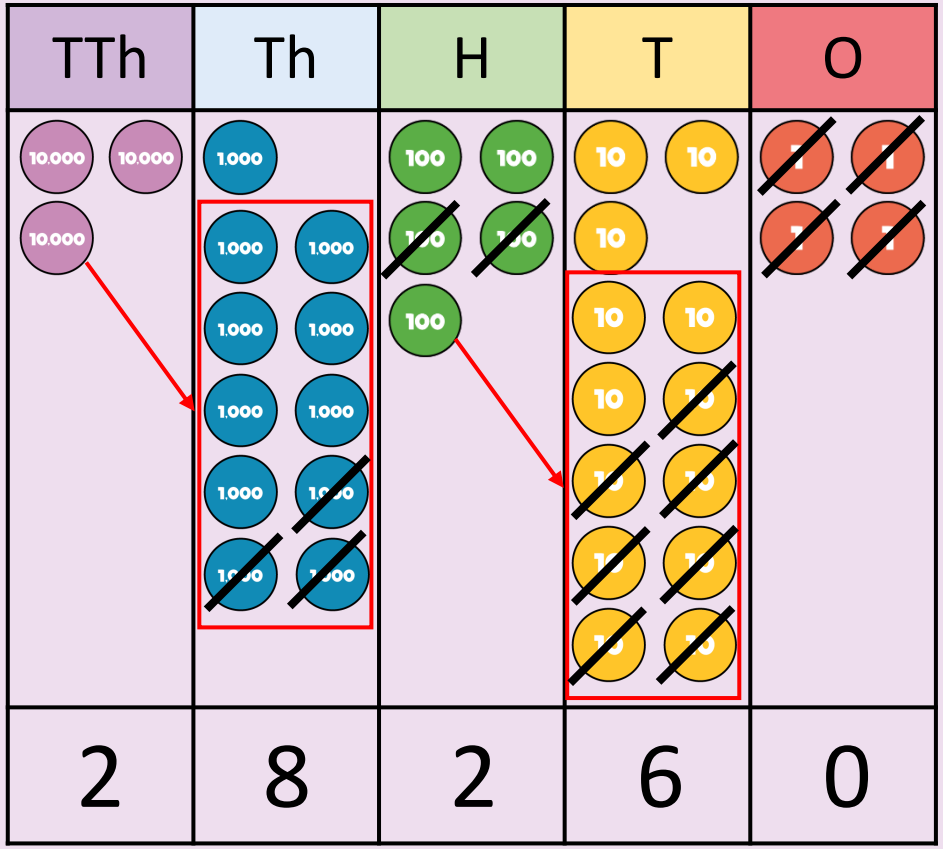
Aim for Year 4

$$3{,}402 - 1{,}319 = 2{,}083$$



	3	$\cancel{4}^{3}$	$0^{\cancel{1}1}$	2	
−	1	3	1	9	
	2	0	8	3	

Aim for Year 4

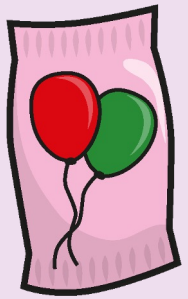


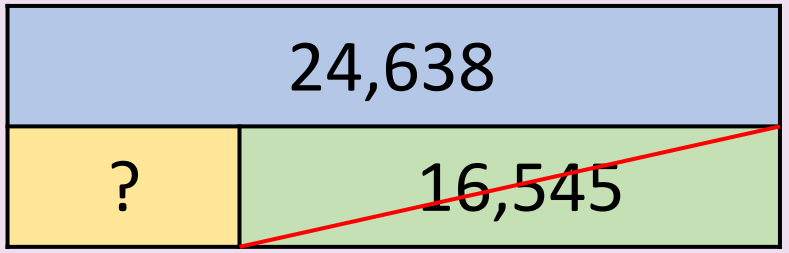
		2		4			
		~~3~~ 11		~~5~~ 13		4	
	–		3	2	7	4	
		2	8	2	6	0	

There are not enough ~~thousands~~ tens , so I need to exchange 1 ~~ten thousand~~ hundred for 10 ~~thousands~~ tens

Aim for Year 5

A factory packs 24,638 bags of balloons in a month.
They sell 16,545 bags of balloons.
How many bags of balloons do they have left?





		1		5			
		~~2~~ 14		~~6~~ 13		8	
	−	1	6	5	4	5	
		0	8	0	9	3	

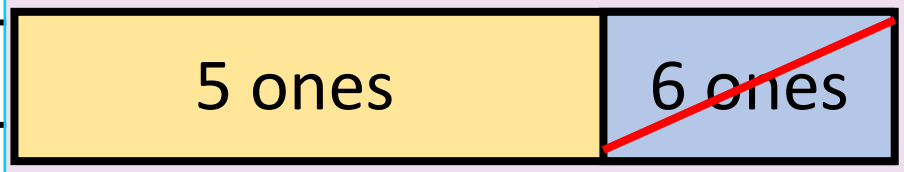
There are 8,093 bags of balloons left.

Aim for Year 5

	6		1	2 ~~3~~	1 1
–	1	4	0	1	6
		8	1	1	5

? – 6 ones = 5 ones

11 ones



TTh	Th	H	T	O
10.000 10.000 10.000 10.000 10.000 10.000		100	10 ~~10~~ 10	1 1 1 1 1 ~~1~~ ~~1~~ ~~1~~ ~~1~~ ~~1~~ ~~1~~

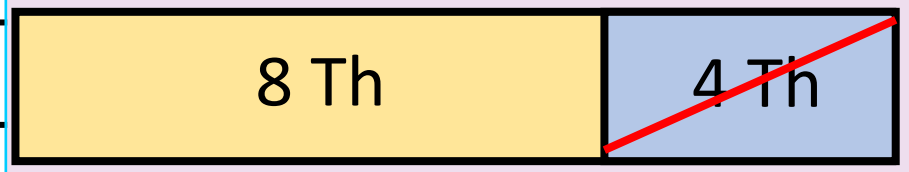
Aim for Year 5/6

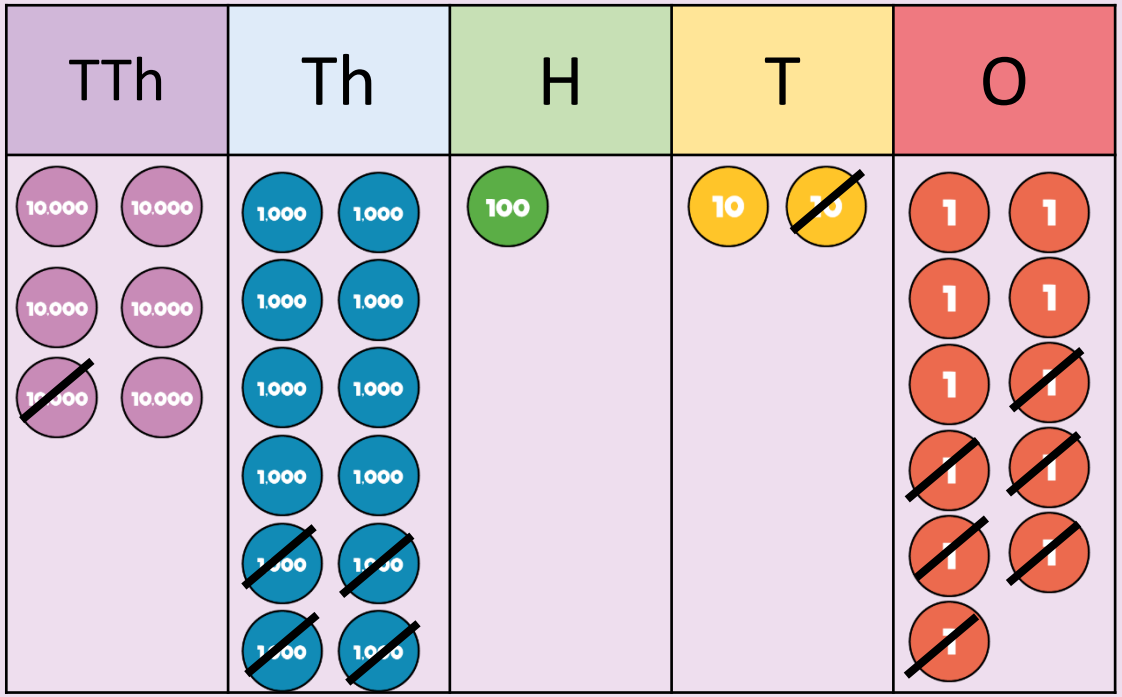
	$5\not{6}$	$^{1}2$	1	$^{2}\not{3}$	$^{1}1$
−	1	4	0	1	6
	4	8	1	1	5

? − 4 thousand = 8 thousand

12 thousand

?





Aim for Year 5/6

Any questions?

Next time – multiplication and division

What else would you like?