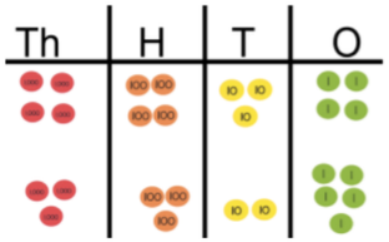
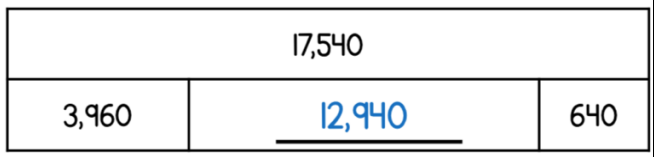
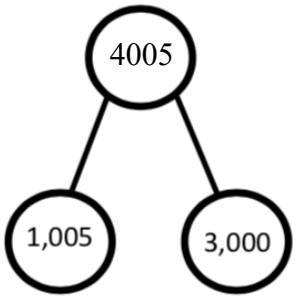
Year 6 Calculation

Concrete – Pictorial - Abstract

(Addition, Subtraction, Multiplication, Division)

Year 5 - add whole numbers with **more than** 4 digits
Year 6 - solve addition **multi-step problems** in contexts

Concrete Resources: Place Value Counters/Base 10	*Abstract Calculations:*	*Pictorial Representation – Abstract Calculation*	
 4434 +3325 7759 Abstract	32 461 + 4 352 36 813 1	 12 940 3 960 + 640 17 540 2 1 Abstract	 1005 + 3000 = 4005 Abstract
Place Value Counters/Base 10 Column Addition	*Column Addition*	*Bar Model*	*Part-Whole Model*

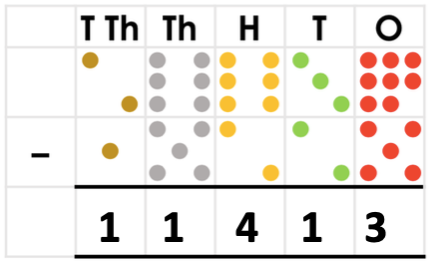
Year 6 Calculation

Concrete – Pictorial - Abstract

(Addition, Subtraction, Multiplication, Division)

Year 5 – subtract whole numbers with **more than** 4 digits
Year 6 - solve subtraction **multi-step problems** in contexts

Concrete Resources:



Abstract:
26638 – 15225 = 11413

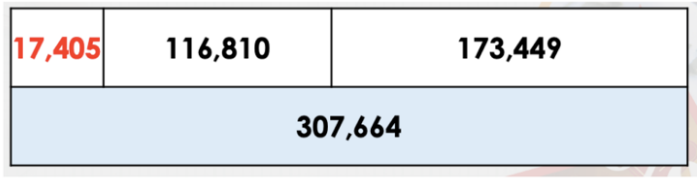
Place Value Counters/Base 10 Column Subtraction (with or without exchanging)

Abstract Calculation:



Column Subtraction (with or without exhanging)

Pictorial Representation – Abstract Calculation



Step 1:

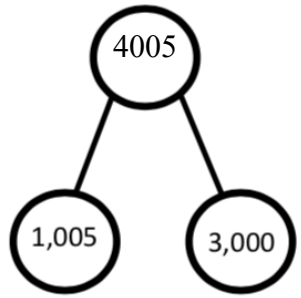
116 810
+ 173 449
290 259

Step 2:

307 664
- 290 259
017 405

Abstract Calculation:
116 810 + 173 449 = 290 259
307 664 – 290 259 = 17 405

Bar Model – Multi-step



Abstract:

4005 – 3000 = 1005

4005 – 1005 = 3000

Part-Whole Model

Year 6 Calculation

Concrete – Pictorial - Abstract

(Addition, Subtraction, Multiplication, Division)

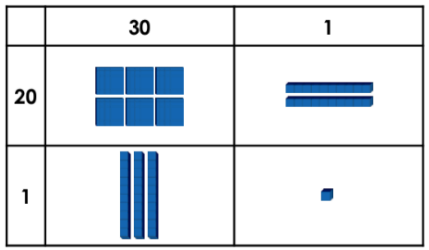
Year 5 – multiply numbers up to **4 digits** by a **one- or two-digit number** using a formal written method
Year 6 - solve multiplication **multi-step problems** in contexts

Base 10 – Area Model

Concrete/Pictorial:

31 x 21 =

(30 + 1) x (20+1)



630 + 21 = 651

Abstract: 31 x 21 = 651

Place Value Counters

Concrete/Pictorial:

1221 x 4 =

4 **lots of** 1221 = 4884

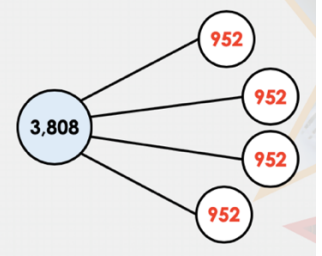


Abstract Calculation:

	1	2	2	1
x				4
	4	8	8	4

Part Whole Model

Pictorial Representation – Abstract Calculation



Abstract Calculation:

952 x 4 = 3808

4 **lots of** 952 = 3808

Written Column Multiplication

Abstract Calculation:

			5	2	
x			3	6	
		3	1 (1)	2	(6 x 52)
	1	5	6	0	(30 x 52)
	8	8	7	2	

Written Column Multiplication

Abstract Calculation:

		1	3	4	3	
x				3	2	
		2	6	8	6	
	4 (1)	0 (1)	2	9	0	→ Place Holder
	4	2	9	7	6	
		1				

Bar Model

5,244			
1311	1311	1311	1311

Abstract Calculation:

1311 x 4 = 5244

4 **lots of** 1311 = 5244

Year 6 Calculation

Concrete – Pictorial - Abstract

(Addition, Subtraction, Multiplication, Division)

Year 6 – divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division and of short division

Abstract Calculation:

2649 ÷ 8 = 331 r 1

	0	3	3	1	r1
8	2	$^{2}6$	$^{2}4$	9	

Abstract Calculation: 364 ÷ 14 = 26

Step 1: Write key number facts for times table.

Key facts	
2 x 1 4 =	2 8
5 x 1 4 =	7 0
1 0 x 1 4 =	1 4 0
2 0 x 1 4 =	2 8 0

		0	2	6	
1	4	3	6	4	
	–	1	4	0	(x10)
		$^{1}2$	$^{1}2$	4	
	–	1	4	0	(x10)
		0	8	4	
			8	4	(x6)
				0	

Step 2: Multiply the divisor (e.g. 14 x 10).
Step 3: Record the product beneath the dividend.
Step 4: Subtract the product

Step 5: Repeat the process

Short Division (with exchanging and remainders)

432 ÷ 15 becomes

		2	8	r 12
1	5	4	3	2
		3	0	0
		1	3	2
		1	2	0
			1	2

Answer: 28 remainder 12

432 ÷ 15 becomes

		2	8	
1	5	4	3	2
		3	0	0
		1	3	2
		1	2	0
			1	2

15×20

15×8

$\frac{12}{15} = \frac{4}{5}$

Answer: $28\frac{4}{5}$

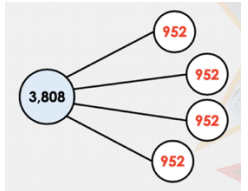
Long Division

432 ÷ 15 becomes

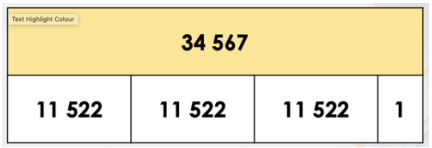
		2	8 ·	8
1	5	4	3	2 · 0
		3	0	↓
		1	3	2
		1	2	0
			1	2 0
			1	2 0
				0

Answer: 28·8

Pictorial Representation – Abstract



3808 ÷ 4 = 952



Abstract:
34 567 ÷ 3 = 11 522 r1

Interpreting Remainders: Fractions and Decimals

Part Whole

Bar Model