

Our Progression in Calculation – Addition

Concrete – Pictorial - Abstract

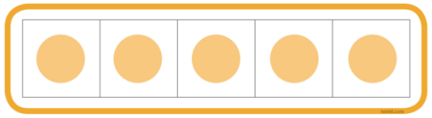
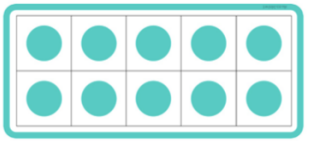
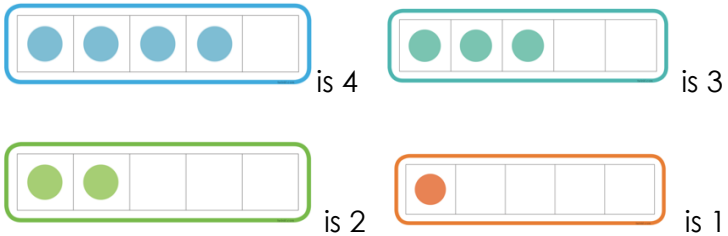
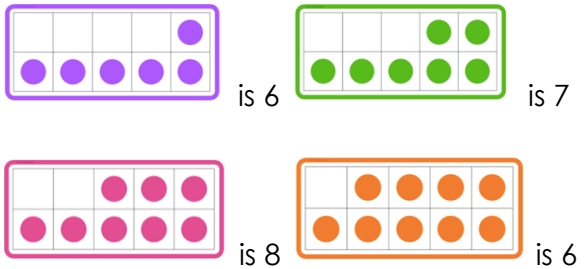
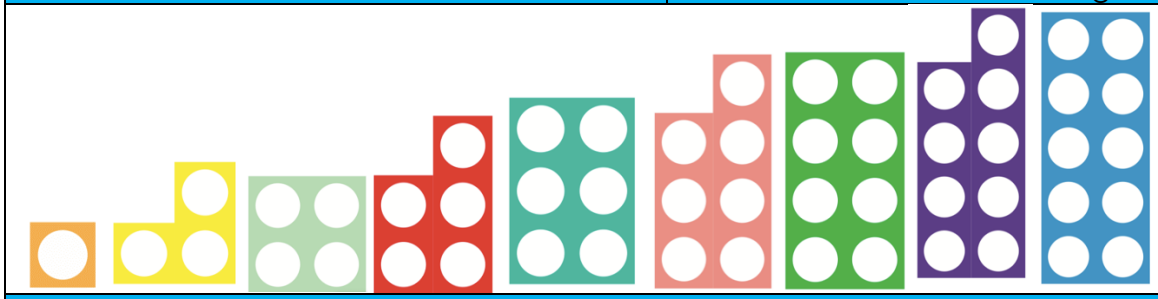
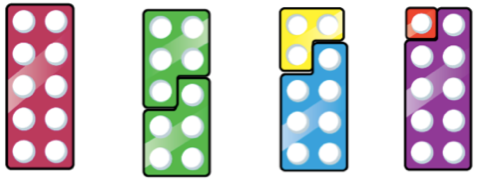
ADDITION: Vocabulary Progression:

- Using **correct mathematical language** is crucial for thinking, learning and communicating mathematically.
- We encourage children to explain **what they are doing** and **why they are doing it**.
- When children are first introduced to new vocabulary, it is **not essential** that children remember these words - but this modelling will help them become **familiar with the terms**, gradually beginning to use them accurately and with understanding in later years.

	EYFS	KS1		KS2			
	YR R	YR 1	YR 2	YR 3	YR 4	YR 5	YR 6
Number	zero, one, two..twenty number How many ...? count, count (up) to, count on (from, to), count back (from, to) is the same as more/less few pattern pair	twenty-one - one hundred numeral forwards/backwards odd/even equal to equivalent to most/least many multiple of	two hundred - one thousand Tally Sequence Continue Predict Rule > Greater than < Less than	Factor of Relationship Roman Numerals	ten thousand - hundred thousand - million next consecutive integer positive negative above zero below zero minus negative numbers	factor pair ≥ greater than/equal to ≤ less than/equal to formula divisibility square number prime number ascending/descending order	factorise prime factor digit total
Addition	add/more/and make/sum/total altogether One more, two more ...	addition near double equals is the same as number bonds/pairs ten more	one hundred more number facts tens boundary	Hundreds boundary	inverse	Ones boundary Tenths boundary	

Our Progression in Calculation – Addition

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EYFS – use **quantities** and **objects** to add **two single digit** numbers and **count on** to find the answer.			
We start EYFS with **LOTS** of number recognition using **CONCRETE** resources.			
			
We start by knowing a hand is 5 (without counting).	*We can then look for patterns and spot 5 using 5 frames.*	*Once, we can spot 5, we can use this pattern to spot 10 (know our hands).*	*We can also spot 10 using a 10 frame.*
			
We love using ourselves to spot 5 and 10!	*Once we can spot 5 and 10, we can look for patterns in numbers using 5 frames.*	*Then, we can spot patterns in numbers using 10 frames.*	
			
We love using Numicon to recognise number.		*We can then use Numicon to make 10.*	

Our Progression in Calculation – Addition

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EYFS – use **quantities** and **objects** to add **two single digit** numbers and **count on** to find the answer.

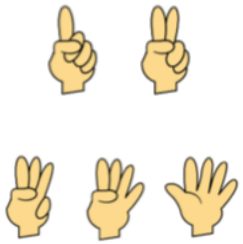
Once EYFS has developed **number recognition**, finding '**one more**' can then be explored using CONCRETE resources.



How many items have you used for each step?

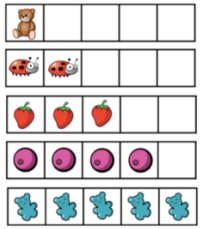
How many more have you used each time?

Construction



Children use their counting and comparing skills

Fingers



Use a 5 frame (or 10 frame) to represent numbers and then make one more.

Concrete Objects

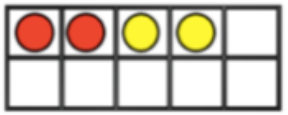




One more than 3 makes 4.

We love grouping ourselves!

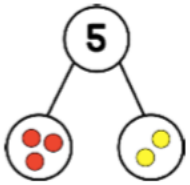


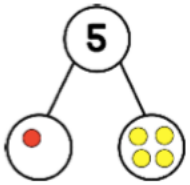


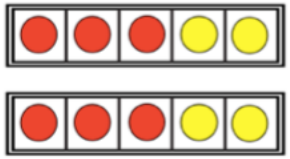
First, there were 2 people on a bus.
Then, 2 people got on.
Now, there are 4 people on the bus.

Number Stories

Pictorial Representation







Could you show your counters on a 5 frame or part whole model?

Part Whole and 5 Frame (extending to 10 frame)

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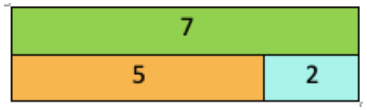
Year 1 – adding **one-digit** and **two-digit** numbers **to 20**

CONCRETE resources developing **ABSTRACT** calculations

Concrete Resource:



Pictorial:

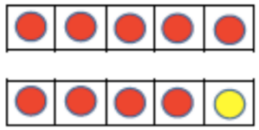


Abstract:

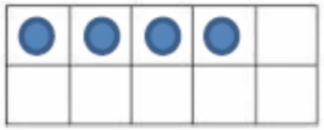
5 + 2 = 7

Building on our learning in EYFS, we can begin counting on with fingers.

*Concrete Resource: **5 frame:***



*Concrete Resource **10 frame:***



Abstract: 4 + 6 = 10

Building on our learning in EYFS, we can use 5 frames (extending to 10 frames).

*Concrete Resource: **Counters/Cubes***



*Concrete Resource: **Base 10:***

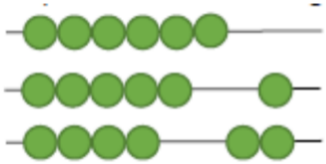


*Concrete Resource: **Everyday Objects:***



Using a Range of Concrete Objects

Concrete - Abstract



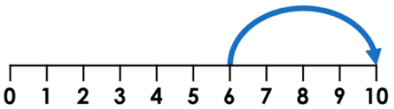
6 = 6 + 0

6 = 5 + 1

6 + 4 + 2

Bead Strings can help us spot patterns

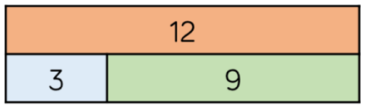
Concrete Resource/Pictorial Representation:



Abstract: 6 + 4 = 10

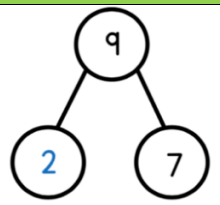
Using a number line to count on.

Pictorial Representation – Abstract Calculation



3 + 9 = 12

Bar Model



7 + 2 = 9

Part Whole Model

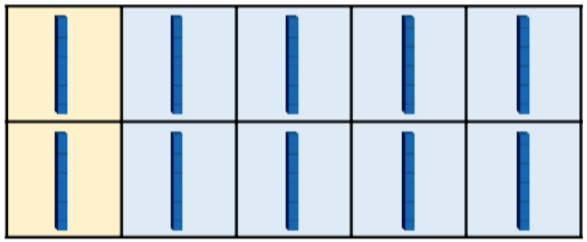
Our Progression in Calculation – Addition

Concrete – Pictorial - Abstract

Year 2 – adding a **two-digit number** and **ones**; a **two-digit number** and **tens**; **two two-digit** numbers; adding **three one-digit** numbers

Concrete Resource:

Using Base 10:



2 tens + 8 tens = 10 tens

Abstract: ***20 + 80 = 100***

We can use a 10 frame and base 10 to spot number bonds to 100.

Concrete Resource:

Using 10 frame:



Abstract:

2 + 8 = 10

20 + 80 = 100

10 Frame –spotting patterns

Concrete Resource:

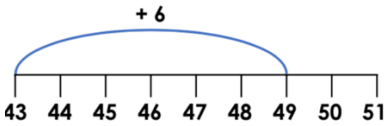


Abstract:

4 + 3 + 3 = 10

We can also use a 10 frame to add 3 one digit numbers

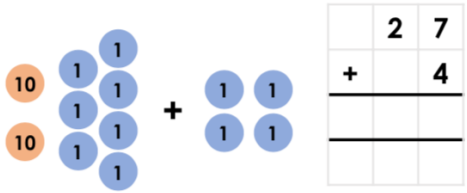
Concrete Resource/Pictorial Reoresentation:



43 + 6 = 49

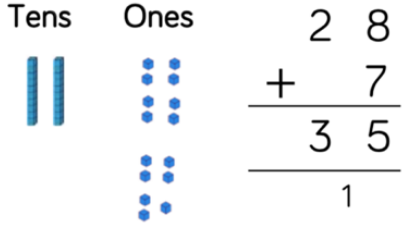
Number line – 2 digit number add ones

Concrete Resource: ***Place Value Counters***



Abtract calculation

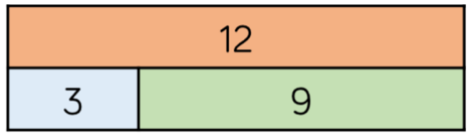
Concrete Resource: **Base 10**



Abtract calculation

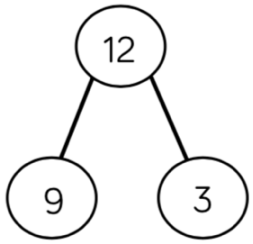
We can use conrete resources to introduce us to column addition

Pictorial Representation – Abstract Calculation



3 + 9 = 12

Bar Model



9 + 3 = 12

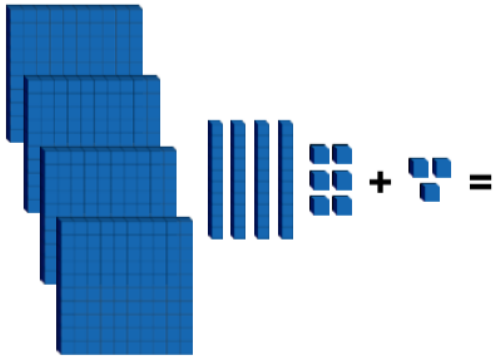
Part Whole Model

Our Progression in Calculation – Addition

Concrete – Pictorial - Abstract

Year 3 - adding a **three-digit** number and **ones**; a **three-digit number** and **tens**; a **three-digit number** and **hundreds**

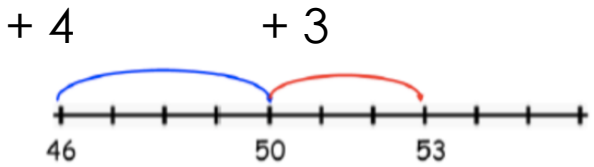
Concrete Resource:



Abstract: 446 + 3 = 449

Base 10 (or PV Counters) – Adding Ones

Concrete Resource/Pictorial Representation:



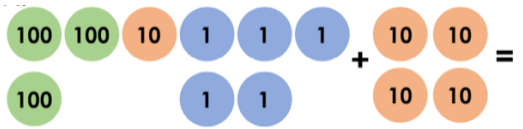
Abstract: 46 + 7 = 53

so

346 + 7 = 353

Number Line– Adding Ones

Concrete Resource:



Abstract: 315 + 40 = 355

Place Value Counters (or Base 10) – Adding Tens

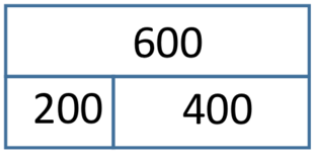
Concrete Resource:



Abstract: 422 + 200 = 622

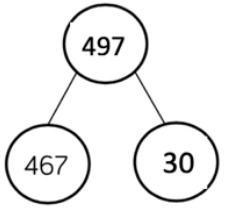
Base 10 (or PV counters) – Adding Hundreds

Pictorial Representation – Abstract Calculation



200 + 400 = 600

Bar Models



467 + 30 = 497

Part Whole Model

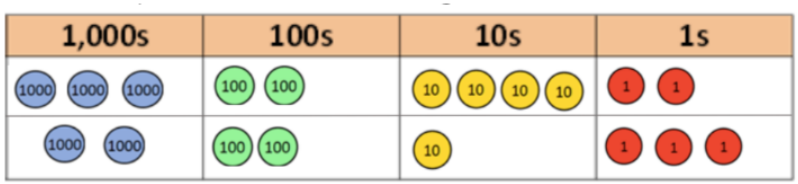
Our Progression in Calculation – Addition

Concrete – Pictorial - Abstract

Year 4 - add numbers **with up to** 4 digits

Concrete Resourse (PV counters):

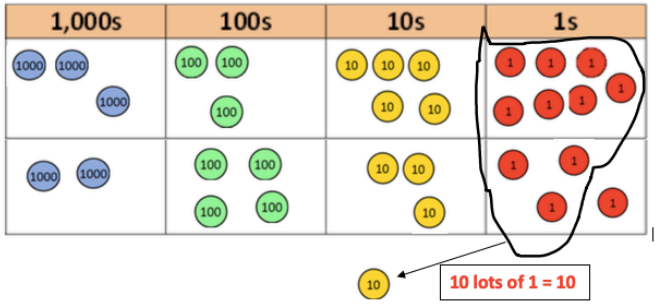
Column Addition (without crossing):



Abstract

3 2 4 2
+ 2 2 1 3
5 4 5 5

Column Addition (with crossing)

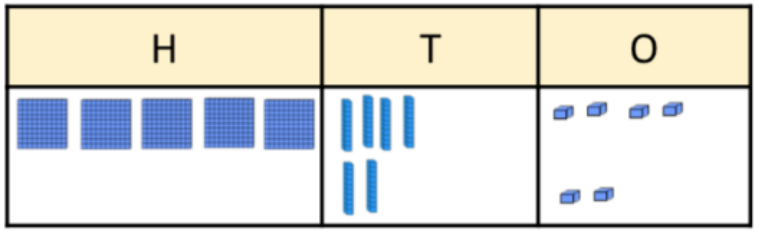


Abstract

3 3 5 7
+ 2 4 3 4
5 7 9 1

Place Value Counters – Column Addition (with and without crossing)

Concrete Resourse (Base 10):



544
+ 22
566

Abstract

4,844
+ 2,156
7, 000
1 1 1

Abstract

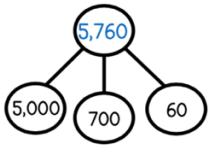
Column Addition

2 503
2 811
+ 814
6 128
2

Abstract

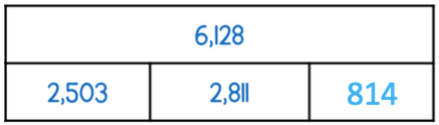
Column Addition

Pictorial Representation – Abstract Calculation



5000 + 700 + 60 = 5760

Part Whole Model



2503 + 2811 + 814 = 6128

Bar Model

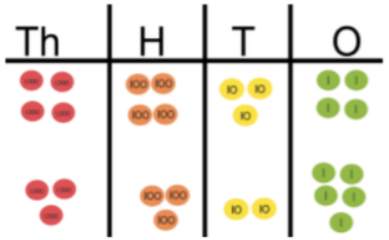
Base 10 – Column Addition (with and without crossing)

Our Progression in Calculation – Addition

Concrete – Pictorial - Abstract

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



$$\begin{array}{r} 4434 \\ +\,3325 \\ \hline 7759 \end{array}$$

Abstract

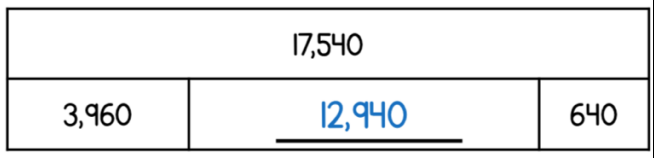
Place Value Counters/Base 10 Column Addition

Abstract Calculations:

$$\begin{array}{r} 32\,461 \\ +\;4\,352 \\ \hline 36\,813 \\ \hline 1 \end{array}$$

Column Addition

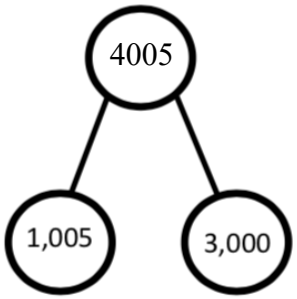
Pictorial Representation – Abstract Calculation



$$\begin{array}{r} 12\,940 \\ 3\,960 \\ +\quad 640 \\ \hline 17\,540 \\ 2\;1 \end{array}$$

Abstract

Bar Model



1005 + 3000 = 4005

Abstract

Part-Whole Model