

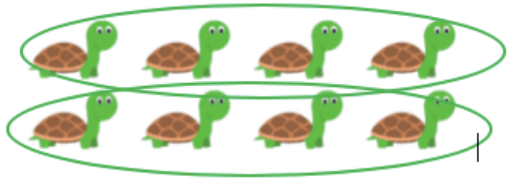
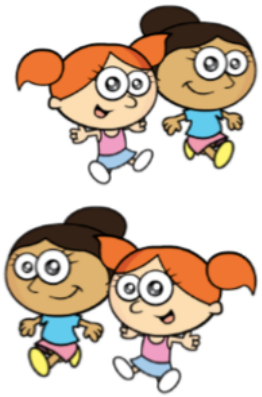
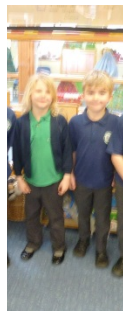
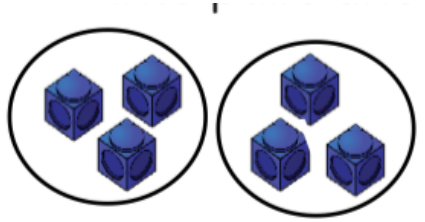
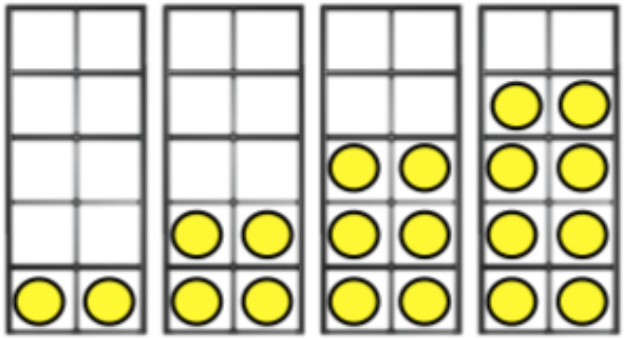
Our Progression in Calculation - Division

DIVISION: 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
Place Value	ones/tens/digit the same number as as many as more/larger/bigger/greater fewer/smaller/less most/biggest/larges/greatest compare/order first, second, third... last/last but one before/after/next/between	equal to half-way between above/below one more/ten more one less/ten less	place value stands for represents exchange	one hundred more one hundred less	one thousand more one thousand less		
Division	sharing halving number patterns	division dividing grouping array	groups of times repeated addition divide/divide by share equally left/left over one/two/three/ten each group in pairs/three/tens equal groups of row/column	factor product remainder	inverse square/squared cube/cubed		

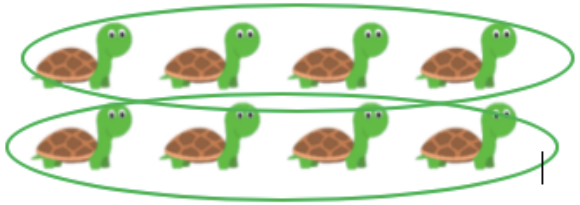
Our Progression in Calculation - Division

EYFS – solve problems by **halving** and **sharing**.			
As with multiplication, we start EYFS with **LOTS** of **concrete** resources.			
		 	
Making Equal Groups		*We love putting ourselves in groups*	*6 in 2 groups (halves)*
			
Base 10 – Doubles and Halves			*We love chopping things in halves!*

Our Progression in Calculation - Division

Year 1 – solve 1 step division calculations using concrete objects, pictorial representations and arrays

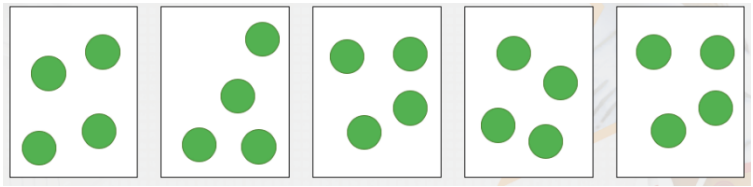
Concrete/Pictorial:



Abstract Calculation:
8 **grouped equally** in 2 is 4

Making Arrays – Grouping

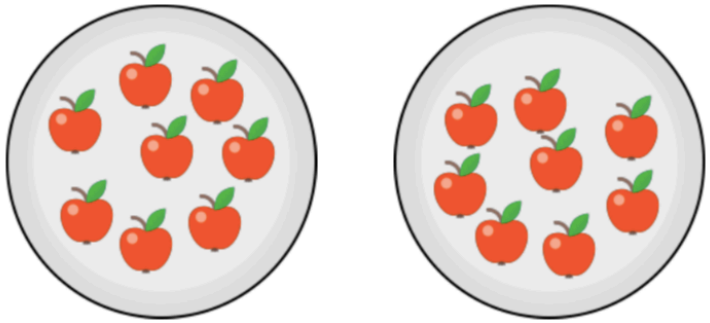
Concrete/Pictorial:



Abstract Calculation:
20 **shared equally** between 5 is 4

Concrete objects (shared equally)

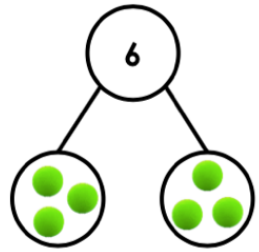
Concrete/Pictorial:



Abstract:
*16 apples **shared equally** between 2 plates.*
There are 8 apples on each plate.

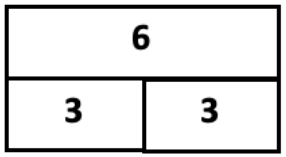
Pictorial Objects – Shared Equally

Pictorial Representation – Abstract Calculation



Abstract Calculation:
6 **shared equally** between 2 is 3

Part Whole Model – Making Doubles



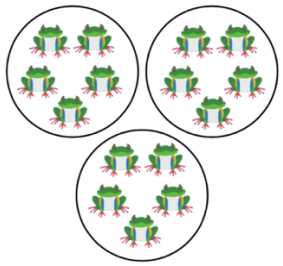
Abstract Calculation:
6 **shared equally** between 2 is 3

Bar Model

Our Progression in Calculation - Division

Year 2 - calculate division facts within the multiplication tables (x2, x5, x10), and write them using the division symbol "÷"

Concrete/Pictorial:



Abstract Calculation:

There are 3 **equal groups** with 5 in each group.

15 ÷ 3 = 5

Equal Groups

Concrete/Pictorial:



Abstract Calculation:

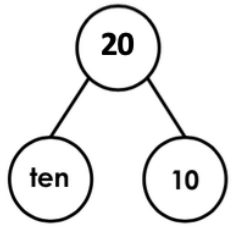
20 ÷ 5 = 4

20 **shared equally** between 4 is 5

20 **grouped equally** between 4 is 5

Base 10 – dividing by 5

Pictorial Representation – Abstract Calculation



Abstract Calculation:

20 ÷ 2 = 10

20 **shared equally** between 2 is 10

Concrete:



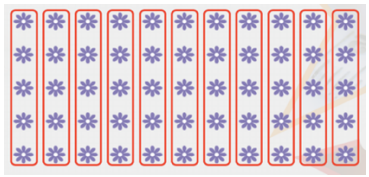
Abstract Calculation:

How many groups of ten? 9

90 ÷ 10 = 9

Base 10 – dividing by 10

Concrete/Pictorial:



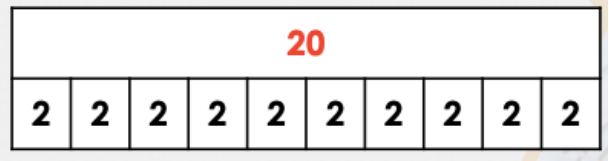
Abstract Calculation:

55 ÷ 5 = 11

There are 11 **equal groups** with 5 in each group.

Making Arrays

Part Whole Model



Abstract Calculation: 20 ÷ 10 = 2

20 **grouped equally** between 10 is 2

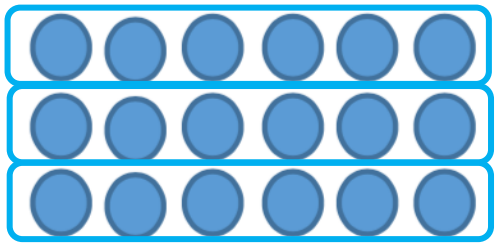
Bar Model

Our Progression in Calculation - Division

Year 3 – use division facts within the multiplication tables they know (x3, x4 and x8)

Making Arrays – Grouping

Concrete/Pictorial:



Abstract Calculation:

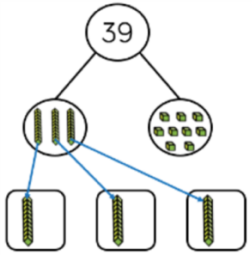
18 ÷ 3 = 6

There are 3 **equal groups** with 6 in each group.

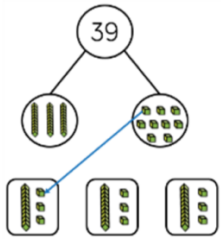
Base 10 – Partitioning and Sharing Equally

Concrete/Pictorial: 39 ÷ 3 =

Step 1: Share the tens



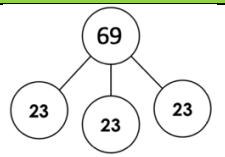
Step 2: Share the ones



Abstract: There are 3 **equal groups** with 13 in each group.

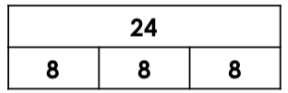
39 ÷ 3 = 13

Pictorial Representation – Abstract Calculation



Abstract: 69 ÷ 3 = 23

Part-Whole Model



Abstract: 24 ÷ 8 = 3

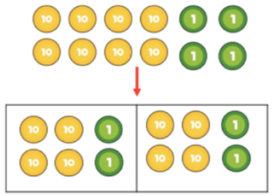
Bar Model

Place Value Counters Shared Equally

Concrete/Pictorial:

*84 **shared equally** between 2.*

There are 42 counters in each group.



Abstract Calculation: 84 ÷ 2 = 42

Base 10 Shared Equally

Concrete/Pictorial:

There are 11 counters in each group.

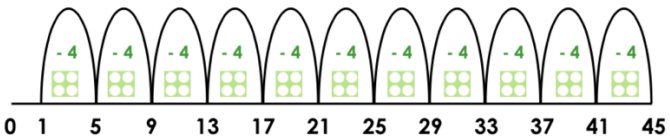


There are 11 counters each.

Number Line – Repeated Subtraction

Pictorial/Abstract:

45 ÷ 4 = 11 r 1

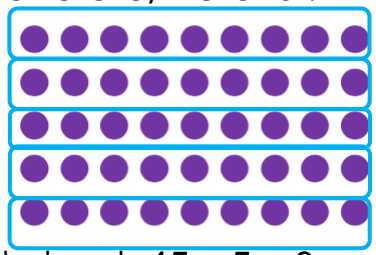


Our Progression in Calculation - Division

Year 4 – recall division facts for multiplication tables up to 12 × 12; use place value, known and derived facts to divide mentally - including dividing by 1 digit numbers

Making Arrays

Concrete/Pictorial:

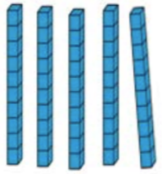


Abstract: 45 ÷ 5 = 9

5 **equal groups** with 9 in each group.

Base 10 – Fact Families

Concrete/Pictorial:



Abstract:

5 x 10 = 50 or 10 x 5 = 50

50 ÷ 10 = 5 or 50 ÷ 5 = 10

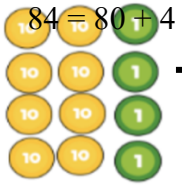
Place Value Counters – Sharing Equally (no exchanging)

Concrete/Pictorial:

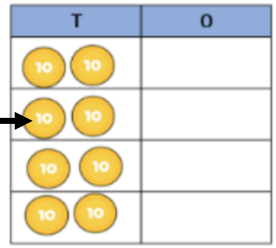
84 ÷ 4 = 21

Step 1: Build the number

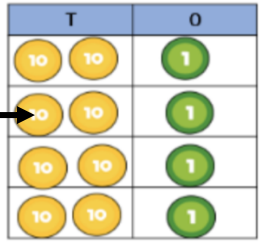
84 = 80 + 4



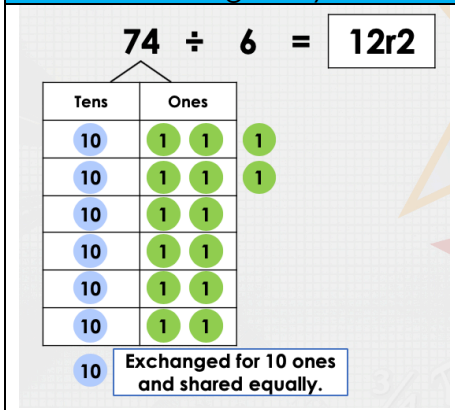
Step 2: Share the tens into 4 equal groups



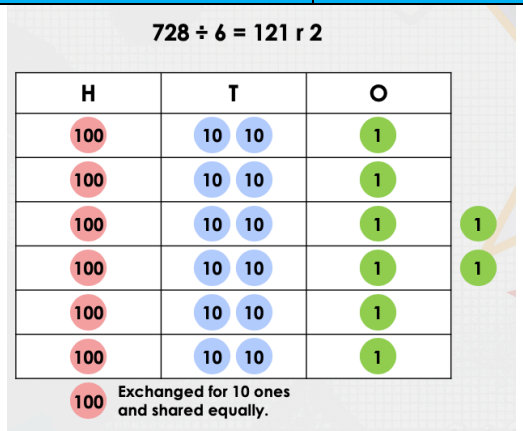
Step 3: Share the one into 4 equal groups



Place Value Counters (with exchanging)

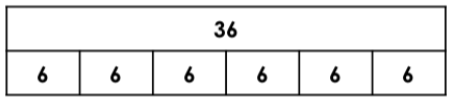


Place Value Counters (with exchanging)



Pictorial Representation – Abstract Calculation

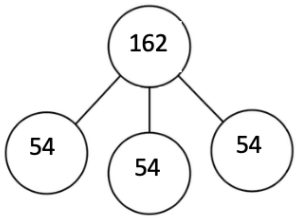
Bar Model



36 **shared equally** between 6 is 6.

36 ÷ 6 = 6

Part Whole Model



162 **shared equally** between 3 is 54.

162 ÷ 3 = 54

Our Progression in Calculation - Division

Year 5 – divide numbers up to **4 digits by a one-digit number** using the **formal written method** of short division and interpret remainders appropriately for the context

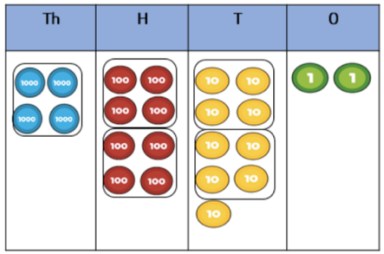
Concrete/Pictorial:

Abstract:

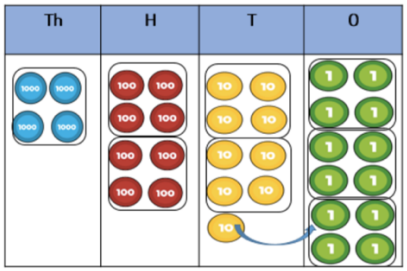
4892 ÷ 4 = 1223

Step 1: Build the number and group equally in 4

4892 = 4000 + 800 + 90 + 2



Step 2: Exchange the remaining ten for ten, ones. Then, group remaining ones equally in 4



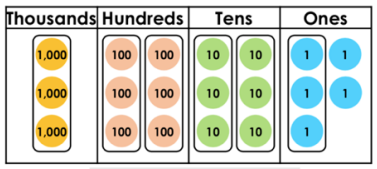
Step 3: Write as a formal written method

$$4\overline{)4892}\quad 1223$$

Place value counters progressing to formal written method

Concrete/Pictorial:

3665 ÷ 3 =

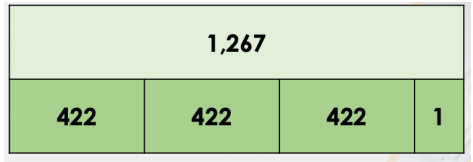


$$3\overline{)3665}\quad 1221\ r2$$

Abstract Calculation: 3665 ÷ 3 = 1221 r 2

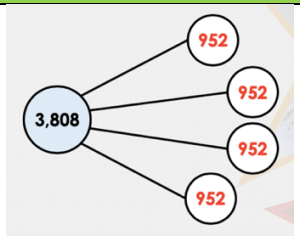
Place value counters - formal written method with remainers

Pictorial Representation – Abstract Calculation



Abstract: 1267 ÷ 3 = 422 r 1

Bar model



3808 ÷ 4 = 952

Part Whole model

Our Progression in Calculation - 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)

Long Division

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

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

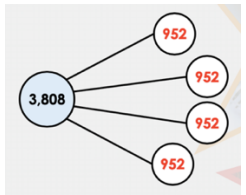
Answer: $28\frac{4}{5}$

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

34 567			
11 522	11 522	11 522	1

Abstract:
34 567 ÷ 3 = 11 522 r1

Interpreting Remainders: Fractions and Decimals

Part Whole

Bar Model