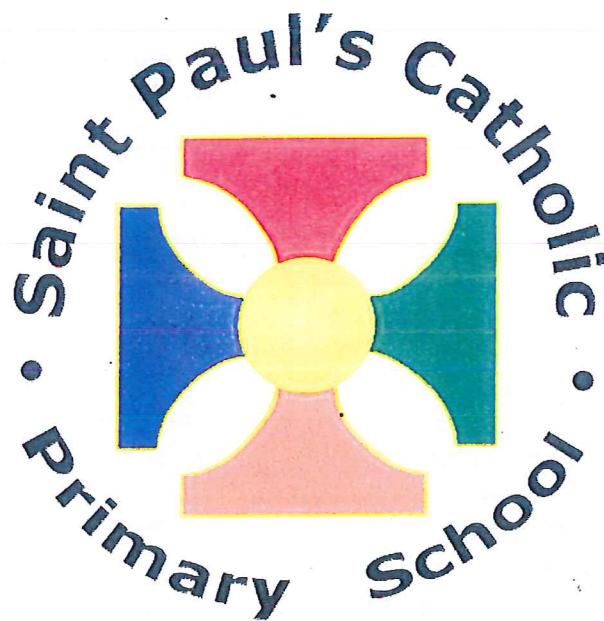


# Calculation Methods at St Paul's Catholic Primary School



## Vocabulary Associated with Number Operation

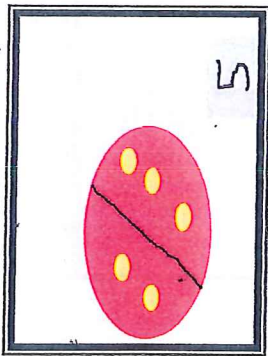
Addition Vocabulary (+)	Subtraction Vocabulary (-)
add addition plus more and make sum total altogether score double one more, two more, ten more... how many more to make... ? how many more is... than...?	subtract take (away) leave how many are left/left over? how many have gone? one less, two less, ten less... how many fewer is... than...? difference between  <b>Note</b> – addition and subtraction are inverse operations of each other. For example: $6 + 4 = 10$ and $10 - 6 = 4$ $4 + 6 = 10$ and $10 - 4 = 6$
Multiplication Vocabulary (x)	Division Vocabulary (÷)
lots of groups of times multiplication multiply multiplied by multiple of product once, twice, three times four times, five times... ten times times as (big, long, wide, and so on) repeated addition double	halve share, share equally one each, two each, three each... group in pairs, threes... tens equal groups of divide, division, divided by, divided into remainder factor divisible by  <b>Note</b> – multiplication and division are inverse operations of each other. For example: $6 \times 4 = 24$ and $24 \div 6 = 4$ $4 \times 6 = 24$ and $24 \div 4 = 6$

## Other Key Vocabulary Related to Number Operation

- Decimal Fraction** - A fraction written as a decimal.
- Decimal Point** - The point that separates whole numbers from decimal fractions.
- Denominator** - Bottom number of a fraction showing the parts the whole is divided into
- Digit** - symbol used to show a number, so 18 is a 2-digit number.
- Estimate** - An approximate or rough calculation, often based on rounding.
- Even number** - A number that is divisible by 2. Numbers that end in 2, 4, 6, 8 or 0.
- Factor** - A whole number that is multiplied by another number to make a third
- Integer** - A whole number and not a decimal number.
- Numerator** - A number above the line of a fraction showing how many parts of the whole.
- Odd number** - Number that is not divisible by 2. Numbers that end in 1, 3, 5, 7 or 9.
- Partition** - Where you split the whole number into parts, so  $123 = 100$  and  $20$  and  $3$
- Place Value** - The value of a digit in a number (the 6 in 2,645 is 600)
- Prime Number** - A number that is only divisible by the number 1 and itself. The prime numbers up to 30 are 2, 3, 7, 11, 13, 17, 19, 23, 29  
(To make 12 you can do  $1 \times 12$ ,  $2 \times 6$ ,  $3 \times 4$ , so factors of  $12 = 1, 2, 3, 4, 6$ )
- Round** - Change a number to a more convenient value such as nearest whole number nearest 10 or 100. Remember rule of magic 5 where 5 and above rounds up.
- Square Number** - A number that is multiplied by itself.  $1 \times 1 = 1$ ,  $2 \times 2 = 4$ ,  $3 \times 3 = 9$ ,  $4 \times 4 = 16$  etc

Addition  
Milestone 1

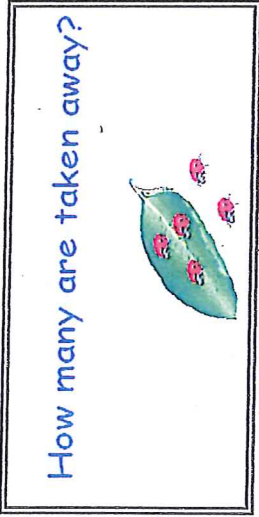
Pictures



5

Subtraction  
Milestone 1

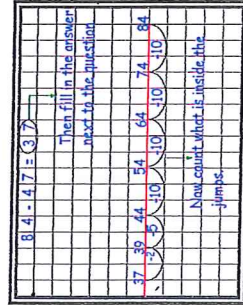
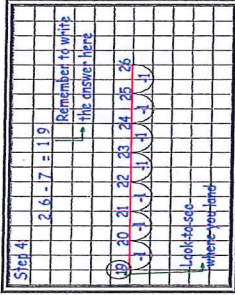
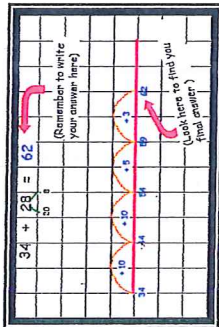
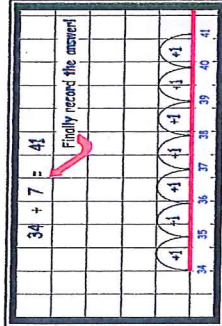
Pictures



How many are taken away?

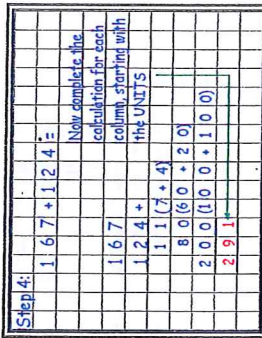
Milestone 2

Number  
lines



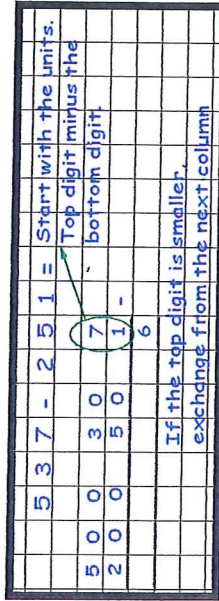
Milestone 3

Partition



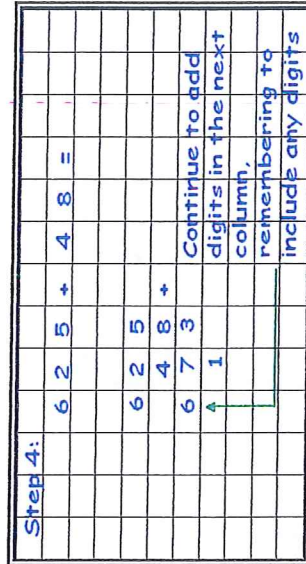
Milestone 3

Partition



Milestone 4

Compact



Milestone 4

Compact





<p><b>Mental Maths Milestone</b> <b>EYFS</b></p>	<ul style="list-style-type: none"> <li>• Recognise numerals of significant importance.</li> <li>• Recognise numerals from 1 to 5</li> <li>• Count up to 4 objects</li> <li>• Count stationary objects</li> <li>• Count objects to 10 and beyond.</li> <li>• Count up to 6 objects from a larger group.</li> <li>• Select the numeral to represent 10 objects.</li> <li>• Count irregular arrangements for up to 10 objects.</li> <li>• Estimate and count objects within 10.</li> <li>• Use more and fewer to compare sets of objects.</li> <li>• Find the total number of objects in 2 groups.</li> <li>• Same number that is 1 more</li> <li>• Say number that is 1 more or 1 less within 10.</li> <li>• Use vocabulary for adding and subtracting.</li> </ul>
<p><b>Milestone 1</b></p>	<ul style="list-style-type: none"> <li>• Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number</li> <li>• Count, 100 in numerals; count in multiples of twos, fives and tens given a number, identify one more and one less</li> <li>• Represent and use number bonds and related subtraction facts within 20</li> <li>• Add and subtract one-digit and two-digit numbers to 20, including zero</li> </ul>
<p><b>Milestone 2</b></p>	<ul style="list-style-type: none"> <li>• Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward; recognise the place value of each digit in a two-digit number (tens, ones)</li> <li>• Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100</li> <li>• Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: <ul style="list-style-type: none"> <li>• a two-digit number and ones</li> <li>• a two-digit number and tens</li> <li>• two two-digit numbers</li> <li>• adding three one-digit numbers</li> </ul> </li> <li>• Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers</li> </ul>
<p><b>Milestone 3</b></p>	<ul style="list-style-type: none"> <li>• Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number.</li> <li>• Add and subtract numbers mentally, including: <ul style="list-style-type: none"> <li>• a three-digit number and ones</li> <li>• a three-digit number and tens</li> <li>• a three-digit number and hundreds</li> </ul> </li> <li>• Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables</li> <li>• Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers using mental methods</li> </ul>

### Mental Maths Mileston e 4

- Count in multiples of 6, 7, 9, 25 and 1000
- Find 1000 more or less than a given number
- Count backwards through zero to include negative numbers
- Round any number to the nearest 10, 100 or 1000
- Recall multiplication and division facts for multiplication tables up to  $12 \times 12$
- Use place value, known and derived facts to multiply and divide mentally,
- Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.
- Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths
- Round decimals with one decimal place to the nearest whole number
- Add and subtract fractions with the same denominator

### Milestone 5

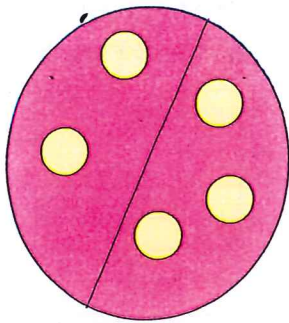
- Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000
- Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000
- Add and subtract numbers mentally with increasingly large numbers
- Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000
- Multiply and divide numbers mentally drawing upon known facts
- Recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)
- Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents
- Round decimals with two decimal places to the nearest whole number and to one decimal place

### Milestone 6

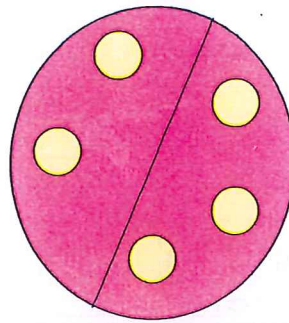
- Round any whole number to a required degree of accuracy
- Use negative numbers in context, and calculate intervals across zero
- Perform mental calculations, including with mixed operations and large numbers
- Identify common factors, common multiples and prime numbers
- Identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places
- Multiply one-digit numbers with up to two decimal places by whole numbers
- Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.

# Pictorial Addition (+)

Step one: How many on each side?

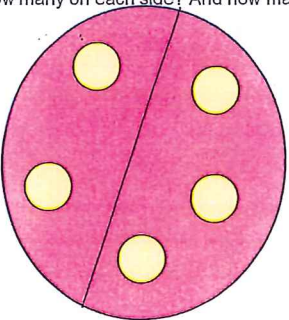


Step two: How many altogether? Record the answer.



Step three: How many on each side? And how many altogether?

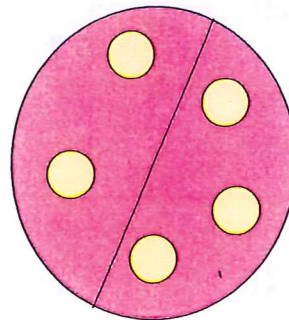
2



3

5

Step four: Write the match sum including symbols.



$$2 + 3 = 5$$

# Adding in ones (+)

Step 1:

$$34 + 7 =$$

First write the number sentence

34 35

Begin to add on the ones

Biggest number goes here

Step 2:

$$34 + 7 = 41$$

Don't forget to write the answer

34 35 36 37 38 39 40 41

Now add the rest of the ones.

See where you have landed

# Adding tens and units on a numberline (+)

**Step 1:**

$$34 + 28 =$$

$\begin{array}{r} 20 \\ 8 \end{array}$ 
 (Remember you can partition the number)

Now add your tens

Biggest number goes here

**Step 2:**

$$34 + 28 = 62$$

Remember to write your answer here.

Now add on the units. You can do this in more than one step.

Look here to find your answer

# ADDITION USING PARTITIONING

**Step 1:**

$$167 + 124 =$$

Set out the calculation in columns. Record one digit in one square.

$$\begin{array}{r} 167 \\ 124 \end{array} +$$

Addition sign here.

**Step 2:**

$$167 + 124 =$$

Starting with the UNITS COLUMN record the units sum, the tens sum then the hundreds sum in brackets

$$\begin{array}{r} 167 \\ 124 \end{array} + \begin{array}{l} (7 + 4) \\ (60 + 20) \\ (100 + 100) \end{array}$$

**Step 3:**

$$167 + 124 =$$

Now complete the calculation for each line.

$$\begin{array}{r} 167 \\ 124 \end{array} + \begin{array}{l} 11(7 + 4) \\ 80(60 + 20) \\ 200(100 + 100) \end{array}$$

**Step 4:**

$$167 + 124 =$$

Now complete the calculation for each column, starting with the UNITS

$$\begin{array}{r} 167 \\ 124 \end{array} + \begin{array}{l} 11(7 + 4) \\ 80(60 + 20) \\ 200(100 + 100) \end{array} = 291$$



# Compact addition (+)

Step 1:

6	2	5	+	4	8	=
6	2	5		4	8	
			+			

Lay out your grid making sure your columns line up accurately.

Addition sign goes here.

Step 2:

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

Starting with the UNITS, add the digits

Carry the tens to the next column

Step 3:

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

Continue to add digits in the next column, remembering to include any digits

Step 4:

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

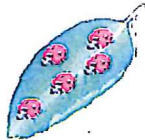
Continue to add digits in the next column, remembering to include any digits

# Pictorial Subtraction (-)

Taking Away

Step 1:


How many are on the leaf?



Taking Away

Step 2:


How many are taken away?



Taking Away

Step 3:

How many are left on the leaf?




Taking Away

Step 4:

Write how many are left.  
Record in a number sentence.

$5 - 2 = 3$



# Subtracting in Ones (-)

Step 1:

$$26 - 7 =$$

Write the number sentence

Biggest number goes here

26

Step 2:

$$26 - 7 =$$

Begin to subtract the ones

24 25 26

-1 -1

Step 3:

$$26 - 7 =$$

19 20 21 22 23 24 25 26

-1 -1 -1 -1 -1 -1 -1

Now subtract the rest of the ones

Step 4:

$$26 - 7 = 19$$

Remember to write the answer here

19 20 21 22 23 24 25 26

-1 -1 -1 -1 -1 -1 -1

Look to see where you land

# Subtraction in tens and units (-)

Step 1:

$$84 - 47 =$$

40 7

Partition this number to make it easier

84

Biggest number goes here

Step 2:

$$84 - 47 =$$

44 54 64 74 84

-10 -10 -10 -10

Begin to subtract the tens

Step 3:

$$84 - 47 =$$

40 7

37 39 44 54 64 74 84

-2 -5 -10 -10 -10 -10

Now subtract the units. Remember you can do this in more than one step.

Step 4:

$$84 - 47 = 37$$

Then fill in the answer next to the question

37 39 44 54 64 74 84

-2 -5 -10 -10 -10 -10

Now count what is inside the jumps.

# Subtraction expanded method (-)

**Step 1**

$$537 - 251 =$$

Partition the numbers, making sure the columns line up accurately.

500	30	7
200	50	1

Minus sign here.

**Step 2**

$$537 - 251 =$$

Start with the units. Top digit minus the bottom digit.

500	30	7
200	50	1
		6

If the top digit is smaller, exchange from the next column.

**Step 3**

$$537 - 251 =$$

Now move on to the tens column. If the top digit is smaller, exchange from the next column.

400	130	7
500	30	1
200	50	6

500 becomes 400      30 becomes 130

**Step 4**

Write answer here.

$$537 - 251 = 286$$

Now complete the calculation.

400	130	7
500	30	1
200	50	6

Take the partitioned answer and put it back together.

$$286$$

# Subtraction compact method (-)

**Step 1**

$$754 - 86 =$$

Lay out your grid, making sure that the columns line up accurately.

754	
86	

Minus sign here.

**Step 2:**

$$754 - 86 =$$

Start with the units. Top digit minus bottom digit.

7	5	4
		14
		8

If the top digit is smaller, you have to borrow from the next column.

Taking 1 from the tens leaves 4.

Adding 10 to the units, makes 14.

**Step 3:**

$$754 - 86 =$$

Move to the next column. Top digit minus bottom digit.

6	14
7	14
8	6
6	8

If the top digit is smaller, you have to borrow from the next column.

Taking 1 from the hundreds column, leaves 6.

Top digit - bottom digit

**Step 4:**

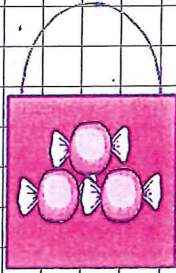
$$754 - 86 = 668$$

Move to the next column. Top digit minus bottom digit.

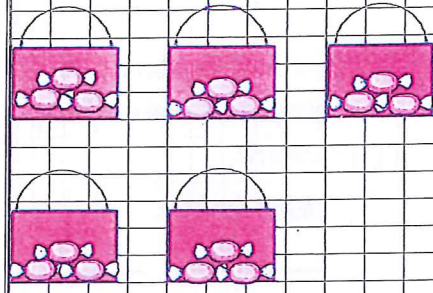
6	14
7	14
8	6
6	8

# Pictorial Multiplication (x)

Problem: There are 3 sweets in 1 bag. How many are there in 5 bags?



Problem: There are 3 sweets in 1 bag. How many are there in 5 bags?



Problem: There are 3 sweets in 1 bag. How many are there in 5 bags?

Answer: 5 groups of 3 makes 15 sweets

$$5 \times 3 = 15$$

# Number line Multiplication (x)



2 groups of 3 makes 6

$$2 \times 3 = 6$$

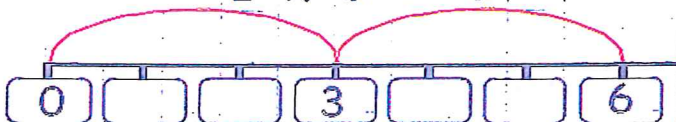


3 groups of 2 makes 6

$$3 \times 2 = 6$$

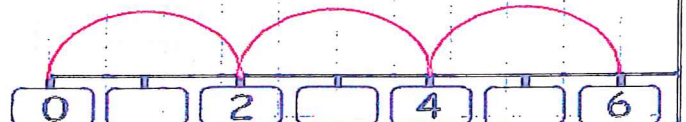
2 groups of 3 = 6

$$2 \times 3 = 6$$



3 groups of 2 makes 6

$$3 \times 2 = 6$$



# Multiplication as Repeated Addition

Step 1: using number line

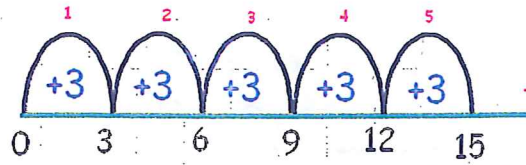
$$5 \times 3 =$$



Start at 0 and make 1 jump of 3

Step 2: using number line

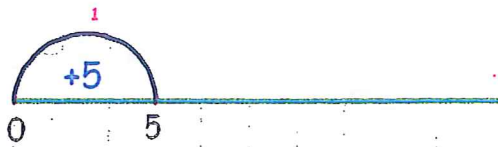
$$5 \times 3 = 3 + 3 + 3 + 3 + 3 = 15$$



Keep making jumps of 3 until you have made 5 jumps.

Step 1: using number line

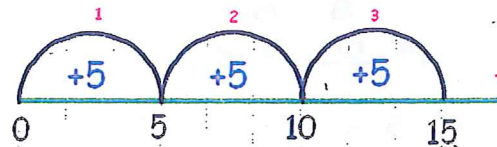
$$3 \times 5 =$$



Starting from zero make 1 jump of 5

Step 2: using number line

$$3 \times 5 = 5 + 5 + 5 = 15$$



Keep making jumps of 5 until you have made 3 jumps.

# Informal Recording (Grid Method) in Multiplication (X)

Step 1

$$13 \times 4$$

Partition 13

x	10	3
4		

Step 2

$$13 \times 4$$

x	10	3
4	40	12

$4 \times 10 = 40$

$3 \times 4 = 12$

Step 3

$$13 \times 4 = 52$$

x	10	3
4	40	12

Add 40

	12	+
	40	
	52	

# Expanded vertical method in Multiplication (X)

Step 1

H	T	U
4	3	
_____		
	6	x
		(6 x 3)
		(6 x 4 0)

Partition 43 into 40 and 3  
 Multiply unit (6) by unit (3)  
 Multiply unit (6) by tens 4

Step 2

H	T	U
4	3	
_____		
	6	x
	1	8
		(6 x 3)
		(6 x 4 0)

Calculate  $6 \times 3 = 18$   
 Put 1 in tens column and 8 in units column

Step 3

H	T	U
4	3	
_____		
	6	x
	1	8
		(6 x 3)
	2	4 0
		(6 x 4 0)

Calculate  $6 \times 40 = 240$   
 Put 2 in hundreds column,  
 4 in tens column and  
 0 in units column

Step 4

H	T	U
4	3	
_____		
	6	x
	1	8
		(6 x 3)
	2	4 0
		+(6 x 4 0)
	2	5 8

Add together 18 and 240  
 to give 258.

# Compact Multiplication

Step 1

5 1 3 x 4 =

Put numbers into columns

5	1	3
_____		
		4
		x

Step 2

5	1	3
_____		
		4
		x
		2

$3 \times 4 = 12$   
 Put 2 in the units column.  
 1(10) is carried over  
 to the tens column.

Step 4

T	H	T	U
5	1	3	
_____			
			4
			x
	2	0	5 2
		1	

Multiply digit in hundreds  
 column by number being  
 multiplied.  $5(100) \times 4 = 20$   
 The 2 is put into the  
 thousands column

Step 3

H	T	U
5	1	3
_____		
		4
		x
	5	2
		1

Multiply digit in tens column  
 by number being multiplied.  
 $1(10) \times 4 = 4$   
 Don't forget to add the digit  
 carried over.  $4 + 1 = 5$

# Compact Long Multiplication

## Step 1

HT U

$$\begin{array}{r} 38 \\ 17 \times \\ \hline 266 \end{array} \quad (38 \times 7)$$

Multiply the units digit by units digit. ( $7 \times 8 = 56$ )

Put 6 in units column and carry 5 into tens column.

Multiply units digit by tens digit ( $7 \times 3 = 21$ ). Don't forget to add the digit carried over ( $21 + 5 = 26$ ) Put 6 in tens column and 2 in hundreds column, to give answer 266.

## Step 2

HT U

$$\begin{array}{r} 38 \\ 17 \times \\ \hline 266 \\ 380 \end{array} \quad (38 \times 10)$$

Multiply the tens digit by units digit. ( $1(10) \times 8 = 80$ )

Remember to add 0 to units column and 8 to tens column

Multiply tens digit by tens digit ( $1 \times 3 = 3$ ). Put 3 in hundreds column to give answer 380.

## Step 3

HT U

$$\begin{array}{r} 38 \\ 17 \times \\ \hline 266 \\ 380 + \\ \hline 646 \end{array}$$

Add the two amounts together

To give the answer

646

# Pictorial Division

## Step 1

Count the total number of objects.



There are 6 cakes

## Step 2

Group the objects into equal groups. eg groups of 2.



There are 3 groups.

## Step 3

6 cakes in groups of 2 makes 3 groups



# Numberline Division

Step 1.

Write the number sentence:

$$15 \div 5 =$$

Step 2.

Draw the numberline:

Draw on the jumps to see how many groups you will get.

Step 3.

Draw the numberline:

There are 3 groups of 5 in 15.

Step 4.

Use the numberline to write the sentence:

$$15 \div 5 = 3$$

# Repeated Subtraction Division

Step 1

Write the number sentence and draw the numberline.  
Remember to include 0.  
Start counting back from 33.

$$33 \div 5 =$$

Step 2.

Subtract groups of 5.  
Count the number of whole groups.

$$33 \div 5 =$$

Step 3.

There are 6 groups.  
How many are remaining to get to 0?

$$33 \div 5 =$$

Step 4.

Complete the number sentence

$$33 \div 5 = 6 \text{ r}3$$



# Division by Chunking

**Step 1: Chunking**

$196 \div 6 =$

Write the calculation in this format

Create your working out box (WO)

**w/o**

$1 \times 6 = 6$   
 $2 \times 6 = 12$   
 $3 \times 6 = 18$   
 $4 \times 6 = 24$   
 $5 \times 6 = 30$   
 $6 \times 6 = 36$   
 $7 \times 6 = 42$   
 $8 \times 6 = 48$   
 $9 \times 6 = 54$   
 $10 \times 6 = 60$

**Step 2: Chunking**

$196 \div 6 =$

**w/o**

$1 \times 6 = 6$   
 $2 \times 6 = 12$   
 $3 \times 6 = 18$   
 $4 \times 6 = 24$   
 $5 \times 6 = 30$   
 $6 \times 6 = 36$   
 $7 \times 6 = 42$   
 $8 \times 6 = 48$   
 $9 \times 6 = 54$   
 $10 \times 6 = 60$

Take away the biggest multiple of 6 you can.

**Step 3: Chunking**

$196 \div 6 =$

**w/o**

$1 \times 6 = 6$   
 $2 \times 6 = 12$   
 $3 \times 6 = 18$   
 $4 \times 6 = 24$   
 $5 \times 6 = 30$   
 $6 \times 6 = 36$   
 $7 \times 6 = 42$   
 $8 \times 6 = 48$   
 $9 \times 6 = 54$   
 $10 \times 6 = 60$

Keep taking away multiples of 6 until you are left with zero or number smaller than 6.

**Step 4: Chunking**

$196 \div 6 = 32 \text{ r } 4$

Now count up multiples of 6 you have taken away. This is your answer.

The number left over is the remainder.

# Division by Shorter Chunking

**Step 1: Chunking**

$196 \div 6 =$

Write the calculation in this format

Create your working out box (WO).

**w/o**

$1 \times 6 = 6$   
 $2 \times 6 = 12$   
 $3 \times 6 = 18$   
 $4 \times 6 = 24$   
 $5 \times 6 = 30$   
 $6 \times 6 = 36$   
 $7 \times 6 = 42$   
 $8 \times 6 = 48$   
 $9 \times 6 = 54$   
 $10 \times 6 = 60$   
 $10 \times 6 = 60$   
 $20 \times 6 = 120$   
 $30 \times 6 = 180$   
 $40 \times 6 = 240$

In short method also find multiples of 10. Stop when your number is bigger than the number you are dividing (196).

**Step 2: Chunking**

$196 \div 6 =$

**w/o**

$1 \times 6 = 6$   
 $2 \times 6 = 12$   
 $3 \times 6 = 18$   
 $4 \times 6 = 24$   
 $5 \times 6 = 30$   
 $6 \times 6 = 36$   
 $7 \times 6 = 42$   
 $8 \times 6 = 48$   
 $9 \times 6 = 54$   
 $10 \times 6 = 60$   
 $10 \times 6 = 60$   
 $20 \times 6 = 120$   
 $30 \times 6 = 180$   
 $40 \times 6 = 240$

Find the biggest multiple of 10 you can take away.

**Step 3: Chunking**

$196 \div 6 =$

**w/o**

$1 \times 6 = 6$   
 $2 \times 6 = 12$   
 $3 \times 6 = 18$   
 $4 \times 6 = 24$   
 $5 \times 6 = 30$   
 $6 \times 6 = 36$   
 $7 \times 6 = 42$   
 $8 \times 6 = 48$   
 $9 \times 6 = 54$   
 $10 \times 6 = 60$   
 $10 \times 6 = 60$   
 $20 \times 6 = 120$   
 $30 \times 6 = 180$   
 $40 \times 6 = 240$

Take away biggest multiple of 6 to leave 0 (no remainder) or a number less than 6 (remainder).

**Step 4: Chunking**

$196 \div 6 = 32 \text{ r } 4$   
or  $32 \frac{4}{6}$

Add up multiples of 6. This is your answer.

The amount left over is the remainder.

# Compact Division

## Step 1: Compact division

$$196 \div 6 =$$

Write the calculation in this format

$$6 \overline{) 196}$$

## Step 2: Compact division

$$196 \div 6 =$$

w/o

- 1 x 6 = 6
- 2 x 6 = 12
- 3 x 6 = 18
- 4 x 6 = 24
- 5 x 6 = 30
- 6 x 6 = 36
- 7 x 6 = 42
- 8 x 6 = 48
- 9 x 6 = 54
- 10 x 6 = 60

$$6 \overline{) 196}$$

Ask how many 6's are in 19. As you can't divide, this 1 carries over to the tens column to make 19.

## Step 3: Compact division

$$196 \div 6 = 32 \text{ r } 4 \text{ Answer}$$

Remember to put 3 in correct column.

$$6 \overline{) 196}$$

w/o

- 1 x 6 = 6
- 2 x 6 = 12
- 3 x 6 = 18
- 4 x 6 = 24
- 5 x 6 = 30
- 6 x 6 = 36
- 7 x 6 = 42
- 8 x 6 = 48
- 9 x 6 = 54
- 10 x 6 = 60

Ask how many 6's are in 19. There are 3 (3 x 6 = 18) with a remainder of 1. This is carried over to the units column. Carry on with next number (2 x 6 = 12) with remainder of 4.

## Compact with decimals

$$196 \div 5 = 39.2$$

$$5 \overline{) 196.0}$$

5 doesn't divide into 1 so 1 is carried into next column.

19 divided by 5 is 3 (5 x 3 = 15) with a remainder of 4.

This remainder is put in the next column to make 46.

46 divided by 5 is 9 with remainder of 1.

10 divided by 5 is 2 (5 x 2 = 10)

# Long division with chunking

## Step 1: Chunking

$$540 \div 24 =$$

Write calculation in this format

w/o

Half 10 x 24 to find 5 x 24

$$5 \times 24 = 120$$

$$24 \overline{) 540}$$

$$1 \times 24 = 24 \quad 10 \times 24 = 240$$

$$2 \times 24 = 48 \quad 20 \times 24 = 480$$

Create your working out box (W/O). Remember you don't need to write all your 24 times table out.

Multiply 1 x 24 by 10 to find x10, x20.

## Step 2: Chunking

$$540 \div 24 =$$

w/o

$$1 \times 24 = 24 \quad 5 \times 24 = 120$$

$$2 \times 24 = 48 \quad 10 \times 24 = 240$$

$$20 \times 24 = 480$$

$$24 \overline{) 540}$$

$$480 - (x20)$$

$$80$$

Take away biggest multiple of 24 you can.

## Step 3: Chunking

$$540 \div 24 =$$

w/o

$$1 \times 24 = 24 \quad 5 \times 24 = 120$$

$$2 \times 24 = 48 \quad 10 \times 24 = 240$$

$$20 \times 24 = 480$$

$$24 \overline{) 540}$$

$$480 - (x20)$$

$$80$$

$$48 - (x2)$$

$$24 - (x1)$$

$$8$$

Keep taking away multiples of 24 until you are left with a zero or number less than 24.

## Step 4: Chunking

$$540 \div 24 = 23 \text{ r } 8 \text{ or } 23 \frac{8}{24}$$

$$24 \overline{) 540}$$

$$480 - (x20)$$

$$80$$

$$48 - (x2)$$

$$24 - (x1)$$

$$8$$

Now count up multiples of 24 you have taken away. This is your answer.

The number left over is the remainder.