



St David's C of E Primary School Parents Booklet

Written Methods of
Calculations
(Years 5 and 6)

Do your children ask for help with their maths homework and start using words like 'partitioning', 'formal columnar method', 'grid multiplication'? The purpose of this booklet is to outline the various calculation methods that children are taught, many of which look different to the methods that you may have been taught in your school days.

We hope the explanations and examples of strategies will help you to assist your child at home.

A lot of emphasis in Mathematics teaching is placed on using mental calculations where possible, using jottings to help assist thinking. As children progress through St David's, and are taught more formal written methods, they are still encouraged to think about what mental strategies they could use first and only use written methods for those calculations they cannot solve in their heads.

It is important to encourage children to look first at the problem and then get them to decide which is the best method to choose - pictures, mental calculations with or without jottings, structured written methods, appropriate equipment even a or calculator.

When faced with a calculation problem, encourage your child to ask:

Can I do this in my head?

Do I need to use a written method?

Should I do this in my head, using drawings or jottings to help me?

Year 5

Addition

Year 6

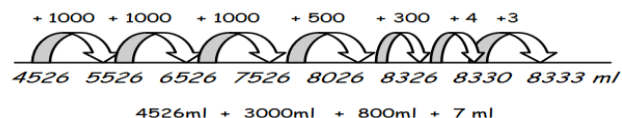
Counting on

Why use a number line?

It helps me to partition the number so it is easier to add on.

Number lines using efficient counting on

$$4526\text{ml} + 3807\text{ml} = 8333\text{ml} = 8.333 \text{ litres}$$



Expanded Column

Why are you saying 20 + 40 and not 2+4?

It helps me to see the value of the number in each column.

$$3327 + 2544 = 5871$$

T H T U
3 3 2 7
+ 2 5 4 4
1 1
6 0
8 0 0
5 0 0 0
5 8 7 1

Standard Compact

Why are you no longer partitioning?

I need am now secure with the value of each column

$$5587 + 3475 = 9062$$

T H T U
5 5 8 7
+ 3 4 7 5
9 0 6 2
1 1 1

Standard Compact

Why are you no longer using headings for your columns?

I am now fully secure with what each column represents.

$$15,587 + 13,475 = 29,062$$

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

Standard Compact – 100,000 +

$$215,587 + 213,475 = 229,062$$

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

Standard Compact -decimals

Surely adding numbers in the hundreds is too simple for year 6?

No, because when we add decimals our numbers are up to 3 decimal places in size.

$$155.87 + 134.75 = 290.62$$

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

Year 5

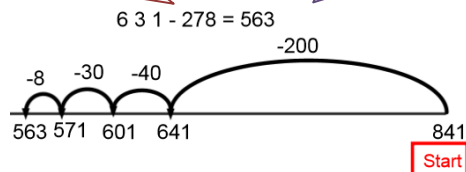
Subtraction

Year 6

Number lines and difference

Why are you starting the number line on the right?

It helps to understand that subtraction is taking away.



Decomposition

Why have you divided the numbers up into HTU?

It's called partitioning and it helps me to subtract each number by size.

$$754 - 286 = 468$$

TH	HT	U			
7	5	4	=	700	+ 50 + 4
-	2	8	6	=	- 200 + 80 + 6

600					
700	+ 40	+ 14			
-	200	+ 80 + 6			

600	+ 140	+ 14			
-	200	+ 80 + 6			
468	=	400	+ 60	+ 8	

Standard Compact

Why are you no longer partitioning?

I am now secure with the value of each column.

HTU
6 14 1
7 5 4
- 2 8 6
4 6 8

Standard Compact 1000 +

Why have you crossed out some numbers and written other numbers in their place?

I do this when I need to borrow from a column with a larger value.

6	14	1
7	5	4
-	4	2 8 6
3	4	6 8

Standard Compact – Multiples of 100 and 1000

7	9	9	1
8	0	0	0
-	4	2	5 7
3	7	4	3

Standard Compact - Decimals

6	14	1
7	5	. 4 7
-	4	2 8 . 6 4
3	4	6 . 8 3

Year 5

Multiplication

Year 6

Grid Method

You've got to do lots of calculations. Don't you get confused?

The layout of the grid helps me organise what I have to do.

$$46 \times 32 = 1472$$

X	40	6	
30	1200	180	= 1380
2	80	12	=+ 92
			1472

Expanded Column Method

What are the brackets for?

$$23 \times 8 = 184$$

HTU	
23	
x 8	
160	(20x8)
24	(3x8)
184	

They remind me which numbers I am multiplying. I also have to remember to line the numbers up as HTU.

Standard Compact method

Why do you multiply the units first?

I multiply the units first so I can carry forward any tens I need to.

$$23 \times 8 = 184$$

HTU	
23	
x 8	
184	
2	

Grid Method

You've got to do lots of calculations. Don't you get confused?

The layout of the grid helps me organise what I have to do.

x	300	70	2
20	6000	1400	40
4	1200	280	8

Grid method with decimals

x	4	0.9	0.02
3	12	2.7	0.06

Expanded column and Standard Compact Method

4346	
x 8	
48	
320	
2400	
32000	
34768	

Th	H	T	U
4	3	4	6
x			8
34	7	6	8
2	3	4	

Year 5

Division

Year 6

Chunking

This looks very complicated?

I look for chunks of 10 first. If I take bigger chunks it makes the calculation quicker and easier. This will help me to understand the short compact method I will be using in year 5 and 6.

$$972 \div 36$$

$$\begin{array}{r} 27 \\ 36 \overline{) 972} \\ \underline{- 720} \\ 252 \\ \underline{- 252} \\ 0 \end{array}$$

Answer:

20x
7x
↓
27

Bus stop

Why do you use this method rather than chunking?

It's quicker and it doesn't involve subtraction, however I need to be confident with my mental calculations involving simple division.

$$\begin{array}{r} 131 \text{ r}23 \\ 32 \overline{) 4215} \end{array}$$