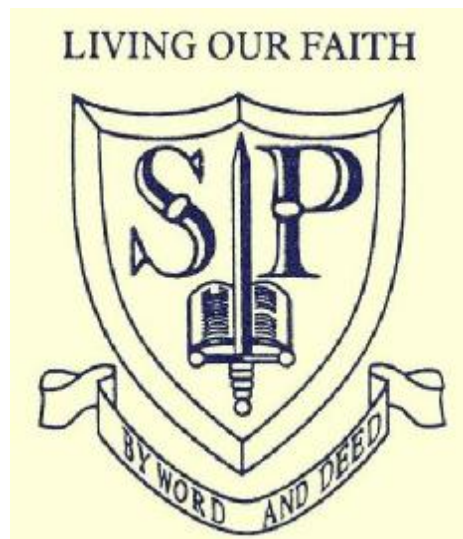


# St. Paul's Primary School



## A Guide to Numeracy at Home

© St. Paul's Primary School, Turner Lane, Hyde, SK14 4AG

## NUMERACY BOOKLET

The information in this booklet is to help you to help your child with maths.

It explains some of the different strategies used for mental and written calculations in school.

It gives a wide variety of ways of helping your child at home.

It also includes a selection of websites, which your child may enjoy.

At St. Paul's we endeavour to provide a clear approach to teaching number. Much time is spent on teaching mental calculation strategies. Up to the age of about 9 (Year 4) informal written recording should take place regularly as it is an important part of learning and understanding. Formal written methods, which you will be more familiar with, should follow only when your child is able to use a wide range of mental calculation strategies.

### USE OF MENTAL STRATEGIES

Here at St. Paul's, we teach a range of mental strategies to pupils. Understanding what numbers mean and what operations mean is the foundation for learning increasingly complex mathematics. Younger students should be able to recognize the number of objects represented in familiar patterns such as the five dots on the side of a die or eight objects arranged in two rows of four.

At Key Stage 1 a lot of time is spent teaching **number bonds** to 10 and 20, so that children know that  $7 + 3$  make 10 and  $17 + 3$  make 20. Facts like this are things children need to *know* rather than work out.

Other facts the children should *know* are **timestables**. Many of us can remember standing up in class and reciting our times tables, but how many of us really understood what we were doing? Learning tables doesn't have to be meaningless or boring. Tables are useful. They are a quick way of handling large numbers and they will help your child to get a feel for whether an answer is sensible or not. But they take time to learn and your child will be building up their knowledge over several years at school. These will also help with **doubles and halves**.

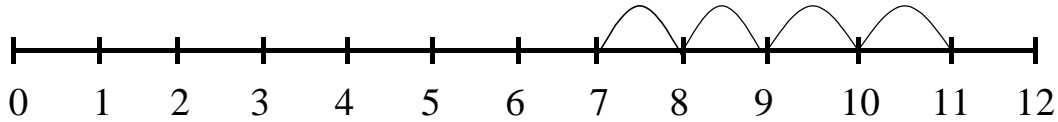
© St. Paul's Primary School, Turner Lane, Hyde, SK14 4AG

## WRITTEN METHODS FOR ADDITION

Younger children are encouraged to use a number line for addition. They are used to support mental calculations and do not need to be drawn to scale.

- Jumping in ones.

$$7 + 4$$



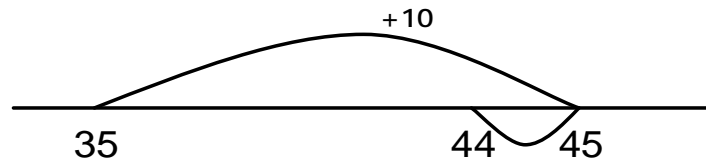
- Partitioning and bridging through 10.

$8 + 7 = 15$  (Children should be able to partition the 7 to relate adding the 2 and then the 5.)



- Add 9 or 11 by adding 10 and adjusting by 1.

$$35 + 9 = 44$$



-1

- Partition into tens and ones.

$$\begin{aligned} 36 + 53 &= 53 + 6 + 30 \\ &= 59 + 30 \\ &= 89 \end{aligned}$$



### Pencil and paper procedures.

When the children are confident with these informal methods we move onto informal pencil and paper procedures.

$$53 + 42 = 95 \text{ (no carrying)}$$

$$\begin{array}{l} 1^{\text{st}} \quad 50 + 3 \\ \underline{40 + 2} \\ 90 + 5 = 95 \end{array}$$

$$\begin{array}{l} \text{then } 53 \\ \underline{42} \\ 5 \end{array}$$

$$\begin{array}{l} \text{onto } 53 \\ \underline{42} \\ 95 \end{array}$$

$$\underline{90}$$

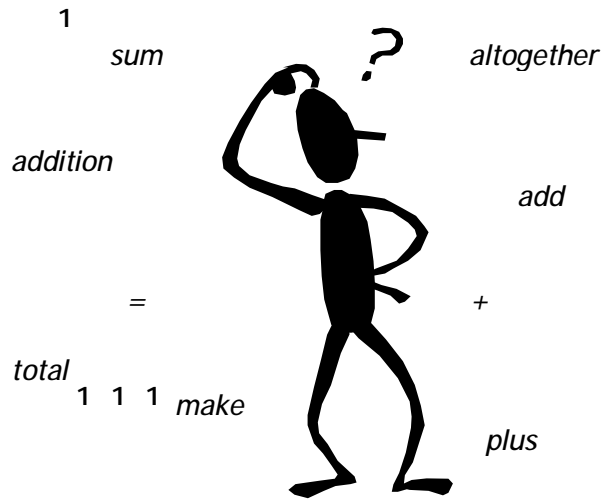
$$95$$

Then onto formal written methods.

Single carry- 
$$\begin{array}{r} 367 \\ +251 \\ \hline 618 \end{array}$$

Double carry- 
$$\begin{array}{r} 367 \\ +185 \\ \hline 552 \end{array}$$
 1 1

Treble carry- 
$$\begin{array}{r} 3587 \\ + 675 \\ \hline 4262 \end{array}$$

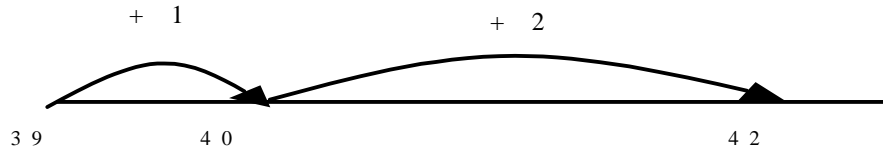


## WRITTEN METHODS FOR SUBTRACTION

Younger children are also encouraged to use a number line for subtraction. They are used to support mental calculations.

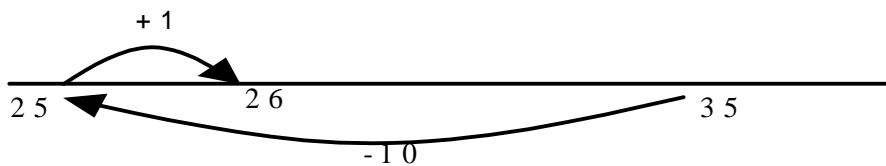
- Find a small difference by counting up.

$$42 - 39 = 3$$



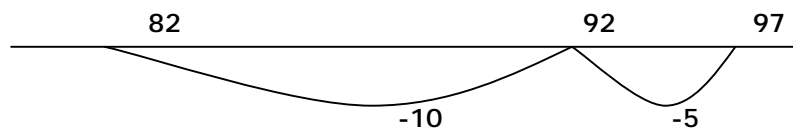
- Subtract 9 or 11. Begin to add/subtract 19 or 21.

$$35 - 9 = 26$$



- Use known number facts and place value to subtract.

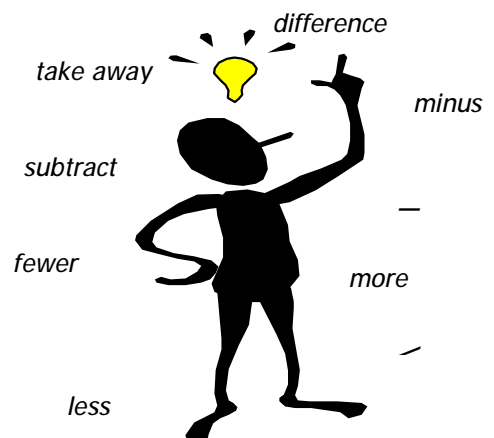
$$97 - 15 = 82$$



With practice, children will need to record less information and decide whether to count back or forward. It is useful to ask children whether counting up or back is the more efficient for calculations such as  $57 - 12$ ,  $86 - 77$  or  $43 - 28$ .

### Pencil and paper procedures.

No carry	$\begin{array}{r} 387 \\ -173 \\ \hline 214 \end{array}$	
Single Carry	$\begin{array}{r} 367 \\ -271 \\ \hline 96 \end{array}$	2 16
Double Carry	$\begin{array}{r} 362 \\ -275 \\ \hline 87 \end{array}$	2 15 12
Treble Carry (4 digits)	$\begin{array}{r} 6237 \\ -4379 \\ \hline 1858 \end{array}$	5 11 12 17



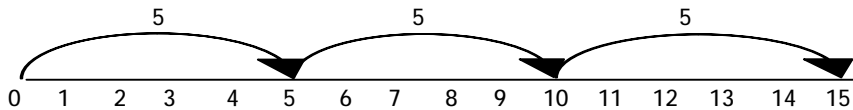
## WRITTEN METHODS FOR MULTIPLICATION

- Using  $\times$  and  $=$  signs and missing numbers

$7 \times 2 = \square$	$\square = 2 \times 7$
$7 \times \square = 14$	$14 = \square \times 7$
$\square \times 2 = 14$	$14 = 2 \times \square$
$\square \times \nabla = 14$	$14 = \square \times \nabla$

- Children can use a number line for multiplication

$5 \times 3$



- Multiplication by grid method – based on the ability to partition.

$29 \times 6 = 174$

X	20	9	Total
6	12	54	174

$28 \times 34 = 840 + 112 = 952$

X	20	8	Total
30	60	24	840
4	80	32	112
			952

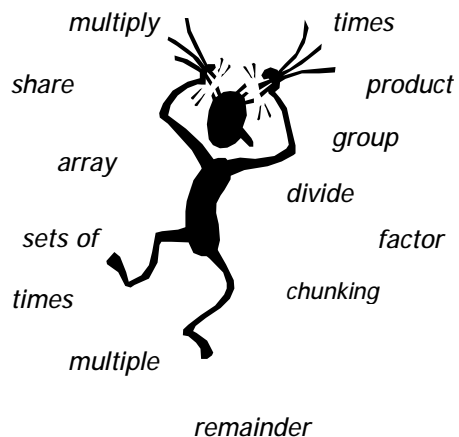
- Partition into tens and units.

$47 \times 6 = 282$

$47 \times 6 = (40 \times 6) + (7 \times 6) = 282$

- Pencil and paper procedures.

$$\begin{array}{r}
 72 \\
 \underline{X38} \\
 2100 \\
 560 \\
 60 \\
 \underline{16} \\
 2736
 \end{array}$$



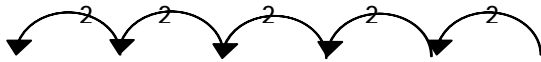
## WRITTEN METHODS FOR DIVISION

- Using  $\div$  and  $=$  signs and missing numbers

$$\begin{array}{ll} 6 \div 2 = \square & \square = 6 \div 2 \\ 6 \div \square = 3 & 3 = 6 \div \square \\ \square \div 2 = 3 & 3 = \square \div 2 \\ \square \div \nabla = 3 & 3 = \square \div \nabla \end{array}$$

- Children can use a number line for division.

How many 2s are there in 10?  $10 \div 2 =$



• 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

$196 \div 6$  is approximately just over  $180 \div 6 = 30$

Short division (HTU  $\div$  U)

$$196 \div 6$$

$$\begin{array}{r} \underline{32 \text{ r } 4} \\ 6 \overline{)196} \end{array}$$

$434 \div 14$  is nearly  $450 \div 15 = 30$

Long division (HTU  $\div$  TU)

$$\begin{array}{r} \underline{31} \\ 14 \overline{)434} \\ \underline{-42} \downarrow \\ 14 \\ \underline{-14} \\ 0 \end{array}$$

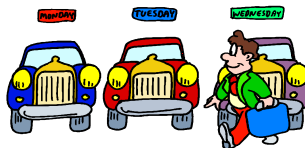
## HOW YOU CAN HELP YOUR CHILD AT HOME

- ✓ It is most important that you *talk & listen* to your child about their work in maths. It will help your child if they have to explain to you.
- ✓ Share the maths activity with your child and discuss it with them.
- ✓ Be positive about maths, even if you don't feel confident about it yourself.
- ✓ Remember, you are not expected to teach your child maths, but please share, talk and listen to your child.
- ✓ If your child cannot do their homework do let the teacher know by either writing a note in your child's book or telling the teacher.
- ✓ A lot of maths can be done using everyday situations and will not need pencil and paper methods.
- ✓ Play games and have fun with maths!

Here are some examples of how you can include mathematics at home:

### COUNTING

- ◆ Collections of objects – shells, buttons, pretty stones.
- ◆ Cars on a journey e.g. how many red cars?
- ◆ Animals in a field e.g. sheep, cows.
- ◆ Stairs up to bed, steps etc.
- ◆ Sports scores – cricket averages, goal averages.
- ◆ Pages in a storybook.
- ◆ Counting up to 10, 20, and 100 – backwards and forwards.
- ◆ Counting buttons, shoes, socks as a child gets dressed.
- ◆ Tidy a cupboard or shelf and count the contents e.g. tins, shoes, etc.
- ◆ Counting particular vehicles on a journey e.g. Eddie Stobart lorries, motorbikes, etc.





## SHOPPING

- £ Looking at prices
- £ Calculating change – which coins, different combinations.
- £ Weighing fruit and vegetables in the supermarket.
- £ Counting pocket money.
- £ Reading labels on bottles, packets, in order to discuss capacity, weight, shape and colour.
- £ Estimating the final bill at the end of shopping while waiting at the cash out.
- £ Calculating the cost of the family going to the cinema, swimming baths, etc.



## TIME

- 1 Looking at the clock – identify the numbers telling the time using analogue and digital clocks.
- 1 Calculating how long a journey will take looking at train/bus/airline timetables.
- 1 Using TV guide to calculate the length of programmes.
- 1 Programming the video or the microwave.
- 1 Looking at the posting times on the post box.
- 1 Discussing events in the day e.g. teatime, bed time, bath time.
- 1 Setting an alarm clock.



## SEQUENCING

- The main events of the day;
- Routines and what comes next;
- The parts of a recipe, set of instructions;
- Getting dressed;
- Tying shoe laces;
- Imagine you have a week to do whatever you wish. Plan your week on the timetable;

	Morning		Afternoon	
Monday				
Tuesday				
Wednesday				
Thursday				
Friday				
Saturday				
Sunday				

## BEAT THE CLOCK

Time your child as they do one of the following:

- Count back from 100 in tens.
- Count back from 75 in fives.
- Starting at six, count up in tens to 206.
- Starting at 39, count up in twenties to 239.
- Starting at 67, count up in thirties to 367.



Can they beat their record?

## SORTING AND MATCHING

- 2 Setting the table and sorting cutlery. This teaches 1 to 1 correspondence and is helpful for you!
- 2 Sorting clothes for washing – size, colour.
- 2 Matching pairs of socks, gloves, shoes.
- 2 Sorting groceries.



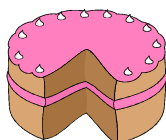
## REASONING

- ? Laying the table for four people, 'How many knives, forks and spoons will I need altogether?'
- ? Planning a TV viewing session, 'How long will the programme last?'



## ACTIVITIES USING NUMBERS AROUND US

- Using car number plates – add the digits to find biggest, smallest and total.
- Sharing out sweets, toys etc in groups of 2, 3, 4, 5, 6 etc to help with times tables.
- Using telephone numbers – value of each digit.
- Using sandwiches to show fractions  $\frac{1}{2}$ ,  $\frac{1}{4}$ .
- Using a round sandwich cake to show fractions  $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{6}$ ,  $\frac{1}{8}$  etc.



### Pizza please!

Your pizza costs £3.60. Cut it into six equal slices.

How much does each slice cost?

The answer is that each slice costs 60p.

- How much is half a slice?
- How much do two slices cost?
- How much does half ( $\frac{1}{2}$ ) of the whole pizza cost?

What if you cut your pizza into four equal slices (quarters)?

- How much does one slice ( $\frac{1}{4}$ ) cost now?
- How much does half cost now?
- Is it the same, more or less than above?



## NUMBER GAMES

- ¥ Skipping – every skip count 2, 3, 4 etc.
- ¥ Hop scotch
- ¥ Ludo
- ¥ Snakes and ladders
- ¥ Dominoes
- ¥ Cards – number sequences
- ¥ Cards – Rummy, Patience, Pontoon, Snap
- ¥ Bingo
- ¥ Yahtzee
- ¥ Darts
- ¥ Heads & Tails and keep a tally
- ¥ Chess and draughts
- ¥ Monopoly
- ¥ Computer programmes
- ¥ Beetle
- ¥ Connect 4
- ¥ Counting games to practise times tables
- ¥ I spy a number in town, on a journey
- ¥ Number jigsaws
- ¥ Clock golf, croquet, crazy golf on holiday to help counting
- ¥ Snooker and pool
- ¥ Number Lotto
- ¥ Dot to dot with numbers
- ¥ Skittles
- ¥ Happy families
- ¥ Whist
- ¥ Cribbage
- ¥ Number crosswords, dot to dot, puzzles



The level of mathematical challenge in a board game can be altered by introducing more dice & either adding or subtracting the numbers thrown.

## WEB SITES

- 8 [www.counton.org](http://www.counton.org) has lots of ideas and games to play.
- 8 [www.bbc.co.uk/schools](http://www.bbc.co.uk/schools) games to play and links to many subjects.
- 8 [www.dfes.gov.uk/homework](http://www.dfes.gov.uk/homework)
- 8 [www.woodlands-junior.kent.sch.uk](http://www.woodlands-junior.kent.sch.uk)
- 8 [www.nrich.maths.org](http://www.nrich.maths.org)
- 8 [www.echalk.co.uk/Maths/PrimaryNationalStrategy\\_Yr6/DfES-MathsActivitiesforyear6/index.html](http://www.echalk.co.uk/Maths/PrimaryNationalStrategy_Yr6/DfES-MathsActivitiesforyear6/index.html)
- 8 [www.muddlepuddle.co.uk](http://www.muddlepuddle.co.uk)
- 8 [www.whizz.com](http://www.whizz.com)
- 8 [www.mad4maths.com](http://www.mad4maths.com)
- 8 [www.teachingtables.co.uk](http://www.teachingtables.co.uk)
- 8 [www.activityvillage.co.uk](http://www.activityvillage.co.uk)