## Maths

Workshop KS1 17.10.19



Thinking is at the heart of Mathematics and therefore should be at the heart of Mathematical teaching and learning. At St Anne's we believe that all children can do Maths (and do it well).


## Aims of today's meeting

- To get an insight into how Maths is taught at St Anne's.
- To gain an understanding of the National Maths curriculum and expectations.
- To take part in a variety of Maths activities.
- To take away some ideas to support your children at home.


## Warm Up..................



## Maths



## The Maths Curriculum

Children should:

- Become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- Reason mathematically by following a line of enquiry, conjecturing relationships and generalisations and developing an argument, justification or proof using mathematical language.
- Solve problems by applying their mathematics to a variety of problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.


## Teaching for Mastery

- Access
- Pattern
- Making Connections

Coherence

- Procedural
- Conceptual
- Making Connections
- Chains of Reasoning
- Making Connections Small steps are easier to take
- Number Facts
- Table Facts
- Making Connections


# Progression of expectations 

| EYFS | Year 1 | Year 2 |
| :--- | :--- | :--- |
| Count reliably up to 10 objects | Count to and across 100, forwards and <br> backwards, beginning with 0 or 1, or from any <br> given number | Pupils count fluently forwards and backwards <br> in 10s, starting at any 1 or 2 digit number |
| Estimate how many objects they can see <br> and check by counting | identify and represent numbers using objects <br> and pictorial representations including the <br> number line | Place and identity 2 digit numbers on a <br> number line using their understanding of how <br> close the numbers are to multiples of 10 |
| Use language such as 'more' or 'fewer' to <br> compare two numbers | use the language of: equal to, more than, less <br> than (fewer), most, least | Pupils recognise commutativity as the <br> relationship between subtraction and <br> addition. Subtraction meaning take away, <br> difference, how many more. |
| Recognise numerals 1-9 |  | read and write numbers from 1 to 20 in <br> numerals and words. |
| Count aloud in ones, twos, fives or tens | count, read and write numbers to 100 in <br> numerals; <br> count in multiples of twos, fives and tens | count in multiples of twos, threes, fives and <br> tens from any given number |

## Now it's your

## turn.........Using the resources, make the



## Place Value

- Place value is at the heart of the number system. All digits have a value and a secure understanding of this will enable children to use and understand different calculation methods.
- We constantly ask our children to tell us what each digit in a number represents.
- E.g. 24 - The 2 represents 2 tens, the 4 represents 4 ones.


## Concrete, Pictorial to Abstract

|  |  |  |
| :---: | :---: | :---: |
| 10 (1) | -12 | "** |
| 10 (1) |  |  |
|  | -33 |  |
|  |  |  |
| 0 | -42 |  |
| $23-12=11$ |  |  |
|  |  |  |



## Number Sense!

Children need to understand our number system, starting with counting numbers, building an understanding of how our numbers work and fit together. This includes exploring place value and comparing and ordering numbers then applying this understanding in different contexts.


# How many different ways can you make 5? 



## Fluency

- It is important that children recognise number bonds, different pairs of numbers with the same total and that they are fluent in this.
- Children need to be secure on bonds to 10 by the end of Year 1.
How many ways to make $5 ?$
5 red and 0 yellow
4 red and 1 yellow
3 red and 2 yellow
2 red and 3 yellow
1 red and 4 yellow
0 red and 5 yellow


## Bonds to 10 \＆ 20

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## Fluency

- Once children are secure on number bonds they are then able to apply this to derived number facts. Using known facts. What facts do you need to solve $7+5$ ?

- This grid shows the number facts children should be secure on by the end of Year 1 and

2. 



2018 Arithmetic Paper - you have 1 minute

## Have a go!

$2398-\square=28$

$$
74-47=\square
$$

## $\square+8=20$

24

$$
120 \div 10=\square \frac{1}{4} \text { of } 24=
$$

## End of KS1 SATs

- At the end of KS1 (Year 2) children will take their end of KS1 SATs.
- This is done in school, with their class teachers. Children are encouraged to do their best.
- The children are expected to complete 2 Reading papers, 2 Maths papers and 2 SPaG papers. This is spread out throughout the week.
- The Maths SATs consist of an arithmetic paper and a reasoning paper.
- The Arithmetic paper which contains 25 questions. Children will have 20 minutes to complete this although this is not strictly timed.
- The Reasoning paper consists of 35 questions which can be read out to the children. The children have 30 minutes to complete this, although this is not strictly timed.


## Have a look at the papers Any Qs? Surprises?

## 2018 Reasoning Panor



Use only these numbers to make a different number sentence each time.

One is done for you.

$$
5 \times 8=40
$$

Write the missing number in the box.

$$
13+6=10+\square
$$



Write two numbers that are greater than 20 to make this subtraction correct.

$$
\square-\square=2
$$

## Addition Calculation Policy

## DEVELOPING UNDERSTANDING OF ADDITION

| Year | NC Objectives | Examples |
| :--- | :--- | :--- |
| EYFS | Children count reliably with <br> numbers from one to 20, <br> place them in order and <br> say which number is one <br> more or one less than a <br> given number. <br> Using quantities and <br> objects, they add and <br> subtract two single-digit <br> numbers and count on or <br> back to find the answer. <br> They solve problems, <br> including doubling, halving <br> and sharing. | Adults to use age appropriate vocabular <br> with children, this includes a range of <br> words such as add, plus, given. |

## Key Language

Add, plus
More than
One more
double
equal, total, altogether parts
groups
bigger
smaller,
(EXC greater than < less than >)

## Misconception

Teen numbers can be difficult for children due to the language e.g. thirteen understanding the 'ten' within teen numbers and the corresponding amount of ones.

## Models and Images

What is one more than 8 ? Can you still see the 8 ? Point to the 'one more'. What number do we have now?

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|,*) (*)**)
```

Show me 4 on your number line. Now jump forward two. What number have you landed on? Two more than four is six.

$$
4+2=6
$$



Children to use known items around them to count using 1-1 correspondence.
How many dinosaurs are there?


What about if I give you two more? How many are there now?


## There are 2 birds. Another bird flies in. How many are

there altogether?


Show me 1 more. Will this number get bigger or smaller?

## $45+25=$

## Subtraction Calculation Policy

Year 1 Represent and use number bonds and related subtraction facts within 20 Recall doubles and halves up to 20

Recall addition and subtraction facts up to 5 .

Identify near doubles/halves using doubles already known.

Add and subtract one-digit and two-digit numbers to 20 , including

Add more than two numbers.

Read and interpret mathematical statements involving addition ( + ), subtraction (-) and equals (=) signs

Key Language
Subtract, take away, parts, whole, less than, inverse, bonds.

Teachers to introduce partitioning as a way of subtracting numbers that go beyond a boundary. Addition and subtraction should be taught together to enable children to see the link.
e.g. $11-4=11-1-3=7$


## Misconception

Subtraction means the number always gets smaller. Introduce adding zero.

There is no link to + or -/
Children should be give appropriate apparatus to subtract numbers beyond 20. Children to use resources and pictorial representation before moving on to the abstract.

What does halving mean? Can you show me? It means subtracting part of the number. What numbers can we double?


$$
8-4=4 \text { or } 8
$$



What does the 4 represent? What does the 8 represent?
Reasoning - An odd number - an odd number = an odd number. Is this always/sometimes/never true?
Start at the larger number on the number line and count back in ones or in one jump to find the answer. Children to progress to jump to the next multiple of 10 .

$74-47=$

## Multiplication Calculation Policy

- Recall and use multiplication and division facts for the 2,5 and 10 multiplication tables, including recognising odd and even numbers
- Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication $(x)$, division ( - ) and equals ( $=$ ) signs
- Show that multiplication of 2 numbers can be done in any order (commutative) and division of 1 number by another cannot
- Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts
Key Language
Multiply, multiplication, times, repeated addition, groups of, equal, doubling, product, factor, larger.

Children need to be able to make links between the numbers they are counting between.
e.g. $5 x$ odd no $=$ odd number
$5 x$ even no $=$ even (and a multiply of 10)

## Misconception

$3 \times 10>5 \times 7$ because 10 is a bigger multiply.

Children do not make links between prior knowledge or do not have a strong understanding of =

## Misconception

23 is a multiply of 3 because it ends in a 3.

Find different ways to find the answer to $12 \times 4$.


\section*{Build multiplication facts on counting stick: <br> 

Bar Model:


A bar model is a good way of showing the repeated addition and equal groups

## Represent multiplication facts using


$5 \times 3=15$

Write these addition sentences as multiplication sentences.
$10+10+10+5+5=$
$2+2+2+4=$
$2+2+4+4=$
$5+5+5+2+3=$

Division Calculation Policy

DEVELOPING UNDERSTANDING OF DIVISION


## Times Tables Rock Stars



## Activity ideas



- Draw a line. Mark 0 and 10 (or any number range needed). Roll a dice. Decide where that number would go and write it in. Repeat. This could also be played with playing cards. You can also start at any number and include whatever your child needs, eg decimals or fractions.
- Inbetweenies

Start by asking for a 2 digit number. Place it at the start of the line. Now ask for a higher 2 digit number and place at the end of the line. Now keep asking for numbers in between until you start having to think about decimals and then the fun begins!


Nice version!
Have a target total and the winner is whoever gets closest to that target without going bust.

Nasty version!
You are allowed to place digits on your partner's board to make it trickier for them.


This game can be played in a number of ways, including with decimals. Either play it by seeing who can end up with the highest (or lowest) number. You need to decide beforehand. Using a 1-9 dice, take turns to roll it. Whatever number you land on needs to be placed on one of your squares. If you are making a 3 digit number, for example, and you are seeing who gets the highest number then you would be hoping to place any larger numbers in the hundreds column and smaller ones in the ones column, but you never know what you will roll! You can also play a version where you add numbers and decide on your target total at the start of the game.


## Questions



