



# THE CRAYLANDS SCHOOL MATHS PARENTS WORKSHOP

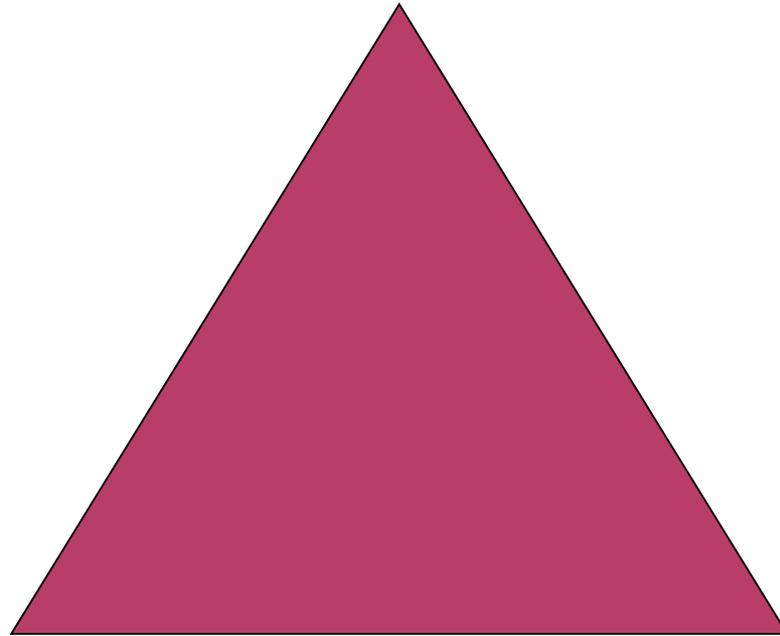
Maths Leader  
Mrs R. Johnson

# NATIONAL CURRICULUM 2014

- ◉ Aims:
- ◉ Become **fluent** in the fundamentals of Maths...so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- ◉ **Reason** mathematically
- ◉ **Solve problems** by applying their maths to a variety of routine and non routine problems.

# Aims of the new Maths NC:

Reason  
mathematically



Problem  
solving and  
using and  
applying in  
context

Fluency with  
conceptual  
understanding

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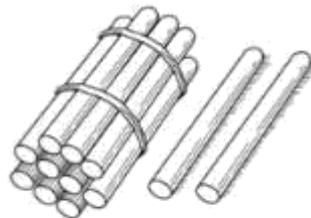
# WHAT DIFFERENT AREAS ARE COVERED IN MATHS?

- The new curriculum classifies these areas calling them domains.
- There are 7 domains in total these are; number and place value, addition and subtraction, multiplication and division, fractions, measurement, geometry shapes, geometry position and direction.
- Each domain can link very closely to others and be taught in a cross curricular way. This makes the teaching more flexible and adaptable for schools. It also helps the children make clear links with the different areas of maths and adapt the strategies they have already learnt.

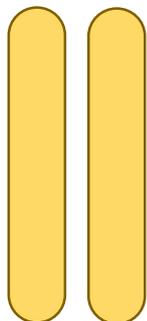
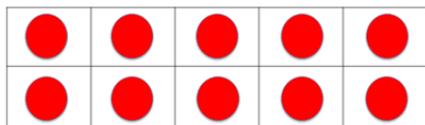
# MASTERY APPROACH TO TEACHING NEW CONCEPTS: **CPA**

1. Concrete (use real objects and equipment)
2. Pictorial (pictures and visual representations including part-whole models like bar models see calculation policy)
3. Abstract (including written methods)

# A RANGE OF RESOURCES



100	10	1



# WHY IS CPA SO IMPORTANT?

- It gives children a deep understanding of Maths
- Concrete resources give time for pupils to investigate a concept first - and then make connections when formal methods are introduced
- Children need to be exposed to **multiple representations** of a concept to develop a deeper understanding

# WHY IS CPA SO IMPORTANT?

- ◉ The pictorial stage allows pupils to demonstrate and sustain their understanding of mathematical concepts and processes
- ◉ The abstract stage should run alongside the concrete - pictorial stage (enables pupils to read mathematical statements and show their understanding using concrete resources or pictorial representations).

# CPA

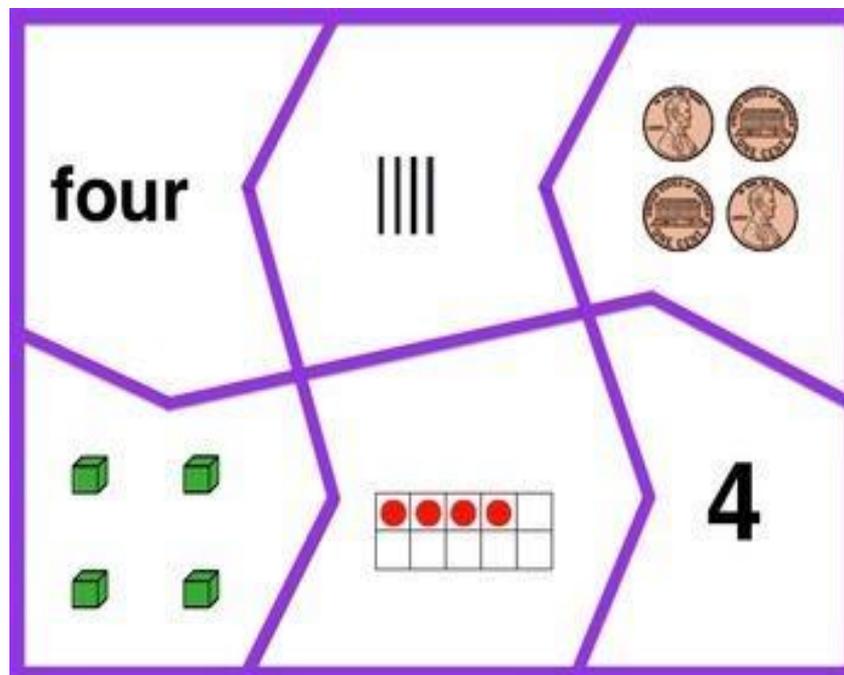
- ⦿ CPA becomes elements of many lessons
- ⦿ Build it, draw it, solve it (all lessons incorporate elements of problem solving and reasoning)
- ⦿ The idea is that children start with mathematical fluency and then move onto applying this through reasoning and problem solving in the lesson.

# STRATEGIES TO SUPPORT MASTERY: MULTIPLE REPRESENTATIONS

- Crucial to deep understanding
- Representing mathematics using objects and pictures to represent abstract concepts.

What concept are these pictures representing?

How has the concept been represented?



# WHAT IS 45?



# Fluency



Fluency involves using this understanding to:

- **notice things**
- **make connections between what is known and what is unknown**
- **make decisions.**

A key element of fluency is reasoning; practice that focuses on reasoning strategies, looking for connections, patterns and relationships, is likely to be more effective (see Baroody, 2008).

No Nonsense Number Facts 2017

# WHAT LEVEL OF REASONING HAVE YOU ACHIEVED?

Reasoning progression:

1. Describing Level
2. Explaining Level
3. Convincing Level
4. Justifying Level
5. Proving Level

1. Describe, what did you do?

How did you start? What did you notice?

2. Explain, Why did you use the method you did? I think this because ... I tested this for ...

3. Convince, True or false? Why?

Can you Convince yourself? Convince your friend? Convince the teacher? Is it always True? For every possibility?

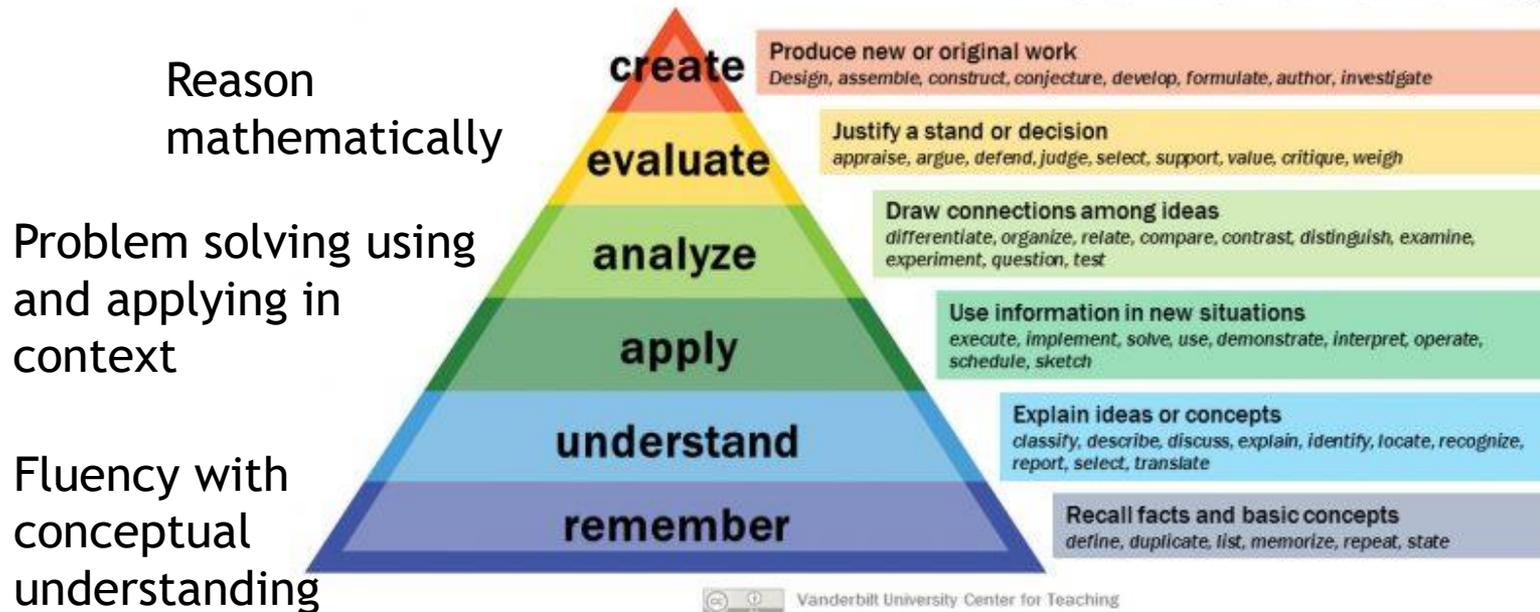
4. Justify your statement is true?

Can you give examples, justify your statements, show a chain of reasoning?

5. Prove your conclusion? What will your proof look like? Can you prove it works for every case? How can prove it to your friend or your teacher?

# HOW WE USE BLOOM'S SKILLS IN MATHS

## Bloom's Taxonomy



# SCHEME: WHITE ROSE HUB

- ◉ Long term plan
- ◉ Medium term planning
- ◉ Teachers plan weekly and set up lessons to incorporate CPA mastery approach
- ◉ Each lesson is differentiated to meet the needs of the children with extension tasks and challenges for children to move on to
- ◉ New curriculum strongly emphasises that children who are more able (GDS) should be given deeper problems rather than moving onto the next year content. **“Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before acceleration through new content.”**

# KEY STAGE 1 SATS

Overall judgement is based upon Teacher Assessment (not exam)

Evidence from: Maths Books, Teacher observations and assessments and from Practice Tests.

Two Maths Papers to sit in May: Not strictly timed

Arithmetic (30 minutes)  
Reasoning (45 minutes)

# EXAMPLE SATS QUESTIONS:

1  $5 + 7 = \square$

4  $17 - 6 = \square$

7  $\square + 5 = 9$

10  $36 + 24 = \square$

14  $2 \times 0 = \square$

16  $3 \times 3 = \square$

17  $35 \div 5 = \square$

24  $\frac{1}{3}$  of 21 =  $\square$

27 Sita has **50** raisins.

She gives **23** to Ben.

She gives **15** to Amy.

How many raisins does Sita have left?



Show  
your  
working

raisins

# END OF KEY STAGE 1

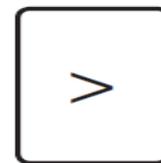
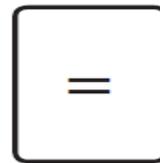
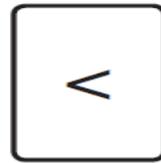
$15 + 11 = \square$

$55 - 17 = \square$

$\square - 9 = 8$

7

Look at these signs.



Write the correct sign in each box.

$85 \square 58$

12 Apples cost **10p** each. Pears cost **25p** each.



Amy buys **1 apple** and **2 pears**.

How much **change** does she get from **£1**?

11

Tick (✓) the number sentences that are correct.

$2 + 6 = 6 + 2 \quad \square$

$5 \times 6 = 6 \times 5 \quad \square$

$6 - 2 = 2 - 6 \quad \square$

# HOW CAN YOU HELP AT HOME?

- Ensure children have access to times table rock stars and learn mental maths skills for their year group
- Make links to maths with your child (giving change in shops, signs, numbers on doors)
- Talk about and use mathematical vocabulary with your child
- Use good maths websites:
  - [ictgames.co.uk](http://ictgames.co.uk)
  - [primaryresources.co.uk](http://primaryresources.co.uk)
  - NRICH
  - Twinkl
  - [Topmarks.co.uk](http://Topmarks.co.uk)
  - [Mathgametime.com](http://Mathgametime.com)
  - [Theschoolrun.com](http://Theschoolrun.com)
- See leaflet for further ideas

# HOW TO HELP Y1/Y2 CHILDREN WITH NUMBER FACTS

- ◉ To learn number bonds to 10, 20, 100 off by heart. (oooo 4 + oooooo 6 = 10 understanding)
- ◉ Doubling and halving facts to 20 e.g.  $3=6$   $10=5$
- ◉ Counting forwards and backwards to 100 from any number.
- ◉ Learn the names and properties of 2d and 3d shapes.
- ◉ Counting on and back mentally with fingers. ( $11-5=6$ )
- ◉ Counting in 2's, 5's and 10's.
- ◉ To know odd and even numbers to 100.

# KS2 SATS

- ⦿ KS2 Paper 1 Arithmetic (40 minutes)
- ⦿ KS2 Paper 2 Reasoning (35 minutes)
- ⦿ KS2 Paper 3 Reasoning (35 minutes)
  
- ⦿ This year in KS2 children needed 61 marks to gain the expected standard. If pupils achieved 30/40 in arithmetic they only then needed to gain 31 combined on the reasoning papers(44% of reasoning correct).

# END OF KEY STAGE 2

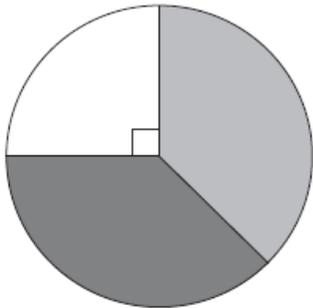
6

Write the missing digits to make the addition correct.

$$\begin{array}{r}
 1 \quad \square \quad 1 \\
 + \quad \square \quad 1 \quad \square \\
 \hline
 9 \quad 0 \quad 0
 \end{array}$$

A shop sells drinks.

The pie chart compares the money a shop took last year for water, juice and soft drinks.



Key:

- Water
- Juice
- Soft drinks

The shop took £8264 for soft drinks.

Sales of water and juice were equal.

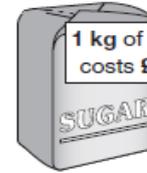
How much money did the shop take for juice last year?

One toffee apple needs:

- 1 stick,
- 100g of sugar,
- 1 apple.



50 sticks  
cost £6.25



1 kg of sugar  
costs £0.99



100 apples  
cost £22.50

Children buy just enough sticks, sugar and apples to make 100 toffee apples.

They sell all 100 toffee apples for £1 each.

The profit goes to charity.

Work out how much money goes to charity.

$$555 + 656 =$$

$$1 \frac{1}{7} - \frac{3}{7} =$$

$$120 - 15 \times 5 =$$

2	8	1	6	5	2		

	2	3	7	6	
x			1	5	

# YEAR 4 TIMES TABLE TEST

- From 2019 -2020 schools will be required to administer an online Multiplication Table Check (MTC)
- The test will assess whether children are fluent with times tables up to and including 12 x 12
- Schools will have a 3 week window in which to administer the test
- Teachers will have the flexibility to administer the check to individual pupils, small groups or the whole class at the same time
- As a school we use times table rockstars to develop times table fluency and knowledge

# HOW TO HELP Y3-Y6 CHILDREN WITH NUMBER FACTS

- ◉ Learn times tables for numbers up to  $12 \times 12$
- ◉ Doubling/halving to 100
- ◉ Number bonds to 10/20/50/100
- ◉ Counting in sequences
- ◉ Fractions of quantities and shapes
- ◉ Read, write, order and compare numbers know what each digit means
- ◉ Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000