

Mastery in Mathematics

“The answer is only the beginning...”

Wednesday 20th January 2016

Objectives

The background features a stylized landscape with green hills and a tree. The tree has a brown trunk and a canopy of green circles. A yellow sun is visible in the upper right. The overall style is clean and modern.

- **To introduce the concept of mastery.**

What does mastery mean to you?

- **All pupils can and will achieve**
- **Challenge depth of understanding**
 - **Develop fluency**
- **Carefully chosen examples supporting the opportunity to make connections**
- **Keeping the class working together**
 - **Longer time on key topics**

A mathematical concept or skill has been mastered, through **exploration, clarification, practice and application over time**, a person can represent it in **multiple ways**, has the **mathematical language** to be able to **communicate related ideas**, a can think mathematically with the concept so that they can **independently apply it to a totally new problem in an unfamiliar situation.**

How does this link to our national curriculum?

What is 'Maths - No Problem!'

It encourages children to talk through their learning and discuss the strategies they like best.
Year 2 Teacher

It breaks down topics into small, achievable steps that can be built on.
Year 2 Teacher

The children are able to articulate their understanding clearly, allowing them to learn from each other.
Year 2 Teacher

The clear visuals enable the children to see numbers represented in many different ways.
Year 1 Teacher

The CPA approach enables children to see each concept in stages that build towards mastery.
Year 1 Teacher

Spending longer on each topic has meant that children have been able to master their basic number facts.
Year 1 Teacher

Early Mathematics



Jojo Chart

1



$1 \times 1 = 1$

$1 \times 2 = 2$

$1 \times 3 = 3$

$1 \times 4 = 4$

$1 \times 5 = 5$

$1 \times 6 = 6$

$1 \times 7 = 7$

$1 \times 8 = 8$

$1 \times 9 = 9$

2

$2 \times 2 = 4$

$2 \times 3 = 6$

$2 \times 4 = 8$

$2 \times 5 = 10$

$2 \times 6 = 12$

$2 \times 7 = 14$

$2 \times 8 = 16$

$2 \times 9 = 18$



3

$3 \times 3 = 9$

$3 \times 4 = 12$

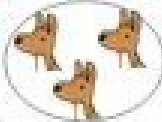
$3 \times 5 = 15$

$3 \times 6 = 18$

$3 \times 7 = 21$

$3 \times 8 = 24$

$3 \times 9 = 27$



4

$4 \times 4 = 16$

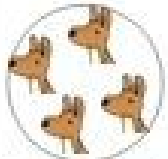
$4 \times 5 = 20$

$4 \times 6 = 24$

$4 \times 7 = 28$

$4 \times 8 = 32$

$4 \times 9 = 36$



5

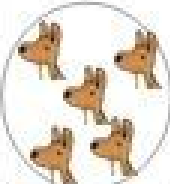
$5 \times 5 = 25$

$5 \times 6 = 30$

$5 \times 7 = 35$

$5 \times 8 = 40$

$5 \times 9 = 45$



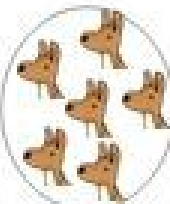
6

$6 \times 6 = 36$

$6 \times 7 = 42$

$6 \times 8 = 48$

$6 \times 9 = 54$

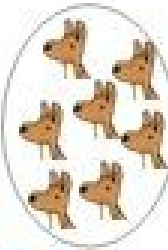


7

$7 \times 7 = 49$

$7 \times 8 = 56$

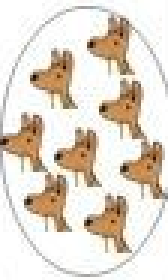
$7 \times 9 = 63$



8

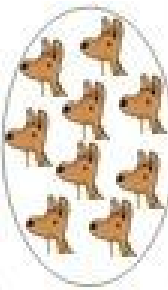
$8 \times 8 = 64$

$8 \times 9 = 72$



9

$9 \times 9 = 81$



Mastery in Key Stage 2

WALT: use a formal written method for addition

19/1/16

Section 1:

- a) $2.56 + 0.07$
- b) $1.28 + 0.8$
- c) $1.09 + 0.03$
- d) $3.9 + 0.6$

Section 2:

- a) $2,145 + 574$
- b) $4,681 + 325$
- c) $3,593 + 217$
- d) $5,754 + 165$

Section 3:

- a) $145,267 + 3,545$
- b) $217,615 + 1,494$
- c) $671,117 + 9,873$
- d) $515,616 + 5,874$

Extension:

Section 4:

- a) $1,756 + 2,358$
- b) $0.006 + 7.586$
- c) $2.516 + 0.684$
- d) $17.54 + 2.36$

a)

$$\begin{array}{r} \quad \quad 5 \quad \quad \\ \quad \quad \underline{\quad} \quad \quad \\ + \quad 4 \quad \underline{\quad} \quad 8 \\ \hline 1 \quad 3 \quad 2 \quad 7 \end{array}$$

b)

$$\begin{array}{r} \quad 3 \quad \underline{\quad} \quad \\ \quad \quad \underline{\quad} \quad \quad \\ + \quad \underline{\quad} \quad 7 \quad 6 \\ \hline 1 \quad 1 \quad 3 \quad 4 \end{array}$$

c)

$$\begin{array}{r} \quad \quad 6 \quad 0 \\ \quad \quad \underline{\quad} \quad \quad \\ + \quad 2 \quad \underline{\quad} \quad \quad \\ \hline 1 \quad 2 \quad 0 \quad 0 \end{array}$$

d)

$$\begin{array}{r} \quad 5 \quad \underline{\quad} \quad 2 \\ \quad \quad \underline{\quad} \quad \quad \\ + \quad \underline{\quad} \quad 2 \quad \underline{\quad} \\ \hline \quad 6 \quad 5 \quad 9 \end{array}$$

Success Criteria:

- I understand the place value of a given digit.
- I can align my digits accurately.
- I begin adding from the ones column.
- If needed, I can carry the number over.
- I have checked my answer.

The background features a stylized landscape with green hills and a yellow sun. A white rectangular box with a green border is centered on the page, containing the text. Below the box, a tree trunk is visible, partially obscured by the box's bottom edge.

**What is bigger a half
or a quarter?**

**Do you have any questions
about teaching to mastery?**

**“I hear and I forget.
I see and I remember.
I do and I understand.”**

(Confucius: 551-479 BC)