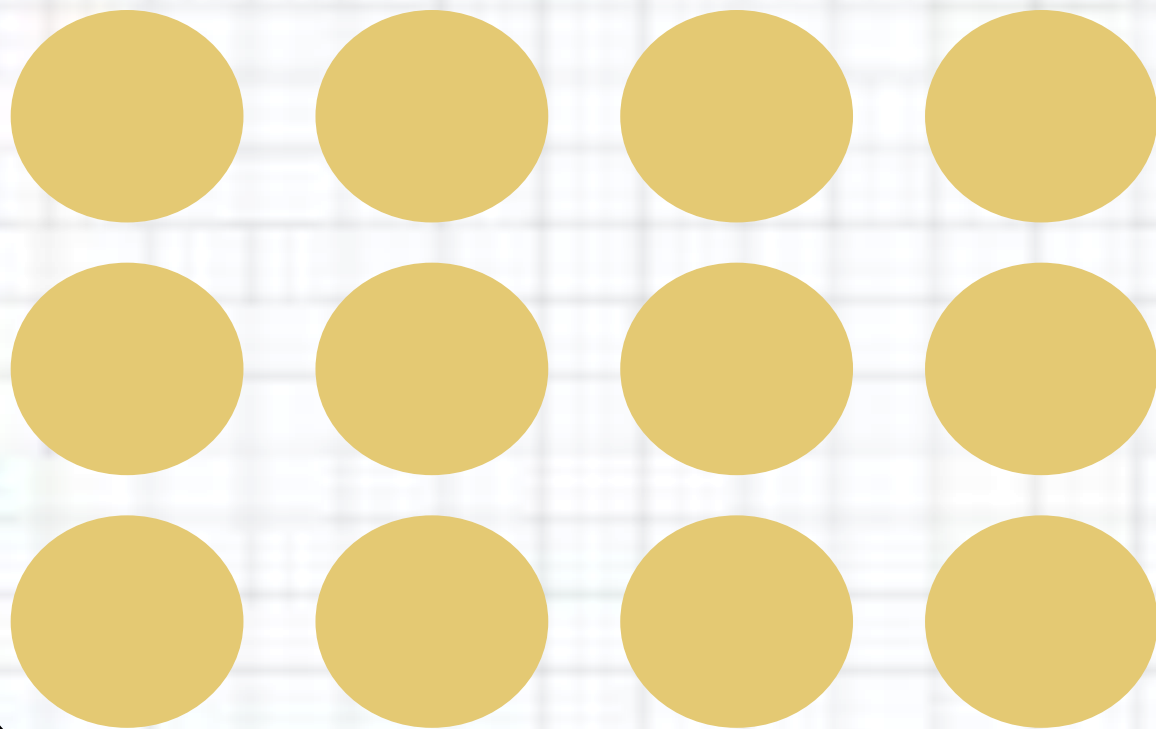


Maths Mastery @



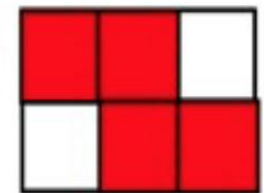
What might this represent?



Fraction representation

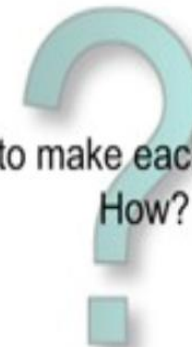
Which is the odd one out?

Why?



Can you find a way to make each shape the odd one out?

How?



Maths Mastery @ Malmesbury



Core belief

Mathematics Mastery schools want to ensure that their aspirations for **every child's** mathematics success become reality

- Success in mathematics for **every child** is possible
- **Mathematical ability** is not innate, and is increased through effort

Maths Mastery @ Malmesbury



Key Principles

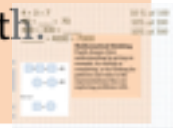
- High expectations for every child
- Fewer topics covered in greater depth
- Number sense and place value come first
- Problem solving is central
- Challenge is provided through an increased depth, rather than acceleration of content



Key Principles

Mathematical thinking

Pupils deepen their understanding by giving an example, by sorting or comparing, or by looking for patterns and rules in the representations they are exploring problems with.



Conceptual understanding

Conceptual understanding

Pupils deepen their understanding by representing concepts using objects and pictures, making connections between different representations and thinking about what different representations stress and ignore.



Mathematical problem solving

Mathematical thinking

Language and communication

Language and communication

Pupils deepen their understanding by explaining, creating problems, justifying and proving using mathematical language. This acts as a scaffold for their thinking deepening their understanding further.



Sum

Product

BODMAS

Place Value

exchange




Language and communication

Pupils deepen their understanding by explaining, creating problems, justifying and proving using mathematical language. This acts as a scaffold for their thinking deepening their understanding further.

*I used the
inverse of...*

*This is different
because...*

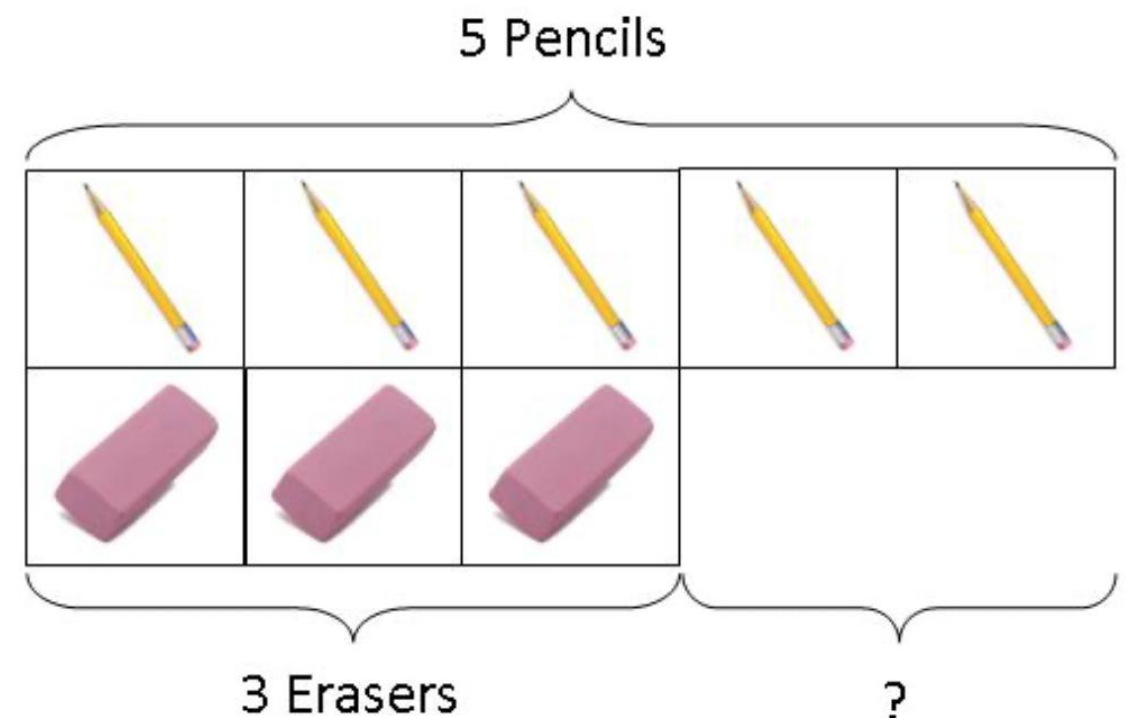
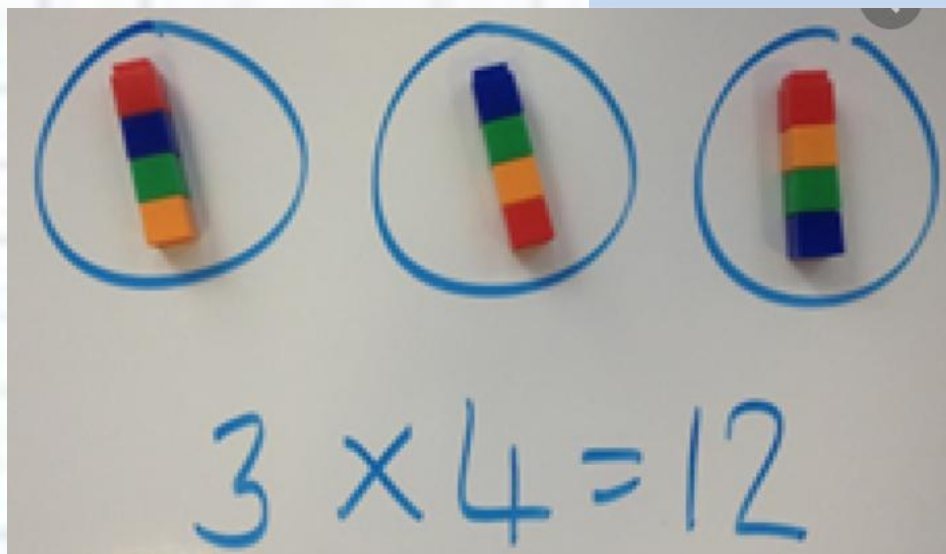
*This is true
because...*

H	T	O	•	t	h	ths
			•			

= 1.34

Conceptual understanding

Pupils deepen their understanding by representing concepts using objects and pictures, making connections between different representations and thinking about what different representations stress and ignore.



$$4 + 3 = 7$$

$$40 + \underline{\quad} = 70$$

$$400 + 300 = \underline{\quad}$$

$$\underline{\quad} + 4000 = 7000$$


10 % of 100

10% of 200

10% of 300

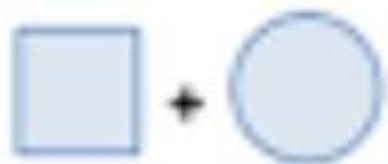
Mathematical thinking

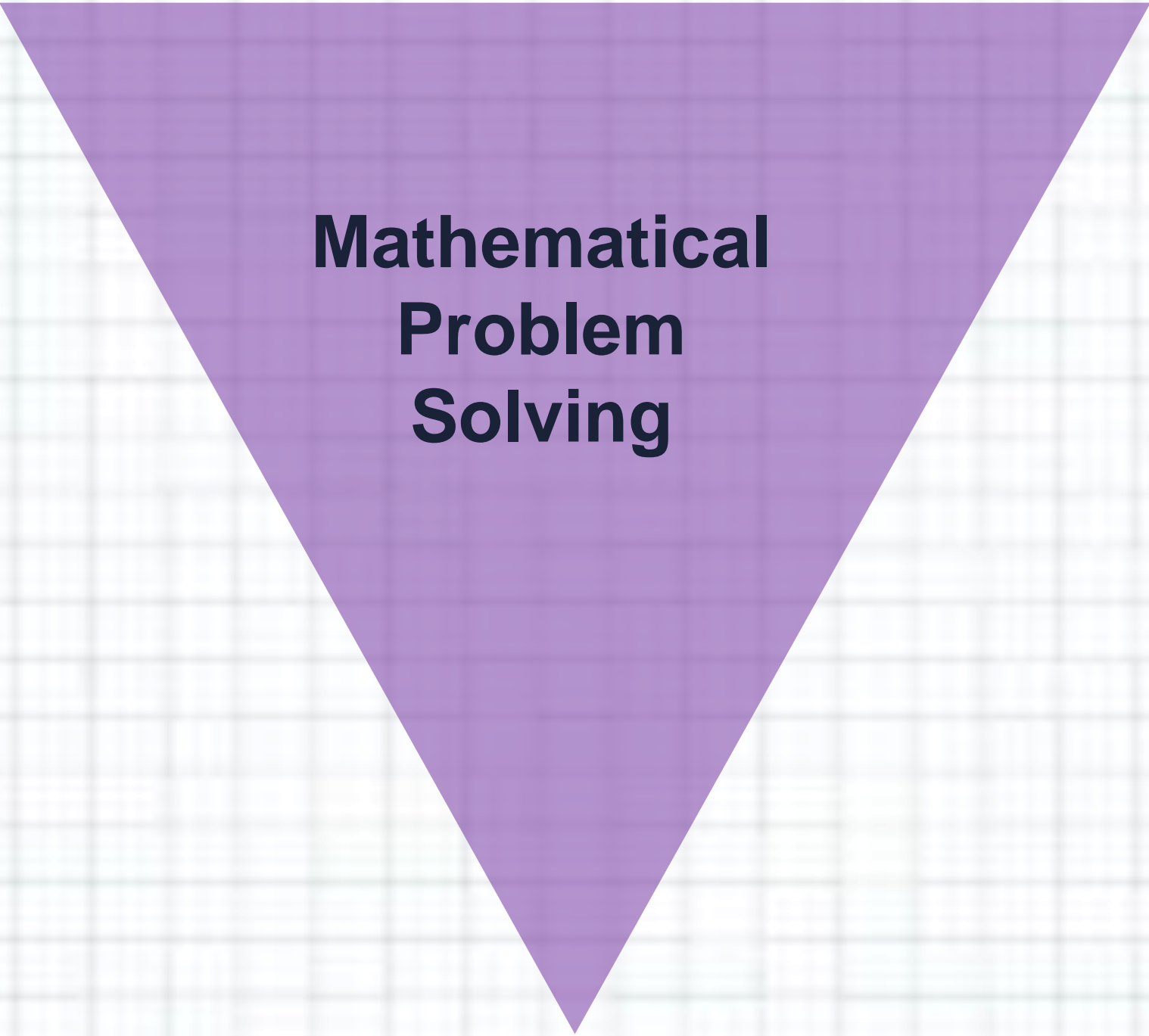
Pupils deepen their understanding by giving an example, by sorting or comparing, or by looking for patterns and rules in the representations they are exploring problems with.


$$\square + \square + \square = 18$$


$$\bigcirc + \bigcirc = 18$$

Work out


$$\square + \bigcirc$$

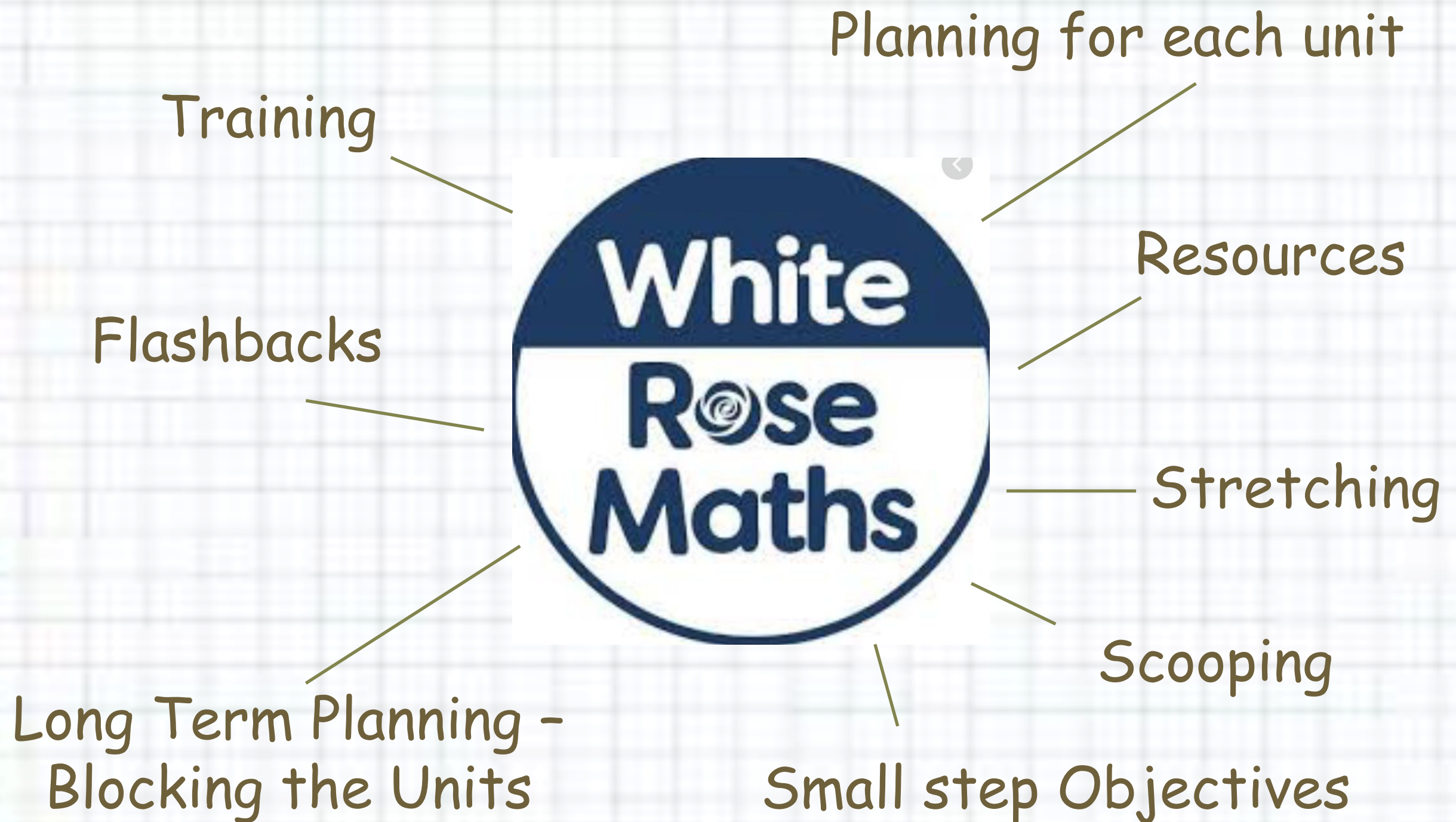


Mathematical Problem Solving

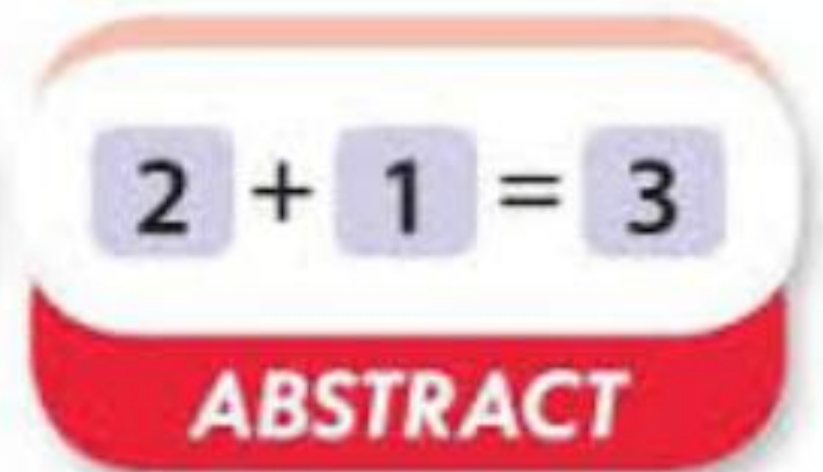
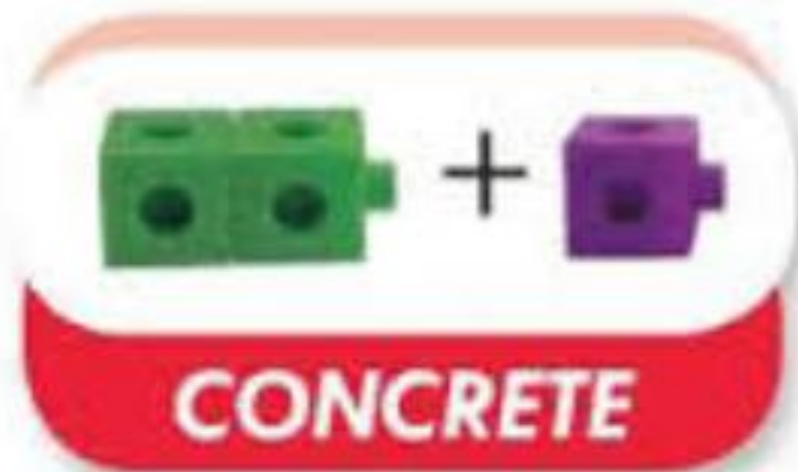
Maths Mastery @ Malmesbury



So how are we delivering this?



Maths Mastery @ Malmesbury



Maths Mastery @ Malmesbury



*‘From concrete manipulatives and experiences, students are **guided to uncover abstract mathematical concepts or results**...The role of the teacher is that of a **facilitator** who guides students through the concrete, pictorial and abstract levels of understanding by providing **appropriate scaffolding and feedback**.’*

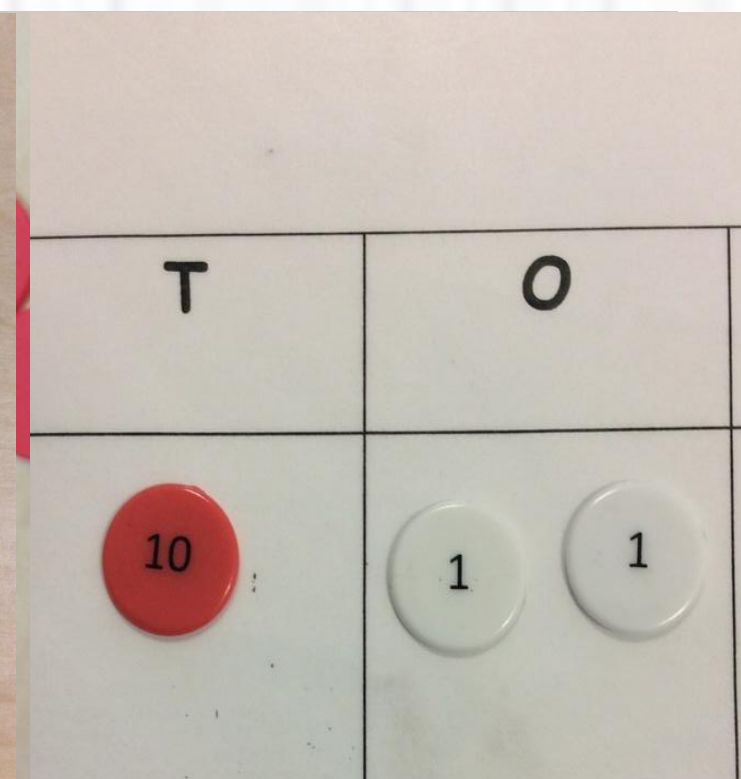
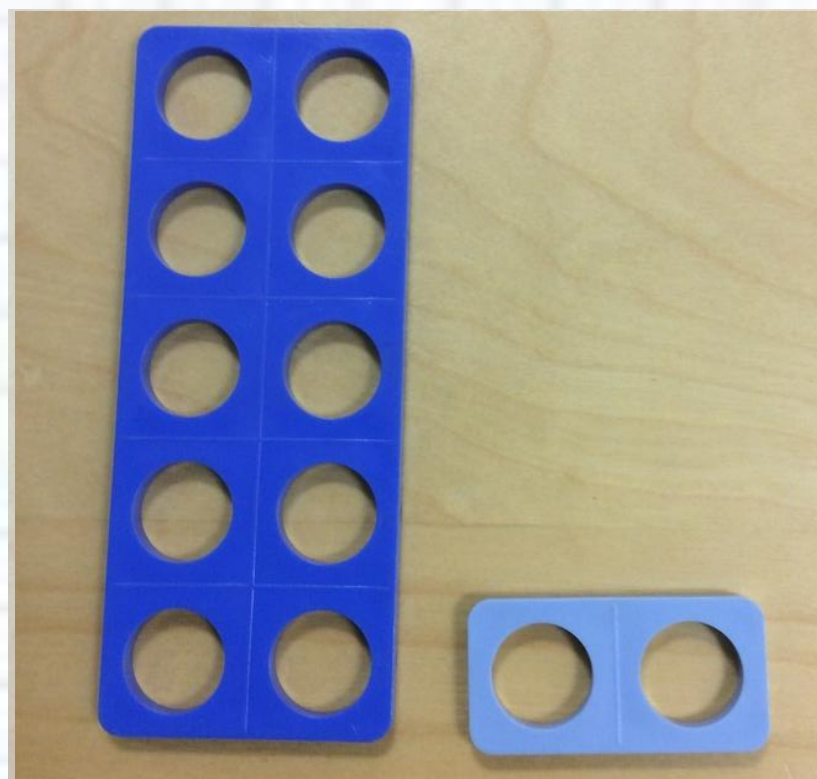
Ministry of Education (2012)



Concrete - Pictorial - Abstract

We use this idea from reception - to Year 6.

Can you show me 12?



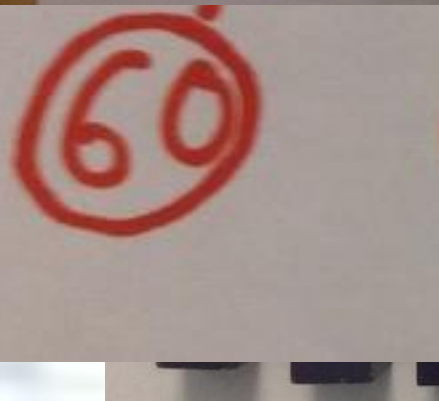
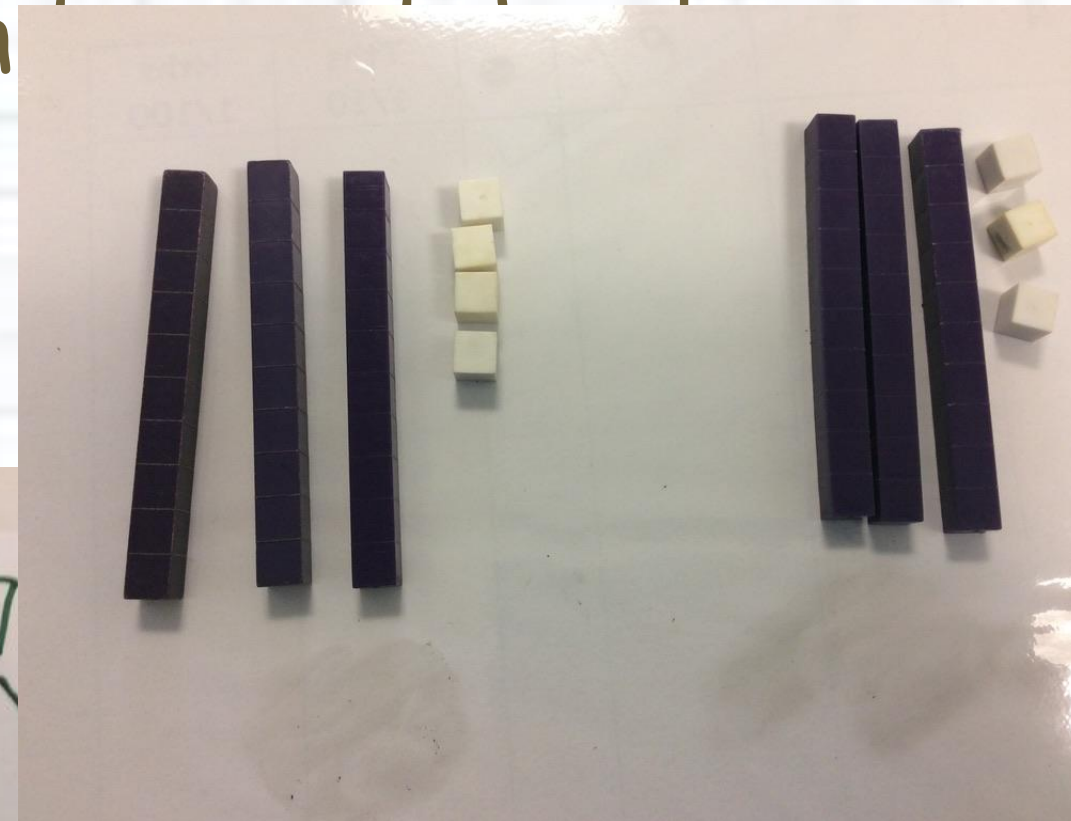
Maths Mastery @ Malmesbury



In Year 1 one children need to know all their numbers to a 100. They also need to un



67



$$67 = 60 + 4 + 1$$





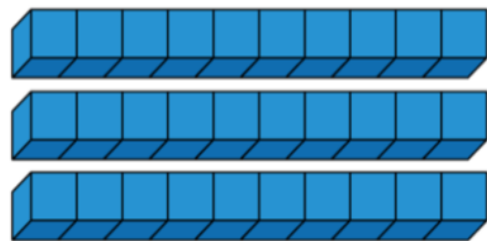
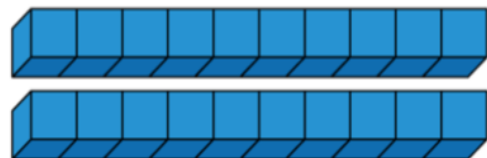
How does the concrete help with formal calculations? (Starting in Yr 2)

Solve...

$$26 + 33 =$$

Model

Tens



Ones



$$\begin{array}{r} 26 \\ + 33 \\ \hline 59 \end{array}$$



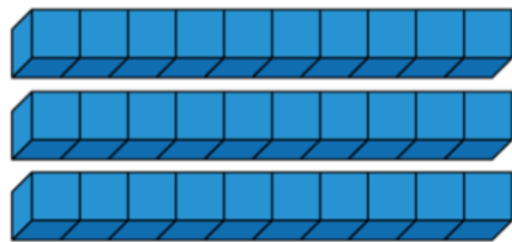
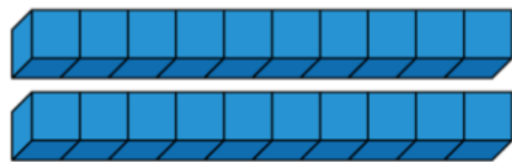
Solve...

$$26 + 35 =$$

Model

Tens

Ones



$$\begin{array}{r} 26 \\ + 35 \\ \hline 61 \end{array}$$

Key vocabulary: **exchange**

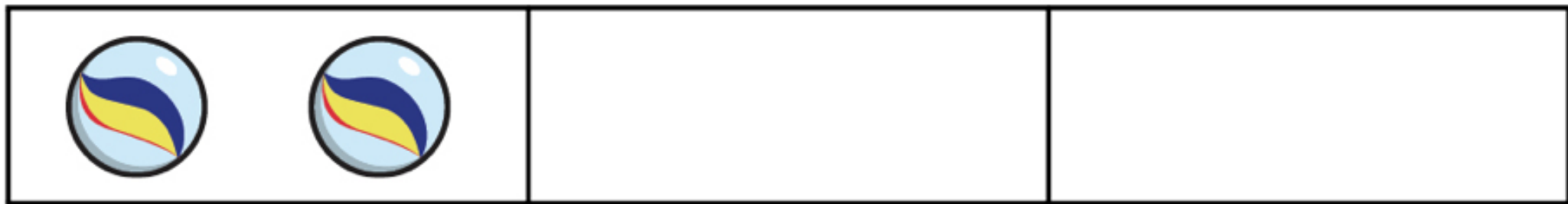
Can we exchange any ones?



It's not just in numbers. Concrete, Pictorial, Abstract work for Fractions as well

Here are some counters.

7 Here are $\frac{1}{3}$ of Jack's marbles.



Draw the rest of Jack's marbles in the bar model.

c) Complete the number sentence.

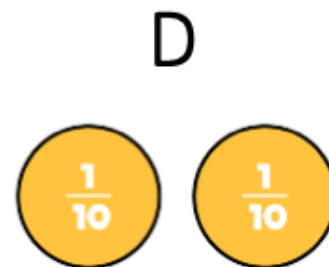
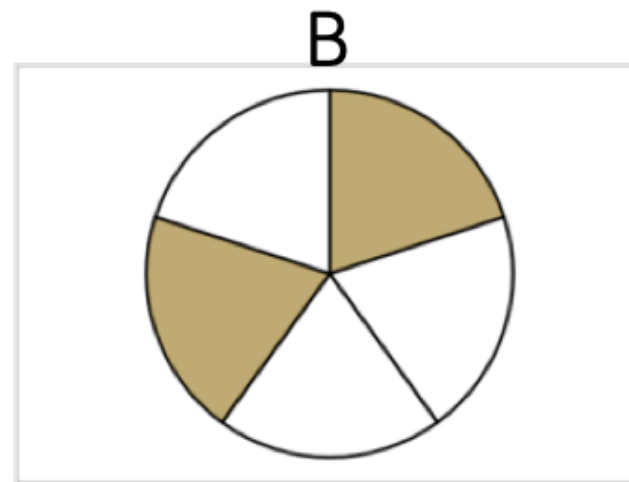
$$\boxed{} + \boxed{} = \boxed{}$$

Maths Mastery @ Malmesbury



Here is an example
of how pictures can
also be used
support problem
solving?

Which of the images below is the odd one out?



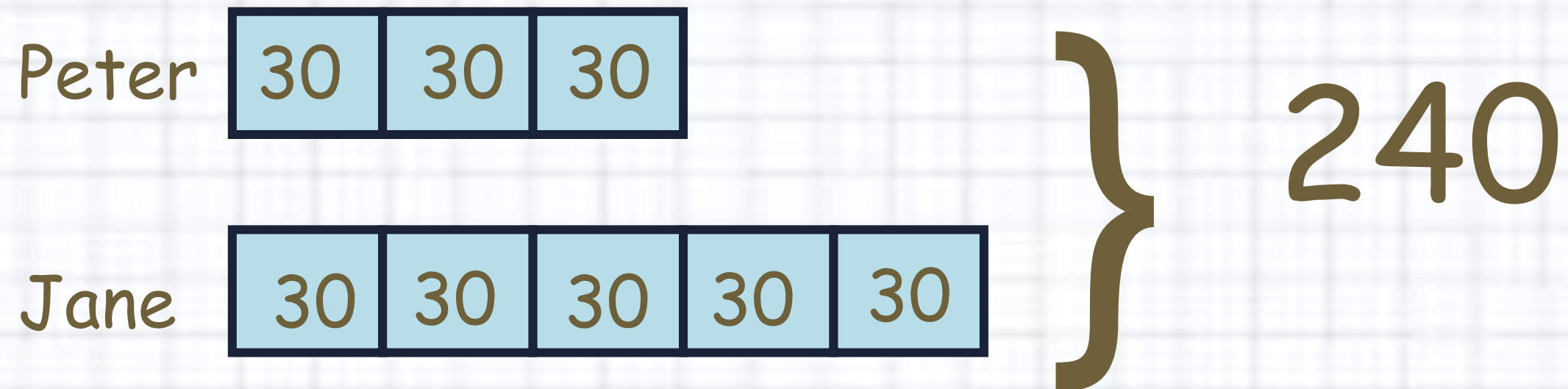
Explain why.

Maths Mastery @ Malmesbury



Manipulatives and Pictures supporting Problem solving.

Peter and Jane share £240 in the ratio of 3 : 5
How much money does each person get?



From this diagram what else could we find out?

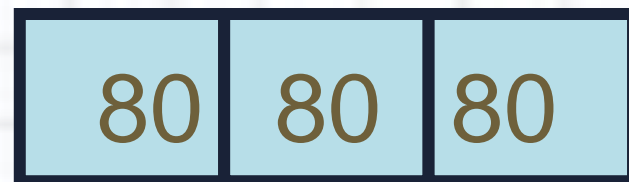


Peter and Jane share some money in the ratio of 3 : 5
Peter gets £240. How much did they share?

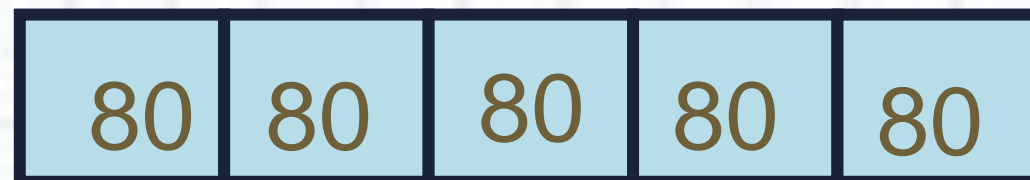
240



Peter



Jane





How are children supported?

- 1.) Most children will access the main curriculum.
- 2.) A few children with special educational needs will need, more support, different tasks.
- 3.) Some children will need extra resources to access the questions.
- 4.) A few will need scooping.
- 5.) Some children will need their knowledge deepening.

Maths Mastery @ Malmesbury



Deepening Knowledge

Deepen knowledge by deepening understanding in problem solving rather than going to the next step.

$$\begin{array}{r} 4 \square 3 \\ - 482 \\ \hline 385 \end{array}$$
$$\begin{array}{r} 3 \quad 12 \quad 13 \\ \cancel{4} \quad \cancel{8} \quad 3 \\ - 482 \\ \hline 385 \end{array}$$

do this

$$\begin{array}{r} 2706 \\ \hline \end{array}$$

Or

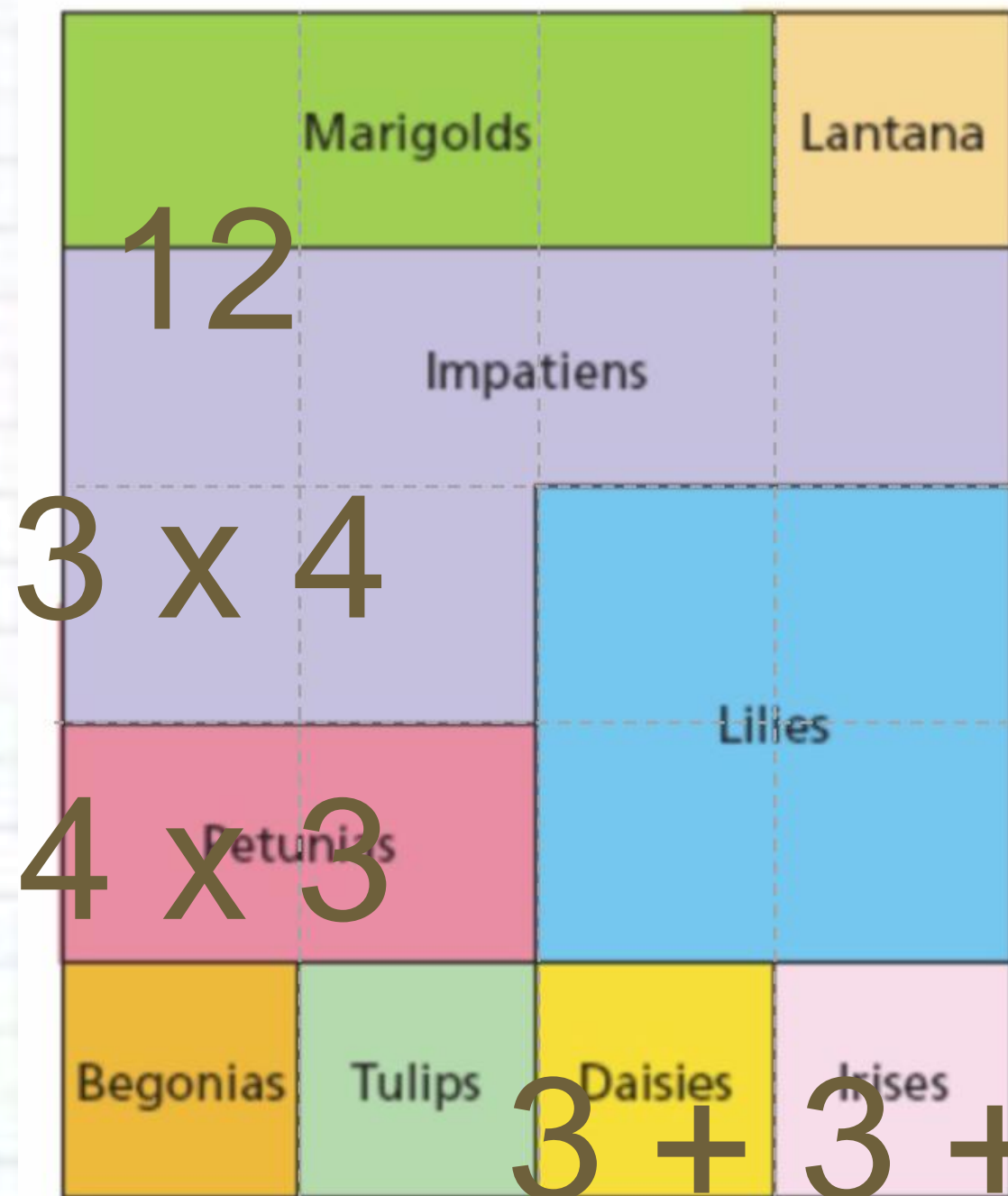
$$\begin{array}{r} 432 \\ - 45 \\ \hline 413 \end{array}$$

Why have I got this calculation wrong? (Explain)



Deepening Knowledge

We try to use questions with a low threshold and high ceiling.



This is a plan of a garden. It has been divided into twenty sections. What information can you show that contains fractions?

$$12 \div 4$$

$$12 \div 3$$

$$3 + 3 + 3 + 3$$

Maths Mastery @ Malmesbury



Where can I find out what me child is doing?



Malmesbury
Church of England Primary School

[Home](#) [About](#) [Learning](#) [Information](#) [Classes](#) [News](#)

[RTC](#) [Friends](#) [Payments](#) [Parent Page](#) [Contact](#) [Governors](#) [Staff only](#)

Welcome

*'Growing together in wisdom and love; discovering
in all its fullness.'*

A warm welcome to Malmesbury C of E Primary School. We
take pride in our vision statement and our school.
This website is intended to share important information about
the exciting learning opportunities your child will be involved in
at school.





Points of Assessment:

- 1.) Children are assessed every lesson – informal (scoop and push)
- 2.) Ongoing termly assessment from their learning and books that feed in to reports.
- 3.) End of year assessments to give a standardised score – done very informally
- 4.) SATs Test at the end of each Key Stage
- 5.) Time table test (Year 4) new this year.

Maths Mastery @ Malmesbury



Extra things that can help



Play board games -
Monopoly, Game of life

Top Trumps

Play Cards

Count

Encourage



Maths Mastery @ Malmesbury

