



# Lesson Structure

Singapore has become a “laboratory of maths teaching” by incorporating established international research into a highly effective teaching approach. With its emphasis on teaching pupils to solve problems, Singapore maths teaching is the envy of the world.

# The Basic Structure



**There are 5 main components:**

## *Anchor Task*

1. Exploration
2. Journalling
3. Reading & Reflection (Master - enter the textbook!)
4. Guided Practice
5. Independent Practice / Guided Groups / Enrichment

# Explore: The Anchor Task



**Timings: 15 mins+**

**The children are presented with a problem and given time to explore. They would have access to resources that may help them to solve the problem and they are encouraged to work with their partner.**

## Explore

There are 3564 letters at the post office ready for delivery.  
Small, large and medium mailbags are used for delivery.

A small mailbag can contain 10 letters.  
A medium mailbag can contain 100 letters.  
A large mailbag can contain 1000 letters.

How many large mailbags can be filled?



# Explore: The Anchor Task



During this time the teacher will circulate around the classroom and identify different methods that are being used by the children. If a child has successfully solved the problem they are encouraged to find a different way to solve it.

## Explore

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# Explore: The Anchor Task



The teacher then facilitates with the children to share their methods with the class. The teacher facilitates the discussion jotting down the methods. At this stage misconceptions can be addressed and clarification of methods.

<p><b>Two-digit Addition</b> Break Apart <math>89 + 34 = 123</math> ones <math>9 + 4 = 13</math> tens <math>30 + 80 = 110</math> <math>+ 13</math> <math>\frac{110}{123}</math></p>	<p><b>Three-digit Addition</b> Break Apart <math>389 + 253 = 642</math> hundreds <math>300 + 200 = 500</math> tens <math>80 + 50 = 130</math> ones <math>9 + 3 = 12</math> <math>\frac{500}{130}</math> <math>\frac{12}{642}</math></p>
<p>Use a number line <math>89 + 34 = 123</math> 89 99 109 119 123</p>	<p>Use a number line <math>389 + 253</math> 389 589 599 609 619 629 639 642</p>
<p>Vertical addition <math>\begin{array}{r} 89 \\ + 34 \\ \hline 123 \end{array}</math> ones tens</p>	<p>Vertical addition <math>\begin{array}{r} 389 \\ + 253 \\ \hline 642 \end{array}</math> ones tens hundreds</p>
<p>algorithm <math>\begin{array}{r} 89 \\ + 34 \\ \hline 123 \end{array}</math> regroup</p>	<p>algorithm <math>\begin{array}{r} 389 \\ + 253 \\ \hline 642 \end{array}</math> regroup</p>

# Explore: The Anchor Task



## DIFFERENTIATION (CPA Approach):

- Concrete materials
- Pictorial supports
- Supporting through modelling
- Questioning, questioning, questioning

Two-digit Addition	Three-digit Addition
<p><i>Break Apart</i></p> $\begin{array}{r} 89 + 34 = 123 \\ \underline{\phantom{00}00} \\ 80 + 9 \phantom{0} \\ \phantom{00}30 + 4 \phantom{0} \\ \hline 110 \phantom{0} \\ \phantom{00}13 \\ \hline 123 \end{array}$ <p>ones <math>9 + 4 = 13</math> tens <math>30 + 80 = 110</math></p>	<p><i>Break Apart</i></p> $\begin{array}{r} 389 + 253 = 642 \\ \underline{\phantom{000}000} \\ 300 + 80 + 9 \\ \phantom{000}200 + 50 + 3 \\ \hline 500 \phantom{00} \\ 130 \phantom{0} \\ \phantom{000}12 \phantom{0} \\ \hline 642 \end{array}$ <p>hundreds <math>300 + 200 = 500</math> tens <math>80 + 50 = 130</math> ones <math>9 + 3 = 12</math></p>
<p><i>Use a number line</i></p> $\begin{array}{r} 89 + 34 = 123 \\ \underline{\phantom{00}00} \\ 89 \phantom{0} \\ \phantom{00}10 \phantom{0} \\ \phantom{00}20 \phantom{0} \\ \phantom{00}30 \phantom{0} \\ \hline 123 \end{array}$	<p><i>Use a number line</i></p> $\begin{array}{r} 389 + 253 \\ \underline{\phantom{000}000} \\ 389 \phantom{00} \\ \phantom{000}100 \phantom{00} \\ \phantom{000}200 \phantom{00} \\ \phantom{000}10 \phantom{00} \\ \phantom{000}10 \phantom{00} \\ \phantom{000}10 \phantom{00} \\ \hline 642 \end{array}$
<p><i>Vertical addition</i></p> $\begin{array}{r} 89 \\ + 34 \\ \hline 13 \text{ ones} \\ + 110 \text{ tens} \\ \hline 123 \end{array}$	<p><i>Vertical addition</i></p> $\begin{array}{r} 389 \\ + 253 \\ \hline 12 \text{ ones} \\ + 130 \text{ tens} \\ + 500 \text{ hundreds} \\ \hline 642 \end{array}$
<p><i>algorithm</i></p> $\begin{array}{r} 89 \\ + 34 \\ \hline 123 \end{array}$ <p>regroup</p>	<p><i>algorithm</i></p> $\begin{array}{r} 389 \\ + 253 \\ \hline 642 \end{array}$ <p>regroup</p>

# Explore: The Anchor Task



What you WON'T see:

- Long periods of pupils silence
- Teachers telling
- Teacher-dominated talk
- Limited variation in questions
- Insufficient time given to explore
- Pupils all doing different tasks/worksheets



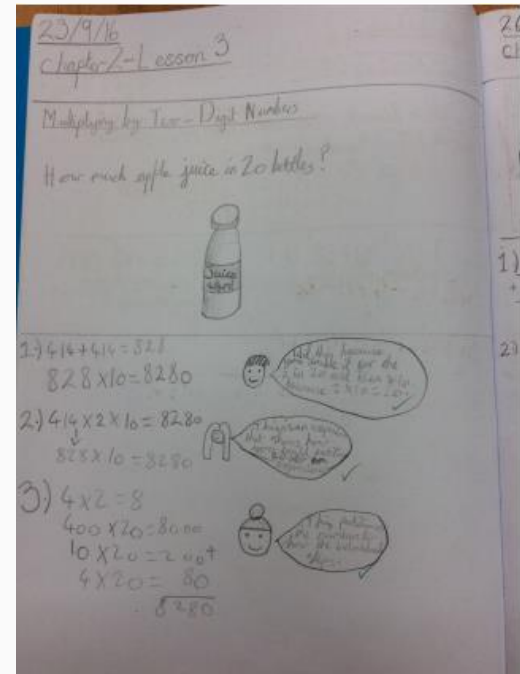
# Journalling



**TIMINGS: 5-10 mins**

The children then record their findings in their journals. This may involve finding and recording more than one method of solving with a written explanation.

The teacher will use questioning to clarify understanding and challenge through reasoning.





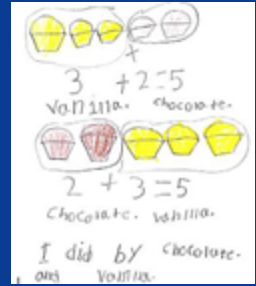
# Journalling

## Role of the TEACHER:

- Prepared questions to target children
- Circulate and assess
- Challenge children in multiple ways



# Journalling



## DIFFERENTIATION:

- Struggling learners showing a method they are comfortable with
- Pictorial representations + concrete materials
- Advanced learners showing a variety of methods with explanation
- Compare and contrast methods
- Vocabulary & maths language

## JOURNALS

### Descriptive Journal

Write a note to explain how to find the value of  $7 + 3 + 2$ .

### Evaluative Journal

Method ①  $7 + 3 + 2 = 10 + 2 = 12$   
Method ②  $7 + 3 + 2 = 4 + 4 + 4 = 12$   
Which method is better?

$$7 + 3 + 2$$

Write a story for  $7 + 3 + 2$ .

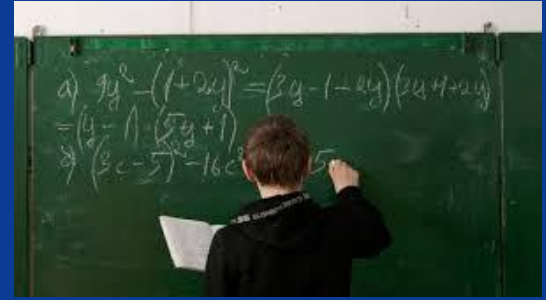
$$\blacksquare + \blacktriangle + \bullet = 22$$

$\blacksquare$ ,  $\blacktriangle$ ,  $\bullet$  are 1-digit numbers and are all different. Investigate

Creative Journal

Investigative Journal

# Journalling



What you WON'T see:

- Pupils copying exactly what the teacher has done
- Daily journals showing only one of: pictures, numbers, words (except FS start of Y1)
- Disorganised approach to recording
- Adults telling pupils what to write

<https://mathsnoproblem.com/en/journaling/>

[Journal Examples](#)

# Reading & Reflection - Master (enter the Textbook)




**TIMINGS: 5-10 mins**

After the children have completed their journal, the teacher will direct the class to 'enter the textbook.' This helps to build skills in reading maths problems.

The problems are designed to move through the pictorial to the abstract and deepen the understanding of the mathematical methods.

## Let's Learn

- 1 What if he bought only  £9 ?

$$\square \times \text{£}9 = \square$$

$$5 \times \text{£}9 = \text{£}45$$

$$6 \times \text{£}9 = \text{£}54$$

$$\text{£}50 - \text{£}45 = \text{£}5$$



If he bought 5 boxes of  £9, his change was £5.

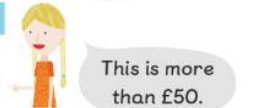
- 2 What if he bought only  £7 ?

$$\square \times \text{£}7 = \square$$

$$7 \times \text{£}7 = \text{£}49$$

$$8 \times \text{£}7 = \text{£}56$$

$$\text{£}50 - \text{£}49 = \text{£}1$$



If he bought 7 boxes of  £7, his change was £1.


# Reading & Reflection (enter the Textbook)



**TIMINGS: 5-10 mins**

The final example may be slightly different to the initial problem but will be based on it. The teacher uses Let's Learn to target children's understanding and progress. It is not a sequence of questions as a class. Pupil's navigate at their own pace. This helps to deepen the children's understanding.

## Let's Learn

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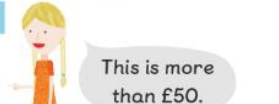
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# Reading & Reflection (enter the Textbook)



## DIFFERENTIATION:

- Intentional questioning
- Struggling learners reflecting upon the familiar
- Clarify what the children know and can use
- Advanced learners can explain the methods of others - which is most efficient, generalise, pattern seek, why does the method work, add variation if appropriate to check understanding

# Reading & Reflection (enter the Textbook)



What you WON'T see:

- **Master = Direct instruction**
- **Focus on solution rather than process**
- **Textbooks on IWB and not in children's hands (reading maths?!)**
- **Teacher solving each question in order under direct instruction**

# Guided Practice



Nobody ever mastered any skill  
except through intensive persistent  
and intelligent practice.

— Norman Vincent Peale —

AL QUOTES

TIMINGS: 10 mins

**The children work through the guided practice with their partners. The questions given, link to each other and guide the children's thinking. For these questions, concrete materials are available.**

## Guided Practice

1



£8 per kg



£9 per kg



Find the cost of each.

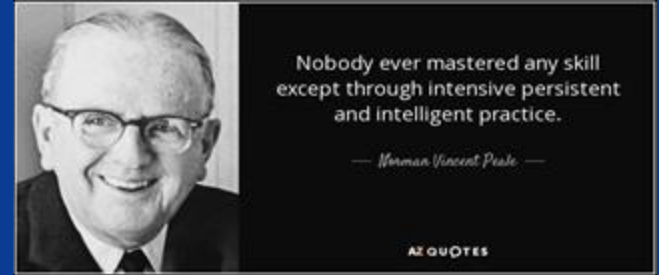
- (a) 6 kg of 
- (b) 2 kg of 
- (c) 30 

What is the total cost of all three items?





# Guided Practice



**The questions become more abstract but still guide the children to the most efficient method of working. This secures understanding of the method. The teacher will use questioning with partners, groups and as a whole class to check understanding.**

2



Charles needs at least 20 sandwiches for his family.  
How much does he need to pay?

# Guided Practice

If children feel safe, they  
can take risks, ask  
questions, make mistakes,  
learn to trust, share their  
feelings, and grow.

Alfie Kohn

[www.storemypic.com](http://www.storemypic.com)

## DIFFERENTIATION:

- Questioning as a key approach
- Struggling learners encouraged to find rules within comfortable method
- Advanced learners between multiple methods and explain which is best in certain context
- Concrete materials / pictorial supports

# Guided Practice



What you WON'T see:

- Finding the answers to questions without explanation of method
- Aiming to complete the questions rather than explore them
- Teachers identifying the variation by instruction
- Used as a written set of questions with no discussion

**Guided Practice**

**1** Make 10 and add.

(a)  $2 + 8 + 4 = \square + \square$   
 $= \square$

(b)  $3 + 9 + 1 = \square + \square$   
 $= \square$

**2** Add.

(a)  $6 + 7 + 4 = \square$

(b)  $9 + 0 + 4 = \square$

(c)  $8 + 5 + 9 = \square$

(d)  $7 + 9 + 6 = \square$

# Independent Practice / Guided Group / Enrichment


**TIMINGS: +/- 15 mins**

This is completed in a workbook. Each question increases in difficulty. The teacher will circulate around the class to assess and progress learning. They will use this opportunity to work with individuals and guided groups.

**Worksheet 15**

Solving Word Problems


Fill in the blanks.



Pepperoni Pizza	£12
Chicken Pizza	£9
Mushroom Pizza	£7
Extra Topping	£2

1 Find the cost of the pizzas.

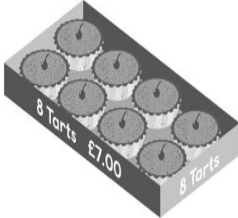
(a) Emma's pizzas cost .



I want four mushroom pizzas with one extra topping on each.

Image 3 of 3

2 Sam wants to buy at least 75 fruit tarts for a party with his friends.



How much does Sam need to pay?

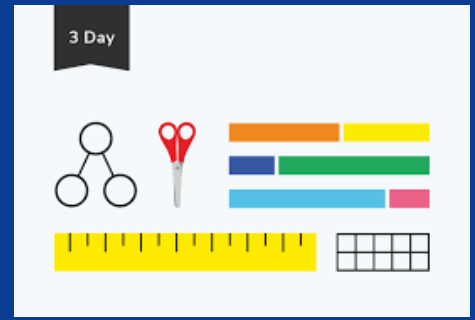
÷  =  remainder

+  =

×  =

Sam needs to pay .

# Independent Practice / Guided Group / Enrichment



## DIFFERENTIATION:

- Resources, groupings and seating, pace, dialogue and outcome
- NOT by task (as a default)
- Learners of all strengths access same task and show understanding in multiple ways
- Use of different journals/quick 6/mathsteasers/variation provided by the teacher

# Independent Practice / Guided Group / Enrichment



## What you will see:

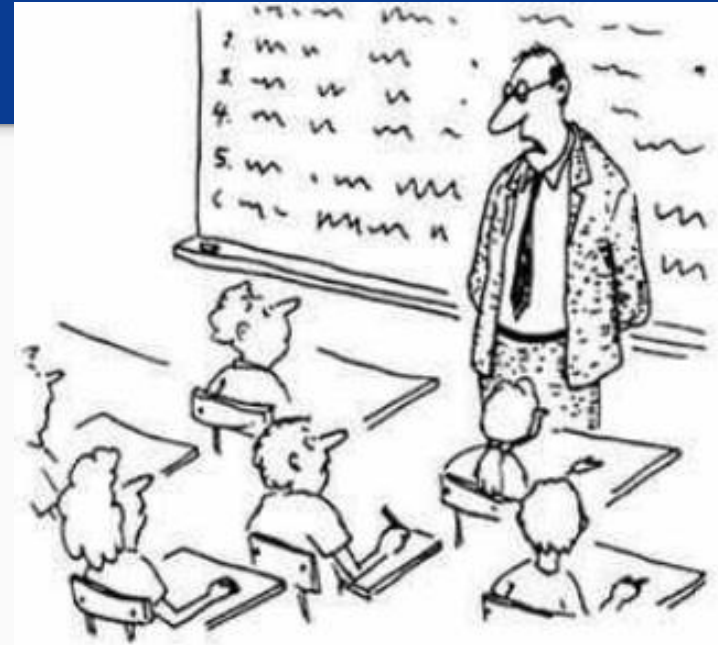
- Pupils confidently answering questions on their own
- Pupils pausing and thinking about strategies
- Pupils supporting one another
- Teacher assessing or supporting guided group
- Calm and purposeful approach to applying knowledge and skills
  
- Teacher always assessing on non-negotiable (key learning from national curriculum)



# Independent Practice / Guided Group / Enrichment

What you WON'T see:

- Hijacking the learning by enforcing correct responses
- Learners not ready for independence being independent
- Empty table-tops
- Pupils covering up their working and not sharing their thinking with one another



*"I expect you all to be independent, innovative, critical thinkers who will do exactly as I say!"*

# The Basic Structure



**There are 5 main components:**

## *Anchor Task*

1. Exploration
2. Journalling
3. Reading & Reflection (Master - enter the textbook!)
4. Guided Practice
5. Independent Practice / Guided Groups / Enrichment

Ban Har : ' up to the teacher to decide on flow and control based on learning'