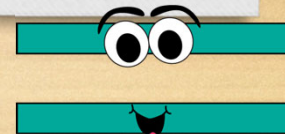
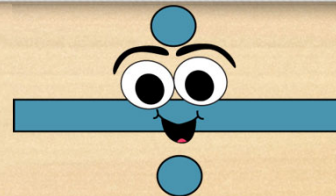
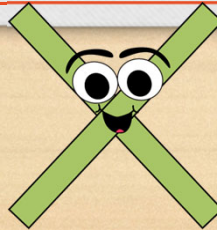
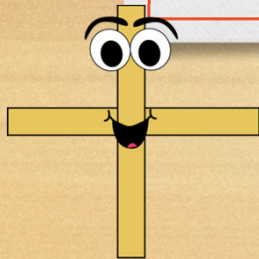




# Addition and Subtraction at Leighterton





# Overview of the session

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9.00 a.m. – 9.30 a.m. – Presentation (hall)

9.30 a.m. – 10.00 a.m. – Workshops (classrooms)

10.00 a.m. – 10.15 a.m. – Celebration assembly (hall)

# Aims for the session

During the morning we aim to

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- Share how we teach addition and subtraction in school and what equipment we use to support the children.
- Give you ideas that you can use at home to support your child.
- Answer any questions you may have



# Aims of the National Curriculum

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- 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
- can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions

# The EYFS

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- Maths Curriculum is split into two strands of equal weighting and importance.
- Number and Shape, Space and Measure.
- Children learn mainly through play in Reception- opportunity to explore, test, experiment, discover for themselves. (Role play, songs, stories, real life problems) Different areas of provision provide mathematical opportunities not just the maths area.
- Element of adult directed teaching through carpet time and focus activities.



# The EYFS

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- Children count reliably with numbers from 1 to 20, place them in order and say which **number is one more or one less than a given number**. **Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer**. They solve problems, including doubling, halving and sharing
- Large focus on subitising – recognising the number of objects by pattern e.g. the pattern on a dice
- Throughout the year, the children will learn their number bonds off by heart within 10 e.g.  
 $3 + 2 = 5$ ;  $6 + 3 = 9$
- This will support their mental calculation when moving into Year 1

# The National Curriculum

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TELL ME  
*and I forget.*  
TEACH ME  
*and I remember.*  
INVOLVE ME  
*and I learn.*

-BENJAMIN FRANKLIN

Playful Learning

- Importance of children gaining breadth and depth of understanding.
- Through our '**Try It, Use It, Prove It**' method we ensure that pupils can:
  - Become fluent in the fundamentals of mathematics (Try It)
  - Reason mathematically (Use It)
  - Solve problems by applying their mathematics (Prove It)



# Expectations at KS1

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- **Year 1**
- Pupils should be taught to:
- read, write and interpret mathematical statements involving addition (+), subtraction (−) and equals (=) signs
- represent and use number bonds and related subtraction facts within 20
- add and subtract one-digit and two-digit numbers to 20, including 0
- solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as  $7 = ? - 9$



# Expectations at KS1

- **Year 2**
- solve problems with addition and subtraction:
  - using concrete objects and pictorial representations, including those involving numbers, quantities and measures
  - applying their increasing knowledge of mental and written methods
- recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100
- add and subtract numbers using **concrete objects, pictorial representations, and mentally**, including:
  - a two-digit number and 1s e.g.  $12 + 9$ ;  $43 - 7$
  - a two-digit number and 10s e.g.  $23 + 40$ ;  $55 - 13$
  - 2 two-digit numbers e.g.  $23 + 45$ ;  $54 - 13$
  - adding 3 one-digit numbers e.g.  $7 + 3 + 1$
- show that addition of 2 numbers can be done in any order (commutative) and subtraction of 1 number from another cannot
- recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems

# Expectations at LKS2

- **Year 3**

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- add and subtract numbers mentally, including:
  - a three-digit number and 1s
  - a three-digit number and 10s
  - a three-digit number and 100s
- add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction
- estimate the answer to a calculation and use inverse operations to check answers
- solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction



# Expectations at LKS2

- **Year 4**

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- add and subtract numbers with up to 4 digits using the **formal written methods of columnar addition and subtraction where appropriate**
- estimate and use inverse operations to check answers to a calculation
- solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why

# Expectation at UKS2

- **Year 5: Including decimals**

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- add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)
- add and subtract numbers mentally with increasingly large numbers
- use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy
- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why



# Expectation at UKS2

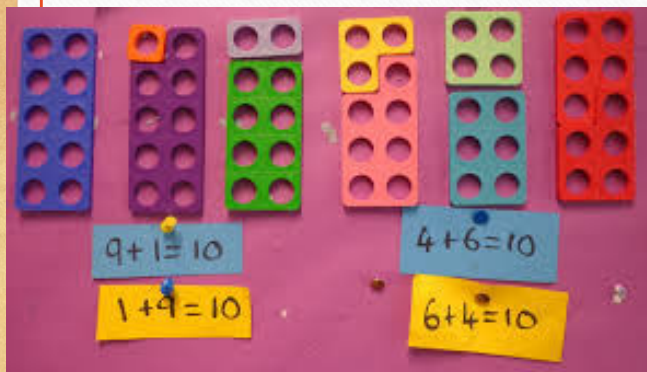
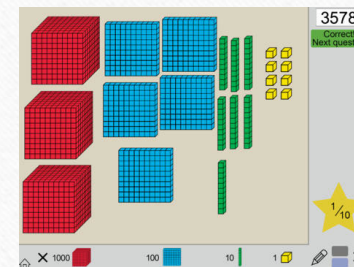
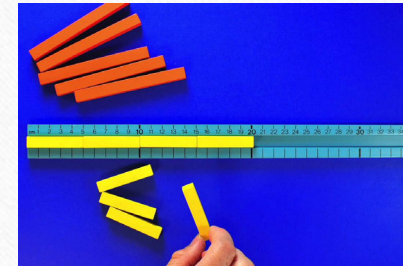
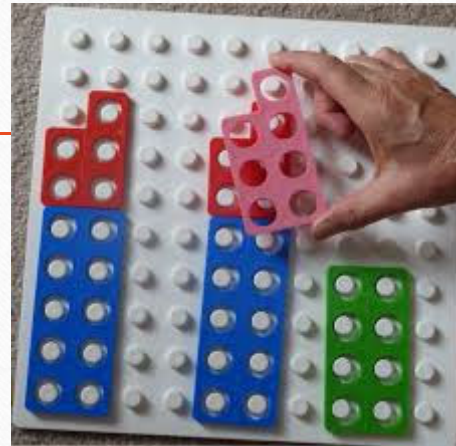
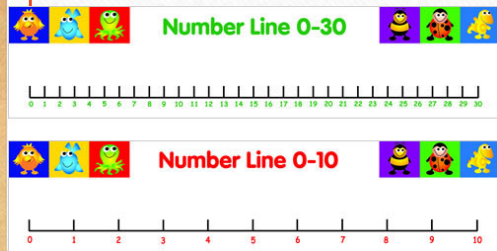
- **Year 6**

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- perform mental calculations, including with mixed operations and large numbers
- use their knowledge of the order of operations to carry out calculations involving the 4 operations (BODMAS)
- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
- solve problems involving addition, subtraction, multiplication and division
- use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy



# Making Maths Multisensory





# Key Vocabulary: Addition

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Add

Addition

More

Plus

Altogether

Total

More than

Combine

Sum

Decimal point

Place value headings: including tenths,  
hundredths, thousandths in KS2

Please help us by only calling addition  
questions sums - use the term written  
calculation or 'number sentence' otherwise

# Key Vocabulary: Subtraction

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Take away

Subtract

Less

Less than

Find the difference between

How many left?

Minus

Reduce by

Fewer

Remain

Inverse





# Reasoning and Problem Solving

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- Huge increase in expectation for **all** children to be able to reason about their mathematics
- You will see examples of reasoning and problem solving questions in the classroom workshops but on the next slide are just a few examples of the style of questions we use regularly.

# Empty box questions

•  +  = 5

•  $7 + \square = 17$

•  $\square - 50 = 200$

•  $\square + \square = 1000$

1	4	2	5
+	<input type="text"/>	3	<input type="text"/>
<hr/>			
5	<input type="text"/>	7	
<hr/>			

<input type="text"/>	1	<input type="text"/>	8	0	<input type="text"/>
+	2	<input type="text"/>	5	7	<input type="text"/>
<hr/>					
4	1	0	5	2	5
<hr/>					



# Always, sometimes, never

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Using examples or explaining your reasoning

**Always, sometimes or never true:**

An odd number add an odd number is always even

**Always, sometimes or never true:**

You can subtract numbers in any order

# Correcting mistakes

- Identifying other people's mistakes helps to really secure a child's own understanding and helps to identify any misconceptions

Explain the mistake

$$5 + 3$$

5, 6, 7



	4	0	5	0	
-	3	7	2	6	
	1	7	2	4	



# Problem Solving

- Problem solving is taught in a wide range of contexts at Leighterton but it is much more than just 'worded' problems. Below are just a few examples:

## Presents and Lollies

1 Mrs Jones has £20 to spend on presents.

She buys 4 mugs and 3 teddy bears.

What is the greatest number of key-rings she can buy?



2 Lollies are sold in two sizes, small and large.

Sanjay buys two small lollies for 92p

Jenny buys 5 small lollies and 3 large lollies and pays with a £10 note.

Jenny receives £4.16 change.

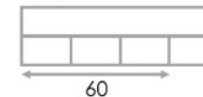


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Go to Settings to activate Windows

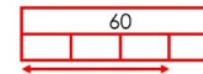
## Which picture?

Draw lines to match the questions to the bar models:

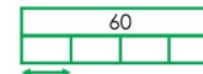
$$60 \div 4$$



$\frac{3}{4}$  of a number is 60.  
What is the number?



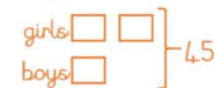
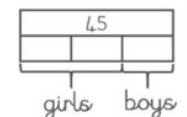
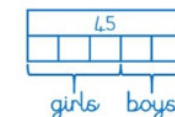
$$\frac{3}{4} \text{ of } 60$$



## Which picture?

$\frac{2}{3}$  of the children in the running club are girls.  
There are 45 children in the running club.  
How many girls are in the running club?

Which drawing(s) represent this question correctly?



## Different ways

$$9 + 8 = \square$$



$9 + 8$  is the same as:

$10 + 10$  take away  $\square$

Double  $\square$  add 1

Double  $\square$  take away 1

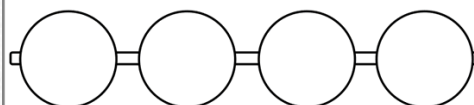
Other: \_\_\_\_\_

\_\_\_\_\_

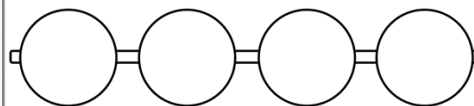
A difference of more than one



Can you put the numbers 5, 6, 7, and 8 into the circles so that the difference between each pair of joined numbers is more than one?



Now can you do it another way?

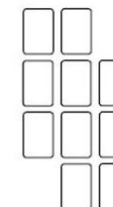


## Next door numbers

Take ten cards numbered 0 to 9.



Arrange the cards like this.



Do it so that no two consecutive numbers are next to each other, horizontally, vertically or diagonally.

There are lots of ways to do it.  
How many ways can you find?



# Problem of the Fortnight

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- Will be introduced for each key stage and parents on every newsletter
- Answers can be posted into a box in the foyer
- Winning children will be presented with a certificate in assembly

# How can you help?

- Practise rapid recall of number facts and mental calculations e.g.  $4 + 5 = 9$ ;  $8 - 5 = 3$
- There are lots of very good websites which can be used to help children to develop quick mental maths strategies and many games you can play with dice or playing cards (see handout.)
- Encourage children to use their calculation skills in real life situations to make it meaningful for them e.g. paying for things in shops, calculating change, time intervals.
- Keep it fun! Little and often is key 😊



# Questions and Feedback

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Thank you for attending our curriculum morning, we hope it has been useful. Please ensure you have picked up your information pack before you visit the classrooms

If you have any further questions, don't be afraid to ask the children or the teachers in the classroom as you go around.

The image shows a presentation slide with a light brown, textured background. A white rectangular area is centered on the slide, framed by a thin red border. A horizontal red line is positioned above the word 'Workshops'. The word 'Workshops' is written in a bold, dark blue font. On the left and right sides of the white area, there are dark brown rectangular shapes that look like binder rings or clips.

# **Workshops**