Edward Peake Church of England Middle School		
Topic: Solving Problems Using Additin and Subtraction	**Year: 7**	**NC Strand: Number**

What should I already know?
• How to use column addition and subtraction with multidigit calculations? • How to decide if mental, informal or column methods of addition and subtraction are more appropriate for a calculation • How to reason and apply my understanding of calculations, inverses and commutativity to use known facts when calculating • How to use my knowledge of rounding to estimate answers for calculations and problems • How to use inverse operations to check my answers to addition and subtraction calculations • How to use my knowledge of addition and subtraction to solve multi-step problems • How to solve problems involving number up to three decimal places

What will I know by the end of the unit?	
• How to use the properties of addition and subtraction • How to use mental strategies to solve addition and subtraction problems • How to use formal methods for addition of integers • How to use formal methods for addition of decimals • How to use formal methods for subtraction of integers • How to use formal methods for subtraction of decimals	• How to choose the most appropriate method to solve a problem • How to solve problems in the context of perimeter • How to solve financial maths problems • How to solve problems involving timetables and tables • How to solve problems with frequency trees • How to solve problems with bar charts and line charts • How to add and subtract numbers given in standard form

Vocabulary			
Total	Inverse	Number Bonds	Decimal point
Sum	Bridging	Column Method	Estimate
Difference	Compensation	Exchange	Equivalence
Number line	Difference	Place Value	Partition
Commutative	Count On	Place Holder	Subtraction
Associative	Partition	Carrying	Addition
Equation	Digit	Formal Method	jottings
Calculator	Mental	Length	units
Path	sides	polygon	distance
profit	Debit	loss	statement
balance	Change	credit	bill
Frequency	Frequency tree	Axis	scale
Standard form	exponent	Significant figure	billion
million	minutes	hours	

Investigate/Homework tasks

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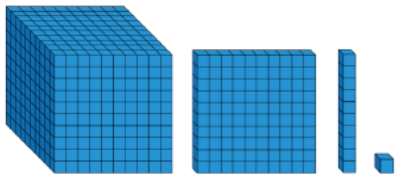
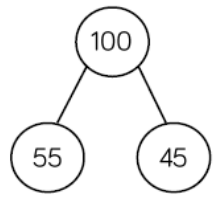
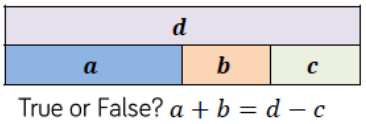
- Homework will be set by your teacher using google classroom
- You should complete at least 30 minutes of maths tasks on Maths Whizz (not games). Please attend help sessions if you do not have access to the internet at home
- Additional work you could complete:
  - Find out more about the meaning of the vocabulary list using http://www.amathsdictionaryforkids.com/
- To challenge yourself: Answer the key questions to deepen your knowledge

Diagram / Key Information

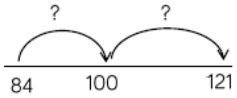
Key Representations

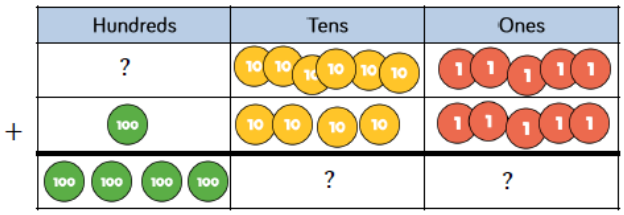






True or False? $a + b = d - c$





Concrete, pictorial and abstract representations are an important part of developing students' conceptual understanding.

Number lines are particularly useful for both addition and subtraction and provide a good model of mental methods.

The column methods are sometimes not understood by students and are therefore prone to error. Linking these formal methods to the use of place value counters and/or base 10 blocks illustrating exchanges is very useful.

Key skills/Timeline/Topic Questions

If we know $x = y + z$, what other addition facts do we know? What subtraction facts do we know?
What's the easiest way to add a list of numbers like this: $6 + 8 + 4 + 7 + 2 + 3$?
How could a number line help us to find the difference between, say, 186 and 354?

Make up an example where number bonds to 10 and 100 are useful to perform mental calculations.
How does adding the same number to both parts of a subtraction affect the difference?
Find three ways to mentally calculate $700 - 438$

Why do you not add/subtract the powers when adding/subtracting numbers written in standard form?

Explain the difference between 10^{-3} and 10^{3}

Does the column method for subtraction work when dealing with time? Why or why not?
Explain how we could use a number line (or time line) to help us with calculations for time.
Is it true that sum of all the row totals in a table equal to the sum of all the column totals? Why or why not?

Why do we start column addition with the column on the right?
When and why do we exchange in column addition?
Is the column method always the best way to solve an addition problem?

What is the difference between the words credit and debit on a bank statement.?

How do you calculate profit?

Why does a calculator display £12.50 as 12.5?

Explain the relationships between the numbers in a frequency tree.

When might we have a frequency tree with more than two branches?

Why isn't subtraction commutative?
How can we check the answer to a subtraction?
When do we need to perform exchanges when doing a written subtraction?

How do you decide which method to use to perform a

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How do we line up decimal addition if one of the numbers is an integer?

What does placeholder mean? Why do we use placeholders?

Why is the number of sides on a shape the same as the number of terms in a perimeter addition?

If all the sides of a rectangle are increased by 2 units, how could we know how much the perimeter has increased by?