

| Unit Overview: Applications of Number | | | | | | | |
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| Half- Term: | AUT 1 | AUT 2 | SPR 1 | SPR 2 | SUM 1 | SUM 2 | No of Lessons: 24 |
| <p>Key Focus for Unit:</p> <p><i>What is the key knowledge being delivered? What is the intent of this unit?</i></p> | | | | | | | |
| <p><u>Weeks 1 & 2: Solving problems with addition & subtraction</u></p> <p>The focus for these two weeks is building on the formal methods of addition and subtraction students have developed at Key Stage 2. All students will look at this in the context of interpreting and solving problems, for those for whom these skills are secure, there will be even more emphasis on this. Problems will be drawn from the contexts of perimeter, money, interpreting bar charts and tables and looking at frequency trees; we believe all these are better studied alongside addition and subtraction rather than separately. Calculators should be used to check and/or support calculations, with significant figures and equations explicitly revisited.</p> | | | | | | | |
| <p><u>Weeks 3 to 5: Solving problems with multiplication & division</u></p> <p>The rest of the term is dedicated to the study of multiplication and division, so allowing for the study of forming and solving of two-step equations both with and without a calculator. Unit conversions will be the main context as multiplication by 10, 100 and 1000 are explored. As well as distinguishing between multiples and factors, substitution and simplification can also be revised and extended. Again, the emphasis will be on solving problems, particularly involving area of common shapes and the mean. Choosing the correct operation to solve a problem will also be a focus. There will exploration of the order of operations, which will be reinforced this content next term when studying directed number.</p> | | | | | | | |
| <p><u>Week 6: Fractions and percentages of amounts</u></p> <p>This short block focuses on the key concept of working out fractions and percentages of quantities and the links between the two. This is studied in depth in Year 8.</p> | | | | | | | |
| <p>Key:</p> <p>MASTERY – The skills and knowledge we want all our students to master and recall quickly.</p> <p>SECURE – The skills and knowledge that we will need to return to regularly and interleave in order for our middle and lower attaining students to secure mastery or for which they might struggle.</p> <p>DEVELOPING – The skills and knowledge that we will use to stretch and challenge our most abled students.</p> | | | | | | | |
| <p>Addition and Subtraction</p> <ul style="list-style-type: none"> Relationship between addition and subtraction How to use the column methods for addition and subtraction How to solve problems involving perimeter graphs and charts How to solve problems in financial mathematics How to solve problems with tables, frequency trees and times tables How to add and subtract numbers in standard form | | | <p>Multiplication and Division</p> <ul style="list-style-type: none"> Understand and use multiples and factors How to multiply and divide by powers of 10 and convert units How to use the formal method of multiplication and division and deduce new facts from known facts How to work out areas of shapes How to find the mean of a set of data How to use the order of operations (BIDMAS / BODMAS) How to use multiplication and division in complex situations | | | <p>Fractions and Percentages of Amounts</p> <ul style="list-style-type: none"> How to work out a fraction of an amount How to work out fractions and percentages using a calculator How to work out the whole given a fraction of an amount How to solve problems with fractions greater than 1 How to work out a percentage of an amount How to solve problems with percentages greater than 1 | |

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| <p>Scaffolded Guidance:</p> <p>Addition and Subtraction</p> <ul style="list-style-type: none"> • Use of manipulatives, place value grids, counters, coins and notes • Use of clocks and number lines • Linking frequency trees to part whole models <p>Stretch Guidance:</p> <ul style="list-style-type: none"> • Adding and subtraction problems involving missing digits • Prompt questioning: what is the same, what is different • Forming expressions for area and perimeter in terms of a and b (link to algebra) | <p>Scaffolded Guidance:</p> <p>Multiplication and Division</p> <ul style="list-style-type: none"> • Use of bar models to help students visualise fact families • Use of counters to highlight factors • Use of bar models to exemplify multiples • Provide students with timetable grids <p>Stretch Guidance:</p> <ul style="list-style-type: none"> • Investigate different solutions and encourage discussion about why multiple solutions are possible • Challenge students to create their own problem using different combinations of digits and incorporating decimals | <p>Scaffolded Guidance:</p> <p>Fractions and Percentages of Amounts</p> <ul style="list-style-type: none"> • Focus on halves, quarters, thirds • Focus on key percentages e.g., 25%, 50%, 75%, 10% <p>Stretch Guidance:</p> <ul style="list-style-type: none"> • Investigate fractions where the numerator is greater than 1. • Investigate percentage of amount greater than 100% |
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Key Knowledge and Big Ideas:

*What **Powerful Knowledge** and **Big Ideas** are explored in this Unit?*

*How have these progressed from previous learning? What **gaps in knowledge** have you identified from **baselining** and how are the being closed?*

BIG IDEAS:

Number

Powerful Knowledge:

- Using the column method for addition and subtraction
- Reading and interpreting tables, timetables, charts and graphs
- Calculating with time
- Adding and subtracting with standard form
- Identify factors and multiples of a number
- Using formal methods for multiplication and division
- Finding the area of triangles and parallelograms
- Using the order of operations
- Working out the mean of a data set
- Working out a fraction and percentage of an amount
- Finding the whole given a fraction or a percentage.

Previous Learning:

- Using decimals
- Comparing and ordering integers
- Column method for addition and subtraction
- Calculating simple percentages

Gaps in Knowledge and Misconceptions:

- Subtracting the wrong way around when using the column method.
- Not reading the scales on the axes correctly or not using a consistent scale when creating own scale
- Thinking that the decimal points move when multiplying or dividing by powers of 10
- When finding the area of a triangle not realising that the base could be any side.

Unit Assessment:

How will this unit be assessed?

What is the frequency of assessments – baselines etc?

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| <p>How will this unit be assessed?</p> <ul style="list-style-type: none"> • Baseline Testing with EOB A or similar at start • End of Block Assessment with EOB B at end | <p>Main Topics Covered in assessments</p> <ul style="list-style-type: none"> • Frequency Tree • Financial Maths problems • Add and subtract numbers given in standard form • Area of rectangle and Rhombus • Area of Trapezium • Metric conversion for length |
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Year 7 Spring 1

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| | <ul style="list-style-type: none"> • Multiplying decimals • BIDMAS • Fraction of amount • Percentage of an amount | |
| <p><u>Retrieval Practice:</u></p> <ul style="list-style-type: none"> • T/F Retrieval starter • Homework tasks • Formula Quiz • Timetable Quiz | <p><u>Key Retrieval Topics (Interleaving):</u></p> <ul style="list-style-type: none"> • Place value and ordering • Write ordinary numbers in standard form and vice versa • Addition and subtraction of decimals | |
| <u>Key Skills Explored</u> | <u>Vocabulary Selected for DVI</u> | <u>Links to Previous Unit</u> |
| <ul style="list-style-type: none"> • Frequency Tree • Financial Maths problems • Add and subtract numbers given in standard form • Area of rectangle and Rhombus • Area of Trapezium • Metric conversion for length • Multiplying decimals • BIDMAS • Fraction of amount • Percentage of an amount | <ul style="list-style-type: none"> • Commutative • Associative • Difference • Inverse • Partition • Place value • Place holder • Equivalence • Estimating • Units • Polygons • Profit • Loss • Credit • Debit | <ul style="list-style-type: none"> • Place value and ordering • Write ordinary numbers in standard form and vice versa • Addition and subtraction of decimals |
| <u>Links to Careers/Employability</u> | <u>How does this unit prepare students for the next unit?</u> | |
| <ul style="list-style-type: none"> • Bank Statement • Bills • Meter reading • Mortgages • Understanding Money • Perimeter in everyday life | <ul style="list-style-type: none"> • Directed numbers • Order of operations • Solving equations • Converting Fractions • Adding and subtracting fractions | |