**Curriculum Overview for Mathematics**

**Year 8**

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| **Half Term 1: Ratio**  **Declarative Knowledge:**   * represent fractions using bar models * Describe a comparison of measurements or objects using ratio notation a:b   **Procedural Knowledge:**   * use models to find fractions of amounts * identify common factors in order to simplify fractions * represent ratios in their simplest form using bar models * write ratios in their simplest form by scaling up * write ratios in the from 1 : n and n : 1 * share quantities by two part ratios * share quantities by ratios with more than two parts * Find a relevant multiplier in a situation involving proportion * Understand and use compound units * Convert between units of speed   **Conditional Knowledge:**   * compare a part of a ratio to the whole written as a fraction * find missing values in ratios using models * complete questions using ratio difference * Solve ratio problems involving mixing * Solve ratio problems involving comparison * Solve ratio problems involving concentrations * Solve problems involving speed * Solve problems involving rates of pay * Solve problems involving unit pricing | Books | Modelling reading of questions by the class teacher – teaching like a Mathematician  Two key words at the start of each lesson defined  Expectation of Mathematical vocabulary used in lessons |
| Speech | Ratio, Proportion, Proportional, Multiplier, Speed, Unitary method, Compound units, Bar model, Part, Equal, Share, Unequal  Notation  Kilometres per hour is written as km/h Metres per second is written as m/s |
| Checklist RTL | End of unit exam completed for Ratio.  Reteaching and relearning opportunities will be delivered to each class dependent on the performance of each class. |
| Home | Dr Frost Maths – practising skills using DrFrost.org (a unique username and password will be provided by the school)  We expect Year 8 pupils to spend 30 minutes on homework for Maths per week. |
| **Half Term 2:**  **Algebra**  **Declarative Knowledge:**   * Know the meaning of expression, term, formula, equation, function * Know and use basic algebraic notation (the ‘rules’ of algebra)   **Procedural Knowledge:**   * Simplify a simple expression by collecting like terms * Simplify more complex expressions by collecting like terms * Manipulate expressions by multiplying an integer over a bracket (the distributive law) * Manipulate expressions by multiplying a single term over a bracket (the distributive law) * Substitute positive numbers into expressions and formulae * Simplify an expression involving terms with combinations of variables (e.g. 3a²b + 4ab² + 2a² – a²b) * Factorise an algebraic expression by using highest common factor * Solve linear equations with the unknown on one side with integers   **Conditional Knowledge:**   * Given a function, establish outputs from given inputs and inputs from given outputs * Solve linear equations with the unknown on one side with when calculating with negative numbers is required * Solve linear equations with the unknown on both sides when the solution is a fraction * Solve linear equations with the unknown on both sides when the solution is a negative number * Solve linear equations with the unknown on both sides when the equation involves brackets | Books | Modelling reading of questions by the class teacher – teaching like a Mathematician  Two key words at the start of each lesson defined  Expectation of Mathematical vocabulary used in lessons |
| Speech | Algebra  Expression, Term, Formula (formulae), Equation, Function, Variable  Mapping diagram, Input, Output  Represent  Substitute  Evaluate  Like terms  Simplify / Collect |
| Checklist RTL | End of unit exam completed for Algebra.  Reteaching and relearning opportunities will be delivered to each class dependent on the performance of each class. |
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