**Curriculum Overview for Mathematics**

**Year 8**

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| **Half Term 1:** **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 | AlgebraExpression, Term, Formula (formulae), Equation, Function, VariableMapping diagram, Input, OutputRepresentSubstituteEvaluateLike termsSimplify / Collect |
| Checklist RTL | There will be a formal end of half-term exam incorporating the units studied during the half-term. We will re-teach during an Exam Review lesson after the assessment |
| Home | Key Knowledge Organiser test – revise the key knowledge organiser given at the start of the unitDr Frost Maths – practising skills using DrFrostMaths.com (a unique username and password will be provided by the school) |
| **Half Term 2: 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 | There will be a formal end of half-term exam incorporating the 2 units studied during the half-term and will recall work from Half-Term 1We will re-teach during an Exam Review lesson after the assessment |
| Home | Key Knowledge Organiser test – revise the key knowledge organiser given at the start of the unitDr Frost Maths – practising skills using DrFrostMaths.com (a unique username and password will be provided by the school) |