**Curriculum Overview for Mathematics**

**Year 10**

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| **Half Term 5: Statistics****Declarative Knowledge:*** Know and understand the terms: primary data, secondary data, discrete data and continuous data
* Know and understand the terms positive correlation, negative correlation, no correlation, weak correlation and strong correlation

**Procedural Knowledge:*** Interpret and construct tables, charts and diagrams including, for categorical data:
	+ frequency tables
	+ bar charts
	+ pie charts
	+ pictograms
	+ vertical line charts for ungrouped discrete numerical data
	+ tables and line graphs for time series data
* Interpret, analyse and compare the distributions of data sets from univariate empirical distributions through
	+ appropriate graphical representation involving discrete, continuous and grouped data, including boxplots
	+ appropriate measures of central tendency (median, mean, mode and modal class)
	+ spread (range, including consideration of outliers, quartiles and interquartile range)
* Construct and interpret diagrams for grouped discrete data and continuous data, i.e. histograms with equal and unequal class intervals and cumulative frequency graphs, and know their appropriate use
* Apply statistics to describe a population
* Infer properties of populations or distributions from a sample, whilst knowing the limitations of sampling
* Use and interpret scatter graphs of bivariate data

**Conditional Knowledge:** * know the appropriate use of each method of representing data, including choosing suitable statistical diagrams
* Recognise correlation and know that it does not indicate causation
* Draw estimated lines of best fit
* Make predictions
* Interpolate and extrapolate apparent trends whilst knowing the dangers of doing so
 | Books | Modelling reading of questions by the class teacher – teaching like a Mathematician Key words on top sheet are shared with children, including syllabification when they appear in the learning  Expectation of Mathematical vocabulary used in lessons |
| Speech | Categorical, qualitative, quantitative, discrete, continuous, grouped, primary, secondary, mean, median, mode, range, outliers, sample, population, correlation, interpolation, extrapolation |
| Checklist RTL | There will be a formal end of half-unit exam. There is an expectation of revision to take place at home. Children will relearn during an Exam Review lesson after the assessment and complete a Whole Class Feedback sheet.  |
| Home | Knowledge Recall Booklet – a selection of recall questions that is set at the start of the half-term and returned for marking at the end of the half-term.Dr Frost Maths – practising skills using DrFrost.org (a unique username and password will be provided by the school).Revision for end of unit exams. This will include Dr Frost Maths practise, but may also include extra revision set by the teacher, including practising past exam questions, creating revision cards, creating mindmaps, etc. |
| **Half Term 6: Volume, Congruence and Similarity****Declarative Knowledge:** * Know the difference between lengths, areas and volumes

**Procedural Knowledge:*** Apply and use the concepts of congruence and similarity, including the relationships between lengths, areas and volumes in similar figures
* Compare lengths, areas and volumes using ratio notation
* ​scale factors
* Make links to similarity
* Know and apply formulae to calculate the volume of cuboids and other right prisms (including cylinders)
* Calculate the volume of spheres, pyramids, cones and composite solids, including frustums
* Calculate exactly with multiples of $π$

**Conditional Knowledge:*** Use the basic congruence criteria for triangles (SSS, SAS, ASA, RHS)
* Apply angle facts, triangle congruence, similarity and properties of quadrilaterals to conjecture and derive results about angles and sides, including Pythagoras’ Theorem and the fact that the base angles of an isosceles triangle are equal, and use known results to obtain simple proofs
 | Books | Modelling reading of questions by the class teacher – teaching like a Mathematician Key words on top sheet are shared with children, including syllabification when they appear in the learning  Expectation of Mathematical vocabulary used in lessons |
| Speech | Congruent, similar, scale factor, volume |
| Checklist RTL | There will be a formal end of half-unit exam. There is an expectation of revision to take place at home. Children will relearn during an Exam Review lesson after the assessment and complete a Whole Class Feedback sheet.  |
| Home | Knowledge Recall Booklet – a selection of recall questions that is set at the start of the half-term and returned for marking at the end of the half-term.Dr Frost Maths – practising skills using DrFrost.org (a unique username and password will be provided by the school).Revision for end of unit exams. This will include Dr Frost Maths practise, but may also include extra revision set by the teacher, including practising past exam questions, creating revision cards, creating mindmaps, etc. |
| **Half Term 6: Pythagoras and Trigonometry (Foundation)****Declarative Knowledge:*** Know the formula for Pythagoras' Theorem, $a^{2}+b^{2}=c^{2}$
* Know the exact values of the trigonometric rations for 0°, 30° 45°, 60° and 90°

**Procedural Knowledge:*** Apply it to find length in right angled triangles in two dimensional figures
* Know and use the trigonometric ratios
	+ $sinθ=\frac{opp}{hyp}$
	+ $cosθ=\frac{adj}{hyp}$
	+ $tanθ=\frac{opp}{adj}$

Apply them to find angles and lengths in right-angled triangles in two dimensional figures* Compare lengths using ratio notation

**Conditional Knowledge:*** Solve problems using Pythagoras’ theorem and trigonometric ratios
 | Books | Modelling reading of questions by the class teacher – teaching like a Mathematician Key words on top sheet are shared with children, including syllabification when they appear in the learning  Expectation of Mathematical vocabulary used in lessons |
| Speech | Pythagoras, hypotenuse, opposite, adjacent, sine, cosine, tangent |
| Checklist RTL | There will be a formal end of half-unit exam. There is an expectation of revision to take place at home. Children will relearn during an Exam Review lesson after the assessment and complete a Whole Class Feedback sheet.  |
| Home | Knowledge Recall Booklet – a selection of recall questions that is set at the start of the half-term and returned for marking at the end of the half-term.Dr Frost Maths – practising skills using DrFrost.org (a unique username and password will be provided by the school).Revision for end of unit exams. This will include Dr Frost Maths practise, but may also include extra revision set by the teacher, including practising past exam questions, creating revision cards, creating mindmaps, etc. |
| **Half Term 6: Pythagoras and Trigonometry (Higher)****Declarative Knowledge:*** Know the formula for Pythagoras' Theorem, $a^{2}+b^{2}=c^{2}$
* Know the exact values of the trigonometric rations for 0°, 30° 45°, 60° and 90°

**Procedural Knowledge:*** Apply it to find angles and lengths in right angled triangles and, where possible, general triangles in two- and three-dimensional figures
* Know and use the trigonometric ratios
	+ $sinθ=\frac{opp}{hyp}$
	+ $cosθ=\frac{adj}{hyp}$
	+ $tanθ=\frac{opp}{adj}$
* Apply them to find angles and lengths in right-angled triangles in two dimensional figures
* Compare lengths using ratio notation; make links to trigonometric ratios
* Know and apply
	+ the Sine rule, $\frac{a}{sinA}=\frac{b}{sinB}=\frac{c}{sinC}$
	+ the Cosine rule, $a^{2}=b^{2}+c^{2}-2bc\cos(A)$

to find unknown lengths and angles* Know and apply $A=\frac{1}{2}ab\sin(C)$ to calculate the area, sides or angles of any triangle

**Conditional Knowledge:*** Apply angle facts, triangle congruence, similarity and properties of quadrilaterals to conjecture and derive results about angles and sides including Pythagoras’ Theorem and use known results to obtain simple proofs
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| Speech | Pythagoras, hypotenuse, opposite, adjacent, sine, cosine, tangent |
| Checklist RTL | There will be a formal end of half-unit exam. There is an expectation of revision to take place at home. Children will relearn during an Exam Review lesson after the assessment and complete a Whole Class Feedback sheet.  |
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