

# GCSE Course Higher Plus

## *Yr 9 work to be covered*

### *Spring Term*

#### **N1 Integers, powers and roots**

N1.1 Powers of 10

N1.2 Standard form for large numbers

N1.3 Standard form for small numbers

N1.4 Prime numbers and factorisation

N1.5 Using prime factors: HCF and LCM

#### **S1 Length, area and volume**

S1.1 Arc length and sector area

S1.2 Volume of a pyramid and a cone

S1.3 Surface area of a pyramid

S1.4 Curved surface area of a cone

S1.5 Volume and surface area of a sphere

#### **A1 Expressions**

A1.1 Simplifying using index laws

A1.2 Expanding single and double brackets

A1.3 Factorisation

A1.4 More factorisation

A1.5 The difference of two square

## *Yr 10 work to be covered*

### *Autumn Term*

#### **N2 Whole number calculations**

N2.1 Rounding

N2.2 Upper and lower rounds

N2.3 Multiplying and dividing

N2.4 Mental calculations

N2.5 Written calculations

## **A2 Equations**

A2.1 Solving equations

A2.2 Solving equations involving fractions

A2.3 Dealing with algebraic fractions

A2.4 Adding and subtracting algebraic fraction

A2.5 More equations involving fractions

## **D1 Sampling methods**

D1.1 Random and systematic sampling

D1.2 Stratified sampling

D1.3 Averages and spread

D1.4 Mean of combined data sets

D1.5 Averages and spread for grouped data

## **N3 Fractions, decimals and percentages**

N3.1 Fraction calculations

N3.2 Fractions and decimals

N3.3 Fractions, decimals and percentages

N3.4 Percentage problems

N3.5 Reverse percentage problems

## **S2 Circle theorems**

S2.1 Angle theorems in circles

S2.2 More angle theorems in circles

S2.3 Tangents to circles

S2.4 Alternate segment theorem

S2.5 Geometrical proof

## **A3 Sequences and quadratic equations**

A3.1 Generating sequences

A3.2 The nth term of a linear sequence

A3.3 The nth term of a quadratic sequence

A3.4 Solving quadratic equations

A3.5 The quadratic formula

## **D2 Displaying and interpreting data**

D2.1 Box plots

D2.2 Cumulative frequency diagrams

D2.3 Using a cumulative frequency diagram

D2.4 Box plots for large data sets

D2.5 Comparing data sets

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## **A4 Linear graphs**

A4.1 Line graphs

A4.2 Finding the equation of a straight line

A4.3 Perpendicular lines

A4.4 Regions

A4.5 Inequalities in two variables

## **D3 Probability**

D3.1 Probability and mutually exclusive events

D3.2 Theoretical and experimental probability

D3.3 Relative frequency and best estimate

D3.4 Independent events

D3.5 Probability of two events

## **N4 Proportion**

N4.1 Proportion problems

N4.2 Direct proportion

N4.3 Inverse proportion

N4.4 Repeated proportional change

N4.5 Ratio problems

## **S3 Congruence and similarity**

S3.1 Congruence

S3.2 Congruence and proof

S3.3 Enlargement

S3.4 Similar shapes

S3.5 Similar shapes - area and volume

## **N5 Index laws**

N5.1 Index laws

N5.2 More index laws

N5.3 Irrational numbers

N5.4 Calculations with surds

N5.5 Number and algebra

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## **A5 Formulae and proof**

- A5.1 Identities, formulae and equations
- A5.2 Rearranging formulae
- A5.3 More rearranging formulae
- A5.4 Proof
- A5.5 More proof

## **S4 Pythagoras and trigonometry**

- S4.1 Pythagoras' theorem and coordinates
- S4.2 Tangent ratio
- S4.3 Sine and cosine ratios
- S4.4 Finding angles in right-angled triangles
- S4.5 Pythagoras' theorem and trigonometry

## **N6 Estimating and calculating**

- N6.1 Estimation
- N6.2 Exact calculations
- N6.3 Limits of accuracy
- N6.4 Written calculation methods
- N6.5 Efficient use of a calculator

## **A6 Simultaneous and quadratic equations**

- A6.1 Using quadratic equations
- A6.2 Solving simultaneous linear equations
- A6.3 Simultaneous linear and quadratic equations
- A6.4 The equation of a circle
- A6.5 Solving inequalities

## **D4 Representing data**

- D4.1 Stem-and-leaf diagrams
- D4.2 Frequency polygons
- D4.3 Time series
- D4.4 Predictions using time series
- D4.5 Scatter graphs

# *Yr 11 work to be covered*

## *Autumn Term*

### **S5 Sine and cosine rules**

S5.1 More pythagoras' theorem and trigonometry

S5.2 The sine rule

S5.3 The cosine rule

S5.4 Solving problems using the sine and cosine rules

S5.5 Pythagoras' theorem and trigonometry in 3-D

### **N7 Fraction and percentage calculations**

N7.1 Finding fractions of quantities

N7.2 Finding a percentage of a quantity

N7.3 Percentage increase and decrease

N7.4 Simple and compound interest

N7.5 More percentage techniques

### **D5 Histograms**

D5.1 Histograms

D5.2 Interpreting histograms

D5.3 More histograms

D5.4 Using histograms to compare data sets

D5.5 Statistical reports

### **S6 3-D problems**

S6.1 Measures and dimensions

S6.2 The area of a triangle

S6.3 Solving problems using trigonometry

S6.4 Frustrums

S6.5 Solving 3-D problems

## **A7 Quadratic equations**

A7.1 More quadratic equations

A7.2 Completing the square

A7.3 Solving quadratics by completing the square

A7.4 Sketching quadratic graphs

A7.5 Solving problems involving quadratics

# *Spring Term*

## **N8 Ratio and proportion**

N8.1 Introducing ratio

N8.2 More ratio

N8.3 Ratio and proportion

N8.4 Ratio, proportion and percentages

N8.5 Reverse percentages

## **S7 Vectors**

S7.1 Vector notation

S7.2 Combining vectors

S7.3 Parallel vectors

S7.4 Using vectors in geometry

S7.5 Proof using vectors

## **D6 Independent events**

D6.1 Drawing tree diagrams

D6.2 Using tree diagrams to find probabilities

D6.3 Sampling without replacement

D6.4 Tree diagrams - conditional probability

D6.5 More conditional probability

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## **A8 Graphical solutions**

- A8.1 Graphs of quadratic and cubic functions
- A8.2 Graphs of exponential and reciprocal functions
- A8.3 Solving equations using graphs
- A8.4 Further graphical solutions
- A8.5 More equations of circles

## **S8 Trigonometric graphs**

- S8.1 Sine graph
- S8.2 Cosine graph
- S8.3 Tangent graph
- S8.4 Solving trigonometric equations
- S8.5 Transformations of trigonometric graphs