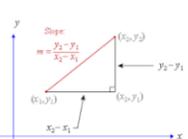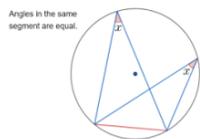# Mathematics Learning Journey

Level 2 or 3 Apprenticeships

A Level Further Mathematics
A Level Mathematics
AS Further Mathematics
Core Mathematics

REVISION OF TOPICS USING EXAM PAPERS AND OTHER RESOURCES

Angles in the same segment are equal.

Changing the subject of the formulae, proof. Algebraic fractions, solving equations arising from algebraic fractions, rationalising surds.

Reciprocal and exponential graphs; gradient and area under graphs

Direct and inverse proportion

FEBRUARY EXAM SERIES

R and P

Quadratics, expanding more than two brackets, sketching graphs, graphs of circles, cubes and quadratics.

Circle theorems, circle geometry.

Vectors and geometric proof.

Further trigonometry.

Geometry and Measure

Algebra

Geometry and Measure

NOVEMBER EXAM SERIES

Algebra

Geometry and Measure

Algebra

R and P

Ratio and proportion.

Circles, cylinders, cones and spheres.

Multiplicative relationships. Plans and elevations. Constructions.

Quadratic equations: expanding and factorising.

Vectors

Rearranging equations, graphs of cubic and reciprocal functions and simultaneous equations

YEAR 11

Angles, polygons, perimeter, area, sectors and arc length. 3D forms and volume. Constructions.

Collecting data, averages, representing data, cumulative frequency, boxplots and histograms.

Tree diagrams and Venn diagrams.

Algebraic fractions.

Percentage recap

Quadratic, cubic and other graphs. Solving quadratic and simultaneous equations. Inequalities.

Linear graphs and coordinate geometry

Expanding brackets.

Recap and extend types of number. Recurring decimals. Recap standard form.

END OF YEAR 10 EXAM SERIES

Higher/Foundation

Geometry and Measure

Statistics

Geometry and Measure

Probability

Algebra

Number

Algebra

Geometry and Measure

Algebra

Number

Tables, charts and graphs, pie charts, scatter diagrams, averages and sampling

Transformations review and extend. Perimeter, area and volume, circles.

Probability review

Fractions, decimals and percentages

Sequences. Algebra Recap. Equations and inequalities. Graphs. Quadratic equations. Simultaneous equations.

Types of number, Indices and standard form.

YEAR 10

Sets 1 and 2/Middle sets

2, 9, 18, 29, 42
+7 +11 +13 +15
+2 +2 +2

Fractions and percentages.

Unitary method, best buys, compound measures, compound interest.

Setting up, rearranging, solving a variety of equations.

Checking calculations and rounding. Indices, roots reciprocals and hierarchy of operations. Factors, multiples, primes, standard form and surds,

Linear y=mx+c and real life graphs

Single and combined events, two way tables, Venn diagrams

Sequences

Trigonometry. Transformations.

Single and combined events, two way tables and Venn diagrams.

Recognising, generating, find and use the nth term. Expressions and substitution. Expanding and factorising, changing the subject, inequalities

Trigonometry. Transformations.

Laws of indices, working with powers and roots. Standard form.

Real-life graphs, straight line graphs, y=mx+c. Plotting quadratics and cubics.

Number

Geometry and Measure

R and P / **Probability**

Algebra

Geometry and Measure

Number

Algebra

Probability

Number

Integers and decimals.

Similarity and congruence. Properties of shape, parallel lines, angle facts, angles in polygons. Pythagoras.

Hypotenuse / θ / Opposite / Adjacent

Area of shapes including trapezia, composite shapes, circles, circumference, surface area and volume

Use of scaling diagrams, percentage of amounts, increase, decrease, reverse, percentage profit/loss, direct and inverse proportion

Geometry and Measure

Pythagoras' Theorem, similarity and congruence in 2D and 3D.

YEAR 9

Constructions

Polygons

Perimeter, area and Volume

Statistical Analysis

Statistical Representation

Percentages and Proportionality

Constructing arcs, circles, triangles, variety of bisectors, and hexagons.

Angles in parallel lines and in polygons, including proofs.

Understand and calculate averages

Constructing pictograms, bar charts, pie charts, scatter diagrams

Equations and Inequalities

Definitions, solving one-step, two-step, multi-step equations, reading, drawing and solving inequalities

Linear and Real Life Graphs

Plot in all four quadrants, generate and plot coordinates from a rule, horizontal and vertical lines.

Multiplicative relationships, ratio tables, double number lines, ratios as fractions, divide into given ratio, finding parts, fraction of an amount, 1:n and n:1.

Ratio & Proportion

Coordinates, plot, midpoints, gradient and y=mx+c

Co-ordinates and the Cartesian Plane

Perimeter and Area

Ratio and fractions

Transformations

Estimation and Rounding

Sequences

YEAR 8

Perimeter, area of rectangles, triangles, parallelograms, trapezia and compound shapes.

Invariance, reflections, translations (including with column vectors.) Rotations and enlargements.

Rounding to: whole numbers, decimal places and significant figures, estimating

Special sequences, arithmetic, geometric, term to term, position to term, nth term, including algebra

Develop a love of Mathematics

Form algebraic expressions, substitute, collecting like terms, expanding a single bracket using distributive law, factorising.

Algebraic Manipulation

Formal written methods for all four operations, associative law, commutative law distributive law. BIDMAS and negative numbers.

Arithmetic with Fractions

The Four Operations of Directed Numbers

Types of Numbers

Place Value and Rounding

SPARX INTRODUCTION

YEAR 7

Representations of fractions, simplifying fractions, equivalent fractions, ordering, mixed to improper and back. Four operations with fractions.

5 x 4 = 20
factor of 20 / factor of 20 / multiple of 5 / multiple of 4

Multiples, factors, squares, cubes, roots, Using calculator, primes, prime factors, HCF and LCM

Comparing, recognising and ordering numbers. Using inequality signs, reading. Multiplying and dividing by powers of 10, rounding.

sparx