Scheme of Work

Topic Code

Duration

Content

1M567

N2

2wk

Ratio and percentages

Percentages definition, forward and backward calculation

Significant figures and rounding (recap when required in questions)

Compound interest and repeated percentage changes

Ratio of two and three quantities (including algebra problems)

G2

1wk

Transformation - Can use tracing paper

Translation (using column vectors)

Reflection (about y=a, x=b, y=x and y=-x only)

Rotation (90, 180, 270 degrees)

Enlargement (+ve scale factor only, incl. scale factor between 0 and 1)

Successive transformations

G3(i)

2wk

Similar shapes: triangles

Identifying similar triangles by AA (with and without parallel lines)

Length and area ratios of similar triangles and other similar 2D shapes

Algebra problems

G4

2.5wk

Trigonometry

Pythagoras theorem and its converse

tan and arctan

sin & cos and their inverses

Compound right-angled triangles

S2

2wk

Probability

Probability calculation using symmetry

Mutually exclusive and independent events (“not”, “or”, “and” rules)

Probability tree, incl. selection problems with and without replacement

A3

2.5wk

Graph basics:

Graph of y=mx+c and calculation of m from a given graph; Interpretation of m, c and the x-intercept (no equation of the line algebra, but incl. relations of y=mx+c, y=-mx+c and y=-mx-c); to include examples using other letters, e.g. v=u+at, where u and a are constants

Plot (quadratic, cubic, reciprocal) curves using table of values, incl. table of values on a calculator

G5(i)

3.5wk

Perimeter, Area and Volume

Area of: rectangle, parallelogram, triangle (no (1/2)ab*sinC), trapezium

Circles: perimeter and area of a circle; arc-length and area of a sector (no segment)

Surface area and volume of 3D shapes: cuboid, prism, cylinder

Compound shapes and shapes subtraction

Unit conversion

Algebra problems

S1

0.5wk

Descriptive statistics

Mean, median, mode, range for ungrouped data only, incl. frequency table and algebra problems

Revision

1wk

Revise for Novi End of Year Exam

2M45678

Further Algebra

1.5wk

Further Algebra

Novi algebra recap: expanding brackets, solving linear equations and simultaneous equations, re-arranging formulae

Expanding three brackets [Book reference: A7]

Harder re-arrangement: unknown in two places (excl. algebraic fractions and surds) [Book reference: A7]

N3(i)

1wk

Arithmetic progression

Sequence notation, position-to-term and recursive rules

AP: finding the n-th term (incl. inverse problems, e.g. how many terms are between 100 and 1000)

A6

2.5wk

Coordinate geometry:

Quadrants

Points: mid-point, distance, reflection about veritcal/horizontal lines and y=x

Equation of a line: all forms

Multiple lines: parallel lines, perpendicular lines, triangles, parallelograms and squares

Simultaneous equations and point of intersection

Problem solving (contents may vary by sets): e.g. point-line distance (default method: perpendicular line -> point of intersection -> distance), area problems

Shading regions defined by 2D inequalities

A4A7

3.5wk

Factorising and solving quadratics (Factorisable quadratics only)

Common factors

Difference of squares (incl. 75x^2 - 12 type)

General quadratic factorisation: cross method or splitting the middle term

Solving quadratics using factorisation

Linear+quadratic simultaneous equations (restricted to factorisable quadratics)

Solving equations with algebraic fractions (eliminating the denominator)

Algebraic fractions

Harder re-arrangement: with algebraic fractions

Revision

1wk

Revise for a test on this term's work (incl. revision topics from Novi)

A9

1wk

Proportionality

Direct and inverse proportion, incl powers (x^2 is proportional to y^3)

Graphical representation (y=kx and y=k/x for positive k and x)

A5

2.5wk

Indices and Surds (NB $\pm\sqrt{x}$ $\sqrt{x}$)

Indices laws: Derivation/Connection between the laws

Standard form

Fractional indices

Surds algebra

Re-arrangement with exponents and surds [Book reference: A7]

Algebraic standard form (may include exponents and surds)

A8

3wk

Quadratic curve

Completing the square and its use in solving quadratic equations, deriving the quadratic formula, finding the axis of symmetry of the curve and the coordinates of the max/min points, and curve sketching

Use of the quadratic formula

Quadratic inequality and solution on the number line

Worded quadratic problems (present both roots and give clear reason for rejection)

N3(ii)

1wk

AP(ii)

AP(i) recap: finding the n-th term

Sum of AP and algebra problems (e.g. finding the number of terms that add up to a given sum)

S3

2.5wk

Process data

Mode/modal class, median, mean, mid-range, range in grouped data

Finding the IQR from a discrete data set

Histograms

Cumulative frequency tables

Problem solving: unknown scales

Optional projects

April Exam

2wk

2M45678 paper on MT and LT materials

G7

1wk

Further trig:

SOH-CAH-TOA revision

Angles of elevation & depression

3D trig

G6

2wk

Circles and chords

Angle theorems (proofs are optional: not examinable in IGCSE)

Tangents theorems and the AST (proofs are optional)

Chords perpendicular to a diameter

Intersecting chords (incl. algebra problems involving quadratic equations)

G3(ii)G5(ii)

2.5wk

PAV:

Similar 3D objects and volume (mass), area (paint) and length ratios

Surface area and volume of 3D shapes: pyramid (simple base only for surfae area), cone, sphere and frustum

Algebra problems and problem solving

N4

0.5wk

Boundsincl. harder examples such as x/(y+z) and x/(y-z) etc - may vary contents by sets

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G8

1.5wk

Circular functions

Graphs of sin, cos and tan for any angle

Sine equations: sin(x)=0.6 type only, 0<x<180 degrees

Area of triangle = (1/2)ab*sin(C) and its application in finding the area of a segment (area of the segment = area of the sector - area of the triangle)

Sine and cosine rules

3 figure bearings (These are clockwise from due north. E.g. 090 is a bearing of due East.)