KS4 Mathematics Programme of Study (Year 1)

Northumberland's P.R.U.

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15

Autumn

Autumn 1 – 'Equality & Diversity'

Subject Area Topic: Reasoning with Algebra

STRAIGHT LINE GRAPHS
- Lines parallel to x and y axis
- Using a table of values
- Comparing Gradients
- Comparing y intercepts
- Understand and use y =mx+c

FORMING AND SOLVING EQUATIONS
- Solving one step equations and inequalities
- Solving two step equations and inequalities
- Solving equations and inequalities with brackets
- Solve equations with unknowns on both sides
- Substitute into a formula
- Rearrange a one step formula

TESTING CONJECTURES
- Calculating and using Factors, Multiples and Primes
- Always, Sometimes, Never
- Expand Binominals
- Using proof

Notes/Links/Interleaving
Use of calculator for more complex calculations.
Using linear Graphs for trends and data in Science

Additional Higher Content;
- Write and equation in the form y= mx+ c
- Solve inequalities with unknowns on both sides
- Expanding triple brackets

Autumn 2 – 'Living in the Wider World'

Subject Area Topic Constructing in 2D and 3D

THREE DIMENSIONAL SHAPES
- Know the names of 2D and 3D shapes
- Identify faces, vertices and edges of 3D shapes
- Construct accurate nets of 3D shapes
- Draw and use Plans and elevations
- Calculate the area of simple 2D shapes
- Use the formula to find the area of a circle
- Calculate Surface area of cubes and cuboids
- Calculate Surface area of a triangular prims

CONSTRUCTION AND CONGRUNECY
- Use a protractor to draw and measure angles
- Construct and interpret scale drawings
- Construct an angle bisector
- Construct a perpendicular bisector
- Construct a locus of equidistance from two points
- Construct triangles from given information.
- Identify congruent figures
- Identify and Explore congruent triangles

ASSESSEMENT

Notes/Links/Interleaving
Use of calculator for more complex calculations.
Substituting into a real life formula
Scale drawings in Science and Product design

Additional Higher Content
- Leaving and using answers in terms of Pi
- Congruent Triangles and tests of congruency

Spring

Spring 1 – 'The Circle of Life'

Subject Area Topic Reasoning with Number

NUMBERS
- Use and manipulate directed numbers
- Solve problems with integers
- Solve Problems with decimals
- Identify and use the HFC and LCM
- To manipulate fractions using the four operations
- Solve problems involving fractions
- To write numbers in standard index form

USING PERCENTAGES
- Calculate and use equivalent Fractions, Percentages and Decimals
- Find a percentage of an amount without a calculator
- Find a percentage of an amount with a calculator
- Calculate percentage increase and decrease
- Express change as a percentage
- Solve reverse percentage problems

MATHS AND MONEY
- Calculate Simple Interest
- Calculate compound interest
- Solve problems involving VAT
- Use bills and banks statements to solve problems and budget
- Calculate the amount of tax needed to be paid on a wage
- Use exchange rates

Notes/Links/Interleaving
Use of calculator for more complex calculations.
Using standard from in Science

Additional Higher Content
- Understand and use Surds
- Calculating with numbers in Standard Form
- Solve problems with repeated percentage change
- Solve unit pricing problems

Spring 2 – 'Conflict'

Subject Area Topic Reasoning with Geometry

DEDUCTION
- Calculate angles on straight lines
- Calculate angles in Triangle and Quadrilaterals
- Understand, find and use angles in parallel lines.
- Form equations to find unknown angles
- Use conjecture to determine properties and similarities of 2D shapes

ROTATION AND TRANSLATION
- Identify the order of symmetry of a shape
- Compare and contrast rotational symmetry with lines of symmetry
- Rotate a shape about on the shape
- Rotate a shape abut a point not in the shape
- Translate shapes and points by a given vector
- Compare rotation and reflection of shapes

ASSESSMENT

Notes/Links/Interleaving
Use of calculator for more complex calculations.
Forming equations for unknown quantities and results in science

Additional Higher Content
- Using vectors and vector notation
- Compare and use multiple transformations

	Summer 1 – 'Health & Leisure'				Summer 2 – 'Crime & Punishment'		
	Subject Area Topic Reasoning with Proportion				**Subject Area Topic Rate, Representation and Revision**		
Summer	**PYTHAGORAS' THEOREM** • Find Squares and square roots • Calculate the hypotenuse of a right angled triangle • Calculate a shorter side of a right angled triangle • Use Pythagoras' on a coordinate grid	**REASONING AND PROPORTION** • Understand and apply enlargement and similarity • Enlarge a shape a positive integer scale factor • Enlarge a shape a positive integer scale from a point factor • Enlarge a shape a positive fractional scale factor • Applying scale factors to find unknown lengths of similar shapes	**SOLVING RATIO AND PROPRTION PROBLEMS** • Understand and use direct proportion • Plot and use direct proportion graphically • Apply inverse proportion to solve problems • Calculate an amount given a ratio • Solve problems with ratio when given one part	**ASSESMENT**	**RATES** • To calculate speed, distance and time without a calculator • To calculate speed, distance and time with a calculator • Plot and use distance time graphs • Solve problems involving Density, Volume and Mass. • Calculate rates and change and their units	**PROBABILITY** • To understand and use a probability line • To recognize all probability can represent between 0 and 1 • To identify the probability of a single event occurring • To identify the probability of a single event not occurring • Use sample space to calculate expected outcomes • Calculate and use relative frequency	**REVISION AND ASSESSMENT**

Notes/Links/Interleaving

Links with vectors in Science

Use of calculator for more complex calculations.

Additional Higher Content

- Apply Pythagoras' Theorem to 3D problems
- Enlarge a shape a negative scale factor
- Solve problems with similar triangles
- Explore rations in right angle triangles
- Use graphs showing inverse proportion.

Notes/Links/Interleaving

• Compound measures in Science

Additional Higher Content

- Converting compound units
- Use Tree Diagrams
- Use Tree diagrams without replacement