Year 7	
Topic	**Number**
Knowledge	Multiply by powers of 10
	Divide by powers of 10
	Identify factors, primes and multiples
	Calculate HCF and LCM
	Identify and calculate terms within arithmetic sequences
	Calculate using powers and roots
	Use column method for addition and subtraction of indices
	Use column method for addition and subtraction of decimals
	Multiply and divide integers and decimals
	Understand and calculate using the order of operations
	Round to a given number of decimals places
	Round to a given number of significant figures
Topic	**Counting and comparing**
Knowledge	Order integers including negative numbers
	Order decimals
	Use and apply inequalities
	Identify and calculate using equivalent fractions
	Order fractions
	Convert improper fractions to mixed number and vice versa
	Convert fractions to decimals and vice versa
	Visulaising and constructing
	Identify lines of symmetry
	Label mathematical diagrams using the correct notation
	Construct shapes using mathematical equipment
	Identify and recognise properties of quadrilaterals
	Identify the properties of 3D shapes
Topic	**Algebraic manipulation**
Knowledge	Simplify algebraic experssions
	Expand and simplify single brackets
	Substitute into expressions

Autumn 1

Autumn 2

Calculate using function machines

Exploring fractions, decimals and percentages

Write one quantity as a fraction of another

Convert a fraction to a percentage and vice versa

Calculate percentages of amounts

Write one quantity as a percentage of another

Compare fractions and percentages

Write and simplify ratios

Solve simple problems involving ratio

Topic

Sequences

Define term to term rules and continue a linear sequence

Identify linear and non linear sequences and generate terms

Calculating space

Correctly use mathematical drawing equipment.

Convert units of measure

Compare units of mass and volume

Convert between units of time to problem solve

Solve problems involving money

Calculate angles using simple angle facts

Calculate angles around a point

Problem solve using angle facts

Fractions, decimals and percentages

Add and subtract improper fractions

Add and subtract mixed numbers

Multiply and divide mixed numbers

Increase and decrease using multipliers

Compare values using percentages

Calculate percentage change

Problem solve using percentages

Topic
Knowledge

Solving equations

Solve two step equations

Solve 3 step equations

Fluently solve mult-step equations

Calculating Space

Calculate the perimeter of compound shapes

Calculate the area of rectangles, triangles and parallelograms

Calculate the area of trapezia

Summer 1		Calculate the volume of a cuboid
		Calculate the surface area of a cuboid
		Determin coordinates based on shape properties
		Identify lines parallel to the axis
		Reflect a shape in a given line
		Translate a shape
		Perform simple rotations
		Solve problems invoving coordinates
Summer 2	**Topic**	**Presentation of data**
	Knowledge	Construct and interpret frequency tables
		Construct and interpret bar charts
		Construct and interpret comparative bar charts
		Solve problems involving line charts
		Construct and interpet pie charts
		Understand the best chart to use
		Measuring data
		Calculate the mean, median, mode and range for a set of data
		Calculate the mode and median from a frequency table
		Determine the best average to use

	Year 8		

Topic Knowledge	**Number** Identify prime numbers Express a number as a product of primes Calculate HCF and LCM using Venn diagrams Round to given significant figures Write a number in standard form **Calculating** Calculate using negative numbers Calculate with fractions using a calculator Calculate using powers and roots Apply order of operations Apply order of operations using powers and roots Estimate the value of roots **Fractions, decimals and percentages** Use equivalence to determine terminating decimals Convert terminating decimals to fractions Use a calculator to convert non terminating decimals to fractions Fluently convert between fractions, decimals and percentages Order fractions, decimals and percentages	Topic Knowledge	
Topic Knowledge	**Visualising and construction** Measure and draw angles accurately Calculate using scale factors Englarge a shape using scale factors Calculate the centre of enlargement Draw and measure bearings using a protractor Calculate bearings from a description/diagram Calculate using bearings and scale factors **Probability** Know and use the correct terminology for probability Calculate simple probabilities and the probability of events not happening Construct and calculate using sample space diagrams Reason using probability with fractions and decimals Calculate probabilities from a table	Topic Knowledge	
Topic Knowledge	**Algebraic manipulation** Correctly use the terminology of algebra Simply complex expressions with powers in the terms Factorise using multiple factors	Topic Knowledge	

Manipulate and simplfy more complex expressions
Calculate using laws of indices
Substitute positive or negative values into formulae
Change the subject of a formula

Ratio and proportion
Simplify ratios
Share into a given ratio
Calculate using ratio
Calculate using direct proportion
Calculate best buys
Calculate using compound measures

Sequences
Recognise square and cube number sequences
Generare a term given a term-to-term rules
Calculate the nth term of a sequence

Topic Knowledge	**Angles**	Topic Knowledge

Angles
Recognise and caculate using angles on parallel lines
Solve more complex geometrical problems
Calculate internal and external angles of regular polygons
Calculate angles involving polygons
Calculate angles using triangle properties

Fractions, decimals and percentages
Calculate fractions of amounts
Calculate one quantity as a fraction of another
Calculate percentages of amounts
Calculate percentages of amounts using multipliers
Calculate percentage increase and decrease
Calculate original values before a percentage increase or decrease
Problem solve using reverse percentages
Calculate using simple interest
Calculate with fraction

Topic Knowledge	**Equations and inequalities**	Topic Knowledge

Equations and inequalities
Solve equations with unknowns on one side
Solve equations with unknowns on both sides
Solve equations involving fractions
Solving equations with negative solutions
Solving equations involving brackets
Solve equations graphically

Calculating space
Identify parts of a circle

Calculate circumference and area of a circle
Calculate the area and perimeter of fractions of a circle
Calculate the volume of prisms
Calculate the volume of cylinders
Calculate using 2D and 3D similar shapes

Algebra
Draw linear graphs
Calculate the gradient of a linear graph
Calculate the gradient from two points
Calculate the equation of a linear graph
Sketch graphs of the form $ax \pm by = c$
Calculate the equation of parallel lines
Draw quadratic graphs
Draw real life graphs
Draw and calculate using distance-time graphs

Topic Knowledge	**Probability**	Topic Knowledge
	Draw and calculate using Venn diagrams	
	List outcomes systematically	
	Draw and calculate using two-way tables	
	Complete and calculate using frequency diagrams	
	Draw and calculate using sample space diagrams	
	Calculate theoretical probability	
	Calculate experimental probability	
	Statistics	
	Input data into grouped tables	
	Calculate averages and range from frequency tables	
	Calculate using bounds	
	Plot and use scatter graphs to estimate values	
	Draw histograms	
	Compare data	
	Justify which average to use	

Year 9	
Calculations	
Written methods of calculating with positive powers	
Calculate with powers and roots	
Calculate with negative powers	
Use a scientific calculator to calculate powers and roots	
Write regular numbers in standard form and vice versa	
Calculate with standard form	
Round or truncate a given number	
Calculate bounds	
Understand and use inequality notation	
Construction	
Accurately construct bisectors	
Accurately construct loci	
Problem solve with loci	
Understand and draw accurate diagrams using plans and elevations	
Problem solve with plans and elevations	
Algebra	
Correctly use the language of algebra	
Expand and simplify expressions involving brackets	
Expand and simplify double brackets	
Factorise single brackets	
Factorise quadratic expressions	
Substitute into formulae	
Proportion	
Understand direct and indirect proportion	
Calculate using direct and indirect proportion	
Recognise and use graphs of proportion	
Calculate using rates of pay	
Calculate using the unitary method	
Calculate using compound measures	
Sequences	
Recognise and calculate Fibonnaci sequences	
Problem solve using sequences	
Generate and calculate terms of quadratic sequences	

Equations and inequalities
Solve and draw simple inequalities
Solve inequalities with unkowns both sides
Solve multi step inequalities
Construct and solve inequalities

Calculating space
Label parts of a circle
Calculate area or circumference of a circle
Calculate arc lengths and sector areas.
Rearrange and substitute into formulae
Calculate the surface areas of prisms
Calculate the surface area of cylinders
Use Pythagoras' theorem to calculate missing sides of right angled triangles
Problem solve using Pythagroas' theorem

Algebra
Rearrange and substitute into formulae
Identify lines parallel to the axis and their equations
Identify the equation of a linear graph
Draw and calculate using conversion graphs
Plot quadratic graphs
Plot cubic graphs
Plot and interpret reciprocal graphs
Recognise types of graphs

Plot real life graphs

Simultaneous equations

Solve simple simultaneous equations

Solve simultaneous equations by multiplying terms

Create and solve simultaneous equations

Solve simultanous equations graphically

Probability

Calculate probabilities using fractions, decimals and percentages

Combine events to calculate probabilities

Calculate probabilities of dependent events

Construct and use tree diagrams to calculate probabilities

Construct and use tree diagrams to calculate probabilities of dependent events

Calculate theoretical probabilities

Presentation of data

Draw and use time series graphs

Describe trends and make predictions using time series graphs

Construct compound bar charts

Construct and use frequency polygons

Construct stem and leaf diagrams

Plot and describe correlation for scatter diagrams

Construct and use lines of best fit for scatter diagrams

10 Foundation	
Number Calculate using integers Calculate with negative numbers Calculate using order of operations Calculate factors, multiples and primes Calculate prime factor decomposition, HCF and LCM **Algebra** Understand the language of algebra Simplify expressions by collecting like terms Expand single brackets and simplify **Fractions, decimals and percentages** Calculate equivalent fractions Order fractions Calculate with decimals Order decimals Calculate percentages of amounts Calculate percentage increase and decrease **Data** Understand how questionnaires work Collate and display data Draw comparative bar charts Draw and make predictions for time series graphs Draw and calculate from graphs and charts e.g pictograms and pie charts Create and calculate from stem and leaf diagrams Calculate using time tables Calculate averages from tables	
Algebra Solve simple linear equations Solve multi-step linear equations Solve equations involving brackets Substitute into simple formulae Create and calculate using formulae Rearrange formulae **Fractions, decimals and percentages** Calculate with simple fractions Calculate with mixed numbers Convert fractions, decimals and percentages Order fractions, decimals and percentages Calculate and compare fractions and percentages of amounts	
Sequences Plot and read coordinates Draw linear graphs State equations of lines parallel to the axis	

Calculate terms of, or continue a sequence

Calculate the nth term of a sequence

Identify a type of sequence and continue the sequence

Draw and identify inequalities on a numberlines

Solve simple inequalities

Measure

Convert metric units

Calculate using compound measure

Calculate angles on parallel lines

Draw, measure and calculate bearings

Draw and calculate using scale drawings

Calculate the perimeter and area of 2D shapes

Calculate the perimeter and area of compound shapes

Identify parts of a circle

Calculate the circumference and area of circles

Calculate using arcs and sectors

Ratio and proportion

Understand and use ratio notation

Simplify ratios or write in the form 1:n or n:1

Share into a given ratio

Problem solve with ratio

Combine ratios

Calculate using simple proportion

Calculate best buys

Identify graphs of proportion

Calculate using direct and indirect proportion

Indices and standard form

Confidently use a calculator

Calculate using powers and roots

Recall and use laws of indices

Round to a given number of decimal places or significant figures

Write a number in standard form or vice versa

Successfully rotate, reflect, translate or enlarge a shape

Describe a transformation

Revision and end of year exams

10 Higher

Algebra
Understand the language of algebra
Solve simple equations
Solve multi-step equations
Solve equations involving brackets and/or fractions
Substitute into formulae
Rearrange equations

Data
Calculate using sampling
Understand how to collect and collate data
Draw and calculate using cumulative frequency
Calculate quartiles using box plots
Compare box plots with cumulative frequency graphs
Draw and calculate using histograms

Number
Calculate using fractions and mixed numbers
Calculate percentage change, increase/decrease and reverse percentages
Calculate using index laws
Write a number in standard form and vice versa
Calculate with standard form
Simplify surds
Calculate with surds
Expand brackets involving surds
Rationalise a surd

Quadratics
Factorise simple quadratics
Factorise and solve harder quaratics
Complete the square and identify turning points
Use the quadratic formula
Sketch graphs of quadratics and identify roots
Shape

Shape
Calculate angles
Calculate angles on parallel lines
Calculate bearings and scale drawings
Calculate angles in polygons
Calculate perimeter and area of 2D shapes in terms of algebra
Calculate using arcs and sectors
Calculate the volume of 3D shapes
Calculate the volume and surface area of cones and spheres

Graphs
Calculate the equation of a straight line
Calculate equations or parallel and perpendicular lines
Plot and recognise non-linear graphs

Number
Using a calculator
Calculating powers an
Laws of indices
Conversion with stand
Calculating with stand
Rounding to integers
Rounding to a given nu
Rounding to a given nu
Calculate using estima
Error intervals

Probability
Writing probability of e
Working with sample s
Calculating probability
Listing combinations
Calculating from proba
Completing venn diagra
Set notation
Calculating averages f
Calculating averages f
Drawing scatter graph
Interpreting scatter gra

Shape
Calculate angles in po
Calculate missing leng
Apply rules of congrue
Construct perpendicu
Construct angle bisec
Construct using loci
Calculate sides with p
Calculate the distance
Calculate sides with tr
Calculate angles with
Reflect shapes
Rotate shapes
Enlarge shapes with p
Translate shapes
Describe transformati

Algebra
Collect like terms
Simplify algebraic expr
Expand single bracket
Expand 2 single bracke
Factorise sigle bracket
Form and Solve Equati

Recognise and draw reciprocal and cubic graphs
Recognise and sketch various graphs
Ratio and proportion
Recognise ratio notation and problem solve with ratio
Combine ratios
Calculate using direct proportion
Calculate using direct and indirect proportion

Sequences
Recognise and continue various types of sequences
Generate a sequence from an nt term
Calculate the nth term of linear or quadratic sequences
Solve simple inequalities
Solve harder inequalities
Show inequalities graphically
Show quadratic inequalities graphically
Shape
Transform a shape based on a description
Recognise and identify a transformation
Calculate using Pythagoras' theorem
Calculate missing sides or angles of right angled triangles using trigonometry
Calculate missing sides or angles of non-right angled triangles using sine or cosine
Calculate the area of non-right angled triangles
Calculate exact trigonometric values

Probability
Calculate the probability of single or two events
Solve problems using basic probability
Calculate probabilities of independent events using tree diagrams
Calculate probabilities of dependent events using tree diagrams
Draw and calculate probabilities using Venn diagrams
Calculate using averages and range
Plot and make predictions based on scatter diagrams

Expand 2 brackets
Factorise Quadratics
Solve Quadratic by fac
Solve quadratics by us
Drawing quadratic gra
Calculate roots of qua
Recognise key graphs
Calculating gradient
Interpreting real life gr
Draw and interpret dis
Draw ad interpret velo
Shape
Know the properties of
Draw nets of 3D shape
Draw plas and elevatio
Calculate the ara of 2D
Calculate the area of c
Calculate the surface
Know the parts of a cir
Calcuate the area of a
Calculate the circumfe
Calculate the volume
Calculate the volume
Calculate the volume
Calculate with bearing
Interpret and work with
Represent a movemer
Arithmatic with colum
Percentages
Calculate with percen
Calculate with reverse
Calculate simple inter
Calculate percentage
Proportion
Calculate direct propo
Calculate inverse prop
Represet direct propor
Represent inverse prop
Calculate with compo
Calculate problems wi
Equations
Rerrage formula
Solve 2 and 3 step equ
Solve equations with v
Solve linear simultaeo
Solve linear simultaeo

Revision and end of year exams

11 Foundation	11 Higher
	Quadratics
	Solve quadratics and complete the square
d roots	Problem solve and solve quadratics
	Solve linear equations by elimination
lard form	Solve linear equations by multiplying and elimination
lard form	Create and solve linear equations
	Solve quadratic simultaneous equations
umber of decimal places	**Measure**
umber of significant figures	Calculate compound measures
ation	Calculate angles in polygons
	Accurately construct triangles
	Draw and problem solve with loci
events	Identify circle theorems
space diagrams	Calculate using circle theorems
y from tables	
ability tress	
ams	
from lists	
from tables	
s	
aphs	
lygons	
gths and sides of similar shapes	
ency	**Graphs**
lar bisector	Draw and calculate using real life graphs
tors	Calculate the area under linear graphs
	Calculate the equation of a linear graph
ythagoras	Estimate the gradient of a non-linear graph
e between two poits	Sketch linear and non-linear graphs
rigonometry	Identify point of intersections of graphs
trigonometry	
	Mock exams
ositive and fractional scale factors	
ons	
ressions	
s	**Graphs**
ets and collect like terms	Calculate the equations of a circle
ts	Calculate the equation of a tangent to a cricle
ions	Draw trigonometric graphs

Calculate using trigonometric graphs

Mock exams

where a=1
ctorising
sing the formula
phs
dratics from a graph

aphs
tance time graphs
city time graphs

f 3D shapes
es
ons
D shapes
compound shapes
area of 3D shapes   **Algebraic fractions**
cle   Simplify algebraic fractions
circle   Calculate with algebraic fractions
erence of a circle   Calculate using functions
of prisms   Calculate using iteration
of a cone   Understand algebraic proof
of a sphere
gs   **Revision**
h scales
t as a vector
n vectors

tage multipliers
percentages
est
change

rtion problems
portion problems
rtion with algebra
portion with algebra
und interest
th repeated decay   **Revision**

uations
ariables on both sides
us equations algebraically
us equations graphically