Stage 8

Unit 1 – Proportion and compound measures

Lesson 1 – Identify, write and simplify a ratio

Lesson 2 – Divide a quantity in a given ratio

Lesson 3 – identify proportion and find multipliers (draw and complete a table – see BAM)

Lesson 4 – Practical proportion problems (recipes, photos etc)

Lesson 5 – Understand the idea of a compound unit, and how we can change compound units (ie km/h to mph) introduce speed, distance, time triangle

Lesson 6 – use SDT triangle in problems/recap

Unit 2 - Algebraic simplification

Lesson 1 – understand algebraic notation, a x a x b x b x b is a^2b^3, and laws of indices for multiplying and dividing

Lesson 2 – Simplify algebraic products and quotients

Lesson 3 – Simplify expressions by collecting like terms, include powers

Lesson 4 – Expand and simplify a single bracket, including powers

Lesson 5 – Factorise into a single bracket for linear expressions

Lesson 6 – Factorise a quadratic into a single bracket, $x^2 + x$

Lesson 7 - Substitute +/- numbers onto formulae

Lesson 8 – Understand and change the subject of a formula (only 1 or 2 step but include powers)

Lesson 9 – be aware of common scientific formula for subbing and rearranging (1 and 2 step)

Unit 3 – Fractions decimals and percentages

Lesson 1 – Dividing to change a fraction to a percentage, including recurring decimals

Lesson 2 – Recall fraction/decimal equivalents, including recurring (maybe prove some by division)

Lesson 3 – Change a decimal to a fraction and simplify

Lesson 4 – change fractions to tenths, hundredths and thousandths and then write as a decimal – check with calculator

Lesson 5 - Write fractions/decimals as a percentage

Unit 4 – increasing/deceasing by a percentage

Lesson 1 – identify fractions and percentages as both a number and an operator. Use as operators to calculate %'s or fractions of amounts

Lesson 2 – identify multipliers for increasing or decreasing by a percentage

Lesson 3 – use multipliers to calculate the result of increasing or decreasing by a percentage

Lesson 4 – solve original value problems using multipliers

Lesson 5 – problem solving including financial questions (cost of holidays, best deals etc)

Unit 5 - solving equations with unknowns both sides

Lesson 1 – solve equations (2 step) when answers might be fractions or negatives

Lesson 2 – solve equations with unknowns on both sides (for fractional answers etc)

Lesson 3 – solve equations with unknowns on both sides and brackets

Lesson 4 – recognise point of intersection of two graphs in the form y = mx + c is the solution of the connected equations

Lesson 5 – Problems of the forming equations and solving type

Unit 6 – Sequences and nth terms

Lesson 1 – starter on spotting the term to term rule and using to generate a sequence. Introduce the idea of a position to term rule

Lesson 2 – find the position to term rule and use to generate a sequence, introduce convention of nth term instead of position to term, including generate a quadratic sequence

Lesson 3 – finding the nth term of a linear sequence

AP1

Unit 7 – area and volumes involving circles

Lesson 1 – introduce the vocab of circles, introduce pi, know and use area of a circumference formula

Lesson 2 – find circumference, find radius, find perimeter in compound problems.

Lesson 3 – know and use the formula for area of a circle

Lesson 4 – find radius given area, composite areas

Lesson 5 – know and use volumes of prisms formula

Lesson 6 – know how to find volume of a cylinder

Lesson 7 – problem solving with volume of a cylinder (find h and r, etc)

Unit 8 – Probability of equally likely outcomes

Lesson 1 – the vocabulary of probability and using a number scale to represent probabilities (as fractions or decimals. i.e where is probability of 0.6, ¼ on the number line)

Lesson 2 – calculate the probabilities of events with equally likely outcomes

Lesson 3 – listing outcomes, systematically (i.e. bb, br, bg, rb, rr, rg etc)

Lesson 4 – Listing outcomes with possibility spaces and using to find probability (ie what is prob of two sixes)

Lesson 5 – Probability from a table (mutually exclusive must add up to 1 to find a missing probability, include when two are missing)

Unit 9 – plotting and sketching graphs

Lesson 1 – recognise equations of a straight line in the form y=mx+c, use the equation to plot a graph

Lesson 2 – plot graphs when equations given in other forms

Lesson 3 – use a graph to find the gradient and y intercept

Lesson 4 – use gradient and y intercept to sketch a graph

Lesson 5 – plot a simple quadratic graph ($y = x^2 + a$)

Lesson 6 – plot and interpret piece wise linear graphs (distance time graphs, filling a bath etc)

Lesson 7 – develop distance time graphs and use to find speeds

Unit 10 - Prime numbers and significant figures

Lesson1 – Prime factor decomposition using tree diagram

Lesson 2 – Use a Venn diagram for prime factors and use to find HCF/LCM

Lesson 3 – Problem solving for HCF/LCM, including worded questions such as burgers come in packs, a train leaves at 9:00 etc

Lesson 4 – Understanding significant figures and rounding to 1 or 2 sig figs.

Lesson 5 – Write upper and lower bounds as an inequality

Lesson 6 – Simple calculation with bounds to find maximum and minimum values (use perimeter and area)

Unit 11 – alternate and corresponding angles

Lesson 1 – Identify alternate and corresponding angles introduce idea of them being equal and use to find missing angles in simple situations

Lesson 2 – recap angle properties in triangle, on a line and vertically opposite, and apply in more complex geometrical diagrams, including explaining

Lesson 3 – use triangles to find the sum of interior angles of a polygon

Lesson 4 – find the size of an exterior angle in a regular shape

Unit 12 – Metric Measures

Lesson 1 – Measure and draw lines and angles

Lesson 2 – convert metric units of length

Lesson 3 – Convert metric units of capacity and mass

AP2

Unit 13 – transformations

Lesson 1 – recognise and draw equations of horizontal and vertical lines and lines of the form y = x
y = -x

Lesson 2 – reflection in a mirror line, including diagonal

Lesson 3 – find and name the mirror line

Lesson 4 – describe a movement as a vector

Lesson 5 – describe a translation using a vector

Lesson 6 – rotate a shape

Lesson 7 describe a rotation

Unit 14 – Enlargements and bearings

Lesson 1 – Describing enlargements, introduce vocabulary, include centre

Lesson 2 – Drawing enlargements when given a centre, whole number scale factor

Lesson 3 - Drawing enlargements when given a centre, fractional scale factor

Lesson 4 – Introduce plans and elevations, include drawing original shape

Lesson 5 – Describe and draw a bearing

Lesson 6 – drawing a bearing given a length to locate a particular position

Lesson 7 - Geometrical problems

Unit 15 – Calculating with indices and standard form

Lesson 1 – Understand index notation and using laws of indices with numbers/calculating powers of 2 and 10

Lesson 2 – Read and write numbers in standard form (large), include changing near miss numbers (such 34×10^4)

Lesson 3 – Read and write small numbers in standard form

Lesson 4 – Addition and subtraction of numbers in standard form

Lesson 5 – Multiplication and division of numbers in standard form

Lesson 6 – Using a calculator for answering standard form problems

Unit 16 – probability of more than one event

Lesson 1 – introduce set theory

Lesson 2 – set theory and Venn diagrams

Lesson 3 – list outcomes systematically

Lesson 4 – list outcomes in a 2 way table and use to find probabilities

Lesson 5 – use frequency trees

Lesson 6 – use probability to find expected outcomes

Unit 17/18 – averages and grouped data

Lesson 1 – plot a scatter graph and correlation

Lesson 2 – understand continuous data, how to write a class interval and how to construct a grouped frequency distribution

Lesson 3 – find modal class, median class and range from a grouped distribution

Lesson 4 – calculate the mean from grouped distribution

Lesson 5 – construct a stem and leaf diagram

Lesson 6 – interpret a stem and leaf diagram

Lesson 7 – comparing distributions using averages and spread

Unit 19 – Negative numbers and BIDMAS

Lesson1 – Add or subtract a positive number from a negative number using a number line

Lesson 2 – Add or subtract a negative number using a number line

Lesson 3 – Multiply and divide negative numbers

Lesson 4 – Substitution into expressions using negative numbers (include x^2 and x^3)

Lesson 5 – Using BIDMAS with negative numbers and powers and roots Substitution into expressions/formulae using a calculator using negative numbers (include x^2 and x^3)

Lesson 6 – Substitution into expressions/formulae using a calculator using negative numbers (include x^2 and x^3)

TOTAL 105 lessons 35 weeks (including Low Stakes Quizzes)