S3 Preparing for National 4 Qualifications

Aims of the course

- to make maths more relevant and more enjoyable for pupils who may have struggled in the past.
- achieve National 4 numeracy before the end of S3.
- have background learning to enable National 4 maths or National 4 applications course award to be achieved early in S4 (Christmas?) so the pupils progress to National 5 units in S4.

Topic and content	Suggested Resources and Activities
Inspirational Maths • Growth mind set • Resilience • Problem solving skills • Collaborative working	www.youcubed.org/week-of-inspirational-math
Enlargement and Scale Drawing • Enlarge/ reduce a shape with given scale factor • Make and use a simple scale drawing • Make a scale drawing including an angle of elevation or bearing • (tan ratio for potential N5 pupils only)	TJ N4 BK 1 Ch 5 Use a clinometer to find the height of the school Use compass bearings to find the distance to a landmark in the town GAIM – Planning a bathroom

Topic and content	Suggested Resources and Activities
Wages and Salaries • Calculate weekly, monthly and annual wage • Find a percentage of a quantity • Calculate new amount after a percentage change • Calculate commission • Calculate overtime pay (e.g. time and a half) • Calculate net pay • Complete a simplified pay slip	TJ N4 BK 1 Ch 6 and Ch 4 Skills Workshop: Jobs and Salaries Investigate pay offered by various jobs and careers using job adverts and published pay scales. For chosen job work out monthly/ weekly take home pay.
Simple Algebra • Collect like terms • Multiply out brackets with a numeric multiplier • Solve simple equations e.g. $2x - 4 = 12$ • **Extension work** - Solve equations with unknowns on both sides	TJ N4 BK 1 Ch 7
Money • Use 4 rules with decimals with/without a calculator • Round answers to the nearest penny • Calculate simple interest, including part years • Calculate VAT • Calculate hire purchase	TJ N4 BK 1 p27 – 36 (decimals), p91 – 96 (simple interest and VAT), p185 – 187 (HP) Compare purchase of similar items at retailer *e.g.* Argos and HP provider *e.g.* Brighthouse and present findings
Travel • Work within a budget to plan a foreign trip • Calculate a time interval including across midnight. • Use units for time and convert between them – months, weeks, days, hours, minutes, seconds. • Use the 12 hour and 24 hour clock. • Carryout Speed, Distance and Time calculations • Solve a basic problem in time management • Convert pounds sterling into another currency and back again.	Various travel websites for research Bus and train timetables for Journey Planning activity TJ N4 BK 1 Ch 10 and p193 – 194 (foreign exchange) GAIM (time management activities) - Design a better timetable - Every Second Counts - Fashion Workshop - Beach Guesthouse

Topic and content	Suggested Resources and Activities
Fractions • Simplifying fractions • Fraction of a quantity • Mental percentages • Multiply/ divide a decimal (especially money) by 10 and 100	TJ N4 BK 1 Ch 11, p36- 39
Graphs and Statistics • Interpret bar graphs, line graphs and pie charts • Draw graphs, including pie charts • Understand a frequency (tally) table • Calculate mean, median, mode and range • Compare the average and spread (range) of two data sets	TJ N4 BK 1 p132 – 137, p142 – 146, p241- 247
Circles • Use $C = \pi D$ to calculate the circumference of a circle • Use $A = \pi r^2$ to calculate the area of a circle • Calculate the area or perimeter of simple composite shape e.g. rectangle + semicircle	TJ N4 BK 1 p102 – 105 (circumference) TJ N4 BK **2** Ch 8 (area)
Negative Numbers • Place integers on a number line and use notation < and > • Use four rules with integers • Solve simple equations and inequations with integer solutions • Plot points in four quadrants	TJ N4 BK 1 Ch 22 (inequations) TJ N4 BK **2** Ch 1 Compare temperatures around the world Various Christmas themed worksheets and active learning tasks *e.g.* Cracker Equations Christmas coordinate pictures

Topic and content	Suggested Resources and Activities
Patterns • Extend a linear pattern • Find a formula for a linear sequence • Use formula to solve problems	TJ N4 BK 1 Ch 16
Pythagoras' Theorem • Use Pythagoras' theorem to find the length of either the hypotenuse or a shorter side • Solve problems requiring the application of Pythagoras' theorem	TJ N4 BK 1 Ch 13 and Ch 25 Cre8ate resource: Playground design
Area • Revise formulae for area of a rectangle and area of a triangle • Apply formula for area of a triangle to find the areas of parallelograms, kites and trapezia	TJ N4 BK 1 Ch 14 and Ch 26
Proportion and rate • Calculate rate: e.g. miles per hour or number of texts per month • Calculate a ratio • Calculate quantities in direct proportion	TJ N4 BK 2 Ch 2 and Ch 12
Probability • Compare likelihoods of different outcomes by comparing relative frequencies • Calculate probability and express answer as a fraction, decimal or percentage • Calculate expectation from given or calculated probabilities • Compare the probabilities of two events	TJ N4 BK 1 Ch 17 has revision of probability learned in S2 but National 4 numeracy unit requires more than this. See TJ Nat 4 Lifeskills Book Ch12 and TJ Book 4+ Ch 24 for further questions.

Numeracy Revision • add and subtract whole numbers including negative numbers • multiply whole numbers of any size, with up to four-digit whole numbers • divide whole numbers of any size, by a single digit whole number or by 10 or 100 • round answers to the nearest significant figure or two decimal places • find simple percentages and fractions • calculate percentage increase and decrease • convert equivalences between common fractions, decimal fractions and percentages • calculate rate: eg miles per hour or number of texts per month • calculate distance given speed and time • calculate time intervals using the 12- and 24-hour clock • calculate volume (cube and cuboid), area (rectangle and square) and perimeter (shapes with straight lines) • calculate ratio and direct proportion • give reasons for decisions based on the results of measurements or calculations • extract data from charts and graphs • make decisions based on observations of patterns and trends in data • make decisions based on calculations involving data • make decisions based on reading scales in straightforward graphical forms • offer reasons for the decisions made based on the interpretation of data • calculate the probability of an event happening • make predictions and use these predictions to make decisions	SOLAR formative assessments TJ Practice assessment booklet TJ Nat 4 Lifeskills Book – numeracy assessments at end chapters 1 to 12 Focused revision as necessary

Aim to sit National 4 Numeracy assessment (Outcome 1 and Outcome 2) on SOLAR last week before the Easter holidays.

Easter – May

A priority should be ensuring that all pupils achieve the National 4 numeracy award prior to the change of timetable. If re-assessments are necessary, these can be done on SOLAR or paper assessments are available if preferred.

On completion of Nat 4 numeracy pupils should begin one of the other units at National 4: Finance and Statistics/ Geometry and Measure leading to a National 4 Applications course award in S4 or Expressions and Formulae/ Relationships leading to National 4 maths. Some material for all of these units is included in the course up to Easter, and some will be new.

In selecting a unit, appropriate consideration should be given to the aptitude to pupils (evidence from performance throughout S3) and progression through the senior phase.