

Doon Academy



Numeracy Policy

Updated October 2017

Rationale

At Doon Academy we are committed to raising numeracy standards for all of our young people. We seek to develop numeracy skills that will be used effectively across the curriculum. Our aim is to equip our young people with the numeracy skills to cope confidently with numeracy aspects of adult life and employment.

Aims

- To enhance numeracy standards across the curriculum.
- To raise awareness amongst staff of the numeracy elements of their subjects.
- To enable our learners to make links across subjects.
- To identify in lessons (and schemes of work) topics which include the use of numerical skills.
- To help learners to appreciate the importance of being numerate.

Transferrable Skills

Numeracy contributes to many areas across the curriculum. Staff should encourage pupils to make use of their numeracy skills in their own subjects and to emphasise the importance of being numerate. To facilitate this, staff should display the numeracy logo (or inform learners by other means) whenever they are using a numeracy outcome within their lesson. The mathematics department should use the numeracy logo when teaching an outcome that will be used in other subjects and should give learners examples of where they will use the skills and techniques that they are learning.

Departments

All areas of the curriculum can provide an engaging and motivating context for developing and applying numeracy skills. Focusing on numeracy in a range of contexts can give learners the opportunity to:

- *interpret numerical information appropriately and use it to draw conclusions, assess risk, make reasoned evaluations and informed decisions*
- *apply numeracy skills and understanding creatively and logically to solve problems, within a variety of practical activities*
- *apply mental agility skills through the development of efficient mental strategies.*

Every subject uses some numeracy outcomes and therefore has a contribution to make to the development of our young people's numeracy skills. However, it is recognised that some subjects will use numeracy a lot more than others. The table in appendix 1 has been compiled from the results of the numeracy audit that was undertaken. The topics identified will have particular vocabulary and techniques. Further information on these can be found in the "Numeracy Across The Curriculum" booklet. Staff should encourage learners to use the correct mathematical vocabulary, notation and units.

It is the responsibility of all class teachers to model good numeracy skills and to embed relevant numeracy strategies within their lessons. All learners progress at different paces. The mathematics department can provide information as to when numeracy outcomes are covered and at which level. It may be the case that other subjects will be delivering a numeracy outcome to pupils that has not been covered in mathematics by some learners at that point. Liaison is encouraged to ensure that good approaches across the school mirror each other.

Assessment

Self Assessment - All BGE pupils have their own individual numeracy tracker. Each learner is responsible for updating their own tracker. Mentor teachers should encourage and support this at the relevant times (identified on the school calendar).

Teacher Assessment – This will be carried out on an on-going basis by the mathematics department. It will include (but is not limited to): discussions with pupils, jotter evaluations, formal assessments.

Appendix 1

Numeracy Across Learning Outcome Mapping		
Using knowledge and understanding of the number system, patterns and relationships		
Outcome	I can...	
MNU 2-01a	I can round numbers to the nearest 10 or 100	Art, Music
	I can round numbers to the nearest whole number	Technology, PE, HE, Social Subs, Art, Music
	I can estimate answers to calculations by rounding numbers to the nearest 10 or 100	Art
MNU 3-01a	I can round numbers to the nearest 10, 100 and 1000 and can use this method to estimate answers to sums E.g. $293 + 214$ is about $300 + 200 = 500$	Social Subs
	I can read decimal scales	Technology, Language & Literacy, PE, Science
	I can round numbers to a given number of decimal places	PE
	I can round numbers to a given number of significant figures	PE
MNU 2-02a	I can identify the value of a number using place value. E.g. What is the value of 2 in the number 172,605?	
	I can write up to a six digit number in words or figures	Language & Literacy, Science
	I can read numbers up to 1 000 000	Technology, Language & Literacy, PSE, Science, Social Subs
	I can + and – numbers with up to 1 d.p.	Technology, Science, Art
	I know how to multiply numbers with up to 1 d.p. by 10 and 100	Technology, PE, Science
	I know how to divide numbers with up to 1 d.p. by 10 and 100	Technology, Science
	I can order numbers which are between 1 and 100 000	Technology, Science
	I can mentally + and - two digit numbers	Technology, Language & Literacy, PE, Science
	I can mentally + and – numbers with up to 4 digits that are multiples of 10, 100 and 1000. E.g $3200 + 500$, $5750 - 400$	Technology, PE, Science
	I can + and – 4 digit whole numbers	Technology, Science
	I can x and \div 3 or 4 digit numbers by a single digit	Technology, Science
MNU 2-03a	I can read a word problem and decide which calculation is required	Technology, Language & Literacy, Science
MNU 3-03a	I know about place value, eg. Tenths, hundredths and thousandths	Technology, Science
	I can + and – 4 digit numbers with up to 2 decimal places – no calculator.	Science
	I can + and 4 digit numbers with up to 3 decimal places without using a calculator	Science
	I can use a calculator to work out money problems	Technology
	I can x and \div whole numbers and decimals by 10, 100 and 1000	Science

	I can \times and \div whole numbers by a single digit, eg 243×8 , $637 \div 7$	Technology, Science
	I can \times and \div decimals by a single digit numbers without a calculator	Technology, Science
MNU 2-03b	I can identify when a word problem requires me to $+$, $-$, \times or \div	Technology, Science
	I can read number lines and scales with up to 2 d.p	Technology
	I can $+$ and $-$ 4 digit numbers with up to 2 d.p.	Technology
	I can \times and \div numbers with up to 2 dp by a single digit	Technology
	I can do divisions like $3 \div 5$	Technology, Science
	I can \times and \div 4 digit numbers with up to 2 d.p. by a single digit	Technology
	I can solve word problems involving money	Technology
MNU 3-03b	I can multiply by multiples of 10, 100, 1000	Technology, Science
	I can divide by multiples of 10, 100, 1000	Technology, Science
	I can carry out long multiplication	
MNU 2-04a	I can read values shown on scales with negative numbers	Science, Social Subs
MNU 3-04a	I can $+$ and $-$ positive and negative numbers in real life problems	Technology, Science
MNU 2-07a	I can use notes and coins to make a sum of money (up to £20)	Technology, Language & Literacy
	I can "count up" to give change from £20 mentally	Technology, Language & Literacy
	I can $+$ and $-$ amounts of money using the correct layout. E.g. $47p = £0.74$	Technology
	I can find a simple fraction of a number mentally. E.g. $1/6$ of 1800	Technology
	I can understand word problems involving simple fractions of a quantity	Technology, Art
	I can find fractions of quantities. Eg. $3/4$ of 24 without using a calculator	
	I can find fractions of quantities that are in my times tables eg $2/7$ of 21	
	I can find fractions of quantities that are not in my times tables eg $2/5$ of 135	
	I can find simple percentages of quantities mentally eg 25% of 600	Language & Literacy, Science
	I can find percentages of quantities showing working eg 25% of 968g	
	I can find simple a simple fraction of 3 and 4 digit numbers mentally which are multiples of my times tables. Eg $3/4$ of 1200	Science
MNU 3-07a	I can find fractions of harder quantities Eg. $3/4$ of 2.4, without using a calculator	Science
	I can convert between common fractions, decimals and percentages	
	I can calculate common percentages by using fraction equivalences. E.g $50\% = 1/2$ etc.	
	I can use 1% to calculate percentages.	Science
	I can use 10% to calculate percentages.	Science
	I can change a fraction to a percentage.	Science
	I can calculate the percentage of a total in problems.	Technology, Science
	I can calculate a percentage increase/decrease	Technology

	I can calculate percentages of a quantity without using a calculator	
MNU 2-07b	I can tell what percentage in a 100 square has been shaded	
	I can colour percentages in a 100 square	
	I can find equivalent fractions. E.g. $1/5 = 2/10 = 5/25$	Science
	I can change simple fractions to decimals E.g. $4/8 = 0.5$.	Science
	I can change simple decimals to fractions Eg $0.5 = 1/2$	Science
	I can change simple percentages to fractions	Science
	I can place simple fractions, percentages and decimals on a number line in order	
MNU 3-08a	I can write down ratios in the correct order, from given information	
	I can simplify ratios	Biology
	I can find an unknown quantity when given the ratio and one quantity	
	I can divide a quantity in a given ratio, eg. Share £56 in the ratio 4:3	
	I can change from £ to foreign currency	Technology
	I can change from foreign currency to £	Technology
MNU 2-09b	I understand the costs, benefits and risks of using bank cards to purchase goods or obtain cash and realise that budgeting is important.	Technology
MNU 3-09b	I can budget effectively, making use of technology and other methods, to manage money and plan for future expenses.	Technology, Language & Literacy, PSE
MNU 2-09c	I can use the terms profit and loss in buying and selling activities and can make simple calculations for this.	Technology
Use knowledge and understanding of measurement and its application		
Outcome	I can...	
MNU 2-10a	I can change 12 hour to 24 hour time	Language & Literacy
	I can change 24 hour time to 12 hour time	Language & Literacy
	I can calculate simple time intervals mentally	Language & Literacy, HE, Music
	I can calculate more complicated time intervals showing working	Language & Literacy
	I can use timetables	Technology, Language & Literacy, PSE
MNU 3-10a	I can change hours and minutes into decimal/fractional hours.	
	I can calculate speed when given distance and time.	PE, Physics
	I can calculate distance when given speed and time.	Physics
	I can calculate time when given speed and distance.	Physics
MNU 2-10b	I can change between seconds, minutes, hours, etc and choose which is most appropriate	Physics, HE
	I can time activities using a stopwatch	PE, Science
MNU 2-10c	I can estimate how long a journey should take	Technology
MNU 2-11a	I can use my knowledge of the sizes of familiar objects or places to assist me when making an estimate of measure.	Technology, HE

	I can estimate the weights of different items	Language & Literacy
MNU 3-11a	I can change from one unit of length to another, eg cm to m, m to km.	Technology, Science
	I can estimate and measure lengths and areas using appropriate units	Technology
	I can find the perimeter of shapes and can find the length of a missing side when given the perimeter.	
	I can find the perimeter of composite shapes	
	I can find the area of a square and rectangle using the formula $A = l \times b$	Science
	I can find the area of a triangle using the formula $A = \frac{1}{2}bh$	
	I can find the area of composite shapes	
	I can estimate the weight of different items	
	I can change from g to kg and from kg to g.	
	I can change from kg to tonnes and from tonnes to kg	
	I can change between units of length, eg. $5km = 5000m$ $500cm = 5m$	Science
	I understand that volume can be measured by counting cubes.	
	I can find the volume of cubes and cuboids using the formula $V = l \times b \times h$	
	I can change from solid volume measured in cm^3 to liquid volume measured in litres.	
	I can change between ml and litres	Science, HE
	I can find the weight of water using the fact that 1 litre of water weighs 1kg.	
MNU 2-11b	I can measure lines to the nearest mm	Technology, HE, Social Subs, Art
	I can record my answers in a variety of ways. E.g. 3cm and 5mm, 35mm, 3.5cm	Science
	I can convert between metric units. I know that $10mm = 1cm$, $100cm = 1m$, $1000m = 1k$	Technology, Science, HE, Social Subs
	I can use mm, cm, m and km in word problems	Technology, Science
	I know that $1000ml = 1$ litre	Science, HE
	I can change from ml to L	Science, HE
	I can change from L to ml	Science, HE
	I can + and – numbers that are in different units eg $3.12m + 133cm$	Technology
Using knowledge and understanding of shape and space		
Outcome	I can...	
MNU 2-11c	I can find the perimeter of simple shapes	PE
	I can find a missing side if given the perimeter of a shape	
	I can find the areas of squares and rectangles using the formula	
	I can provide the correct units when calculating area. E.g. mm^2, cm^2	
	I can calculate the area of a right-angled triangle	
	I can use the correct units when calculating volume, cm^3 , ml, etc	Science
	I can find the volume of solids by counting cubes	
Researching and evaluating data to assess risks and make		

informed choices		
Outcome	I can...	
MNU 2-20a	I can read and understand information from a table	Technology, Language & Literacy, PE, Science, Social Subs
MNU 3-20a	I can find information from a table with at least 3 categories	Technology, Language & Literacy, Science, Geography
	I can interpret line graphs	Technology, Language & Literacy, Social Subs
	I can describe the trend of a graph	Science, Social Subs
	I can interpret scatter diagrams	
MNU 2-20b	I can collect information using a questionnaire	Technology, Language & Literacy, Science
	I can organise and display questionnaire results in a table	Technology, Science
	I can carry out a survey	Technology, Language & Literacy, Science
	I can display information using an appropriate diagram	Technology, Language & Literacy, Science, Geography
MNU 2-22a	I can conduct simple experiments involving chance and communicate my predictions and findings using the vocabulary of probability.	
MNU 3-22a	I can use the words certain, highly likely, evens, unlikely, impossible to describe probability of an outcome	PE, Social Subs
	I can work out probability of an event using $\frac{\text{number of favourable outcomes}}{\text{total number of outcomes}}$	Biology
Applying numeracy and mathematical skills		
Outcome	I can...	
MNU 3-09a	I can apply my maths and numeracy skills to investigate best value products and can communicate my findings clearly	Technology
MNU3-09b	I can apply my maths and numeracy skills to budget effectively to plan for an event.	Technology, Language & Literacy
MNU3-11a	I can apply my maths and numeracy skills to solve practical problems involving measure, choosing the appropriate units and degree of accuracy for the task and using formula when required.	Technology, Language & Literacy
MNU 3-20a	I can work collaboratively using technology to organise data by designing a database with fields based on survey. I can interpret database by retrieving information subject to more than one condition.	Technology