

curriculum for excellence: numeracy

experiences and outcomes

stromness academy



An initial guide for teachers of all subjects to the outcomes and attainment expected for Curriculum for Excellence levels 2, 3, and 4 in Numeracy

Introduction

This booklet was created by the Stromness Academy Numeracy Working Group as a guide to the progression in Numeracy at Curriculum for Excellence levels two, three, and four across all subjects. In preparation for compiling the booklet all departments of the school were surveyed on their use of Numeracy with respect to the Curriculum for Excellence outcomes and experiences. It is intended that the booklet be updated as more information on assessment becomes available.

The current 5-14 guidelines and the Standard grade arrangements for Mathematics were used to give an overview of the mathematical competence to be expected at each level. Material from a previous booklet "Numeracy across the Curriculum - a Guide for Teachers" compiled in 2006 by the then group was also incorporated wherever appropriate.

Each page begins with a list of the outcomes for a particular topic at the three levels, beneath that are the abbreviated current guidelines from the 5-14 and Standard grade arrangements with examples as necessary. A note has been added on some pages if thought to be useful.

At the foot of each page is a list of departments currently making use of the particular outcome. This information was obtained from our departmental survey. The results of our survey showed that many of the numeracy topics which are being used or taught within departments are not used or taught at the correct CfE Level. For example, aspects of financial education which are included at level 2 have been previously taught for the first time in S5, Level 5. The departmental information at the foot of each page should therefore be treated with some care.

It is hoped that the information in this booklet will be accessible to teachers of all subjects and help them to become more aware of the whole school Numeracy responsibilities being introduced by Curriculum for Excellence. The booklet attempts to give teachers an idea of what level of Numeracy knowledge and skill is expected in the Mathematics department at each level. This should help to ensure smooth transition and progression between subjects for pupils and to enable teachers to begin to implement assessment of pupils' levels of Numeracy within their own subject. Some of the Numeracy outcomes are not included in the current course guidelines, and as more information on the new assessment structure becomes available and new courses are written, this booklet will be modified.

This booklet has been produced by the Stromness Academy Numeracy across the Curriculum Working Group
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Level	Code	Outcome description
2	MNU 2-01a	I can use my knowledge of rounding to routinely estimate the answer to a problem, then after calculating, decide if my answer is reasonable, sharing my solution with others.
3	MNU 3-01a	I can round a number using an appropriate degree of accuracy, having taken into account the context of the problem.
4	MNU 4-01a	Having investigated the practical impact of inaccuracy and error, I can use my knowledge of tolerance when choosing the required degree of accuracy to make real-life calculations

Rounding and Tolerance

LEVEL 2		Approximately 5-14 level C, level D and E
5-14 level C	5-14 level D	5-14 level E
I can round any 3 digit whole number to nearest ten (e.g. when estimating/checking calculations like :- 134 + 23 is about 130 + 20 (= 150)	I can round any number to the nearest unit, 10 or hundred when estimating/checking calculations like :- 737 + 188 is about 700 + 200 (= 900)	I can round any number to one decimal place and use this to check calculations of the form :- 7.253 + 8.174 is about 7.3 + 8.2 ≈ 15.5.
LEVEL 3/4		Approximately S. G. Foundation and General or Int 1
Foundation	General/Int 1	5-14 level F pupils may move directly to level 5
I can carry out addition, subtraction, multiplication and division, rounding my answer to the nearest unit. I can estimate to check my calculations.	I can estimate to check my calculations. I can interpret tolerance notation eg $(25^{\circ} \pm 2^{\circ})$ means between 23° and 27°	I can round any number: - to a required number of decimal places, eg. solutions to calculations involving money rounded to 2 decimal places; - to a required number of significant figures, e.g. solutions to calculations of areas/circumferences of circles rounded to 3 significant figures.

Awaiting introduction of new Assessments for level 3/4 content split detail.

Notes	We always round up for 5 or above
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Level	Used in these departments:-
2	Maths, Geography, RME
3	Maths, English, History, Computing, Physics, Chemistry, Biology, RME, Business Studies, Tech Studies.
4	Physics, Chemistry, Graph Comm

Level	Code	Outcome description
2	MNU 2-02a	I have extended the range of whole numbers I can work with and having explored how decimal fractions are constructed, can explain the link between a digit, its place and its value.
3		
4		
Place value		
LEVEL 2 Approximately 5-14 level C, level D and E		
5-14 level C	5-14 level D	5-14 level E
I can work with whole numbers up to 10000 (count, order, read and write). I can work with decimals up to 2 places when reading or recording money and when using calculator displays :- 2 pounds & 5 pence = £2.05	I can work with whole numbers up to 100000 (count, order, read and write) and up to 1 million (read and write only). I understand the equivalence between decimals & fractions in applications involving money and measurement I know that 1m 35 cm = 1.35 m	I can work with numbers containing up to three places of decimals . In practical applications I can work with measurement to this accuracy.
LEVEL 3/4 Approximately Standard Grade Foundation and General or Int 1		
Foundation	General/Int. 1	5-14 level F pupils may move directly to level 5
Only at Level 2	Only at Level 2	
Awaiting introduction of new Assessments for level 3/4 content split detail.		
Notes	<p>In the maths department we use BODMAS in all calculations from S2 onward: Worked example</p> <p>Calculate $4 + 70 \div 10 \times (1 + 2)^2 - 1$ according to the BODMAS rules.</p> <p>Brackets gives $4 + 70 \div 10 \times (3)^2 - 1$</p> <p>Order gives $4 + 70 \div 10 \times 9 - 1$</p> <p>Division gives $4 + 7 \times 9 - 1$</p> <p>Multiplication gives $4 + 63 - 1$</p> <p>Addition gives $67 - 1$</p> <p>Subtraction gives 66</p> <p>Answer 66</p>	
2	Maths, Computing	
3		
4		

Level	Code	Outcome description
2	MNU 2-03a	Having determined which calculations are needed, I can solve problems involving whole numbers using a range of methods, sharing my approaches and solutions with others.
3	MNU 3-03a	I can use a variety of methods to solve number problems in familiar contexts, clearly communicating my processes and solutions.
4	MNU 4-03a	Having recognised similarities between new problems and problems I have solved before, I can carry out the necessary calculations to solve problems set in unfamiliar contexts.

Problem solving

LEVEL 2 Approximately 5-14 level C, level D and E

5-14 level C	5-14 level D	5-14 level E
Assessment of levels to be developed in National Assessment Resource	Assessment of levels to be developed in National Assessment Resource	Assessment of levels to be developed in National Assessment Resource

LEVEL 3/4 Approximately Standard Grade Foundation and General or Int 1

Foundation	General/Int 1	5-14 level F pupils may move directly to level 5
Assessment of levels to be developed in National Assessment Resource	Assessment of levels to be developed in National Assessment Resource	Assessment of levels to be developed in National Assessment Resource

Awaiting introduction of new Assessments for level 3/4 content split detail.

Notes	<p>The problem-solving and enquiry process can be envisaged as three broadly inter-dependent steps:</p> <p>starting a task:</p> <p style="padding-left: 40px;">exploring the task to identify and interpret the problem; considering what might be relevant, deciding how to proceed;</p> <p>Doing a task:</p> <p style="padding-left: 40px;">implementing strategies; coming to conclusions; evaluating what has been done;</p> <p>reporting on a task:</p> <p style="padding-left: 40px;">using a variety of ways; or a range of audiences and purposes.</p> <p>The pupil should demonstrate skills in carrying out these steps.</p>
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Level	Used in these departments:-
2	Maths, Modern Languages, Science
3	Maths, English, Science, Physics, Chemistry, Business Studies, Craft and Design, Graphic Communication.
4	Maths, Computing, Physics, Chemistry, Biology, Business Studies, Graph Comm, HE, Soc and Voc

Level	Code	Outcome description						
2	MNU 2-03b	I have explored the contexts in which problems involving decimal fractions occur and can solve related problems using a variety of methods.						
3	MNU 3-03b	I can continue to recall number facts quickly and use them accurately when making calculations.						
4								
Decimal fractions								
LEVEL 2 Approximately 5-14 level C, level D and E								
5-14 level D		5-14 level E						
<p>I can add or subtract numbers up to 4 digits, containing at most to 2 decimal places. without a calculator. e.g $23.56 + 19.25$</p> <p>I can multiply or divide any four digit number containing at most 2 decimal places by a single digit number without a calculator. e.g $24.36 \div 4$</p> <p>I can multiply any 4 digit number containing at most 2 decimal places by a two digit number with a calculator. e.g. 45.65×25</p> <p>I can apply these in applications involving number, measurement, & money</p> <p>I can apply all the above to solving problems in context.</p>		<p>I can add or subtract mentally 2 digits numbers including decimals like $(7.3 + 8.2)$ and four digit numbers (up to 2 decimal places) without a calculator.</p> <p>I can add or subtract any number up to 3 decimal places with a calculator.</p> <p>I can multiply and divide mentally any number by a multiple of 10 ($\times 20, \div 300, \times 4000$ etc.)</p> <p>I can multiply 4 digit number (up to 2 decimal places) by a single whole number without a calculator e.g 37.89×8</p> <p>I can multiply or divide any number (three decimal places at most in the answer) with a calculator. e.g 2.123×5 $25.125 \div 5$</p>						
LEVEL 3/4 Approximately Standard Grade Foundation and General or Int 1								
Foundation	General/Int 1	5-14 level F pupils may move directly to level 5						
<p>I can add or subtract a number given to at most 2 decimal places without a calculator.</p> <p>I can multiply or divide numbers given to at most 2 decimal places by a single digit whole number.</p> <p>I can multiply or divide a number of up to two decimal places by 10 or 100.</p>	<p>Without a calculator I can add or subtract numbers given to at most 3 decimal places.</p> <p>Multiply or divide a number given to at most 3 decimal places by single digit whole number.</p> <p>Multiply or divide numbers given to at most 3 decimal places by multiples of 10, 100, 1000.</p>	<p>I know that multiplication by a number less than one has a decreasing effect whereas division by a number less than one has an increasing effect examples of the type</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>3.29×30</td> <td>18.697×40000</td> <td>$21 \div 0.7$</td> </tr> <tr> <td>$0.03 \div 60$</td> <td>0.6×0.3</td> <td>$0.08 \div 0.2$</td> </tr> </table>	3.29×30	18.697×40000	$21 \div 0.7$	$0.03 \div 60$	0.6×0.3	$0.08 \div 0.2$
3.29×30	18.697×40000	$21 \div 0.7$						
$0.03 \div 60$	0.6×0.3	$0.08 \div 0.2$						
Awaiting introduction of new Assessments for level 3/4 content split detail.								
Notes	<p>In the maths department we do not "borrow and pay back"</p> <p>We subtract using decomposition (as a written method)</p> <p>We check by addition</p> <p>We promote alternative mental methods where appropriate.</p>							
Level	Used in these departments:-							
2	Maths, Computing							
3	Maths, History, Physics, Chemistry, Biology, Craft and Design, Graph Comm, Art and Design							
4								

Level	Code	Outcome description
2	MNU 2-04a	I can show my understanding of how the number line extends to include numbers less than zero and have investigated how these numbers occur and are used.
3	MNU 3-04a	I can use my understanding of numbers less than zero to solve simple problems in context.
4		

Negative numbers

LEVEL 2 Approximately 5-14 level C, level D and E		
5-14 level C	5-14 level D	5-14 level E
Only at E	Only at E	I can work with negative numbers in applications (e.g. temperature, dates, banking)
LEVEL 3/4 Approximately Standard Grade Foundation and General or Int 1		
Foundation	General/Int 1	5-14 level F pupils may move directly to level 5
I can use negative numbers in context eg temperatures	I can add or subtract negative integers; Multiply a single digit negative integer by a single digit whole number eg $3 \times (-4)$	I can add, subtract, multiply, and divide negative numbers.

Awaiting introduction of new Assessments for level 3/4 content split detail.

Notes	
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Level	Used in these departments:-
2	Maths, Graph Comm, SFL
3	Maths, Physics, Chemistry, Biology
4	

Level	Code	Outcome description
2	MNU 2-07a	I have investigated the everyday contexts in which simple fractions, percentages or decimal fractions are used and can carry out the necessary calculations to solve related problems.
3	MNU 3-07a	I can solve problems by carrying out calculations with a wide range of fractions, decimal fractions and percentages, using my answers to make comparisons and informed choices for real-life situations.
4	MNU 4-07a	I can choose the most appropriate form of fractions, decimal fractions and percentages to use when making calculations mentally, in written form or using technology, then use my solutions to make comparisons, decisions and choices.

Fractions, Decimals and Percentages

LEVEL 2 Approximately 5-14 level C, level D and E

5-14 level C	5-14 level D	5-14 level E
I can find simple fractions (1/3, 1/5, 1/10) of quantities involving 1 or 2 digit numbers.	I can find simple fractions (1/7, 3/4, 4/5, 60/100) of quantities involving at most 4 digits. I can work with simple percentages (shading, etc) I can recognise what a percentage is.	I can find 50%, 25%, 10% and 1% without a calculator and use addition to find other amounts I can find percentages with a calculator (e.g 23% of £300 = $300 \div 100 \times 23 = \text{£}69$) I know that that "of" means multiply

LEVEL 3/4 Approximately Standard Grade Foundation and General or Int 1

Foundation	General/Int 1	5-14 level F pupils may move directly to level 5
I can find unitary fractions of a quantity, eg $\frac{1}{2}$ of £24	I can calculate simple fractions of a quantity eg $\frac{2}{3}$ of 18; I can add and subtract, simple commonly used fractions and mixed numbers eg $\frac{3}{4} + \frac{3}{4}$; $\frac{1}{2} - \frac{1}{4}$;	I can use mental, written or calculator methods, as appropriate, to add, subtract, multiply and divide fractions (including mixed numbers) in everyday contexts; I can express a fraction as a percentage via the decimal equivalent.

Awaiting introduction of new Assessments for level 3/4 content split detail.

Notes	Add and Subtract	Multiply	Divide
	Make the denominators equal	Multiply top and multiply bottom	Invert the second fraction and multiply
	$\frac{1}{2} + \frac{1}{3}$ $= \frac{3}{6} + \frac{2}{6}$ $= \frac{5}{6}$	$\frac{2}{3} \times \frac{3}{4}$ $= \frac{6}{12}$ $= \frac{1}{2}$	$\frac{3}{4} \div \frac{2}{5}$ $= \frac{3}{4} \times \frac{5}{2}$ $= \frac{15}{8} = 1\frac{7}{8}$

Level	Used in these departments:-
2	Maths, Computing, Science, RME, HE, SFL
3	Maths, English, Physics, Chemistry, PE, Art and Design
4	Maths, Computing, Physics, Chemistry, Tech Studies, Art and Design

Level	Code	Outcome description
2	MNU 2-07b	I can show the equivalent forms of simple fractions, decimal fractions and percentages and can choose my preferred form when solving a problem, explaining my choice of method.
3		
4		
Equivalence of Fractions, Decimals and Percentages		
LEVEL 2 Approximately 5-14 level C, level D and E		
5-14 level C	5-14 level D	5-14 level E
I can work with halves and quarters thirds, fifths, eights and tenths and simple equivalences e. g. 1 half = 2 quarters in practical applications.	I can work with all the previous fractions plus twentieths, fiftieths, hundredths and the equivalences among these and decimals (in applications) I can recognise and be able to change between simple fractions, decimals and percentages.	All widely used fractions and equivalence among these and decimals (in applications). Be able to find mentally widely used fractions and percentages of whole number quantities. (75% of £120 = 3/4 of £120 =) With a calculator, find any percentage of a quantity, rounding where needed.
LEVEL 3/4 Approximately Standard Grade Foundation and General or Int 1		
Foundation	General/Int 1	5-14 level F pupils may move directly to level 5
50% = 0.5 = $\frac{1}{2}$, 25% = 0.25 = $\frac{1}{4}$	I can identify any commonly used equivalence eg 75% = 0.75 = $\frac{3}{4}$, 40% = 0.4 = $\frac{2}{5}$ With a calculator, I can find any percentage of a quantity, rounding where needed.	I can work with all rational numbers and the equivalence between these and decimals. I can apply percentage increase and decrease in context.
Awaiting introduction of new Assessments for level 3/4 content split detail.		
Notes		
Level	Used in these departments:-	
2	Maths	
3	Maths	
4	Maths	

Level	Code	Outcome description
2		
3	MNU 3-08a	I can show how quantities that are related can be increased or decreased proportionally and apply this to solve problems in everyday contexts.
4	MNU 4-08a	Using proportion, I can calculate the change in one quantity caused by a change in a related quantity and solve real-life problems.

Ratio and Proportion

LEVEL 2 Approximately 5-14 level C, level D and E

5-14 level C	5-14 level D	5-14 level E
		I can find ratios between quantities and use simple unitary ratios. e.g. 3: 1, 5:2

LEVEL 3/4 Approximately Standard Grade Foundation and General or Int 1

Foundation	General/Int 1	5-14 level F pupils may move directly to level 5
I can use direct proportion eg Three bananas cost 33p how much would 5 cost?	I can split a quantity in a given ratio eg Split £240 in a ratio of 3:1 I can use inverse proportion e.g. A bale of hay lasts two horses one week. How long would it last one horse? I can carryout direct variation calculations involving a constant k.	I can use scales and extend my knowledge to scales represented by ratios such as 1:50, 1: 500 and others widely used in maps.

Awaiting introduction of new Assessments for level 3/4 content split detail.

Notes	<p>When doing proportion examples in maths we expect pupils to</p> <ul style="list-style-type: none"> ○ identify direct or inverse proportion ○ use the unitary method (i.e. find the value of 'one' first then multiply by the required value) ○ if rounding is required we do not round until the last stage
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Level	Used in these departments:-
2	
3	Maths, Modern Languages, Physics, Biology, RME, Craft and Design, Graph Comm, HE, Art and Design
4	Maths, Geography, Physics, Chemistry, Biology, Tech Studies, Graph Comm, Art and Design

Level	Code	Outcome description
2	MNU 2-09a	I can manage money, compare costs from different retailers, and determine what I can afford to buy.
3	MNU 3-09a	When considering how to spend my money, I can source, compare and contrast different contracts and services, discuss their advantages and disadvantages, and explain which offer best value to me.
4	MNU 4-09a	I can discuss and illustrate the facts I need to consider when determining what I can afford, in order to manage credit and debt and lead a responsible lifestyle.

Managing money

LEVEL 2 Approximately 5-14 level C, level D and E

5-14 level C	5-14 level D	5-14 level E
Use coins/notes to £5 worth or more, including exchange	Use all UK coins/notes to £20 worth or more, including exchange	(Use relationships between currencies to do simple calculations)

LEVEL 3/4 Approximately Standard Grade Foundation and General or Int 1

5-14 level F pupils may move directly to level 5	Foundation	General/Int 1
To be developed	To be developed	To be developed

Awaiting introduction of new Assessments for level 3/4 content split detail.

Notes

Level	Used in these departments:-
2	PSE, HE, SFL
3	PSE, HE, SFL
4	PSE, Soc and Voc

Level	Code	Outcome description
2	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.
3	MNU 3-09b	I can budget effectively, making use of technology and other methods, to manage money and plan for future expenses.
4	MNU 4-09b	I can source information on earnings and deductions and use it when making calculations to determine net income.

Budgeting

LEVEL 2 Approximately 5-14 level C, level D and E

5-14 level C	5-14 level D	5-14 level E
To be developed	To be developed	To be developed

LEVEL 3/4 Approximately Standard Grade Foundation and General or Int 1

5-14 level F pupils may move directly to level 5	Foundation	General/Int 1
To be developed	To be developed	To be developed

Awaiting introduction of new Assessments for level 3/4 content split detail.

Notes

Level	Used in these departments:-
2	PSE, HE
3	PSE, Craft and Design
4	Maths, Graph Com

Level	Code	Outcome description
2	MNU 2-09c	I can use the terms profit and loss in buying and selling activities and can make simple calculations for this.
3		
4	MNU 4-09c	I can research, compare and contrast a range of personal finance products and, after making calculations, explain my preferred choices.
Personal Finance		
LEVEL 2 Approximately 5-14 level C, level D and most of E		
5-14 level C	5-14 level D	5-14 level E
To be developed	To be developed	To be developed
LEVEL 3/4 Approximately Standard Grade Foundation and General or Int 1		
Foundation	General/Int 1	5-14 level F pupils may move directly to level 5
I can understand : Home and personal budgeting. Earnings. Wage rises (as a whole number percentage), Take home pay. Deductions. Overtime (double time) Commission. Simple savings eg 6 months at £12.50 per month Expenditure, profit and loss in buying and selling in money terms. Shopping bills and value for money. Household bills eg fuel bills (500 units at 7p) Foreign exchange Cost of borrowing and loans. Hire purchase (eg deposit plus repayments) Surcharges and VAT.	I can understand and carry out calculations on: Wage rises (added to initial wage); Commission as a percentage. Calculations involving deductions. Bonuses. Overtime (double time and time and a half) Shopping bills and best value for money. Depreciation and appreciation. Percentage profit and loss. One quantity as a percentage of another. Insurance premiums. Foreign exchange e.g £ to \$ and \$ to £. Hire purchase eg deposit plus repayments VAT calculate and know to add on. Discount -calculate and know to subtract.	
Awaiting introduction of new Assessments for level 3/4 content split detail.		
Notes		
Level	Used in these departments:-	
2	Maths, Geography, Computing, Business Studies, HE	
3		
4	PSE, Soc and Voc	

Level	Code	Outcome description
2	MNU 2-10a	I can use and interpret electronic and paper-based timetables and schedules to plan events and activities, and make time calculations as part of my planning.
3	MNU 3-10a	Using simple time periods, I can work out how long a journey will take, the speed travelled at or distance covered, using my knowledge of the link between time, speed and distance.
4	MNU 4-10a	I can research, compare and contrast aspects of time and time management as they impact on me.

Time Calculations and Management

LEVEL 2 Approximately 5-14 level C, level D and E

5-14 level C	5-14 level D	5-14 level E
<p>I can use 12 hour times for simple timetables. e.g. times of TV programs. I know the conventions for recording time :- 1.40 am = twenty to two in the morning I can understand the calendar and recording of dates 05.03.07, 5/3/07, 5th March 2007</p>	<p>I can use 24 hour times and equate them with 12 hour times.</p>	<p>I can time activities in seconds using a digital stopwatch in seconds, tenths and hundredths of a second.</p>

LEVEL 3/4 Approximately Standard Grade Foundation and General or Int 1

Foundation	General/Int 1	5-14 level F pupils may move directly to level 5
<p>I can read the 12-hour and 24-hour clock; I understand the units second, minute, hour, day, week, month, year and leap year, and their interrelationships. I can calculate a time interval within a given half day on the 12-hour clock eg 2.35 pm to 5.10 pm or within the same day on the 24-hour clock, eg 0920 to 1705.</p>	<p>I can also calculate a time interval over midnight or midday on the 12-hour clock. I can change decimal time into actual time simple cases and vice versa.</p>	

Awaiting introduction of new Assessments for level 3/4 content split detail.

Notes	<p>How long is it from 0755 to 0948? 0755 → 0800 → 0900 → 0948 (5 mins) + (1 hr) + (48 mins) Total time 1 hr 53 minutes In the maths department we do not teach time as a subtraction</p>
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Level	Used in these departments:-
2	Maths, Business Studies, PSE, HE, SFL
3	Maths, Physics, RME, Tech Studies.
4	PSE

Level	Code	Outcome description
2	MNU 2-10b	I can carry out practical tasks and investigations involving timed events and can explain which unit of time would be most appropriate to use.
3		
4	MNU 4-10b	I can use the link between time, speed and distance to carry out related calculations

Speed Distance and time

LEVEL 2		Approximately 5-14 level C, level D and E	
5-14 level C		5-14 level D	
I can time simple activities for 1 - 5 minute periods.		I can time activities in seconds using a stopwatch.	
		I can time activities using a digital stopwatch in seconds, tenths and hundredths of a second.	
LEVEL 3/4 Approximately Standard Grade Foundation and General or Int 1			
Foundation		General/Int 1	
I can find distance given speed and time, simple cases only.		I know and can use the relationships between distance, speed and time: $D = ST$ $S = D/T$ $T = D/S$ I can calculate any one of speed distance or time, given the other two using appropriate units. e.g. Stephen walks 11.5 km at an average speed of 5 km/h. How long does his journey take? Give your answer in hours and minutes.	
5-14 level F pupils may move directly to level 5			

Awaiting introduction of new Assessments for level 3/4 content split detail.

Notes	
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Level	Used in these departments:-
2	Maths, Science, PE
3	
4	Maths, Physics, Tech Studies

Level	Code	Outcome description
2	MNU 2-10c	Using simple time periods, I can give a good estimate of how long a journey should take, based on my knowledge of the link between time, speed and distance.
3		
4		
Time intervals and timetables		
LEVEL 2 Approximately 5-14 level C, level D and E		
5-14 level C	5-14 level D	5-14 level E
I can calculate hours and minutes for short duration time periods such as morning break.	I can calculate durations of time in hours and minutes mentally if possible.	I can read a timetable and use it to calculate journey times.
LEVEL 3/4 Approximately Standard Grade Foundation and General or Int 1		
Foundation	General/Int 1	5-14 level F pupils may move directly to level 5
Level 2 only	Level 2 only	
Awaiting introduction of new Assessments for level 3/4 content split detail.		
Notes		
Level	Used in these departments:-	
2	Maths, Science	
3		
4		

Level	Code	Outcome description
2	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.
3	MNU 3-11a	I can solve practical problems by applying my knowledge of measure, choosing the appropriate units and degree of accuracy for the task and using a formula to calculate area or volume when required.
4	MNU 4-11a	I can apply my knowledge and understanding of measure to everyday problems and tasks and appreciate the practical importance of accuracy when making calculations.

Measure

LEVEL 2 Approximately 5-14 level C, level D and E

5-14 level C	5-14 level D	5-14 level E
<p>I can estimate lengths and heights in easily handled standard units :- m, 1/2 m, 1/10 m and cm</p> <p>e.g. length of pencil = 10cm width of desk = 1/2m</p>	<p>I can estimate small weights, small areas and small volumes in easily handled standard units. e.g. bag of sugar = 1kg</p>	<p>I can estimate area in square cm and square metres. e.g. area of a whiteboard = 4m²</p> <p>diameter of a 1p = 15mm</p>

LEVEL 3/4 Approximately Standard Grade Foundation and General or Int 1

Foundation	General/Int 1	5-14 level F pupils may move directly to level 5
<p>I can read simple scales on measuring devices. I can estimate length, weight, area, volume and angle</p>	<p>I can use everyday measuring instruments including those with imperial scales.</p>	<p>I can work with square kilometres, hectares, tonnes when appropriate. I can read scales on measuring devices, including estimating between graduations.</p> <p>I realise that volume can be conserved when shape changes.</p>

Awaiting introduction of new Assessments for level 3/4 content split detail.

Notes	
Level	Used in these departments:-
2	Maths, Craft and Design, Graph Comm, HE, Art and Design, SFL
3	Science, Chemistry, PSE, Craft and Design, Graph Comm, Art and Design
4	Maths, Computing, Physics, Chemistry, Craft and Design, Tech Studies, Graph Comm, HE, Soc and Voc, Art and Design

Level	Code	Outcome description
2	MNU 2-11b	I can use the common units of measure, convert between related units of the metric system and carry out calculations when solving problems.
3		
4		
Measurement and Conversion of Metric Units		
LEVEL 2 Approximately 5-14 level C, level D and E		
5-14 level C	5-14 level D	5-14 level E
<p>I can measure in standard units: - weights with an accuracy extended to 20g weights</p> <p>I know that: 1 kg = 1000 g</p> <p>I can measure volumes 1 litre 1/2 litre and 1/4 litre</p> <p>I can select an appropriate measuring devices and units, e.g metre tape or stick metres or centimetres</p>	<p>I can measure: Small lengths in mm Height of buildings in m Weights to include my own in kg</p> <p>I can measure volumes with an accuracy extended to small containers in ml</p> <p>I know that 1 litre = 1000 ml.</p> <p>I can measure areas of right angled triangles on grids.</p> <p>I can select appropriate weighing devices & units</p>	<p>I can work with sq km and hectares when appropriate.</p> <p>I can read scales on measuring devices not always graduated in tens.</p> <p>I know that 1000kg = 1 tonne, 1000cm³ = 1m³</p>
LEVEL 3/4 Approximately Standard Grade Foundation and General or Int 1		
Foundation	General/Int 1	5-14 level F pupils may move directly to level 5
I can carry out the above measurements to a reasonable degree of accuracy.	I can use cubic and square units I know that 1cm ³ is 1ml.	
Awaiting introduction of new Assessments for level 3/4 content split detail.		
Notes		
Level	Used in these departments:-	
2	Maths, Computing, Science, Craft and Design, Graph Comm, SFL	
3		
4		

Level	Code	Outcome description
2	MNU 2-11c	I can explain how different methods can be used to find the perimeter and area of a simple 2D shape or volume of a simple 3D object.
3		
4		
Perimeter, Area, Volume		
LEVEL 2 Approximately 5-14 level C, level D and E		
5-14 level C		5-14 level D
I can measure the areas of shapes composed of rectangles and squares or irregular shapes using tiles or grids in square centimetres or metres. I can understand and measure volumes litre, 1/2 litre, 1/4 litre.		I can calculate perimeters of simple straight-sided shapes by adding lengths, find areas of right-angled triangles on cm squared grids, measure volumes in small millilitre containers, and volumes of cuboidal shapes using cubes.
5-14 level E		
I can calculate areas using rules of rectangles and squares. I can calculate volumes of cubes and cuboids.		
LEVEL 3/4 Approximately Standard Grade Foundation and General or Int 1		
Foundation		General/Int 1
I can calculate the perimeter of figures rectilinear figures I can find the areas of figures rectangle, square and right-angled triangle. and irregular figures by counting squares I can find the volumes of solids cube, cuboid, and other solids by counting cubes.		I can calculate the perimeter of figures rectilinear figures circumference of a circle I can find the areas of figures any triangle (given base and height), circle, kite, rhombus, parallelogram, composite figures I can find the surface areas of solids A cube or a cuboid, cylinder or triangular prism I can find the volumes of solids cylinder, triangular prism
5-14 level F pupils may move directly to level 5		
I can calculate using rules: the areas of non-right-angled triangles and (given the base and height), of a kite, rhombus, parallelogram and composite shapes. the circumference and areas of circles: I know and can use $C = \pi d$ and $A = \pi r^2$;		
Awaiting introduction of new Assessments for level 3/4 content split detail.		
Notes		
Level	Used in these departments:-	
2	Maths, Science, SFL	
3		
4		

Level	Code	Outcome description
2	MNU 2-20a	Having discussed the variety of ways and range of media used to present data, I can interpret and draw conclusions from the information displayed, recognising that the presentation may be misleading.
3	MNU 3-20a	I can work collaboratively, making appropriate use of technology, to source information presented in a range of ways, interpret what it conveys and discuss whether I believe the information to be robust, vague or misleading.
4	MNU 4-20a	I can evaluate and interpret raw and graphical data using a variety of methods, comment on relationships I observe within the data and communicate my findings to others.

Presentation, Interpretation and Evaluation of Data

LEVEL 2 Approximately 5-14 level C, level D and E

5-14 level C	5-14 level D	5-14 level E
I can interpret from displays/databases <ul style="list-style-type: none"> • by retrieving specific records • by identifying the most and the least frequent items • and/or by using computer packages 	I can interpret from a range of displays and databases. I can retrieve information subject to one condition e.g. "Which children are taller than 120cm?"	I can interpret from an extended range of displays, diagrams, tables, graphs, pie charts and databases. I can retrieve information subject to more than 1 condition. "Which children are taller than 130 cm and heavier than 40 kg?" I can describe the main features of a graph to show awareness of the significance of the information. e.g. given graph of water level in a harbour, say what's happening.

LEVEL 3/4 Approximately Standard Grade Foundation and General or Int 1

Foundation	General/Int 1	5-14 level F pupils may move directly to level 5
I can identify one main trend in a graph, eg increasing or decreasing I can extract data from tables clearly presenting 2 categories of data, e.g. timetables, ready reckoners, holiday brochures I can read structured diagrams such as flowcharts possibly with 2 or 3 decision boxes.	I can estimate and interpret a best fit straight line. The scattergraph should show high positive or negative correlation, i.e I can indicate the connection between the variables. I can compare the mean or range for two sets of data I can compare individual data points with the mean/mode (commenting 'well above average' or 'about average')	I can by group and order discrete or continuous data using equal class intervals (approximately six classes) and construct grouped frequency tables. I can construct stem-and-leaf charts of data. I can construct scattergraphs of data; I can construct pie charts using raw data.

Awaiting introduction of new Assessments for level 3/4 content split detail.

Notes	The results of a survey of the number of pets pupils owned were 3, 3, 4, 4, 4, 5, 6, 6, 7, 8 Mean = $(3 + 3 + 4 + 4 + 4 + 5 + 6 + 6 + 7 + 8) \div 10 = 5$ Median = the middle = $(4 + 5) \div 2 = 4.5$ Mode = most common = 4 Range = highest - lowest = $8 - 3 = 5$
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Level	Used in these departments:-
2	Maths, Geography, History, Computing, Science
3	Maths, English, Geography, Computing, Science, Physics, Chemistry, PSE
4	Maths, Geography, Physics, Chemistry, Biology, PE, PSE, Tech Studies, Graph Comm

Level	Code	Outcome description						
2	MNU 2-20b	I have carried out investigations and surveys, devising and using a variety of methods to gather information and have worked with others to collate, organise and communicate the results in an appropriate way.						
3								
4								
Surveys								
LEVEL 2 Approximately 5-14 level C, level D and E								
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 33%;">5-14 level C</th> <th style="width: 33%;">5-14 level D</th> <th style="width: 33%;">5-14 level E</th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top;"> <p>I can collect data from a task using simple yes/no questionnaires from a survey.</p> <p>I can use grouped tally marks.</p> <p>I can enter data into a table using row and column headings.</p> <p>I can use databases where the teacher defines the headings or fields.</p> <p>I can use a simple computer package where appropriate.</p> </td> <td style="vertical-align: top;"> <p>I can collect data from a task including a questionnaire which allows several responses. (What do you buy from the tuck-shop) ?</p> <p>I can display my data using diagrams and tables. (Crisps, Sweets, Fruit, Juice on Mon Tue Wed Thu Fri) etc</p> <p>I can use databases or spreadsheets with up to 3 fields defined by the pupils.</p> <p>I can use a computer package where appropriate.</p> </td> <td style="vertical-align: top;"> <p>I can collect data from a task including</p> <ul style="list-style-type: none"> • practical experiments • surveys using questionnaires • sampling using simple strategy. <p>(Estimate how much water lost from dripping tap in 1 week by measuring loss in 1 hour)</p> <p>Design and use diagrams and tables.</p> <p>Design and use a database or spreadsheet - fields designed by pupils.</p> <p>Use a computer package appropriate.</p> </td> </tr> </tbody> </table>			5-14 level C	5-14 level D	5-14 level E	<p>I can collect data from a task using simple yes/no questionnaires from a survey.</p> <p>I can use grouped tally marks.</p> <p>I can enter data into a table using row and column headings.</p> <p>I can use databases where the teacher defines the headings or fields.</p> <p>I can use a simple computer package where appropriate.</p>	<p>I can collect data from a task including a questionnaire which allows several responses. (What do you buy from the tuck-shop) ?</p> <p>I can display my data using diagrams and tables. (Crisps, Sweets, Fruit, Juice on Mon Tue Wed Thu Fri) etc</p> <p>I can use databases or spreadsheets with up to 3 fields defined by the pupils.</p> <p>I can use a computer package where appropriate.</p>	<p>I can collect data from a task including</p> <ul style="list-style-type: none"> • practical experiments • surveys using questionnaires • sampling using simple strategy. <p>(Estimate how much water lost from dripping tap in 1 week by measuring loss in 1 hour)</p> <p>Design and use diagrams and tables.</p> <p>Design and use a database or spreadsheet - fields designed by pupils.</p> <p>Use a computer package appropriate.</p>
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Foundation	General/Int 1	5-14 level F pupils may move directly to level 5						
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Awaiting introduction of new Assessments for level 3/4 content split detail.								
Notes								
Level	Used in these departments:-							
2	Maths, Geography, History, Modern Languages, Science, HE, SFL							
3								
4								

Level	Code	Outcome description
2	MNU 2-22a	I can conduct simple experiments involving chance and communicate my predictions and findings using the vocabulary of probability.
3	MNU 3-22a	I can find the probability of a simple event happening and explain why the consequences of the event, as well as its probability, should be considered when making choices.
4	MNU 4-22a	By applying my understanding of probability, I can determine how many times I expect an event to occur, and use this information to make predictions, risk assessment, informed choices and decisions.

Probability

LEVEL 2 Approximately 5-14 level C, level D and E

5-14 level C	5-14 level D	5-14 level E
To be developed by the maths department.	To be developed by the maths department.	To be developed by the maths department.

LEVEL 3/4 Approximately Standard Grade Foundation and General or Int 1

Foundation	General/Int 1	5-14 level F pupils may move directly to level 5
	<p>Simple outcomes such as: a 5 from rolling a die numbered 1 to 6</p> <p>Probability of one value from a given frequency table</p>	<p>I can list possible outcomes of simple random events, e.g. 1, 2, 3, 4, 5, 6 from rolling a die numbered from 1 to 6;</p> <p>I can use appropriate words such as highly likely, unlikely, to describe probability of an outcome;</p> <p>I know that probability is a measure of chance is between 0 and 1; the probability of an impossible event is 0; the probability of a certain event is 1;</p> <p>I can determine probability of a familiar event (eg. an ace from a pack of cards), defining probability as</p> <p style="text-align: center;">The number of favourable outcomes the total number of outcomes where all the outcomes are equally likely</p>

Awaiting introduction of new Assessments for level 3/4 content split detail.

Notes	Expectation prediction and risk assessment are not at present in the course and will need to be developed by the mathematics department.
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Level	Used in these departments:-
2	Maths, HE
3	Maths
4	