East Lothian 'CFE Numeracy and Mathematic' Framework

Experiences and Outcomes	Time	Measurement	Patterns & Relationships
	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. **MNU 2-10a** I can carry out practical tasks and investigations involving timed events and can explain which unit of time would be most appropriate to use. **MNU 2-10b** 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. **MNU 2-10c**	I can use my knowledge of the sizes of familiar or places to assist me when making an estimate of measure. **MNU 2-11a** I can use the common units of measure, convert between related units of the metric system and carry out calculations when solving problems. **MNU 2-11b** I can explain how different methods can be used to find the perimeter and area of a simple 2D shape and the volume of a simple 3D objects **MNU 2-11c**	Having explored more complex number sequences, including well-known named number patterns, I can explain the rule used to generate the sequence, and apply it to extend the pattern. **MTH 2-13a**
On track in P5	• I can read and record 12 hour time on digital and analogue clocks to one minutes intervals. • I can calculate durations of events using 12 hour and notation • I can demonstrate the relationship between common units of time, e.g. seconds in a minute, minutes in an hour, and can convert between them. • I can use a 12 hour clock to read, interpret and create a range of time tables. • I can select a device to measure time and record using appropriate units. • I can estimate and measure how long a journey will take.	• I can use the measurements of everyday items to help me estimate length, weight and volume e.g. arm span, stride, A4 paper. • I can use measuring devices and read scales accurately. • I can convert between common units of measurement e.g. metres into km (2200 metres = 2km 200m), grams into kg (3kg 9g = 3009g) and ml into l. • I can explain the terms area, perimeter and volume. • I can measure area and perimeter using squared cm and m. • I can draw shapes with a given perimeter or area on squared paper. • I can explain that when a shape moves its dimensions remain the same.	• I can recognise number sequences where numbers are linked by one of the four operations and continue the sequence. • I can use knowledge of the four operations to continue and create number patterns e.g. repeated addition / subtraction, times tables etc.
On track in P6	• I can read and record 12 and 24 hour time. • I can calculate durations of events using 12 hour notation including those bridging hours or parts of hours. • I can use the relationship between common units of time, to carry out conversions calculations e.g. 1 ¾ hours into minutes. • I can use a 12 and 24 hour clock to read, interpret and create a range of time tables. • I can read and record time from a variety of timers using correct abbreviations. • I can calculate the end time of an event if I have the start time and the duration.	• I can compare size of familiar objects to make reasonable estimations of length, weight, area and capacity. • I can use measuring devices to solve single step problems reading scales accurately • I can calculate the difference between my estimate and measurement using standard units • I can convert between common units of measurement using decimal notation e.g. metres into km (2200 metres = 2.2 km), grams into kg (3.009kg = 3009g) and ml into l. • I can calculate area and perimeter of rectangles using cm^2 and m^2 using formula A = l x b. • I can calculate the volume of solid 3D objects such as cubes and cuboids using cm^3 and m^3. • I can draw shapes with a given perimeter or area on plain paper. • I can list some imperial units of measurement e.g. miles, pints, stones etc.	• I can continue and create a number sequence by applying or writing a rule from one of the four operations • I can use knowledge of multiples, factors, square and triangular numbers to continue and create number patterns.
On track in P7	• I can read and record any 12 and 24 hour time and convert between the two. • I can calculate durations of events using 12 hour and 24 hour notation including those bridging across several hours or parts of hours. • I can carry out conversions calculations for units of time e.g. 1 ¾ hours into minutes and explain the most appropriate unit to use. • I can use and interpret a variety of electronic and paper based timetables and calendars to plan events and solve real life problems. • I can show how to time events more accurately using tenths and hundredths of seconds. • I can select the most appropriate unit of time and timing device for a given task and justify my choice. • I can calculate the duration of a journey given the distance and speed.	• I can accurately estimate the size of familiar objects using standard units • I can select measuring devices to solve multistep problems reading scales accurately and justifying my choice • I can evaluate the impact the difference between my estimate and the actual measurement may have. • I can calculate area and perimeter of 2D shapes including triangles and compound shapes using cm^2 and m^2. • I can calculate the volume of solid 3D objects such as cubes and cuboids using cm^3 and m^3 justifying method of choice and units used. • I can draw shapes with a particular perimeter or area to solve real life problem • I can draw shapes with the same perimeter but different areas. • I can compare between imperial units and standard metric units.	• I can solve problems by identifying a rule, applying the rule and continuing the sequence. • I can explain a rule to extend more complex number sequences including well known sequences such as, Pascal's triangle and Fibonacci sequence.

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| National Benchmarks | • Reads and records any time in both 12 hour and 24 hour notation and converts between the two.
• Knows the relationships between commonly used units of time and carries out simple conversion calculations, for example, changes **1 ³/₄** hours into minutes.
• Uses and interprets a range of electronic and paper-based timetables and calendars to plan events or activities and solve real life problems.
• Calculates durations of activities and events, including situations bridging across several hours and parts of hours using both 12 hour clock and 24 hour notation.
• Estimates the duration of a journey based on knowledge of the link between speed, distance and time.
• Chooses the most appropriate timing device in practical situations and records using relevant units, including hundredths of a second.
• Selects the most appropriate unit of time for a given task and justifies choice. | • Uses the comparative size of familiar objects to make reasonable estimations of length, weight, area and capacity.
• Estimates to the nearest appropriate unit, then measures accurately: length, height and perimeter in millimetres (mm), centimetres (cm) and metres (m); distances in kilometres (km); weights in grams (g) and kilograms (kg); capacity in millilitres (ml) and litres (l).
• Calculates the perimeter of simple 2D shapes in millimetres (mm), centimetres (cm) and metres (m) and explains the choice of method used.
• Calculates the area of 2D shapes in square millimetres (mm^2), square centimetres (cm^2) and square metres (m^2) and explains the choice of method used.
• Calculates the volume of simple 3D objects in cubic centimetres (cm^3) and cubic metres (m^3) and explains the choice of method used.
• Converts between common units of measurement using decimal notation, for example, 550cm = 5.5m; 3.009kg = 3kg 9***g*** and applies this knowledge when solving problems.
• Chooses the most appropriate measuring device for a given task, reading scales accurately, carrying out the required calculation and recording results in the correct unit.
• Draws shapes accurately with a given perimeter or area.
• Demonstrates understanding of the conservation of measurement.
• Shows awareness of imperial units used in everyday life, for example, miles or stones. | • Explain and uses a rule to extend well known number sequences including square numbers, Pascal's triangle and Fibonacci sequences.
• Applies knowledge of multiples, factors, square numbers and triangular numbers to generate number patterns for others to continue. |

2

Experience and Outcomes	2D Shape and 3D Objects	Angle, Symmetry and Transformation	Data and Analysis
	Having explored a range of 3D objects and 2D shapes, I can use mathematical language to describe their properties, and through investigation can discuss where and why particular shapes are used in the environment. **MTH 2-16a** Through practical activities, I can show my understanding of the relationship between 3D objects and their nets. **MTH 2-16b** I can draw 2D shapes and make representations of 3D objects using an appropriate range of methods and efficient use of resources. **MTH 2-16c**	I have investigated angles in the environment, and can discuss, describe and classify angles using appropriate mathematical vocabulary. **MTH 2-17a** I can accurately measure and draw angles using appropriate equipment, applying my skills to problems in context. **MTH 2-17b** Through practical activities which include the use of technology, I have developed my understanding of the link between compass points and angles and can describe, follow and record directions, routes and journeys using appropriate vocabulary. **MTH 2-17c** Having investigated where, why and how scale is used and expressed, I can apply my understanding to interpret simple models, maps and plans. **MTH 2-17d** I can use my knowledge of the coordinate system to plot and describe the location of a point on a grid. **MTH 2-18a /MTH 3-18a** I can illustrate the lines of symmetry for a range of 2D shapes and apply my understanding to create and complete symmetrical pictures and patterns. **MTH 2-19a / MTH 3-19a**	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. *MNU 2-20a* 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. *MNU 2-20b* I can display data in a clear way using a suitable scale, by choosing appropriately from an extended range of tables, charts, diagrams and graphs, making effective use of technology. *MNU 2-21a/MNU3-21a*
On track in P5	• I can identify and describe 2D shapes and 3D objects using the following: faces, edges, side, corner, vertex, vertices, diagonals and angles. • I can draw circles using a variety of methods • I can explain what a net is and create a 3D shape from a given net. • I can identify 2D shapes and 3D objects in my environment. • I can use a range of mathematical instruments including a ruler, compass and protractor to draw simple 2D shapes and patterns.	• I can identify and describe the terms acute, obtuse and right angles and identify them in the environment. • I can measure angles using a protractor. • I can use correct vocabulary to describe and explain a route or journey e.g. turns, bee-bots, LOGO. • I can demonstrate an understanding of eight points of a compass. • I can explain when scale is used and why we use it. • I can discuss how scaled objects and maps will compare to the original. • I can use the terms x-axis, y-axis, axes, x-coordinate, y-coordinate and origin. • I can read, record and plot the coordinates of a point using the correct notation (x, y). • I can complete symmetrical images with two or more lines of symmetry.	• I can analyse and interpret data from a range a range of different sources. • I can gather, organise and display data accurately in a variety of ways, including surveys, questionnaires and digital technologies. • I can construct a range of graphs, tables and diagrams including line graphs, bar charts, pie charts, frequency tables and spreadsheets, incorporating all important features e.g. title, labelled axes, scale and key where appropriate.
On track in P6	• I can identify and describe 2D shapes and 3D objects using the following: radius, diameter, circumference, scalene, isosceles, equilateral, right-angled, polygon and quadrilateral. • I can draw circles with given radius or diameter. • I can link nets to their 3D shape such as cubes and cuboids. • I can discuss the purpose of specific shapes within the environment e.g. triangles in bridges. • I can use a range of mathematical instruments including digital technologies to draw simple 3D objects.	• I can identify and describe reflex angles, sort all angles according to their size or type and identify them in the environment • I can, with increasing accuracy, use a protractor to measure and draw a range of angles. • I can follow or create a route using what I know about directional language, compass points and angles. • I can calculate true dimensions or distances given a simple map or plan and the scale being used. • I can make a scaled drawing of an object map or plan, from its true dimensions. • I can plot and join points in the correct order to produce an image or picture. • I can create my own symmetrical image or design with two or more lines of symmetry.	• I can compare and discuss the same data displayed in different ways, make judgements and draw conclusions. • I can devise ways to gather data and can collect, organise and display data accurately in a variety of ways, including digital technologies. • I can select the most appropriate way to collect and display data, draw conclusions and communicate them effectively. • I can choose a suitable method to display data from a range of tables, charts, graphs, diagrams and spreadsheets, including all important features e.g. title, labelled axes, scale and key where appropriate.
On track in P7	• I can explain the terms regular and irregular • I can solve problems that require drawing circles as part of the solution. • I can explore and build nets for more complex 3D shapes. • I can demonstrate my understanding of the function of certain shapes by solving practical design challenges. • I can make solid and skeleton models of 3D objects using different resources and justifying my choice.	• I can describe complimentary and supplementary angles, and use this to calculate missing angles. • I can use my knowledge of drawing and measuring angles to solve related problems. • I can mark a bearing from a point remembering to mark and start from North. • I can use compass bearings on a map. • I can draw maps or objects to a scale of my choice in order to interpret and solve problems, justifying my decision. • I can read, record and plot the coordinates of a point in four quadrants using the correct notation (-x,-y). • I can create images and patterns by reflecting, rotating and translating lines and shapes.	• I can explain how data can be misleading through the way data is gathered or presented (e.g. scale is wrong, data gathered is incorrect) and this may influence people's opinions. • I can investigate data, draw conclusions and justify my opinions. • I can explain my decision to collect data in a particular way. • I can select the most suitable method to display data using appropriate scale and justifying my choices.

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National Benchmarks			
	• Describes 3D objects and 2D shapes using specific vocabulary including regular, irregular, diagonal, radius, diameter and circumference. Applies this knowledge to demonstrate understanding of the relationship between 3D objects and their nets. • Identifies and describes 3D objects and 2D shapes within the environment and explains why their properties match their function. • Knows that the radius is half of the diameter. • Uses digital technologies and mathematical instruments to draw 2D shapes and make representations of 3D objects, understanding that not all parts of the 3D object can be seen.	• Uses mathematical language including acute, obtuse, straight and reflex to describe and classify a range of angles identified within shapes in the environment. • Measures and draws a range of angles to within . • Knows that complementary angles add up to 90° and supplementary angles add up to 180° and uses this knowledge to calculate missing angles. • Uses knowledge of the link between the eight compass points and angles to describe, follow and record directions. • Interprets maps, models or plans with simple scales, for example, 1 cm: 2 km. • Describes plots and record the location of a point on a grid using coordinate notation. • Identifies and illustrates all lines of symmetry on a wide range of 2D shapes and applies this understanding to complete a range of symmetrical patterns, with and without the use of digital technologies.	• Devises ways of collecting data in the most suitable way for the given task. • Collects, organises and displays data accurately in a variety of ways including through the use of digital technologies, for example, creating surveys, tables, bar graphs, line graphs, frequency tables, simple pie charts and spreadsheets. • Analyses, interprets and draws conclusions from a variety of data. • Draws conclusions about the reliability of data taking into account, for example, the author, the audience, the scale and sample size used. • Displays data appropriately making effective use of technology and chooses a suitable scale when creating graphs.

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Experiences and Outcomes	Expressions and Equations I can apply my knowledge of number facts to solve problems where an unknown value is represented by a symbol or letter. MTH 2-15a	Ideas of Uncertainty and Chance I can conduct simple experiments involving chance and communicate in my predictions and findings using the vocabulary of probability. MNU 2.22a	Mathematics – It's impact on the world, past, present and future I have worked with others to explore, and present our findings on, how mathematics impacts on the world and the important part it has played in advances and inventions. MTH 2-12a
On track in P5	Within my number range: • I can solve a simple equation by finding the value of a letter or a symbol. • I can use simple function machines including doubling, halving, adding and subtracting.	• I can use language of probability to describe the likelihood of simple events occurring, e.g. equal chance, fifty-fifty, probable, probability, etc. • I can demonstrate an understanding of one-in-two / fifty-fifty e.g. tossing a coin = heads or tails. • I can carry out simple experiments such as throwing dice to investigate chance and probability.	• I can describe how mathematics impacts on everyday lives. • I can list some important inventions that have been developed using mathematics.
On track in P6	Within my number range: • I can solve and create simple equations • I can solve simple inequations. • I can use more complex function machines including, multistep, multiplication and division.	• I can use language of probability to describe the likelihood of simple events occurring, e.g. two-in-three, 1:6, random, randomly etc. • I can demonstrate an understanding of more complex chance such as two-in-three / one-in-six using a variety of materials e.g. two yellow beads and one red bead would equal two in three, etc. • I can plan and carry out experiments with repeated trials to explore probability.	• I can discuss how mathematics impact mathematics has in the world of life and work. • I can work in a group to research and present findings on how mathematics has affected society.
On track in P7	Within my number range: • I can explain what a variable is. • I can apply my understanding of balancing an equation by performing operations on both sides e.g. $3x + 1 = 10$ $3x = 10 - 1$ $x = 9 / 3$	• I can use language of probability to accurately describe and predict the likelihood of simple events occurring. • I can demonstrate probability in a variety of ways. • I can use data to make predictions about the outcome of an experiment and explain reasons for my prediction.	• I can work in a group to investigate the role mathematics plays in the development of science, medicine or technology. • I can choose a suitable method to present my findings and justify my choices. • I can describe how statistics play an important part in daily life*
National Benchmarks	• Solves simple algebraic equations with one variable, for example, a - 30 = 40 and 4b = 20.	• Uses the language of probability accurately to describe the likelihood of simple events occurring, for example, equal chance, fifty-fifty, one in two, two in three, percentage chance and 1:6 • Plans and carries out simple experiments involving chance with repeated trials, for example, what is the probability of throw a double six if you throw two dice fifty times? • Uses data to predict the outcome of a simple experiment	• Researches and presents examples of the impact mathematics has in the world of life and work. • Contributes to discussions and activities on the role of mathematics in the creation of important inventions, now and in the past.

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	Money I can manage money, compare costs from different retailers, and determine what I can afford to buy **MNU 2-09a** I understand the costs, benefits and risks of using bank cards to purchase goods or obtain cash and realise that budgeting is important. **MNU 2-09b** I can use the terms profit and loss in buying and selling activities and can make simple calculations for this **MNU 2-09c**
On track in P5	• I can solve money problems using addition and subtraction up to £120. • I can manage money, compare costs and budget for spending, in real or imaginary situations. • I can explain the terms used in personal banking such as; budget, balance, overdrawn, interest, credit, debit, account, statement, withdrawal and deposit. • I can read and understand bank statements.
On track in P6	• I can solve money problems using the four operations (+ - x /) up to £1000. • I can discuss the advantages and disadvantages of saving and borrowing. • I can name different types of bank accounts and their purpose e.g. savings / debit. • I can compare costs and special offers when working within a budget. • I can explain what profit, loss and VAT, and their link to percentages.
On track in P7	• I can select the correct operations to solve money problems using greater amounts to challenge myself. • I can demonstrate an understanding of the benefits and risks of bank cards and digital technologies. • I can compare costs and considering affordability when working to a budget within different contexts. • I can calculate profit and loss accurately (e.g. buying and selling in real life and imaginary contexts).
National Benchmarks	• Carries out money calculations involving the four operations. • Compares costs and determines affordability within a given budget. • Demonstrates understanding of the benefits and risks of using bank cards and digital technologies. • Calculates profits and loss accurately e.g. when working with a budget for an enterprise activity.

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