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| Subject: Mathematics Year 10C Curriculum Map 2024-2025 |
| Terms | **Topics covered** and **core knowledge and skills** | Links to careers | Links to the Knowledge organiser and other additional resources |
| Half term 1 | **Unit 1: NP4-9 Essentials**NP4

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| Powers and roots |
| Index laws |
| Prime factors |

NP5

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| Order of operations with four operations, exponents and brackets to break the order |

NP6

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| Four operations with directed numbers |
| Powers of negative numbers |

NP7

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| Adding and subtracting fractions |
| Finding a fraction given the whole, finding a whole given a fraction. |
| multiplying and dividing fractions, fraction of an amount (incl. fractions of fractions) with link to multiplying; increasing and decreasing by a fraction by multiplying |

NP8

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| Equivalent fractions, decimals and percentages |
| Recurring and terminating decimals |
| Percentages of amounts, percentage increase and decrease |

NP9

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| Fluent use of the calculator |
| Rounding, truncation and error intervals |
| Estimation and approximation |

**Unit 2: A3-8 Essentials**A3

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| Expand and factorise a single bracket |

A4

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| Solve equations with an unknown on both sides |
| Solve equations containing brackets |
| Solve simple equations containing fractions |
| Forming and solving equations |

A5

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| Substituting into a formulae to find an unknown variable |
| Forming formulae and using to find unknowns |
| Rearranging linear formulae |

A6

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| Find the midpoint of a line segment |
| Plot a linear graph |
| Understand y=mx+c |
| Find the equation of a line from the gradient and y intercept |
| Identify parallel lines from their equations |
| Plot a quadratic graph |

A7

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| Generate terms of a sequence |
| Find the nth term of a sequence |
| Recognise common sequences |

A8

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| Representing inequalities on a number line |
| Solve linear inequalities |
| Represent inequalities involving x or y by shading on a graph |

 | Approximation: <https://www.youtube.com/watch?v=cABMOLgTkYM>Decimals:<https://www.youtube.com/watch?v=X0Gl72XKiyI>Fractions:<https://www.youtube.com/watch?v=3pccvFEWO0k>Percentages:<https://www.youtube.com/watch?v=7EB0H1bhGTo>Algebra: <https://www.youtube.com/watch?v=c4xwvFtsrMU>Graphs:<https://www.youtube.com/watch?v=JcEHR6O5E6Q>Inequalities:<https://www.youtube.com/watch?v=5sOw5og5sgc>Quadratic Equations:<https://www.youtube.com/watch?v=QAmbU12zs8c>Sequences:<https://www.youtube.com/watch?v=7Vf6BJwdy_0> | This link would take you to the KO on our website<https://teachers.thenational.academy/subjects/maths/key-stages/key-stage-4><https://www.bbc.co.uk/bitesize/subjects/z38pycw><https://vle.mathswatch.co.uk/vle/><https://corbettmaths.com/contents/> |
| Half term 2 | **Continue Unit 2: A3-8 Essentials****Unit 3: NP10-11 Essentials**NP10

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| Using ratio tables for direct and inverse proportion |
| Value for money |
| Exchange rates |
| Recipes |
| Decimal multipliers |
| Finding a percentage change |

NP11

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| Simplifying ratios |
| 1:n and n:1 |
| Ratios and fractions |
| Finding parts of a ratio given another part |
| Finding the value of parts given the whole |
| Finding the value of parts in a ratio given the difference |

 | Finance:<https://www.youtube.com/watch?v=Yjc_VxMMCy8>Proportion:<https://www.youtube.com/watch?v=Mz4nMRtTDCw>Ratio:<https://www.youtube.com/watch?v=BU9mKIvfxYU> |  |
| Half term 3 | **Unit 4: GM1-3 Essentials**

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| **GM1 - Drawing, Measuring and Constructing** |
| Measuring and naming angles |
| Constructing and drawing triangles |
| Bisecting angles and lines |
| **GM2 - Polygons and Angles** |
| Angles round points and on straight lines |
| Vertically opposite angles  |
| Missing angles in triangles |
| Missing angles in quadrilaterals |
| Properties of quadrilaterals |
| Interior angles in polygons |
| **GM3 - Area** |
| Rectilinear area |
| Area of a parallelogram |
| Area of a triangle |
| Area of a trapezium |
| Area of a circle |

**Unit 5: NP12-13 Essentials**

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| **Unit NP12 - Standard Form** |
| large numbers in standard form |
| small numbers in standard form |
| converting from 'almost standard' form to standard form |
| comparing numbers in standard form (and "almost standard" form) |
| adding and subtracting in standard form, by converting to normal form *and* by using distributivity |
| multiplying and dividing in standard form (using commutativity) |
| problems and applications, including order of operations |
| SI prefixes and engineering form |
| **Unit NP13 - Advanced Proportion and Rates of Change** |
| reverse percentages (original value problems) and finding the original value given a percentage of it |
| Simple interest |
| Direct (linear) proportion - first numerically, then graphically, then **algebraically** |
| Inverse proportion (excluding squares, cubes, roots) - first numerically, **then graphically, then algebraically** |
| Compound units - density, pressure, speed, value for money (what unit have I found?), including conversions between compound units |
| Ratio problems - combining ratios, finding parts, differences and wholes; mixing ratios with fractions (part/part and part/whole) |

 | Angles:<https://www.youtube.com/watch?v=S-Xx22DaOvE>Area:<https://www.youtube.com/watch?v=D8RJUooe9CI>2D Shapes:<https://www.youtube.com/watch?v=Ybe3gKeT7Jo>Standard form:<https://www.youtube.com/watch?v=gjeoyUHoy3Q>Operations:<https://www.youtube.com/watch?v=xm0ZgEImZZA>Percentages:<https://www.youtube.com/watch?v=7EB0H1bhGTo>Finance:<https://www.youtube.com/watch?v=Yjc_VxMMCy8>Proportion:<https://www.youtube.com/watch?v=Mz4nMRtTDCw>Speed:<https://www.youtube.com/watch?v=bM8W7zrggt4>Ratio:<https://www.youtube.com/watch?v=BU9mKIvfxYU> |  |
| Half term 4 | **Continue Unit 5: NP12-13****Unit 6: GM4 Congruence and Similarity**

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| Congruence - introduction |
| Tessellating congruent shapes to fill the plane |
| Isometries: translation (as a vector), reflection and rotation, including rotational and reflective symmetry, combinations of transformations, including successive translations. Knowing that reflection, rotation and translation produce congruent shapes |
| Similarity of length, proving shapes are similar, finding scale factors and writing equivalent sides as equivalent ratios |
| Enlargement (including negative and fractional enlargements). Knowing that enlargements produce similar shapes |
| Conditions for congruent triangles - simple examples, getting familiar with terms |

 | 2D Shapes:<https://www.youtube.com/watch?v=Ybe3gKeT7Jo>Geometry:<https://www.youtube.com/watch?v=b4Shg4r8gng>Ratio:<https://www.youtube.com/watch?v=BU9mKIvfxYU>Transformations:<https://www.youtube.com/watch?v=ejuJ20JroTo> |  |
| Half term 5 | **Unit 7: A9-10 Essentials**

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| **Unit A9 - Contextual graphs** |
| General "real-life" graphs, interpreting y-intercepts as a fixed value/charge, etc, and gradient as a rate of change in context |
| Drawing, reading from and extrapolating from conversion graphs |
| Introduction to speed, distance, time |
| Distance-time graphs, including finding the average speed, and the speed of a section as the gradient of the line |
| Velocity-time graphs, including finding the acceleration as the gradient and displacement as the area under the graph |
| **Unit A10 - Advanced Linear Graphs and Equations** |
| Find the gradient of a line using change in y/change in x |
| Use the form y=mx+c to draw lines (without plotting points) and factorising to find the root. Sketching linear graphs. |
| Identify equations of parallel and **perpendicular lines.** |
| Advanced y=mx+c questions **-** is (x,y) on the given line?, **finding equations given two points or a point and gradient. Solve problems related to this.** |
| Solve equations in two variables graphically: know that the points on a line represent the solution set to an equation in two variables, and that the intersection of two lines represents the solution to a pair of simultaneous equations in two variables |
| Find the solution to a pair of simultaneous equations by elimination **and by substitution**, and check the solution |
| Write and solve simultaneous equations from contexts |
| **Find regional solutions to linear inequalities in two variables on a Cartesian grid, including regions formed from multiple inequalities and identifying integer solutions in a region.** |

 | Graphs:<https://www.youtube.com/watch?v=JcEHR6O5E6Q>Speed:<https://www.youtube.com/watch?v=bM8W7zrggt4>Simultaneous Equations:<https://www.youtube.com/watch?v=z5p8MQSGh0w>Inequalities:<https://www.youtube.com/watch?v=5sOw5og5sgc> |  |
| Half term 6 | **Unit 8: SP3 – Introduction to Probability**

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| **Unit SP3 - Introduction to Probability** |
| systematic listing **(product rule for counting)** |
| Record, describe and analyse the frequency of outcomes of simple probability experiments, introduce language of probability |
| Theoretical probability - formalising language and notation, calculating |
| Sum of probabilities of all mutually exclusive events = 1 |
| Generate theoretical sample spaces, including systematic listing of combinations and outcomes, and use these to calculate probabilities |
| Recording outcomes and possibilities using frequency trees, two-way tables and simple Venn diagrams. Use these diagrams to calculate probabilities |

**Unit 9: GM5 – Right-Angled Triangles**

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| **Unit GM5 - Right-Angled Triangles** |
| Pythagoras' Theorem in 2D to find missing sides |
| Proving a triangle is right-angled with Pythagoras |
| Identifying Pythagorean triples |
| Pythagoras to find the distance between two points |
| Trigonometric ratios for finding missing sides in right-angled triangles |
| Trigonometric ratios for finding missing angles in right-angled triangles |
| Exact values of sinq, cosq and tanq for q = 0, 30, 45, 60, 90 by heart |
| Problems involving Pythagoras and trigonometry (including bearings), method selection practice |

**Unit 10: GM6 – Circles**

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| **Unit GM6 - Circles** |
| Circle parts and properties |
| Circumference of a circle (and semi/quarter circles), in terms of pi and rounded |
| Area of a circle (recap) and semi/quarter circles, in terms of pi and rounded |
| Problems with circumference and area of a circle |
| Length of an arc and area of a sector |
| **Identifying and using the circle theorems** |

 | Probability:<https://www.youtube.com/watch?v=cJ1QPiGnGEM>Pythagoras:<https://www.youtube.com/watch?v=KY8rRWvmt5c>Trigonometry:<https://www.youtube.com/watch?v=v62GGaDpk9Q>Circles:<https://www.youtube.com/watch?v=-PGrkZkYSF0> |  |