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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   |  | | --- | | Powers and roots | | Index laws | | Prime factors |   NP5   |  | | --- | | Order of operations with four operations, exponents and brackets to break the order |   NP6   |  | | --- | | Four operations with directed numbers | | Powers of negative numbers |   NP7   |  | | --- | | 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   |  | | --- | | Equivalent fractions, decimals and percentages | | Recurring and terminating decimals | | Percentages of amounts, percentage increase and decrease |   NP9   |  | | --- | | Fluent use of the calculator | | Rounding, truncation and error intervals | | Estimation and approximation |   **Unit 2: A3-8 Essentials**  A3   |  | | --- | | Expand and factorise a single bracket |   A4   |  | | --- | | Solve equations with an unknown on both sides | | Solve equations containing brackets | | Solve simple equations containing fractions | | Forming and solving equations |   A5   |  | | --- | | Substituting into a formulae to find an unknown variable | | Forming formulae and using to find unknowns | | Rearranging linear formulae |   A6   |  | | --- | | 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   |  | | --- | | Generate terms of a sequence | | Find the nth term of a sequence | | Recognise common sequences |   A8   |  | | --- | | 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   |  | | --- | | Using ratio tables for direct and inverse proportion | | Value for money | | Exchange rates | | Recipes | | Decimal multipliers | | Finding a percentage change |   NP11   |  | | --- | | 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**   |  | | --- | | **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**   |  | | --- | | **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**   |  | | --- | | 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**   |  | | --- | | **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**   |  | | --- | | **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**   |  | | --- | | **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**   |  | | --- | | **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> |  |