CTA Y10 E (HIGHER) UNIT 1: POWERS & ROOTS

1.1	Negative powers	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/arithmetic-procedures-index-laws/lessons/the-laws-of-indices-negative-and-zero-exponents/overview [This lesson also includes power 0]
1.2	Index laws for multiplication, division, and power of power	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/arithmetic-procedures-index-laws/lessons/the-laws-of-indices-multiplication/overview
		https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/arithmetic-procedures-index-laws/lessons/the-laws-of-indices-division/overview
		https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/arithmetic-procedures-index-laws/lessons/the-laws-of-indices-raising-a-power-to-a-power/overview
1.3	Power 0	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/arithmetic-procedures-index-laws/lessons/the-laws-of-indices-negative-and-zero-exponents/overview [This lesson also includes negative powers]
1.4	Simplify expressions involving powers using index laws	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/arithmetic-procedures-index-laws/lessons/advanced-problem-solving-with-the-laws-of-indices/overview
1.5	Use index laws to multiply and divide algebraic terms	
1.6	Fractional powers	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/arithmetic-procedures-index-laws/lessons/the-laws-of-indices-fractional-exponents/overview
1.7	Add, subtract and multiply surds	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/surds/lessons/accuracy-of-final-answers/overview [Introduction to surds]
		https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/surds/lessons/addition-with-surds/overview
1.8	Simplify surds	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/surds/lessons/simplifying-surds/overview
1.9	Divide with surds in simple cases	
1.10	Simplify a surd expression with a 1-term denominator, by rationalising	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/surds/lessons/rationalising-a-single-term-denominator/overview
1.11	Simplify a surd expression with a 2-term denominator, by rationalising	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/surds/lessons/rationalising-a-two-term-denominator/overview

CTA Y10 E (HIGHER) UNIT 2: RATIO & SCALE

2.1	Sharing in a ratio (including where one part, or the difference, is given)	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/ratio/lessons/checking-and-securing-understanding-of-sharing-in-a-ratio/overview
2.2	Combined ratios	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/ratio/lessons/combining-ratios/overview
2.3	Problems which combine ratios, fractions, decimals and/or percentages	
2.4	Scale diagrams	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/bearings/lessons
2.5	Bearings	[Set of 6 lessons on bearings and scale diagrams]

CTA Y10 E (HIGHER) UNIT 3: BRACKETS

3.1	Prove an identity	
3.2	Expand and simplify a 'triple bracket'	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/algebraic-manipulation/lessons/the-product-of-three-binomials/overview
3.3	Simplify an algebraic fraction by factorising into single brackets	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/algebraic-fractions/lessons/simplifying-algebraic-fractions/overview [Stop the video at 9:35 and ignore question 4 onwards in the Exit Quiz]
3.4	Factorise a quadratic expression (x^2)	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/algebraic-manipulation/lessons/factorising-a-quadratic-expression/overview
3.5	Factorise a quadratic expression ($2x^2$, $3x^2$, etc.)	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/algebraic-manipulation/lessons/factorising-quadratics-of-the-form-ax-2-plus-bx-plus-c/overview
3.6	Factorise a difference of two squares	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/algebraic-manipulation/lessons/factorising-using-the-difference-of-two-squares/overview

CTA Y10 E (HIGHER) UNIT 4: AREA & PERIMETER

4.1	Solve area or perimeter problems involving more than one shape (e.g. the area of the triangle is 5 times the area of the rectangle)	
4.2	Form and solve a linear equation in the context of area or perimeter	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/algebraic-manipulation/lessons/checking-and-securing-understanding-of-forming-linear-equations/overview [This lesson also includes some other contexts for forming and solving equations.]
4.3	Use brackets in the context of area or perimeter (e.g. area of a rectangle)	
4.4	Parts of a circle (tangent, chord, sector, segment, arc, circumference, diameter, radius)	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/circle-theorems/lessons/checking-and-securing-understanding-of-the-parts-of-a-circle/overview
4.5	Calculate the area, arc length or perimeter of a sector	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/2d-and-3d-shape-compound-shapes/lessons/calculating-arc-length/overview
		https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/2d-and-3d-shape-compound-shapes/lessons/area-of-a-sector/overview
4.6	Form and solve an equation to calculate the angle or radius of a sector, using its area or arc length	
4.7	Use the area of a sector to calculate the perimeter (or arc length) and vice versa	

CTA Y10 E (HIGHER) UNIT 5: EQUATIONS

5.1	Solve a quadratic equation by factorising (x^2)	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/algebraic-manipulation/lessons/solving-quadratic-equations-by-factorising/overview
5.2	Rearrange, expand or simplify a quadratic equation before factorising and solving	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/algebraic-manipulation/lessons/solving-quadratic-equations-by-factorising-where-rearrangement-is-required/overview
5.3	Reduce a quadratic equation to x^2 by dividing by a common factor, before factorising and solving	
5.4	Know and apply the Quadratic Formula	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/algebraic-manipulation/lessons/solving-quadratic-equations-by-using-the-formula/overview
5.5	Solve linear simultaneous equations using a graph	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/simultaneous-equations-2-variables/lessons/solving-simultaneous-linear-equations-graphically/overview
5.6	Solve linear simultaneous equations by 'elimination'	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/simultaneous-equations-2-variables/lessons/solving-algebraic-simultaneous-equations-by-elimination/overview
		https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/simultaneous-equations-2-variables/lessons/solving-more-complex-simultaneous-equations-by-elimination/overview
5.7	Solve a problem by deriving and solving simultaneous equations	

CTA Y10 E (HIGHER) UNIT 6: SOLIDS

6.1	Volume of cuboids, prisms and cylinders	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/2d-and-3d-shape-surface-area-and-volume-pyramids-spheres-and-cones/lessons/checking-and-securing-understanding-of-volume-of-prisms/overview
		https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/2d-and-3d-shape-surface-area-and-volume-pyramids-spheres-and-cones/lessons/checking-and-securing-understanding-of-volume-of-a-cylinder/overview
6.2	Volume of spheres, cones and pyramids	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/2d-and-3d-shape-surface-area-and-volume-pyramids-spheres-and-cones/lessons/the-volume-of-a-pyramid/overview
		https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/2d-and-3d-shape-surface-area-and-volume-pyramids-spheres-and-cones/lessons/the-volume-of-a-sphere/overview
		https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/2d-and-3d-shape-surface-area-and-volume-pyramids-spheres-and-cones/lessons/the-volume-of-a-cone/overview
6.3	Solve context problems involving the volume of solids, including composite solids Form and solve equations to solve problems involving volume (e.g. to find a missing length)	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/2d-and-3d-shape-surface-area-and-volume-pyramids-spheres-and-cones/lessons/volume-of-composite-solids/overview [This lesson is on composite solids]
6.4	Use algebra in context problems involving volume (e.g. where lengths are specified algebraically)	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/2d-and-3d-shape-surface-area-and-volume-pyramids-spheres-and-cones/lessons/forming-equations-involving-complex-shape-calculations/video [This lesson also includes surface area]
6.5	Surface area of cuboids, prisms and cylinders	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/2d-and-3d-shape-surface-area-and-volume-pyramids-spheres-and-cones/lessons/checking-and-securing-understanding-of-surface-area-of-cuboids/overview
		https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/2d-and-3d-shape-surface-area-and-volume-pyramids-spheres-and-cones/lessons/checking-and-securing-understanding-of-surface-area-of-other-prisms/overview
		https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/2d-and-3d-shape-surface-area-and-volume-pyramids-spheres-and-cones/lessons/checking-and-securing-understanding-of-surface-area-of-a-cylinder/overview
6.6	Surface area of spheres, cones and pyramids	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/2d-and-3d-shape-surface-area-and-volume-pyramids-spheres-and-cones/lessons/the-surface-area-of-a-pyramid/overview
		https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/2d-and-3d-shape-surface-area-and-volume-pyramids-spheres-and-cones/lessons/the-surface-area-of-a-sphere/overview
		https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/2d-and-3d-shape-surface-area-and-volume-pyramids-spheres-and-cones/lessons/the-surface-area-of-a-cone/overview
6.7	Solve context problems involving the surface area of solids, including composite solids	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/2d-and-3d-shape-surface-area-and-volume-pyramids-spheres-and-cones/lessons/surface-area-of-composite-solids/overview

CTA Y10 E (HIGHER) UNIT 7: FRACTIONS

7.1	Convert a fraction to a recurring decimal	
7.2	Convert a recurring decimal to a fraction	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/arithmetic-procedures-index-laws/lessons/converting-any-recurring-decimal-to-a-fraction/overview
7.3	Compare and order fractions (with different denominators)	
7.4	Order a combination of fractions, decimals and percentages	
7.5	Add, subtract, multiply and divide simple algebraic fractions	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/algebraic-fractions/lessons/operations-with-algebraic-fractions/overview
7.6	Multiply/divide more complex algebraic fractions	
7.7	Increase or decrease by a fraction	
7.8	Repeated fractional change	

CTA Y10 E (HIGHER) UNIT 8: ANGLES

8.1	Angles on parallel lines	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-foundation/units/angles/lessons/checking-and-securing-understanding-of-advanced-angle-facts/overview
8.2	Angles in polygons	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-foundation/units/angles/lessons/checking-and-securing-understanding-of-polygons/overview
		https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-foundation/units/angles/lessons/checking-and-securing-understanding-of-interior-angles/overview
		https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-foundation/units/angles/lessons/checking-and-securing-understanding-of-exterior-angles/overview
8.3 8.4 8.5	Circle theorems	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/circle-theorems/lessons [Series of lessons on circle theorems]
8.6	Chains of reasoning with angles	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/angles/lessons/checking-and-securing-understanding-on-chains-of-reasoning-with-angle-facts/overview
8.7	Form and solve a linear equation in the context of angles	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/angles/lessons/forming-equations-with-angles/overview

CTA Y10 E (HIGHER) UNIT 9: LINEAR GRAPHS

9.1	*Plot a line graph of the form $y = mx + c$* Decide whether a point would lie on a line with given equation	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-foundation/units/linear-graphs/lessons/checking-and-securing-understanding-of-drawing-linear-graphs/overview
9.2	Plot a line graph which is defined implicitly e.g. $3x + 4y = 12$	
9.3	Solve a linear equation using a graph	
9.4	Find the equation of a line from one point and its gradient Find the equation of a line from one point and the equation of a line which is parallel to it	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/linear-graphs/lessons/checking-and-securing-understanding-of-finding-the-equation-of-the-line-from-coordinates/overview https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/linear-graphs/lessons/parallel-linear-graphs/overview
9.5	Gradients of perpendicular lines Find the equation of a line from one point and the equation of a line which is perpendicular to it	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/linear-graphs/lessons/perpendicular-linear-graphs/overview https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/linear-graphs/lessons/identifying-perpendicular-linear-graphs/overview

CTA Y10 E (HIGHER) UNIT 10: INEQUALITIES

10.1	Inequalities on number lines	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/inequalities/lessons/inequalities-on-number-lines/overview
10.2	Solve a linear inequality with a negative term in the unknown on one side e.g. $30 - 5x < 8$	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/inequalities/lessons/solving-simple-linear-inequalities/overview
10.3	Solve a linear inequality with the unknown on both sides Identify possible integer solutions	
10.4	3-part inequalities Identify the set of integer solutions	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/inequalities/lessons/solving-more-complicated-linear-inequalities/overview
10.5	Single inequalities as regions on graphs	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/inequalities/lessons/solving-a-linear-inequality-graphically/overview
10.6	Multiple inequalities as regions on graphs	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/inequalities/lessons/solving-a-set-of-linear-inequalities-graphically/overview
10.7	Identify the inequalities from a graph	

CTA Y10 E (HIGHER) UNIT 11: STATISTICS 1

11.1	Criticise a data collection method	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/sampling/lessons/data-collection/overview
11.2	Find a small set of data values that produce a combination of given statistics (mean, median, mode, range) Understand why the median is often a more reliable measure of average than the mean	
11.3	Calculate the mean and total from an ungrouped table Estimate the mean and total from a grouped table, understanding why this is only an estimate	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/comparisons-of-numerical-summaries-of-data/lessons/calculating-the-mean-from-a-grouped-frequency-table/overview
11.4	Identify the mode from an ungrouped table Identify the modal class from a grouped table	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-foundation/units/comparisons-of-numerical-summaries-of-data/lessons/calculating-summary-statistics-from-a-grouped-frequency-table/video
11.5	Identify the range from an ungrouped table Estimate the range from a grouped table	
11.6	Frequency polygons	
11.7	Misleading diagrams	https://www.thenational.academy/pupils/programmes/maths-secondary-year-9/units/thinking-critically-with-maths/lessons/misleading-data/overview
11.8	Construct stem and leaf diagrams	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/comparisons-of-numerical-summaries-of-data/lessons/constructing-stem-and-leaf-diagrams/overview
11.9	Interpret stem and leaf diagrams, including identifying the mode, median and range	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/comparisons-of-numerical-summaries-of-data/lessons/calculating-summary-statistics-from-stem-and-leaf-diagrams/overview

CTA Y10 E (HIGHER) UNIT 12: FORMULAE & FUNCTIONS

12.1	Use function notation (to find outputs)	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/functions-and-proof/lessons/defining-function-notation/overview
12.2	Inverse functions	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/functions-and-proof/lessons/finding-the-inverse-of-a-function/overview
12.3	Composite functions	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/functions-and-proof/lessons/writing-composite-functions/overview
12.4	Create a formula	
12.5	Change the subject of formulas involving 3+ steps, small powers, and small roots	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/algebraic-manipulation/lessons/checking-and-securing-understanding-of-changing-the-subject/overview [Ignore the examples using cos, sin or tan functions]
12.6	Change the subject of a formula when the subject appears twice	

CTA Y10 E (HIGHER) UNIT 13: BASIC TRIGONOMETRY

13.1	Pythagoras' theorem in 2D, including in context Use Pythagoras' theorem to decide whether a triangle is right-angled	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/right-angled-trigonometry/lessons/checking-and-further-securing-understanding-of-pythagoras-theorem/overview
		https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/right-angled-trigonometry/lessons/using-pythagoras-theorem-to-justify-a-right-angled-triangle/overview
13.2	Pythagoras' theorem in 3D	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/right-angled-trigonometry/lessons/applying-pythagoras-theorem-in-3d/overview
13.3	Use sin, cos, tan to find a missing side	• https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/right-angled-trigonometry/lessons/checking-and-securing-understanding-of-sine-ratio-problems/overview • https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/right-angled-trigonometry/lessons/checking-and-securing-understanding-of-cosine-problems/overview • https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/right-angled-trigonometry/lessons/checking-and-securing-understanding-of-tangent-ratio-problems/overview
13.4	Use sin, cos, tan to find a missing angle	
13.5	Solve problems involving right-angled triangles, including in context	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/right-angled-trigonometry/lessons/advanced-problem-solving-with-right-angled-trigonometry/overview

CTA Y10 E (HIGHER) UNIT 14: NUMBER

14.1	Use a calculator for complex calculations	
14.2	Use prime factor form to identify the LCM and HCF	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/arithmetic-procedures-index-laws/lessons/checking-and-securing-understanding-of-prime-factorisation/overview
		https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/arithmetic-procedures-index-laws/lessons/checking-and-securing-understanding-of-lcm-and-hcf/overview
14.3	Solve context problems involving HCF and LCM	
14.4	Divide by a decimal Estimate when dividing by a decimal	https://www.thenational.academy/pupils/programmes/maths-secondary-year-7/units/arithmetic-procedures-with-integers-and-decimals/lessons/dividing-with-decimals/video
14.5	Estimate with powers and roots, including in context Decide whether an estimate is an over-estimate or under-estimate	
		https://www.thenational.academy/pupils/programmes/maths-secondary-year-8/units/estimation-and-rounding/lessons/overestimating-vs-underestimating/overview
14.6	Upper and lower bounds Error intervals	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/rounding-estimation-and-bounds/lessons/upper-and-lower-bounds/overview
14.7	Problems involving bounds	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/rounding-estimation-and-bounds/lessons/upper-and-lower-bounds-in-additive-calculations/overview
		https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/rounding-estimation-and-bounds/lessons/upper-and-lower-bounds-in-multiplicative-calculations/overview
		https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/rounding-estimation-and-bounds/lessons/using-upper-and-lower-bounds-practically/overview
14.8	Truncate a decimal number	https://www.thenational.academy/pupils/programmes/maths-secondary-year-8/units/estimation-and-rounding/lessons/truncating/video
14.9	Error interval for a truncated number	

CTA Y10 E (HIGHER) UNIT 15: NON-LINEAR GRAPHS

15.1	Plot the graph of a more complex quadratic function, using a table of values Know the general shape of a quadratic graph Identify/estimate the roots and turning point of a quadratic function from its graph	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/non-linear-graphs/lessons/checking-and-securing-understanding-of-drawing-quadratic-graphs/overview
		https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/non-linear-graphs/lessons/key-features-of-a-quadratic-graph/overview
15.2	Find approximate solutions to a quadratic equation using a graph	
15.3	Plot the graph of a simple cubic function, using a table of values Appreciate the general shape of a cubic graph, and know the specific graphs of $y = x^3$ and $y = -x^3$	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/non-linear-graphs/lessons/drawing-cubic-graphs/overview
15.4	Plot the graph of a simple reciprocal function using a table of values	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/non-linear-graphs/lessons/drawing-reciprocal-graphs/overview
15.5	Plot/interpret the graph of a non-standard function	

CTA Y10 E (HIGHER) UNIT 16: COMPOUND UNITS

16.1	Speed, distance and time	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/compound-measures/lessons/compound-measures-for-speed/overview
16.2	Plot/complete a distance-time graph	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/real-life-graphs/lessons/checking-and-securing-understanding-of-drawing-distance-time-graphs/overview
		https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/real-life-graphs/lessons/distance-time-graphs/overview
16.3	Density	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/compound-measures/lessons/compound-measures-for-density/overview

CTA Y10 E (HIGHER) UNIT 17: PROPORTION

17.1	Direct proportion word problems	
17.2	Rates of pay	
17.3	Population density	
17.4	Other rates and rates of change	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-foundation/units/compound-measures/lessons/problem-solving-with-compound-measures/overview
17.5	Direct proportion: graphs and tables Direct proportion: expressions and formulas	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/linear-graphs/lessons/checking-and-understanding-graphs-showing-direct-proportion/overview [This lesson covers graphs showing direct proportion]
17.6	Construct and use simple formulas involving direct proportion	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/direct-and-inverse-proportion/lessons/finding-the-constant-of-proportionality-for-direct-proportion/video
17.7	Construct and use more complex formulae involving direct proportion	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/direct-and-inverse-proportion/lessons/finding-the-constant-of-proportionality-for-directly-proportional-relationships/overview
17.8	Inverse proportion word problems	
17.9	Inverse proportion: formulas	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/direct-and-inverse-proportion/lessons/finding-the-constant-of-proportionality-for-inverse-proportion/overview
17.10	Inverse proportion: graphs, tables, expressions and formulas	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/direct-and-inverse-proportion/lessons/checking-and-securing-understanding-of-inverse-proportion-graphs/overview [This lesson covers graphs showing inverse proportion]

CTA Y10 E (HIGHER) UNIT 18: PERCENTAGE

18.1	Compare using percentages	
18.2	Identify the percentage of a change, profit or loss	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/percentages/lessons/percentage-profit-and-loss/overview
18.3	Repeated percentage change Simple and compound interest	https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/percentages/lessons/simple-and-compound-interest/overview
		https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/percentages/lessons/simple-interest-calculations/overview
		https://www.thenational.academy/pupils/programmes/maths-secondary-year-10-higher/units/percentages/lessons/compound-interest-calculations/overview
18.4	Original value problems involving repeated percentage change	

CTA Y10 E (HIGHER) UNIT 19: ADVANCED TRIGONOMETRY

19.1	Sine Rule to find missing sides	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/non-right-angled-trigonometry/lessons/the-sine-rule/overview
19.2	Sine Rule to find missing angles	
19.3	Cosine Rule to find missing sides	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/non-right-angled-trigonometry/lessons/the-cosine-rule/overview
19.4	Cosine Rule to find missing angles	
19.5	Problems involving non-right-angled triangles	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/non-right-angled-trigonometry/lessons/using-the-sine-and-cosine-rules/overview
		https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/non-right-angled-trigonometry/lessons/problem-solving-with-non-right-angled-trigonometry/overview

CTA Y10 E (HIGHER) UNIT 20: STATISTICS 2

20.1	Use a sample to predict properties of a population	
20.2	Quartiles and inter-quartile range (IQR) Understand why the IQR is generally a more reliable measure of spread than the range Construct box plots	
20.3	Interpret box plots and use them to compare two sets of data	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/graphical-representations-of-data-cumulative-frequency-and-histograms/lessons/comparing-box-plots/overview
20.4	Construct cumulative frequency graphs	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/graphical-representations-of-data-cumulative-frequency-and-histograms/lessons/constructing-a-cumulative-frequency-graph/overview
20.5	Interpret cumulative frequency graphs	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/graphical-representations-of-data-cumulative-frequency-and-histograms/lessons/interpreting-a-cumulative-frequency-graph/overview
		https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/graphical-representations-of-data-cumulative-frequency-and-histograms/lessons/interquartile-range/overview
20.6	Construct box plots using cumulative frequency graphs	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/graphical-representations-of-data-cumulative-frequency-and-histograms/lessons/constructing-box-plots/overview

CTA Y10 E (HIGHER) UNIT 21: SEQUENCES & PROOF

21.1	Use algebra in proofs involving odd and even numbers	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/functions-and-proof/lessons/writing-a-proof/overview
21.2	Use algebra in sequences, including Fibonacci-type sequences	
21.3	Explore Fibonacci-type sequences involving surds	
21.4	Identify the nth term of an increasing or decreasing linear sequence	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/further-sequences/lessons/checking-and-securing-rules-for-generating-arithmetic-sequences/overview
21.5	Quadratic sequences	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/further-sequences/lessons/introducing-quadratic-sequences/overview
		https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/further-sequences/lessons/quadratic-sequences/overview
21.6	Types of sequence (arithmetic, geometric, Fibonacci-type or quadratic)	

CTA Y10 E (HIGHER) UNIT 22: VECTORS

22.1	Column vectors on a grid	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/vectors/lessons/column-vectors/overview
		https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/vectors/lessons/algebraic-vector-notation/overview
22.2	Add column vectors, representing this on a grid	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/vectors/lessons/addition-with-vectors/overview
22.3	Subtract column vectors	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/vectors/lessons/subtraction-with-vectors/overview
22.4	Multiply a column vector by a number (scalar)	https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/vectors/lessons/multiplication-with-vectors/overview
22.5	Identify vectors in a diagram (e.g. in terms of **a** and **b**), including where a midpoint is involved	

CTA Y10 E (HIGHER) UNIT 23: PROBABILITY

23.1	Use a theoretical probability to identify a total	
23.2	Find a missing probability in a table of numerical probabilities	
23.3	Algebraic problems involving tables of probabilities	
23.4	Probability tree diagrams	https://www.thenational.academy/pupils/programmes/maths-secondary-year-9/units/probability-theoretical-probabilities/lessons/calculating-theoretical-probabilities-from-probability-trees-two-events/video
		https://www.thenational.academy/pupils/programmes/maths-secondary-year-11-higher/units/conditional-probability/lessons/conditional-probability-in-a-tree-diagram/overview
23.5	Tree diagrams for non-standard situations	
23.6	Addition law of probability ('OR') Multiplication law of probability ('AND')	