

Procedural knowledge (exam technique, skills etc):

- a: Accuracy
- b: Problem solving
- c: Logic
- d: Communication
- e: Interpretation
- f: Appropriate use of technology
- R:
- h: Diagram use
- i: Revision techniques
- j: Numeracy
- k: Units and dimensions

Across the entire curriculum thus not referenced subsequently

Across work set in all work outside of class due to synoptic nature of work
 Across the entire curriculum thus not referenced subsequently

No of lessons	Disciplinary Knowledge area	Disciplinary Knowledge Content	RS revision knowledge topic	HW focus and actions	Assessment (Topic and skills assessed)
4	Algebraic Expressions	Index laws Expanding brackets Factorising Negative and fractional indices Surds Rationalising denominators	Notes page	All homeworks synoptic and diagnostic	As homework column - synoptic AP as test; flexible AP as Assignment per half term
4	Quadratics	Solving quadratic equations Completing the square Functions Quadratic graphs The discriminant Modelling with quadratics	Notes page Calculator procedures to identify key features of quadratic Recall the properties of the discriminant How to solve hidden quadratic (larger powers)		
7	Equations and inequalities	Linear simultaneous equations Quadratic simultaneous equations Simultaneous equations on graphs Linear inequalities Quadratic inequalities Inequalities on graphs Regions	Notes page How to identify strict vs non-strict inequalities on a graph How to solve quadratic inequalities		
6	Graphs and transformations	Cubic graphs Quartic graphs Reciprocal graphs Points of intersection Translating graphs Stretching graphs Transforming functions	Notes page Explain transformations of $af(bx+c)+d$ on $f(x)$		
3	Straight line graphs	$y = mx + c$ Equations of straight lines Parallel and perpendicular lines Length and area Modelling with straight lines	Notes page		
4	Circles	Midpoints and perpendicular bisectors Equation of a circle Intersections of straight lines and circles Use tangent and chord properties Circles and triangles	Notes page How to identify number of intersections between circle and straight line process for finding centre and radius given a non factorised equation Centre finding given 3 points		
4	Algebraic methods	Algebraic fractions Dividing polynomials The factor theorem Mathematical proof Methods of proof	Notes page Explain how to prove by exhaustion explain how to divide polynomial Explain the factor theorem Explain when to use the factor theorem and when to divide		
4	Binomial Expansion	Pascal's triangle Factorial notation The binomial expansion Solving binomial problems Binomial estimation	Notes page What useful formulae for the binomial expansion is in the formula book? How can you use a binomial expansion to approximate ...		
6	Trigonometric ratios	The cosine rule The sine rule Areas of triangles Solving triangle problems Graphs of sine, cosine and tangent Transforming trigonometric graphs	Notes page How to identify which trig equation to use. Sketch graphs Connecting graphs and CAST		
8	Trigonometric identities and equations	Angles in all four quadrants Exact values of trigonometrical ratios Trigonometric identities Simple trigonometric equations Harder trigonometric equations Equations and identities	Notes page Recall trigonometric identities how to solve a quadratic in trig		
7	Vectors	Vectors Representing vectors Magnitude and direction Position vectors Solving geometric problems Modelling with vectors	Notes page Application to constant velocity in a horizontal plane How to find the magnitude and direction of a vector		
12	Differentiation	Gradients of curves Finding the derivative Differentiating Differentiating quadratics Differentiating functions with two or more terms Gradients, tangents and normal Increasing and decreasing functions Second order derivatives Stationary points Sketching gradient functions Modelling with differentiation	Notes page First principles How to identify type of stationary point		
7	Integration	Integrating Indefinite integrals Finding functions Definite integrals Areas under curves Areas under the x-axis Areas between curves and lines	Notes Page Difference between definite and indefinite integration How to find the area between curve and axis (or between 2 curves)		
11	Exponentials and Logarithms	Exponential functions $y=e^x$ Exponential modelling Logarithms Laws of logarithms Solving equations using logarithms Working with natural logarithms Logarithms and non-linear data	Notes page Definition of log and log laws How to smooth non-linear data		
4	Data Collection	Populations and samples Sampling Non-random sampling Types of data The large data set	Notes page Advantages and disadvantages of sampling techniques Recall of LDS facts		
4	Measures of location and spread	Measures of central tendency Other measures of location Measures of spread Variance and standard deviation Coding	Notes page How to perform linear interpolation Explain how coding affects the mean and SD		
4	Representations of data	Outliers Box plots Cumulative frequency Histograms Comparing data	Notes page		
2	Correlation	Correlation Linear regression	Notes page		

2	Probability	Calculating probabilities Venn diagrams Mutually exclusive and independent events Tree diagrams	Notes page Formulae for mutually exclusive and independence and how to identify on Venn and tree diagrams
2	Statistical distributions	Probability distributions The binomial distribution Cumulative probabilities	Notes page What are the different ways of finding the probability of a single event in the Binomial distribution? How do you find different binomial probabilities on your calculator?
3	Hypothesis testing	Hypothesis testing Finding critical values One-tailed tests Two-tailed tests	Notes page Recall steps of hypothesis testing
3	Modelling in mechanics	Constructing a model Modelling assumptions Quantities and units Working with vectors	Notes page What are the standard modelling assumptions?
6	Constant acceleration	Displacement-time graphs Velocity-time graphs Constant acceleration formulae 1 Constant acceleration formulae 2 Vertical motion under gravity	Notes page how can you use velocity time graphs to generate SUVAT equations?
6	Forces and motion	Force diagrams Forces as vectors Forces and acceleration Motion in 2 dimensions Connected particles Pulleys	Notes page Design a multi-step connected particles across a pulley question
5	Variable acceleration	Functions of time Using differentiation Maxima and minima problems Using integration Constant acceleration formulae	Notes page With constant a , initial velocity u , initial displacement 0 , using calculus derive the SUVAT formulae