



### Golden Threads

### Enrichment

### Review and Evaluation

	Topics & Substantive Knowledge	Assessment	Misconceptions	Key Vocabulary	Knowledge Tracking
<b>Term 1 (teacher 1)</b>	<b>Paper 1 Content</b>				
	1. Budgeting		Incorrect multipliers for % of/ increase/ decrease.	Rule of 72	GCSE knowledge of Percentages:
	2. Inflation		Using 0.7 rather than 0.07 for a calculation 7% of. 0.05, not 1.05 for 5% increase. Dividing to complete a percentage decrease. Not dividing by multipliers to find reverse percentages.	Income	<ul style="list-style-type: none"> <li>Percentage of</li> <li>Percentage Increase and Decrease</li> </ul>
	3. Percentages		Thinking the 'new' is the 'original'.	Expenditure	<ul style="list-style-type: none"> <li>Percentage Change</li> <li>Reverse percentages</li> </ul>
	4. Financial Problems		Using simple interest instead of compound. Similar errors in decay and repeated percentage change problems.	Cash Flow	<ul style="list-style-type: none"> <li>Simple and Compound Interest</li> <li>Standard Exchange rate principles</li> </ul>
	5. Exchange Rates			Contingency	
	6. The modelling cycle			Retail Price Index (RPI)	
	7. Fermi estimation			Consumer Price Index (CPI)	
	F7.4 Budgeting, rule of 72			Office for National Statistics (ONS)	
	F7.1 The effects of inflation, including (RPI) and (CPI)			Inflation	
F2.1 Interpreting percentages and percentage changes as a fraction or a decimal and interpreting these multiplicatively			Hyper Inflation		
F2.2 Expressing one quantity as a percentage of another			Exchange rate		
F2.3 Comparing two quantities using percentages			Fermi Estimation		
F2.4 Working with percentages over 100%					
F2.5 Solving problems involving percentage change, including percentage increase/decrease and original value problems					
F3.1 Simple and compound interest					
F7.2 Setting up, solving and interpreting the solutions to financial problems, including those that involve compound interest using iterative methods					
F7.3 Currency exchange rates including commission					



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Term 1 (teacher 2)	<p><b>Paper 2 Content</b></p> <ol style="list-style-type: none"> <li>Critical analysis of data in the media (substantiating headlines' claims)</li> <li>Combatting misconceptions of percentages and graphs</li> <li>Critical analysis of data representation</li> <li>Activity networks and precedence tables</li> </ol> <p>C1.1 Criticising the arguments of others            C2.1 Summarising and report writing            C3.1 Comparing results from a model with real data            C3.2 Critical analysis of data quoted in media, political campaigns, marketing etc            R1 Compound projects:            R1.1 Representing compound projects by activity networks            R1.2 Activity-on-node representation will be used</p>		<p>Incorrect trend identification</p> <p>Ignoring or misinterpreting the scale</p> <p>Over generalisation</p> <p>Misidentifying outliers</p>	<p>Critically analyse</p> <p>Percentages</p> <p>Trends</p> <p>Axes</p> <p>Substantiate</p> <p>Conclusion</p> <p>Misleading</p> <p>Activity network</p> <p>Node</p> <p>Arc</p> <p>Precedence table</p> <p>Dependent</p>	<p>From GCSE:</p> <p>Statistical charts and data comprehension:</p> <ul style="list-style-type: none"> <li>Properties of bar charts, scatter graphs, pie charts, etc</li> <li>Fluency in percentages</li> <li>Concepts of proof (giving conclusions)</li> <li>Fluency in using and comparing averages</li> </ul>



	Topics & Substantive Knowledge	Assessment	Misconceptions	Key Vocabulary	Knowledge Tracking
Term 2 (teacher 1)	<p><b>Paper 1 Content</b></p> <ol style="list-style-type: none"> <li>1. Student loans</li> <li>2. Mortgages</li> <li>3. Income tax, National Insurance, Value Added Tax (VAT)</li> <li>4. Savings and investments. Annual Equivalent Rate (AER)</li> <li>5. Annual Percentage Rate (APR)</li> <li>6. The modelling cycle</li> <li>7. Fermi estimation</li> </ol> <p>F4.1 Student loans</p> <ul style="list-style-type: none"> <li>• Interest added year on year.</li> <li>• Limits of borrowing per student and dependencies of borrowing.</li> <li>• Repayment conditions based on Gross salary</li> <li>• Calculations for various salary amounts and different bands depending on year of issue</li> <li>• Excel use to represent repayments</li> </ul> <p>F4.1 Mortgages</p> <ul style="list-style-type: none"> <li>• Types of mortgage</li> <li>• Repayment calculations</li> </ul> <p>F6.1 Income tax (IT), National Insurance (NI), Value Added Tax (VAT)</p> <ul style="list-style-type: none"> <li>• Using Gross salary, calculate tax for each to show resultant annual and monthly net pay</li> </ul> <p>F3.1 F3.2 savings and investments</p> <ul style="list-style-type: none"> <li>• Annual Equivalent Rate (AER)</li> <li>• Using the formula to find AER, Nominal Interest Rate, Compounding Interest rate</li> </ul> <p>F4.1 Annual Percentage Rate (APR)</p> <ul style="list-style-type: none"> <li>• Using the formula to find Amount Borrowed, Repayment amount, Nominal Interest rate for single and multiple payment strategies</li> </ul> <p>E1 The modelling cycle</p> <p>E2 Fermi estimation</p>		<p>Student loans are always fully repaid (most are not)</p> <p>Everyone gets the same amount in grants and maintenance (they don't)</p> <p>Repayment is based on whole Salary (forgetting that it is only above threshold value)</p> <p>A lower interest rate means a lower mortgage (Mortgage repayment is dependent on rate AND borrowing amount)</p> <p>Everyone has to pay tax (no not below the personal allowance threshold)</p> <p>You only need to calculate NI or IT (you need to do both)</p> <p>Everyone pays the same tax rate (depends on gross salary)</p> <p>Nominal rate is the same as APR or AER (it is not)</p>	<p>Tuition Fees</p> <p>Maintenance Loan</p> <p>Grants</p> <p>Repayment mortgage</p> <p>Interest Free Mortgage</p> <p>Variable rate</p> <p>Fixed Rate</p> <p>National Insurance (NI)</p> <p>Income Tax (IT)</p> <p>Value Added Tax (VAT)</p> <p>Tax Bands</p> <p>Gross Salary</p> <p>Net Salary</p> <p>Pension Contributions</p> <p>Personal Allowance</p> <p>Deductions</p> <p>Benefits</p> <p>Annual Equivalent Rate (AER)</p> <p>Annual Percentage Rate (APR)</p> <p>Nominal rate</p> <p>Overdraft</p> <p>Loan</p> <p>Pay day loan</p> <p>Credit Card</p>	<p>GCSE knowledge of Percentages:</p> <ul style="list-style-type: none"> <li>• Percentage of</li> <li>• Percentage Increase and Decrease</li> <li>• Percentage Change</li> <li>• Reverse percentages</li> <li>• Simple and Compound Interest</li> </ul> <p>GCSE knowledge of Rearrangement of basic and advanced equations</p>



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Term 2 (teacher 2)	<p><b>Paper 2 Content</b></p> <ol style="list-style-type: none"> <li>Drawing activity networks from precedence tables</li> <li>Activity networks with durations</li> <li>Early Event Times and Late Event Times</li> <li>Floats</li> <li>Critical activities and critical paths</li> <li>Gantt Charts</li> <li>Time analysis</li> </ol> <p>R1 Compound projects:</p> <p>R1.1 Representing compound projects by activity networks</p> <p>R1.2 Activity-on-node representation will be used</p> <p>R2.1 Using early time and late time algorithms to identify critical activities and find the critical path(s)</p> <p>R3.1 Using Gantt charts (cascade diagrams) to present project activities</p>		<p>Putting activities wherever they will fit on the activity network rather than having all arrows going forwards (to represent passage of time in a single direction).</p> <p>Forward and backward pass errors quite common as they confuse whether they are selecting the largest option or the smallest.</p> <p>Including the duration as part of the float.</p> <p>Forgetting to add on the duration of the final activity to get the initial LET.</p>	<p>Activity network</p> <p>Precedence table</p> <p>Duration</p> <p>Early Event Time</p> <p>Late Event Time</p> <p>Float</p> <p>Critical activity</p> <p>Critical path</p> <p>Gantt Chart</p>	No prior knowledge required



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Term 3 (teacher 1)	<p><b>Paper 1 Content</b></p> <ol style="list-style-type: none"> <li>1. Spreadsheets</li> <li>2. Standard Mathematical operations</li> <li>3. Limits of accuracy and approximation</li> <li>4. Types of Data, Data collection and sampling strategies</li> <li>5. The modelling cycle</li> <li>6. Fermi estimation</li> </ol> <p>F1.1 substituting numerical values into formulae, spreadsheets and financial expressions, including bank accounts</p> <p>F1.2 using conventional notation for priority of operations, including brackets, powers, roots and reciprocals</p> <p>F1.3 applying and interpreting limits of accuracy, specifying simple error intervals due to truncation or rounding</p> <p>F1.4 finding approximate solutions to problems in financial contexts</p> <p>D1.1 appreciating the difference between qualitative and quantitative data, including the difference between discrete and continuous quantitative data</p> <p>D1.2 appreciating the difference between primary and secondary data, including the use of secondary data that have been processed eg grouped</p> <p>D1.3 collecting quantitative and qualitative primary and secondary data</p> <p>D2.1 inferring properties of populations or distributions from a sample, whilst knowing the limitations of sampling</p> <p>D2.2 appreciating the strengths and limitations of random, cluster, stratified and quota sampling methods and applying this understanding when designing sampling strategies, appreciating that improving accuracy by removing bias and increasing sample size may cost/save both time and money</p> <p>E1 The modelling cycle</p> <p>E2 Fermi estimation</p>	<p>Internal assessment in exam conditions: Single combined paper on content covered so far.</p>	<p>Confusing rounding the decimal places and significant figures</p> <p>Errors on the upper bound, not accounting for more decimal places</p> <p>Doing the full calculation when asked to estimate.</p> <p>Three is only 1 correct way to model different data (there are multiple strategies)</p>	<p>Excel</p> <p>Cell</p> <p>Substitution</p> <p>Error Bounds and intervals</p> <p>Truncate</p> <p>Qualitative data</p> <p>Quantitative data</p> <p>Discrete data</p> <p>Continuous data</p> <p>Primary data</p> <p>Secondary data</p> <p>Sample</p> <p>Random sample</p> <p>Cluster sample</p> <p>Stratified sample</p> <p>Quota sample</p>	<p>GCSE knowledge of upper and lower bounds and limits of accuracy</p> <p>Basic GCSE knowledge of types of graph and their interpretation</p>



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Term 3 (teacher 2)	<p><b>Paper 2 Content</b></p> <ol style="list-style-type: none"> <li>Experimental vs theoretical probability</li> <li>Representations of probability: two-way tables, tree diagrams, Venn diagrams</li> <li>Probability of combined events</li> <li>Expected value</li> <li>Cost-benefit analysis</li> <li>Control measures</li> <li>Risk analysis</li> </ol> <p>R4.1 Understanding that uncertain outcomes can be modelled as random events with estimated probabilities. Knowing that the probabilities of an exhaustive set of outcomes sum to one.</p> <p>R4.2 Applying ideas of randomness, fairness and equally likely events to calculate expected outcomes</p> <p>R5.1 Understanding and applying Venn diagrams and simple tree diagrams</p> <ul style="list-style-type: none"> <li>Understanding that <math>P(A)</math> means the probability of event A</li> <li>Understanding that <math>P(A')</math> means the probability of not event A</li> <li>Understanding that <math>P(A \cup B)</math> means the probability of event A or B or both</li> <li>Understanding that <math>P(A \cap B)</math> means the probability of event A and B</li> </ul> <p>R6.1 Calculating the probability of combined events:</p> <ul style="list-style-type: none"> <li>both A and B;</li> <li>neither A nor B;</li> <li>either A or B (or both)</li> <li>To include independent and dependent events.</li> </ul> <p>R7.1 Calculating the expected value of quantities such as financial loss or gain</p> <p>R8.1 Understanding that many decisions have to be made when outcomes cannot be predicted with certainty</p> <p>R9.1 Understanding that the actions that can be taken to reduce or prevent specific risks may have their own costs.</p> <ul style="list-style-type: none"> <li>Including the costs and benefits of insurance</li> </ul> <p>R10.1 Using probabilities to calculate expected values of costs and benefits of decisions.</p> <ul style="list-style-type: none"> <li>Other factors must be considered, for example</li> <li>The regulatory framework (eg compulsory insurance)</li> <li>Minimising the maximum possible loss</li> </ul> <p>R10.2 Understanding that calculating an expected value is an important part of such decision making</p>		<p>Adding probabilities instead of multiplying</p> <p>Treating outcomes as equally likely when they have different probabilities</p> <p>Incorrectly using the rule of probabilities adding up to 1.</p> <p>Not multiplying by the probabilities to find expected values</p> <p>Not laying work out clearly enough to keep track of calculations they've already done and thus completing the same calculation too many times</p> <p>Not considering every possible outcome</p>	<p>Experimental probability</p> <p>Theoretical probability</p> <p>Two-way table</p> <p>Tree diagram</p> <p>Venn diagram</p> <p>Universal set</p> <p>Union</p> <p>Intersection</p> <p>Complement</p> <p>Mutually exclusive</p> <p>Independent events</p> <p>Dependent events</p> <p>Expected value</p> <p>Random events</p> <p>Control measure</p> <p>Mitigation</p> <p>Cost benefit analysis</p> <p>Insurance</p>	<p>From GCSE (to be recapped and built upon throughout this term):</p> <p>Basic probability rules</p> <p>Tree diagrams</p> <p>Venn diagrams</p> <p>Set notation and vocabulary</p> <p>Two-way tables</p> <p>Fluency in percentages</p> <p>Expected outcomes</p> <p>Theoretical vs experimental probability</p>

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<b>Term 4 (teacher 1)</b>	<b>Paper 1 Content</b>	<p>1. Graphical Construction, Analysis and Interpretation</p> <ul style="list-style-type: none"> <li>• Histograms</li> <li>• Cumulative Frequency</li> <li>• Box Plots</li> <li>• Stem and Leaf</li> </ul> <p>2. Standard Deviation</p> <p>3. The modelling cycle</p> <p>4. Fermi estimation</p> <p>D3.1 Calculating Mean, Median, Mode, Quartiles, Percentiles, Range, Interquartile range from Raw data and from graphs</p> <p>D3.2 Construct different types of graph from raw data including cumulative frequency diagrams, stem-and-leaf diagrams or box plots.</p> <p>F5.1 and D3.2 graphical representation, including plotting points to create graphs. Use these graphs to compare and contrast different scenarios and financial interpretations, reaching conclusions based on these measures</p> <p>D4.1 constructing and interpreting diagrams for grouped discrete data and continuous data, knowing their appropriate use and reaching conclusions based on these diagrams, including histograms with equal and unequal class intervals</p> <p>Calculate standard deviation from raw data. Calculate SD manually and also understand how to get the calculator to calculate SD by switching to stats mode and inputting raw data.</p> <p>E1 The modelling cycle</p> <p>E2 Fermi estimation</p>		<p>Plotting the frequency rather than frequency density in a histogram</p> <p>Plotting frequency polygons at the edge of the range and cumulative frequency at the centre.</p> <p>Plotting bars on a cumulative frequency diagram</p> <p>Stating facts rather than comparing when asked to do so.</p> <p>Omitting a key in a stem-and-leaf diagram</p> <p>Not adding all the mean values in SD calculations.</p> <p>All calculators do the same calculation method</p>	<p>Mean</p> <p>Median</p> <p>Mode</p> <p>Quartiles</p> <p>Percentiles</p> <p>Range</p> <p>Interquartile range</p> <p>Raw data</p> <p>Histograms</p> <p>Cumulative Frequency</p> <p>Box Plots</p> <p>Stem and Leaf</p> <p>Standard Deviation</p> <p>Measure of spread</p> <p>Frequency distribution</p>	<p>Basic GCSE knowledge of types of graphs and their interpretation:</p> <ul style="list-style-type: none"> <li>• Histograms</li> <li>• Cumulative Frequency</li> <li>• Box Plots</li> <li>• Stem and Leaf</li> <li>• Mean</li> <li>• Mode</li> <li>• Median</li> <li>• Range</li> <li>• IQR</li> </ul>
	<b>(teacher 2)</b>	<p>1. Preliminary material work</p> <p>2. Exam practice</p> <p>Going over all past exam papers</p> <p>Looking at this year's preliminary material and working on predicting questions and practising answers to them.</p>	<p>Exam papers completed in class and for homework, alternating between exam conditions and otherwise.</p>			



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Term 5 (teacher 1)	<p><b>Paper 1 Content</b></p> <ol style="list-style-type: none"> <li>Critical Analysis and comparing data in context</li> <li>Report summarising and writing</li> <li>The modelling cycle</li> <li>Fermi estimation</li> <li>Preliminary material work</li> <li>Exam practice</li> </ol> <p>C1.1 - C3.1 Criticising the arguments of others. Comparing results from a model with real data. Critical analysis of data quoted in media, political campaigns, marketing etc.</p> <p>C2.1 summarising and report writing techniques, strategies and presentation. How to influence others in a business and financial context</p> <p>E1 The modelling cycle</p> <p>E2 Fermi estimation</p> <p>Going over all past exam papers</p> <p>Looking at this year’s preliminary material and working on predicting questions and practising answers to them.</p>	<p>Exam papers completed in class and for homework, alternating between exam conditions and otherwise.</p> <p>Sit the external exam.</p>			
	<ol style="list-style-type: none"> <li>Preliminary material work</li> <li>Exam practice</li> </ol> <p>Going over all past exam papers</p> <p>Looking at this year’s preliminary material and working on predicting questions and practising answers to them.</p>	<p>Sit the external exam.</p>			