



YEAR 12 Core Maths

'An ambitious curriculum that meets the needs of all'

Medium Term Planning – Correlation and Regression Unit

Curriculum Intent

Skills/Assessment Objective Links

	Content	Additional information
S7.1	recognising when pairs of data are uncorrelated, correlated, strongly correlated, positively correlated and negatively correlated	
S7.2	appreciating that correlation does not necessarily imply causation	
S7.3	understanding the idea of an outlier	identifying and understanding outliers and make decisions whether or not to include them when drawing a line of best fit
S8.1	understanding that the strength of correlation is given by the pmcc	
S8.2	understanding that pmcc always has a value in the range from -1 to $+1$	
S8.3	appreciating the significance of a positive, zero or negative value of pmcc in terms of correlation of data	
S9.1	the plotting of data pairs on scatter diagrams and the drawing, by eye, of a line of best fit through the mean point	the idea of residuals will not be required
S9.2	understanding the concept of a regression line	
S9.3	plotting a regression line from its equation	
S9.4	using interpolation with regression lines to make predictions	

Skills/Assessment Objective Links

Prior Knowledge

1. Basic Handling and Interpretation of Data

Understanding of:

Scatter graphs (scatter plots): plotting and interpreting them.

Types of data: discrete, continuous, categorical.

Bivariate data: recognizing when two variables are involved.

2. Descriptive Statistics

Ability to:

Find and interpret mean, median, mode.

Calculate and interpret range, interquartile range, and standard deviation (if introduced earlier).

Understand what a trend in data means.

3. Drawing and Reading Graphs

Confidence with:

Drawing axes and plotting coordinate points.

Labelling graphs clearly and correctly.

Prior Knowledge

	<p>Interpreting data from a visual representation.</p> <p>4. Basic Algebra and Equations Understanding: How to substitute into and rearrange simple equations. The concept of a linear relationship (straight-line graphs: $y = mx + c$). Slope (gradient) and intercept from a line equation.</p> <p>5. Understanding of Context Being able to: Interpret statistical findings in the context of a real-world problem. Know that correlation does not imply causation.</p>
Spiritual, moral, social, and cultural development	<p>Spiritual - Reflecting critically on data patterns</p> <p>Moral - Evaluating causation, handling outliers ethically</p> <p>Social - Collaboration, communication about real-world issues</p> <p>Cultural - Exploring global datasets, respecting diverse contributions to statistics</p>
Numeracy	<p>Data handling - Plotting, reading, and interpreting scatter plots</p> <p>Algebra - Understanding and using regression equations</p> <p>Estimation - Predicting values using lines of best fit</p> <p>Problem-solving - Applying statistical models to real-life scenarios</p> <p>Critical reasoning - Judging reliability and identifying misuse of data</p>
Literacy	<p>Vocabulary - Using technical terms accurately</p> <p>Comprehension - Reading and interpreting data-rich problems</p> <p>Written communication - Explaining findings clearly in context</p> <p>Critical analysis - Judging the reliability of data and conclusions</p> <p>Speaking & listening - Discussing findings and reasoning with peers</p>
Becoming future ready	<p>Data interpretation - Prepares for data-rich jobs and courses</p> <p>Critical thinking - Helps spot false or misleading claims</p> <p>Communication - Explaining data clearly in work/university</p> <p>Problem-solving - Supports decision-making in real contexts</p> <p>Application to careers - Useful in business, health, science, and more</p>
Adaptation QFT/SEND Provision	<ul style="list-style-type: none"> • By progressive questioning: exploring pupils' understanding through interactive dialogue. • By outcome: different learners will produce different outcomes. • By resource: worksheets are clearly presented and accessible. • By intervention: by providing different levels of supervision and support. • By grouping/setting: according to prior attainment, gender, social preference, preferred learning style. • By offering optional activities: In class or as homework, to extend learning.
Implementation Curriculum Delivery	<p>1. Construct and Interpret Scatter Graphs</p> <p>Accurately plot bivariate data on scatter graphs.</p> <p>Identify and describe the nature of a correlation:</p>

Learning Outcomes (Knowledge)	<p>Positive / Negative / No correlation. Weak / Moderate / Strong correlation.</p> <p>2. Understand and Use the Correlation Coefficient (PMCC) Understand what the Pearson correlation coefficient (r) tells us: Direction and strength of the relationship. That $-1 \leq r \leq 1$. Interpret the value of r in context (e.g. strong positive correlation).</p> <p>3. Understand that Correlation Does Not Imply Causation Recognise and explain why two variables might be correlated without one causing the other. Be able to provide or identify examples of spurious correlation.</p> <p>4. Draw and Use a Line of Best Fit by Eye Estimate and sketch a line of best fit on a scatter graph. Use the line to make predictions about one variable given the other (interpolation/extrapolation).</p> <p>5. Use Regression Line Equations for Prediction Use the regression line equation: $y = a + bx$ to make informed estimates. Interpret slope (b) as rate of change. Understand the intercept (a) and its context.</p> <p>6. Assess the Reliability of Estimates Understand the difference between: Interpolation (prediction within data range) – usually reliable. Extrapolation (prediction outside data range) – may be unreliable. Judge whether a prediction from a regression line is reasonable.</p> <p>7. Interpret Statistical Relationships in Context Clearly communicate conclusions in the context of real-life problems. Evaluate whether a model is appropriate, based on the data.</p>
Assessment	Refer to Assessment Map – Final examination May/June End of Year 12
Impact	Attainment and Progress – Refer to assessment results / data review documentation.