Subject	Year	Month	
Mathematics	9	December	Balcarras From strength to strength

Topic:

TIME SERIES, FREQUENCY POLYGONS AND SCATTER GRAPHS — 5 LESSONS

Content (Intent)

Prior Learning

Y7
- Averages and range
- Frequency tables
- Comparative bar charts
- Pie charts

Y8
- Types of data (e.g. discrete vs continuous)
- Averages from frequency tables
- bar charts, pie charts, vertical line charts
- Intro to scatter diagrams

Future Learning

- Cumulative Frequency graphs
- Interquartile range
- Box and Whisker Plots

Objectives

- Construct and interpret graphs of **time series**
- Interpret and construct **frequency polygons**

- Interpret a **scatter diagram** using understanding of correlation
- Construct a line of best fit on a scatter diagram and use the line of best fit to estimate values
- Know when it is appropriate to use a line of best fit to estimate values
- Understand that correlation does not indicate causation

For teaching purposes

Possible Questions
- What's the same and what's different: correlation, causation?
- What's the same and what's different: scatter diagram, time series, line graph, compound bar chart?
- Convince me how to construct a line of best fit.
- Always/Sometimes/Never: A line of best fit passes through the origin

Misconceptions
- may think that correlation implies causation
- may think that a line of best fit always has to pass through the origin
- may misuse the inequality symbols when working with a grouped frequency table

Pedagogical notes (implementation)

Students may have encountered both lines and curves of best fit in science by this time.

As a way of recording their thinking, all students construct the appropriate horizontal and vertical line when using a line of best fit to make estimates. In simple cases, students plot the 'mean of x' against the 'mean of y' to help locate a line of best fit.

Notation
Correct use of inequality symbols when labelling groups in a frequency table

How will understanding be assessed & recorded (Impact)

End of Term assessment in December
Exams in May

How can parents help at home?

MathsWatch clips (Qualification KS3)
65b, 153, 129

Further reading/discussion

Reading / Enrichment

KM: Stick on the MathsHD2: Frequency polygons and scatter diagrams

Literacy

Categorical data, Discrete data
Continuous data, Grouped data
Axis, axes
Time series
Compound bar chart
Scatter graph (scatter diagram, scattergram, scatter plot)
Bivariate data
(Linear) Correlation
Positive correlation, Negative correlation
Line of best fit
Interpolate
Extrapolate
Trend

Numeracy Links

Careers Links

Statistical analyst