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| **UNIT 3: Drawing and interpreting graphs, tables and charts** |

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**SPECIFICATION REFERENCES**

G2 use the standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to a given line from/at a given point, bisecting a given angle); use these to construct given figures and solve loci problems; know that the perpendicular distance from a point to a line is the shortest distance to the line

G14 use standard units of measure and related concepts (length, area, volume/capacity, mass, time, money, etc.)

G15 measure line segments and angles in geometric figures …

S2 interpret and construct tables, charts and diagrams, including frequency tables, bar charts, pie charts and pictograms for categorical data, vertical line charts for ungrouped discrete numerical data, tables and line graphs for time series data and know their appropriate use

S4 interpret, analyse and compare the distributions of data sets from univariate empirical distributions through:

* appropriate graphical representation involving discrete, continuous and grouped data
* appropriate measures of central tendency (… mode and modal class) and spread (range, including consideration of outliers)

S5 apply statistics to describe a population

S6 use and interpret scatter graphs of bivariate data; recognise correlation and know that it does not indicate causation; draw estimated lines of best fit; make predictions; interpolate and extrapolate apparent trends whilst knowing the dangers of so doing

**PRIOR KNOWLEDGE**

Students should be able to read scales on graphs, draw circles, measure angles and plot coordinates in the first quadrant, and know that there are 360 degrees in a full turn and   
180 degrees at a point on a straight line.

Students should have experience of tally charts.

Students will have used inequality notation.

Students must be able to find the midpoint of two numbers.

Students should be able to use the correct notation for time using 12- and 24-hour clocks.

**KEYWORDS**

Mean, median, mode, range, average, discrete, continuous, qualitative, quantitative, data, scatter graph, line of best fit, correlation, positive, negative, sample, population, stem and leaf, frequency, table, sort, pie chart, estimate

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| **3b. Pie charts**  (G2, G15, S2, S4) | **Teaching time**  2-4 hours |

**OBJECTIVES**

By the end of the sub-unit, students should be able to:

* Interpret tables; represent data in tables and charts;
* Know which charts to use for different types of data sets;
* Draw circles and arcs to a given radius;
* Know there are 360 degrees in a full turn, 180 degrees in a half turn, and 90 degrees in a quarter turn;
* Measure and draw angles, to the nearest degree; Construct pie charts for categorical data and discrete/continuous numerical data;
* Interpret simple pie charts using simple fractions and percentages; ,  and multiples of 10% sections;
* From a pie chart:
  + find the mode;
  + find the total frequency;
* Understand that the frequency represented by corresponding sectors in two pie charts is dependent upon the total populations represented by each of the pie charts.

**POSSIBLE SUCCESS CRITERIA**

From a simple pie chart identify the frequency represented by  and  sections.

From a simple pie chart identify the mode.

Find the angle for one item.

**OPPORTUNITIES FOR REASONING/PROBLEM SOLVING**

From inspection of a pie chart, students should be able to identify the fraction of the total represented and know when that total can be calculated and compared with another pie chart.

**COMMON MISCONCEPTIONS**

Same size sectors for different sized data sets represent the same number rather than the same proportion.

**NOTES**

Relate , , etc to percentages.

Practise dividing by 20, 30, 40, 60, etc.

Compare pie charts to identify similarities and differences.

Angles when drawing pie charts should be accurate to 2°.