|  |  |
| --- | --- |
| **F Unit 9: Real-life and algebraic linear graphs** | **Road Map** |
| In this unit you will learn about algebra. The aims are as follows:**LG1**: Knowledge**LG2**: Application**LG3**: Skills | Assessment Grades |  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
| **Themes** | **Learning Goals/Outcomes/Content** |  |  |  |
| 9a Real-life Graphs | Use input/output diagrams;  |  |  |  |
| Use axes and coordinates to specify points in all four quadrants in 2D;  |  |  |  |
| Identify points with given coordinates and coordinates of a given point in all four quadrants;  |  |  |  |
| Find the coordinates of points identified by geometrical information in 2D (all four quadrants); |  |  |  |
| Find the coordinates of the midpoint of a line segment;  |  |  |  |
| Draw, label and scale axes;  |  |  |  |
| Read values from straight-line graphs for real-life situations;  |  |  |  |
| Draw straight line graphs for real-life situations, including ready reckoner graphs, conversion graphs, fuel bills graphs, fixed charge and cost per unit;  |  |  |  |
| Draw distance–time graphs and velocity–time graphs;  |  |  |  |
| Work out time intervals for graph scales;  |  |  |  |
| Interpret distance–time graphs, and calculate: the speed of individual sections, total distance and total time;  |  |  |  |
| Interpret information presented in a range of linear and non-linear graphs;  |  |  |  |
| Interpret graphs with negative values on axes;  |  |  |  |
| Interpret gradient as the rate of change in distance–time and speed–time graphs, graphs of containers filling and emptying, and unit price graphs.  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 9b Straight-line graphs | Use function machines to find coordinates (i.e. given the input *x*, find the output *y*);  |  |  |  |
| Plot and draw graphs of *y* = *a*, *x* = *a*, *y* = *x* and *y* = –*x*; |  |  |  |
| Recognise straight-line graphs parallel to the axes;  |  |  |  |
| Recognise that equations of the form *y* = *mx* + *c* correspond to straight-line graphs in the coordinate plane;  |  |  |  |
| Plot and draw graphs of straight lines of the form *y* = *mx* + *c* using a table of values;  |  |  |  |
| Sketch a graph of a linear function, using the gradient and *y*-intercept;  |  |  |  |
| Identify and interpret gradient from an equation *y* = *mx* + *c*;  |  |  |  |
| Identify parallel lines from their equations;  |  |  |  |
| Plot and draw graphs of straight lines in the form *ax* + *by* = *c*; |  |  |  |
| Find the equation of a straight line from a graph;  |  |  |  |
| Find the equation of the line through one point with a given gradient;  |  |  |  |
| Find approximate solutions to a linear equation from a graph;  |  |  |  |
| Find the gradient of a straight line from real-life graphs too.  |  |  |  |

**Links:**

LG1: You will draw various types of graphs, and find equations from graphs.

LG2: You will apply your knowledge of graphs to find coordinates of points identified by geometric information. You will interpret real-life graph in order to (for example) calculate speeds of journeys or convert between currencies. You will use graphs to solve equations.

LG3: You will solve complex problems using graphs, for example, comparing the costs of two service providers, using a graph to calculate one (or both) of the costs.