This course is developed using the WA Curriculum as a guide. The order of the content and the time in which they are covered are only a guide. Circumstances may result in changes during the year. Kambalda West District High School reserves the right to alter the order the objectives are taught and time over which they are taught.

Mathematics Essential is a General course which focuses on using mathematics effectively, efficiently and critically to make informed decisions. It provides students with the mathematical knowledge, skills and understanding to solve problems in real contexts for a range of workplace, personal, further learning and community settings. This course provides the opportunity for students to prepare for post-school options of employment and further training.

Vocabulary & Grammar

Below is a list of words and phrases that students should know: the meaning of; and be able to spell; by the end of term:

Percentage	Linear measure	Conversion graph	Distance
Graph	Dimensions	Column graph	Length
Rates	Mass	Quartiles	Speed
Fractions	Area	Outliers	
Decimals	Volume	Mean	
BIMDAS	Kilojoules	Median	
Round up	Calories	Stem plots	
Round down	Line graph	Time	
Inverse proportion		Ratios	

There is an expectation that students will make every effort to correctly use capitals, full stops, commas, semi colons, apostrophes, question marks and exclamation marks.

Semester 1 – UNIT 1

Unit description

This unit provides students with the mathematical skills and understanding to solve problems relating to calculations, applications of measurement, the use of formulas to find an unknown quantity and the interpretation of graphs. Throughout this unit, students use the mathematical thinking process. This process should be explicitly taught in conjunction with the unit content. Teachers are advised to apply the content of the four topics in this unit: Basic calculations, percentages and rates; Algebra; Measurement; and Graphs, in contexts which are meaningful and of interest to their students. Possible contexts for this unit are Earning and managing money and Nutrition and health.

Week	Topics/Syllabus	Assessment	Resources
	Term 1		
1-3	**Topic 1.1: Basic calculations, percentages and rates** **Basic calculations** 1.1.1 choose and use addition, subtraction, multiplication and division, or combinations of these operations, to solve practical problems 1.1.2 apply arithmetic operations according to their correct order 1.1.3 convert between fractions, decimals and percentages, using a calculator when appropriate 1.1.4 evaluate fractions and decimals of quantities to the required number of decimal places; for example, ¾ of 250 ml, 0.4 of 3kg 1.1.5 apply approximation strategies for calculations if appropriate 1.1.6 use mental and/or flexible written strategies when appropriate 1.1.7 use a calculator appropriately and efficiently for multi-step calculations		
4-5	**Checking and making sense of all calculations** 1.1.8 use leading digit approximation to obtain estimates of calculations 1.1.9 check results of calculations for accuracy 1.1.10 understand the meaning and magnitude of numbers involved, including fractions, percentages and the significance of place value after the decimal point 1.1.11 ascertain the reasonableness of answers, in terms of context, to arithmetic calculations 1.1.12 round up or round down answers to the accuracy required, including to the required number of decimal places	Task 1: Test 1 Due Week 5	
6	**Rates (no inverse proportion)** 1.1.13 identify common usage of rates, such as: km/h as a rate to describe speed or beats/minute as a rate describing pulse rate 1.1.14 convert units of rates occurring in practical situations to solve problems. For example, 1 tablespoon (tbsp) = 4 teaspoons (tsp) or 1 tbsp = 20 ml (Australia) or 15 ml (US and UK) 1.1.15 use rates to make comparisons		
7-8	**Percentages** 1.1.16 calculate a percentage of a given amount, using mental/written strategies or technology when appropriate 1.1.17 determine one amount expressed as a percentage of another		

	1.1.18 apply percentage increases and decreases in situations, for example, mark-ups and discounts and GST		
9	**Topic 1.2: Using formulas for practical purposes** 1.2.1 identify common use of formulas to describe practical relationships between quantities 1.2.2 substitute values for the variables in a mathematical formula in given form to calculate the value of the subject of the formula		
10	**Topic 1.3: Measurement - Linear measure** 1.3.1 choose and use appropriate metric units of length, their abbreviations, conversions between them, and appropriate levels of accuracy, such as mm for building and other trade contexts, cm for textiles 1.3.2 estimate lengths	Task 2: Test 2 Due Week 10	
Term 2			
1-2	**Topic 1.3: Measurement** **Linear measure** 1.3.3 choose and use appropriate metric units of length, their abbreviations, conversions between them, and appropriate levels of accuracy, such as mm for building and other trade contexts, cm for textiles 1.3.4 estimate lengths 1.3.5 convert between metric units of length and other length units for simple practical purposes, for example, 1 inch ≈ 2.54cm 1.3.6 calculate perimeters of familiar shapes, including: triangles, squares, rectangles and composites of these		
3	**Area measure** 1.3.7 choose and use appropriate metric units of area, their abbreviations and conversions between them 1.3.8 estimate the areas of different shapes 1.3.9 convert between metric units of area and other area units 1.3.10 calculate areas of rectangles and triangles, and composites of these shapes	Task 3: Practical Application 1 Due Week 3	
4-6	**Mass** 1.3.11 choose and use appropriate metric units of mass, their abbreviations and conversions between them 1.3.12 estimate the mass of different objects **Volume and capacity** 1.3.13 choose and use appropriate metric units of volume, their abbreviations, and conversions between them 1.3.14 understand the relationship between volume and capacity, recognising that $1 \text{ cm}^3 = 1$ mL and $1 \text{ m}^3 = 1$ kL 1.3.15 estimate volume and capacity of various objects 1.3.16 calculate the volume and capacity of cubes and rectangular and triangular prisms		
7	**Topic 1.4: Graphs - Reading and interpreting graphs** 1.4.1 interpret information presented in graphs, such as: conversion graphs, line graphs, step graphs, column graphs and picture graphs 1.4.2 interpret information presented in two-way tables 1.4.3 discuss and interpret graphs found in the media and in factual texts	Task 4: Practical Application 2 Due Week 8	
8	1.4.4 determine which type of graph is the best one to display a dataset 1.4.5 use spreadsheets to tabulate and graph data 1.4.6 draw a line graph to represent any data that demonstrates a continuous change, such as hourly temperature		
END OF SEMESTER 1			

Semester 2 – UNIT 2

Unit description

This unit provides students with the mathematical skills and understanding to solve problems related to representing and comparing data, percentages, rates and ratios and time and motion. Students further develop the use of the mathematical thinking process and apply the statistical investigation process. The statistical investigation process should be explicitly taught in conjunction with the statistical content within this unit. Teachers are advised to apply the content of the four topics in this unit: Representing and comparing data; Percentages; Rates and ratios; and Time and motion, in a context which is meaningful and of interest to their students. Possible contexts for this unit are Transport and Independent living.

Week	Topics/Syllabus	Assessment	Resources
Term 2			
From Week 9	**Topic 2.2 Percentages - Percentage calculations** 2.2.1 review calculating a percentage of a given amount 2.2.2 review one amount expressed as a percentage of another **Applications of percentages** 2.2.3 determine the overall change in a quantity following repeated percentage changes; for example, an increase of 10% followed by a decrease of 10% 2.2.4 calculate simple interest		
Term 3			
Week 1- 3	**Topic 2.3 Rates and ratios - Ratios** 2.3.1 identify common use of ratios to express comparisons of quantities in practical situations 2.3.2 use diagrams or concrete materials to show simple ratios, such as 1 to 4, 1:1:2 2.3.3 understand the relationship between simple fractions, percentages and ratio, for example, a ratio of 1:4 is the same as 20% to 80% or 1/5 to 4/5 2.3.4 express a ratio in simplest form 2.3.5 determine the ratio of two quantities in context 2.3.6 divide a quantity in a given ratio, for example, share $12 in the ratio 1 to 2 2.3.7 use ratio to describe simple scales	Task 5: Test 3 Due Week 3	
4	**Rates** 2.3.8 review identifying common usage of rates, such as km/h 2.3.9 convert units for rate; for example, km/h to m/s, mL/min to L/h 2.3.10 complete calculations with rates, including solving problems involving direct proportion in terms of rate 2.3.11 use rates to make comparisons 2.3.12 use rates to determine costs		
5-6	**Topic 2.1 Representing and comparing data - Classifying data** 2.1.1 identify examples of categorical data 2.1.2 identify examples of numerical data **Data presentation and interpretation** 2.1.3 display categorical data in tables and column graphs 2.1.4 display numerical data as frequency distributions, dot plots, stem and leaf plots and histograms 2.1.5 recognise and identify outliers 2.1.6 compare the suitability of different methods of data presentation in real-world contexts	Task 6: Test 4 Due Week 6	
7-10	**Summarising and interpreting data** 2.1.7 identify the mode and calculate other measures of central tendency, the arithmetic mean and the median, using technology when appropriate 2.1.8 investigate the suitability of measures of central tendency in various real-world contexts 2.1.9 investigate the effect of outliers on the mean and the median 2.1.10 calculate and interpret quartiles	Task 7: Statistical Investigation 1 Due Week 10	

	2.1.11 use informal ways of describing spread, such as: spread out/dispersed, tightly packed, clusters, gaps, more/less dense regions, outliers		
	2.1.12 interpret statistical measures of spread, such as: the range, interquartile range and standard deviation		
	2.1.13 investigate real-world examples from the media illustrating inappropriate uses, of measures of central tendency and spread		
	Comparing data sets		
	2.1.14 compare back to back stem plots for different data sets		
	2.1.15 complete a five number summary for different data sets		
	2.1.16 construct and interpret box plots using a five number summary		
	2.1.17 compare the characteristics of the shape of histograms using symmetry, skewness and bimodality		

Term 4			
Week 1-5	**Topic 2.4 Time and Motion - Time**	Task 8: Practical Application 2 Due Week 3	
	2.4.1 use of units of time, conversions between units, fractional, digital and decimal representations		
	2.4.2 represent time using 12 hour and 24 hour clocks		
	2.4.3 calculate time intervals, for example, time between, time ahead, time behind		
	2.4.4 interpret timetables, such as bus, train and ferry timetables		
	2.4.5 use several timetables and electronic technologies to plan the most time-efficient routes		
	2.4.6 interpret complex timetables, such as tide charts, sunrise charts and moon phases		
	2.4.7 compare the time taken to travel a specific distance with various modes of transport		
	Distance and length		
	2.4.8 use scales to calculate distances and lengths on plans, maps and charts		
	2.4.9 plan routes for practical purposes, accounting for local conditions.		
	Speed		
	2.4.10 identify the appropriate units for different activities, such as walking, running, swimming and flying		
	2.4.11 calculate speed, distance or time using the formula speed = distance/time		
	2.4.12 calculate the time or costs for a journey from distances estimated from maps		
	2.4.13 interpret distance versus time graphs		
	2.4.14 calculate and interpret the average speed		
END OF SEMESTER 2			

A number of assessments will be used throughout the term to identify the students understanding in the course and be used to determine a grade. Student achievement will be reported using the following descriptors.

Semester 1

Assessment Type *SCSA Weighting*	Task Description	KWDHS Weighting	Set/Due Date
Response 50%	Task 1: Test 1 **Topic 1.1.1-1.1.7: Basic calculations, percentages and rates**	25%	*Term 1, Due Week 5*
	Task 2: Test 2 **Topic 1.1.8-1.2.2: Basic calculations, percentages and rates**	25%	*Term 1, Due Week 10*
Standardised Test	OLNA		*Term 1 Week 5*
Practical Application/Statistical Investigation Process 50%	Task 3: Practical Application 1 **Topic 1.3.1-1.3.10: Measurement**	30%	*Term 2, Due Week 3*
	Task 4: Practical Application 2 **Topic 1.4.1-1.4.6: Graphs**	**30%**	*Term 2 Due Week 8*

Semester 2

Assessment Type *SCSA Weighting*	Task Description	KWDHS Weighting	Set/Due Date
Response 50%	Task 5: Test 3 **Topic 2.3.1-2.3.12 Rates and ratios**	25%	*Term 3, Due Week 3*
	Task 6: Test 4 **Topic 2.1.1-2.1.6 Representing and comparing data**	25%	*Term 3, Due Week 6*
Standardised Test	OLNA		*Term 3 Week 7*
Practical Application/Statistical Investigation Process 50%	Task 7: Statistical Investigation 1 **Topic 2.1.7-2.1.17 Representing and comparing data**	30%	*Term 3, Due Week 10*
	Task 8: Practical Application 3 **Topic 2.4.1-2.4.14 Time and Motion**	20%	*Term 4, Due Week 3*

It is expected that all assessments will be completed to the best of your ability and be submitted by the deadlines set. Please make yourself aware of the Assessment Policy as failure to meet deadlines has severe consequences.

Grade	Description	The student demonstrates achievement that:
A	Excellent	has greatly exceeded the expected standard. Achievement is well beyond what is expected at this year level.
B	Good	exceeds the expected standard.
C	Satisfactory	at the expected standard.
D	Limited	is below the expected standard.
E	Very Low	is below the minimum acceptable for this year level.

Student Signature: _____   Parent/Guardian Signature: _____