APPLIED VOCATIONAL CERTIFICATE IN MATHEMATICS

Syllabus 2026





Year 9			
Topics:	Time, Metric Measures, Comparing Numbers, The Four Basic Operations, Rounding		
Broad Learning Outcome:	I can perform c	alculations and solve problems related to Sports a	and Events.
Learning Outcomes (N	MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
SE1.1 Identify the units of measurement for length (km, m, cm), mass (kg, g), capacity (l, ml) and/or time (h, min, s).		SE1.2 Convert metric measurements of length (km, m, cm), mass (kg, g), and/or capacity (l, ml) to a smaller unit.	SE1.3 Convert metric measurements of length (km, m, cm), mass (kg, g), and/or capacity (l, ml) to a larger unit.
E.g. Determine the unit used to measure the length of a football pitch, the mass of a shot- put ball, the amount of liquid in a sports drink.		E.g. Convert the length of a football pitch from m to cm, the mass of a shot put from kg to g, the amount of liquid held in a sports drink from l to ml.	E.g. Convert the length of a football pitch from m to km, the mass of a shot put from g to kg, the amount of liquid held in a sports drink from ml to l.
SE2.1 Identify the most appropriate unit of measurement for length, mass, capacity, and/or time.			
E.g. Dimensions of a football pitch in metres, weight of a shot-put ball in kilograms, sprinting in seconds.			
SE3.1 Determine the most suitable measuring device to measure length, mass, capacity, and/or time.			
E.g. Use a measuring tape to measure the width of running track lanes; Use weighing scales to measure the mass of an athlete; Use a stopwatch to measure the time taken to finish a race.			

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
SE4.1 Measure length, mass, and/or capacity in half, quarter and three-quarter measures	SE4.2 Measure length, mass, capacity and/or time using appropriate measuring instruments.	
using appropriate measuring instruments. E.g. Mark lengths of 50cm; Measure 750ml of sports drink.	E.g. Use a measuring tape to measure the width of a goal post; use a bathroom scale to measure the mass of a person.	
	SE5.2 Compare length, mass, capacity and/or time to a given quantity.	SE5.3 Estimate length, mass, capacity and/or time.
	E.g. Compare the height of an athlete competing in a high jump to the height of the bar they need to clear.	<i>E.g. Estimate the mass of an adult; Estimate the capacity of a large bottle of water.</i>
SE6.1 Compare integers using <, >, or =.	SE6.2 Compare numbers up to 2 decimal places using $\leq >$, or =.	SE6.3 Compare numbers up to 2 decimal places to a given range of values.
a football league during two different seasons.	E.g. Compare the time taken by a swimmer to complete a lap to the time taken by another swimmer to complete the same lap.	E.g. Compare the mass of different weightlifters to a particular mass category.
SE7.1 Convert units of time (hours, minutes, seconds) restricted to integer values.	SE7.2 Convert units of time (hours, minutes, seconds) involving non-integer values.	
<i>E.g. A wedding reception lasting 300 minutes is equivalent to 5 hours.</i>	E.g. A marathon lasting 276 minutes is equivalent to 4.6 hours.	
SE8.1 Read time to the hour/half hour/quarter hour using terms 'o'clock', 'half past', 'quarter past', and/or 'quarter to'.		
E.g. Read the starting time of a wedding ceremony.		
SE9.1 Write time to the hour/half hour/quarter hour using terms 'o'clock', 'half past', 'quarter past', and/or 'quarter to'.		

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
SE10.1 Write the time using the 12-hour digital time format to 1 minute using the terms 'past' and/or 'to'. <i>E.g. Write the starting time of a birthday party.</i>	SE10.2 Write the time using the 12-hour analogue time format to 1 minute using the terms 'past' and/or 'to'. <i>E.g. Write the starting time of a conference</i> <i>meeting.</i>	
	SE11.2 Use the 12-hour digital time format. <i>E.g. Use the 12-hour time format to make reservations for meetings.</i>	
SE12.1 Convert time in 24-hour format to 12-hour format and/or vice versa. <i>E.g. Express the starting time of a fitness class given in 24-hour time format in 12-hour time format.</i>	SE12.2 Use the 24-hour time format. <i>E.g. Order training session times at the gym given in 24-hour time format.</i>	
SE13.1 Interpret a timetable and/or a timeline. <i>E.g. Use a gym's classes timetable to identify the days and times for CrossFit workouts.</i>	SE13.2 Interpret a calendar. <i>E.g. Use a calendar to identify the days when the gym has shorter opening hours.</i>	
SE14.1 Calculate the duration of an activity that starts on the hour and lasts less than an hour. <i>E.g. Calculate the time taken to wash a car in a car wash if it starts at 9am and finishes by 9:25am.</i>	SE14.2 Calculate the duration of an activity using quarter hour time intervals. <i>E.g. Calculate the duration of a wedding reception which starts at 7:15pm and finishes at 11:30am.</i>	SE14.3 Calculate the duration of an activity. <i>E.g. Calculate the duration of a wedding</i> <i>reception which starts at 7:35pm and finishes</i> <i>at 11:55am.</i>
 SE15.1 Determine the starting time and/or finishing time using hour and/or half hour time intervals. E.g. Determine the finishing time of a movie which starts at 8:30pm and is 2½ hours long. 	SE15.2 Determine the starting time and/or finishing time using quarter hour time intervals. <i>E.g. Determine the finishing time of a movie which starts at 8.45pm and is 1¾ hours long.</i>	SE15.3 Determine the starting time and/or finishing time using time intervals. <i>E.g. Determine the finishing time of a movie which starts at 8.24pm and is 2 hours and 11 minutes long.</i>

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
SE16.1 Solve problems which involve hour and/or half hour intervals.	SE16.2 Solve problems which involve quarter and/or three-quarter time intervals.	SE16.3 Solve problems which involve time intervals.
E.g. Solve problems related to booking a gym session with an instructor who schedules sessions with intervals of half an hour.	E.g. Determine the starting time of a football match's second half given that the match starts at 20:45.	E.g. Solve problems related to booking a gym session with an instructor who schedules training sessions with intervals depending on the needs of the athlete.
SE17.1 Solve problems involving addition and/or subtraction of numbers up to 3 decimal places.		
E.g. Calculate the total time taken for four athletes to complete a relay race; Calculate by how many seconds one athlete surpassed another.		
SE18.1 Solve problems involving simple multiplication or division (up to 3 decimal places) by integers.	SE18.2 Solve problems which involve a combination of any of the four operations. <i>E.g. Calculate the number of coaches needed</i>	SE18.3 Solve problems related to best value for money and/or 'best buys' which consist of more than one operation.
E.g. Calculate the distance covered in 3 laps; Share prize money equally among 3 winners.	to take students from three classes to an event.	E.g. Compare the cost of different transport packages.
SE19.1 Round any quantity to the nearest ten, hundred and/or thousand.E.g. Round the number of km covered in a marathon to the nearest ten.	SE19.2 Round any decimal number up to 3 decimal places to the nearest whole, tenth and/or hundredth. <i>E.g. Round the time taken on a stopwatch to the nearest tenth</i>	SE19.3 Round numbers to an appropriate place value to make approximations. <i>E.g. Round all the expenses incurred in organising an event to the nearest ten Euro to make an approximation of the total cost</i>

Topics:	Metric Units, Fractions, Direct Proportion			
Broad Learning Outcome:	I can perform c	I can perform calculations related to Food and Nutrition.		
Learning Outcomes (N	MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)	
FN1.1 Identify the units of measurement for length (m, cm, mm), mass (kg, g, mg) and/or capacity (l, ml).		FN1.2 Convert metric measurements of length (m, cm, mm), mass (kg, g, mg), and/or capacity (l, ml) to a smaller unit.	FN1.3 Convert metric measurements of length (m, cm, mm), mass (kg, g, mg), and/or capacity (l, ml) to a larger unit.	
E.g. Identify the metric units for the length and width of a dish, the mass of a packet of sugar and the capacity of a jug.		E.g. 1.2kg of oranges is equivalent to 1200g of oranges.	E.g. 135ml of water is equivalent to 0.135litres of water.	
 FN2.1 Identify the most appropriate unit of measurement for length, mass and/or capacity. E.g. Use kilograms to measure the mass of a bunch of bananas and use grams to measure the mass of a small packet of sugar; Use litres to measure the capacity of a pot of soup and use millilitres to measure the capacity of a 				
glass of water. FN3.1 Identify the most suitable measuring device to measure length, mass and/or capacity. <i>E.g. Use a measuring tape to measure the</i> width of a tabletop; Use weighing scales to measure the mass of flour; Use a measuring jug to measure the capacity of oil needed for a recipe.				

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
FN4.1 Use measuring instruments to measure length, mass and/or capacity in half, quarter	FN4.2 Use measuring instruments to measure length, mass and/or capacity.	
and three-quarter quantities. E.g. Use kitchen scales to measure 250g sultanas or half a kilogram of apples.	E.g. Use kitchen scales to measure 35g of sugar; Use a measuring jug to measure 140ml of water.	
	FN5.2 Calculate an equivalent metric measure to cooking utensils such as teaspoon, tablespoon and/or cup, given a conversion table.	
	E.g. Find the capacity, in ml, of 3 teaspoons of vanilla essence if 1 teaspoon holds 5ml of vanilla essence; Find the capacity, in ml, of 2.5 cups of milk if 1 cup holds 250ml of milk.	
FN6.1 Estimate a quantity.		
<i>E.g. Estimate how many walnuts there are in a bowl; Estimate the number of seeds in a tablespoon.</i>		
FN7.1 Compare the length, mass and/or capacity of two objects.	FN7.2 Compare length, mass and/or capacity to a given value.	FN7.3 Estimate the length, mass and/or capacity of an object.
E.g. Compare a cup of sugar to a cup of poppy seeds.	E.g. Estimate whether the mass of a watermelon weighs more or less than 1kg.	E.g. Estimate the diameter of a cake tin; Estimate the mass of five apples.
FN8.1 Express ½, ¼ and ¾ as decimals and/or vice versa.	FN8.2 Convert fractions with denominators which are factors of 100 to decimals and/or vice verse.	FN8.3 Convert fractions to decimals and/or vice versa.
E.g. $\frac{1}{2}$ kg of broccoli = 0.5kg of broccoli.	E.g. $\frac{1}{5}$ kg of tomatoes = 0.2kg of tomatoes.	E.g. $\frac{1}{8}$ litres of vinegar = 0.125 litres of vinegar.

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
FN9.1 Find $\frac{1}{2}$, $\frac{1}{4}$ and/or $\frac{3}{4}$ of a quantity. <i>E.g. Find</i> $\frac{3}{4}$ of 200g of butter.	FN9.2 Find fractions of quantities resulting in a whole number. <i>E.g.</i> Find $\frac{3}{5}$ of 350g of chicken.	FN9.3 Find a fraction of a quantity. E.g. Find $\frac{2}{7}$ of 3kg of minced meat.
FN10.1 Simplify a fraction and write it in its lowest terms. <i>E.g. Eating 4 slices of a cake cut in 6 equal pieces is the same as eating 2 slices when the cake is cut in 3 equal pieces</i>		
FN11.1 Find equivalent fractions. E.g. $\frac{2}{3}$ of a cake is equivalent to $\frac{4}{6}$ of a cake.		
FN12.1 Add two fractions with the same denominator.	FN12.2 Add two fractions whose denominators are multiples of each other.	FN12.3 Add two fractions with different denominators.
E.g. John ate $\frac{2}{9}$ of a chocolate bar and Sam ate $\frac{5}{9}$ of the bar. What fraction did they eat altogether?	E.g. John ate $\frac{1}{5}$ of a chocolate bar and Sam ate $\frac{3}{10}$ of the bar. What fraction did they eat altogether?	E.g. John ate $\frac{1}{4}$ of a chocolate bar and Sam ate $\frac{1}{3}$ of the bar. What fraction did they eat altogether?
FN13.1 Subtract two fractions with the same denominator.	FN13.2 Subtract two fractions whose denominators are multiples of each other.	FN13.3 Subtract two fractions with different denominators.
E.g. Maya ate $\frac{2}{9}$ of a chocolate bar. What fraction of the chocolate bar is left?	E.g. Maya ate $\frac{1}{5}$ from $\frac{3}{10}$ of a chocolate bar. What fraction of the chocolate bar is left?	E.g. Maya ate $\frac{1}{4}$ from $\frac{1}{3}$ of a chocolate bar. What fraction of the chocolate bar is left?
FN14.1 Change an improper fraction to a mixed number and/or vice versa. <i>E.g.</i> $\frac{9}{4}kg = 2\frac{1}{4}kg$	FN14.2 Change a mixed number with denominators which are factors of 100 to a decimal number and/or vice versa. <i>E.g.</i> $3\frac{1}{5}m = 3.2m$	FN14.3 Change a mixed number to a decimal number and/or vice versa. <i>E.g.</i> $3\frac{1}{8}m = 3.125m$

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
FN15.1 Recognise situations where there is and/or there is not direct proportionality.	FN15.2 Work through situations that involve direct proportion using the unitary method.	FN15.3 Work through situations that involve direct proportion.
<i>E.g.</i> Recognise that the required mass of flour is directly proportional to the number of muffins required; Recognise that the time needed to dry 10 tomatoes is the same as that needed to dry 20 tomatoes.	<i>E.g. Calculate the number of calories in one portion of frozen lasagna if the container contains 4 portions.</i>	E.g. Calculate the capacity of applesauce needed to make 5 flapjacks if the recipe gives the capacity of applesauce needed for 12 flapjacks.
FN16.1 Solve problems involving addition and/or subtraction of numbers up to 3 decimal places. <i>E.g. Calculate the total mass of dry ingredients</i>		
in a recipe.		
 FN17.1 Solve problems involving simple multiplication or division (up to 3 decimal places) by integers. E.g. Calculate the calories in one serving of cereal. 	FN17.2 Solve problems which involve a combination of any of the four operations. <i>E.g. Find the total cost of ordering party food for a group of friends given the price per food item and the delivery costs.</i>	FN17.3 Solve problems related to best value for money and/or 'best buys' which consist of more than one operation.E.g. Compare the cost of toilet paper rolls which come in different-sized packs.

Topics:	Place value, Writing numbers in words, Percentages, Percentage Change, VAT, Bills, Utility Bills			
Broad Learning Outcome:	l can perform c	I can perform calculations and solve problems related to Personal Finance .		
Learning Outcomes (N	1QF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)	
PF1.1 Recognise the place value of any digit in an integer up to one thousand.		PF1.2 Recognise the place value of any digit in an integer up to one million.		
PF2.1 Read integers up to one thousand in figures and/or words.		PF2.2 Read integers up to one million in figures and/or words.		
E.g. Read amounts of goods or services requested on a requisition form.		E.g. Read amounts of materials listed on a stock list.		
PF3.1 Write integers up to one thousand in figures and/or words.		PF3.2 Write integers up to one million in figures and/or words.		
E.g. Write a cheque.		E.g. Write a number in a legal document such as a contract or an agreement.		
PF4.1 Represent money values in euro and/or cent.				
E.g. Convert the total price of goods given in cents to euro.				
PF5.1 Solve problems involving the calculation of change required for simple transactions.				
E.g. Check that the correct change was given after making a purchase.				
PF6.1 Recognise the percent symbol (%) and relate it to 'number of parts per 100'.				

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
PF7.1 Recognise and write percentage equivalents to a quarter, one half and three quarters and/or vice versa. <i>E.g. Half price is the same as 50% off.</i>	PF7.2 Write integral percentage equivalents to fractions with denominators which are factors of 100 and/or vice versa. <i>E.g. A discount of 20% is the same as</i> $\frac{1}{5}$ <i>of the price.</i>	PF7.3 Use a calculator to write percentage equivalents to fractions and/or vice versa. <i>E.g. A profit of 30% is the same as</i> $\frac{3}{10}$ <i>of the original value.</i>
	PF8.2 Write integral percentage equivalents to decimals and/or vice versa.	PF8.3 Write percentage equivalents to decimals and/or vice versa.
	<i>E.g. A budget allocation of 0.6 is the same as 60% of the budget.</i>	E.g. 72.5% of the savings is the same as 0.725 of the savings.
	PF9.2 Find the percentage of a quantity resulting in an integral quantity.<i>E.g.</i> Calculate how much to tip at a restaurant by finding a given percentage of the bill.	PF9.3 Find the percentage of a quantity. <i>E.g. Calculate an annual pay raise by finding a given percentage of the annual salary.</i>
		PF10.3 Express one quantity as a percentage of a larger amount.
		E.g. Express a discount as a percentage of the original price.
	PF11.2 Calculate the increase and/or decrease on a given amount by a given percentage. <i>E.g. Calculate the profit given as a percentage</i>	PF11.3 Calculate the final amount after a percentage increase and/or decrease on a given amount. <i>E.g. Calculate the selling price including VAT.</i>
	of the total cost or expenses.	

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
PF12.1 Solve simple problems related to personal finance. <i>E.g. Calculate the total of material and labour costs; Calculate bills related to online shopping including delivery costs.</i>	PF12.2 Solve problems related to personal finance involving the use of percentages. <i>E.g. Allocate percentages of the income to different budget categories such as rent, groceries, entertainment and savings; Calculate the interest charged on a credit card.</i>	 PF12.3 Solve problems related to best value for money and/or 'best buys' involving the use of percentages. <i>E.g.</i> Compare total costs when paying in cash or in monthly instalments with an initial percentage deposit; Compare different hire purchase agreements.
	PF13.2 Work out calculations related to utility bills which involve direct proportion. <i>E.g. Work out the cost of water consumption given the cost per unit.</i>	PF13.3 Calculate totals for utility bills. <i>E.g. Work out the total for a utility bill including service charges and costs of water and electricity consumption.</i>
 PF14.1 Check for reasonableness in an answer when solving problems related to personal finance. <i>E.g.</i> Check that a sensible total is obtained on an invoice or receipt. 		

Topics:	Metric Units, Perimeter, Area, Square Numbers, Algebra (Simplifying by collecting like terms, Changing the subject of the formula), Money-related problems		
Broad Learning Outcome:	I can perform calculations and solve problems related to Designing Spaces .		
Learning Outcomes (N	MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
DS1.1 Identify the units of measurement for length (km, m, cm) and/or area (m ² , cm ²).		DS1.2 Convert metric measurements of length (km, m, cm) to a smaller unit.	DS1.3 Convert metric measurements of length (km, m, cm) to a larger unit.
E.g. The length of a tile is measured in cm while the area of a room is measured in m^2 .		E.g. Convert the length of a curtain rod from m to cm.	E.g. Convert the length of a national park from m to km.
DS2.1 Identify the most approplength and/or area.	oriate unit for		
E.g. The area of land used for a condominium is measured in m ² while the area of a sample of fabric is measured in cm ² .			
DS3.1 Define perimeter as the outline of a 2D shape.			
DS4.1 Calculate the perimeter of regular and/or irregular shapes by finding the sum of side lengths.		DS4.2 Calculate the perimeter of regular polygons by multiplying the number of sides by the length of one side.	
E.g. Calculate the total length of skirting required for an irregular-shaped room.		E.g. Calculate the perimeter of a tabletop in the shape of a regular pentagon with sides of length 55cm.	
		DS5.2 Calculate the perimeter of a rectangle using an appropriate formula. <i>E.g. Use the expression 2l + 2w to find the length of fencing required to enclose a playground.</i>	

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
	DS6.2 Simplify linear algebraic expressions by collecting like terms.	
	<i>E.g. The perimeter of a rectangular netball court is expressed as l + l + w + w = 2l + 2w.</i>	
	DS7.2 Simplify linear algebraic expressions by multiplying a variable by an integer.	
	E.g. The perimeter of a square-shaped swimming pool is expressed as 'length × 4 = 4l'.	
DS8.1 Define area as the total space taken up by a flat 2D shape or surface.		
DS9.1 Find the area of squares and/or rectangles by counting unit squares.	DS9.2 Estimate the area of regular and/or irregular shapes by counting unit squares.	
E.g. Find the area of a small tile by counting squares on a 10cm × 10cm grid overlay.	E.g. Use a grid overlay to estimate the area of an irregular-shaped school yard.	
DS10.1 Find the area of squares and/or rectangles by using the formula $A = L \times B$.		
E.g. Use A = L × B to find the area of a waiting room.		
DS11.1 Calculate the area of a square of integral length l where $1 \le l \le 10$ without the use	DS11.2 Calculate the area of a square of any length using a calculator.	
of a calculator.	E.g. Calculate the area of a square-shaped	
<i>E.g. Calculate the area of a square-shaped bathroom of length 4m.</i>	garden of length 5.6m.	
	DS12.2 Calculate the length of a side of a square of integral length l where $1 \le l \le 10$ given its area.	DS12.3 Calculate the length of a side of a square of any length given its area by using a calculator to find the square root of its length.
	E.g. Calculate the length of a square-shaped carpet having an area of 9m ² .	E.g. Calculate the length of a square-shaped plot of land having an area of 72.25m ² .

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
DS13.1 Work out the area of a right-angled triangle by halving the area of the corresponding rectangle. <i>E.g. Work out the area of a triangular patio.</i>	DS13.2 Work out the area of a triangle using the formula: $Area = \frac{base \times perpendicular \ height}{2}$ <i>E.g. Work out the area of a triangular shaped wall under a staircase.</i>	
	DS14.2 Work out the area of compound shapes that are made up of squares and/or rectangles. <i>E.g. Work out the area of an L-shaped office</i> <i>desk.</i>	DS14.3 Work out the area of compound shapes that are made up of squares, rectangles and/or right-angled triangles. <i>E.g. Work out the area of a plot of land which is</i> <i>made up of a rectangle and a right-angled</i> <i>triangle.</i>
		DS15.3 Calculate a missing quantity through substitution and/or the manipulation of values in a formula. <i>E.g. Find the length of a rectangular football ground given its perimeter and breadth.</i>
	DS16.2 Rearrange a formula to change the subject of the formula using one operation. <i>E.g. Make the length the subject of the formula used to find the area of a square tile.</i>	DS16.3 Rearrange a formula to change the subject of the formula using two operations. <i>E.g. Make the length the subject of the formula used to find the perimeter of a rectangular table.</i>
DS17.1 Solve simple problems related to Designing Spaces which involve the addition and/or subtraction of decimal numbers up to 3 decimal places. <i>E.g. Work out the total cost of electrical fittings</i> <i>by adding the cost of materials and the cost for</i> <i>labour.</i>		

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
 DS18.1 Solve simple problems related to Designing Spaces which involve the multiplication or division of numbers (up to 3 decimal places) by integral values. E.g. Work out the total cost for tiles given the area to be covered by the tiles and the price per square metre; Work out the cost of one dining chair given the price of a set of 4 chairs. 	 DS18.2 Solve simple problems related to Designing Spaces which involve a combination of any of the four operations. <i>E.g. Work out the total cost for concrete</i> <i>flooring given the areas to be covered by the</i> <i>concrete, the cost of concrete per square</i> <i>metre and the labour costs per square metre.</i> 	 DS18.3 Solve problems related to best value for money and/or best buy involving more than one operation. <i>E.g. Compare total costs when buying paint tins of different capacities to paint a room; Compare total costs of materials and labour when buying different tiles for a room.</i>

Year 10			
Topics:	Angles, Angles in Parallel Lines, Symmetry, Transformations		
Broad Learning Outcome:	I can work with	angles in Buildings and Furnishings .	
Learning Outcomes (I	MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
BF1.1 State that angles on a strup to 180°.	raight line add		
E.g. The sum of angles created railroad track is 180°.	along a straight		
BF2.1 Determine the size of mi situations showing angles on a s	ssing angle/s in straight line.		
E.g. Find the missing angles cre straight railroad track.	ated along a		
BF3.1 Determine the size of mi a right angle. <i>E.g. Find the size of angles form</i> <i>geometrical design at the corne</i>	ssing angle/s in hing a r of a		
BF4.1 State that angles meetin up to 360°.	g at a point add		
E.g. The sum of the two angles of hands of an analogue clock.	created by the		
BF5.1 Determine the size of mi situations showing angles meet	ssing angle/s in ing at a point.		
E.g. Find the missing angles cre the centre of a circular table.	ated around		

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
BF6.1 Identify horizontal and/or vertical lines.		
E.g. Vertical and/or horizontal lines in an antique piece of furniture.		
BF7.1 Differentiate between horizontal and/or vertical lines.		
E.g. Differentiate between vertical and/or horizontal lines in metal shelving units.		
BF8.1 Identify parallel lines.		
E.g. Identify parallel lines on a stained-glass window design.		
BF9.1 Draw parallel lines on a square grid.	BF9.2 Draw parallel lines on a square grid in different orientations.	
parallel lines for a balcony railing.	E.g. Create a geometrical design involving multiple sets of parallel lines for the setup of solar panels on a roof.	
BF10.1 Identify perpendicular lines.		
E.g. Identify perpendicular lines in the design of a window.		
BF11.1 Draw perpendicular lines on a square grid.	BF11.1 Draw perpendicular lines on a square grid in different orientations.	
E.g. Create a geometrical design for a French door.	E.g. Create a geometrical design for a wine rack.	
	BF12.2 Describe a transversal in relation to a set of parallel lines.	
	E.g. Describe the transversal present in the design of a staircase railing.	

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
	BF13.2 Identify transversal line/s drawn across a set of parallel lines.	
	E.g. Identify the transversal in a wooden farm gate.	
	BF14.2 Draw transversal line/s across a set of parallel lines.	
	E.g. Draw transversals on the design of a set of parallel shelves to create an original shelf design.	
	BF15.2 Identify vertically opposite angles within a pair of intersecting lines.	BF15.3 Determine the size of missing angles in designs involving vertically opposite angles.
	E.g. Identify vertically opposite angles in the design of a wooden wine rack.	E.g. Find the size of missing angles in the design of a wooden wine rack.
	BF16.2 Identify alternate angles within sets of parallel lines and transversals.	BF16.3 Determine the size of missing angles in designs involving alternate angles.
	E.g. Identify alternate angles in the facade of a skyscraper.	E.g. Find the size of missing angles in the facade of a skyscraper.
	BF17.2 Identify corresponding angles within sets of parallel lines and transversals.	BF17.3 Determine the size of missing angles in designs involving corresponding angles.
	<i>E.g. Identify corresponding angles in the structure of a bridge.</i>	E.g. Find the size of missing angles in the structure of a bridge.
	BF18.2 Identify interior angles within sets of parallel lines and transversals.	BF18.3 Determine the size of missing angles in designs involving interior angles.
	E.g. Identify interior angles in the facade of a block of apartments.	E.g. Find the size of missing angles in the facade of a block of apartments.

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
BF19.1 Recognise lines of symmetry in 2D shapes and pictures.	BF19.2 Recognise lines of symmetry in 2D shapes, pictures and geometrical designs.	
E.g. Find the lines of symmetry in a window.	E.g. Find the lines of symmetry in an open shelf bookcase.	
BF20.1 Draw lines of symmetry in simple 2D shapes and images.<i>E.g. Draw the lines of symmetry in a rectangular window.</i>	BF20.2 Draw lines of symmetry in 2D shapes, images and geometrical designs. <i>E.g. Draw the lines of symmetry in an octagonal open shelf bookcase</i> .	
BF21.1 Complete symmetrical patterns with one line of symmetry.	BF21.2 Complete symmetrical patterns with 2 lines of symmetry at right angles.	
E.g. Complete the design of a symmetrical door given half of it.	E.g. Complete the design of a symmetrical tabletop given ¼ of it.	
BF22.1 Translate a simple 2D shape to a given unit to the left/right and up/down on a grid. <i>E.g. Move a piece of furniture to the right by 5 square tiles.</i>		
BF23.1 Describe the translation of a simple 2D shape using the terms left/right and up/down on a grid.		
<i>E.g. Describe the movement of a piece of furniture on a bathroom wall in relation to square bathroom tiles.</i>		

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
	BF24.2 Draw the rotation of a simple 2D shape about any vertex of the shape and/or about the origin by angles of 90° and/or 180° using a transparency sheet or otherwise.	
	<i>E.g. Draw the new position of a rotating rectangular dining tabletop after a 90° clockwise rotation about its centre.</i>	
	BF25.2 Describe the rotation of a simple 2D shape about any vertex of the shape and/or about the origin by angles of 90° and/or 180°.	
	E.g. Describe the new position of a rotating rectangular dining tabletop after a 90° anticlockwise rotation about its centre.	
	BF26.2 Draw the reflection of a simple 2D shape in a drawn vertical or horizontal line using a transparency or otherwise. <i>E.g. Draw the reflection of a shape using the given line as a mirror line.</i>	

Topics:	Frequency Tables, Pictographs, Line Graphs, Bar Charts, Pie Charts, Measures of Central Tendency, Probability		
Broad Learning Outcome:	I can work with statistics and probability of events which are In the News .		ne News.
Learning Outcomes (N	MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
IN1.1 Order positive integers.			
<i>E.g. Order temperatures in diffe stated in a weather report.</i>	rent cities		
IN2.1 Recognise the place valu hundredths written in decimal for	e of tenths and orm.	IN2.2 Recognise the place value of tenths, hundredths and thousandths written in decimal form.	
IN3.1 Order decimal numbers of places.	up to 3 decimal		
E.g. Order scores obtained in a	competition.		
IN4.1 Interpret data from frequ with ungrouped discrete data.	ency tables	IN4.2 Interpret data from frequency tables with grouped discrete data.	IN4.3 Interpret data from frequency tables with grouped continuous data.
E.g. Interpret a frequency table sales of different newspapers or day.	showing the n a particular	<i>E.g. Interpret a frequency table representing the daily number of sales of a newspaper for a particular week.</i>	E.g. Interpret a frequency table representing the weight of several newspaper batches.
IN5.1 Construct a frequency ta ungrouped discrete data.	ble with	IN5.2 Construct a frequency table with grouped discrete data.	IN5.3 Construct a frequency table with grouped continuous data.
E.g. Construct a frequency table sales of different newspapers or day.	e showing the n a particular	E.g. Construct a frequency table representing the daily number of sales of a newspaper for a particular week.	<i>E.g. Constructing a frequency table representing the weight of newspaper batches in intervals of 1 kg.</i>
IN6.1 Interpret a pictograph wh represents any number of units.	ere the symbol		
E.g. Interpret a pictograph show different newspapers on a partic	ving the sales of cular day.		

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
IN7.1 Draw a pictograph in which the symbol represents 1, 2 or 10 units. <i>E.g. Draw a pictograph representing the sales</i>	IN7.2 Draw a pictograph in which the symbol represents a number of units.	IN7.3 Draw a pictograph in which the symbol represents any number of units, and the categories represent intervals.
of different newspapers on a particular day.	number of sales of a newspaper for a particular week.	<i>E.g. Draw a pictograph representing the number of people browsing a news portal over a period of time in 15-minute intervals.</i>
IN8.1 Read a line graph.	IN8.2 Interpret a line graph.	IN8.2 Interpret a line graph consisting of two
E.g. Indicate the number of people who	E.g. Interpret a line graph representing the	line graphs.
watched the news on a particular day.	number of people who watched the news over a week.	<i>E.g. Interpret a line graph representing the number of males and number of females who watched the evening news in a particular week.</i>
IN9.1 Label the scales of a line graph.	IN9.2 Draw a line graph.	IN9.3 Draw two line graphs on the same
E.g. Label the scales of a line graph	E.g. Draw a line graph representing the number	diagram.
representing the number of people who watched the news over a number of days.	of people who watched the news over a number of days.	<i>E.g.</i> On the same diagram draw a line graph representing the number of males and the number of females who watched the news over a number of days.
IN10.1 Read a bar chart for ungrouped discrete data.	IN10.2 Interpret bar charts for grouped and/or ungrouped data.	IN10.3 Interpret stacked and/or clustered bar charts.
E.g. Read a bar chart on a newspaper showing the number of votes cast in an election in each district.	E.g. Interpret a bar chart representing the number of votes cast in an election in each district.	E.g. Interpret stacked bar charts representing the number of votes for different candidates in each district.
		IN11.3 Interpret population pyramids.
		E.g. Interpret a population pyramid representing the number of males and the number of females of different age groups residing in Malta.

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
IN12.1 Construct a bar chart for ungrouped discrete data.E.g. Construct a bar chart representing the different types of shops in a commercial centre.	 IN12.2 Construct a bar chart for grouped and/or ungrouped discrete data using a frequency table. E.g. Use a frequency table to construct a bar chart representing the different types of shops in Valletta. 	
	IN13.2 Interpret pie charts. <i>E.g. Interpret information from a pie chart representing various categories of waste generated in a year in Malta.</i>	
	IN14.2 Draw pie charts. <i>E.g. Draw a pie chart representing housing owned and rented in Malta.</i>	
IN15.1 Find the mean of a set of ungrouped numerical data.	IN15.2 Find the mean of a set of ungrouped numerical data after removing outliers.	IN15.3 Find the mean of a set of ungrouped numerical data from a frequency table.
E.g. Find the mean daily highest temperature recorded in one particular week.	E.g. Find the mean temperature during a heatwave after removing extreme values.	E.g. Find the mean amount of rainfall for one particular month from a frequency table showing the daily precipitation records.
	IN16.2 Recognise the difference between mean, mode and/or median of a set of ungrouped numerical data.	
	IN17.2 Find the median of a set of ungrouped numerical data. <i>E.g. Find the median daily highest temperature recorded in one particular week.</i>	 IN17.3 Find the median of a set of ungrouped numerical data from a frequency table. E.g. Find the median amount of rainfall for one particular month from a frequency table showing the daily precipitation records.

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
	IN18.2 Find the mode of a set of ungrouped data.	IN18.3 Find the mode of a set of ungrouped data from a frequency table.
	E.g. Determine the most commonly viewed news bulletin.	E.g. Determine the time of the day when a TV station has the highest viewers from a frequency table showing the hourly number of viewers.
		IN19.3 Identify the best measure of central tendency to use in different situations.
		E.g. Decide whether it is best to use the mean or the median in the presence of outliers such as when having unusual extreme temperatures.
	IN20.2 Find the range of a set of ungrouped numerical data.	
	E.g. Calculate the range of temperatures recorded in a particular month.	
	IN21.2 Mention events that are certain to happen and/or events that are impossible to happen.	
	E.g. The certainty that the sun will rise tomorrow and the impossibility of winning the lottery if one has no tickets.	
	IN22.2 Describe events as certain, very likely, likely, equally likely (even chance), unlikely, very unlikely and/or impossible to happen.	
	E.g. One's birthday party is very unlikely to be featured in the evening news while a major earthquake is very likely to be mentioned in the evening news.	

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
	IN23.2 Recognise that the probability of a certain event is 1 while the probability of an impossible event is 0.	
	<i>E.g. The probability of choosing a triangle with 3 sides is 1; The probability of getting a 7 when rolling an ordinary fair six-sided die is 0.</i>	
	IN24.2 Identify the set of all possible outcomes of a single event.	
	E.g. List all the possible outcomes when picking a card from a pack of cards having 3 red, 4 yellow and 5 green cards.	
	IN25.2 Determine the probability of an event happening and/or not happening.	
	E.g. Find the probability of picking a red pen and/or not picking a pen card from a case containing 5 blue pens and 2 red pens.	
	IN26.2 Mark the probability of an event on a probability scale.	
	E.g. Mark the probability of having a boy when a baby is born on a probability scale.	
	IN27.2 Distinguish between experimental and theoretical probability.	
	<i>E.g. Distinguish between the experimental and theoretical probability of getting a 5 on a spinner after 100 spins.</i>	

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
	IN28.2 Estimate the probability of an event by experiment.	
	E.g. Estimate the probability of getting a head when asking 50 people to toss a coin.	
	IN29.2 Identify the set of all possible outcomes of two independent events.	
	E.g. The possible outcomes when tossing two coins are HH, HT, TH and TT.	
	IN30.2 Construct a possibility space table for two independent events.	
	E.g. Construct a possibility space table for tossing a coin and rolling a die.	
	IN31.2 Use a possibility space table to work out the probability of two independent events.	
	E.g. Use a possibility space table to find the probability of getting a head when tossing a coin and an even number when rolling a die.	

Topics:	Angles, Triangles, Quadrilaterals, Polygons, Interior and Exterior Angles, Tessellations			
Broad Learning Outcome:	I can work with	I can work with angles and shapes in Patterns and Structures .		
Learning Outcomes (I	MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)	
PS1.1 Define an angle as a mean <i>E.g. Identify angles on a plan of</i>	asure of turn. a house.			
PS2.1 Express a complete turn a quarter of a turn in terms of the corresponding number of right a	, half a turn and e Ingles.			
E.g. State how many right angle turn to move from one room to a plan of a house.	s one needs to mother using a			
PS3.1 Identify acute angles, ob and/or right angles. <i>E.g. Identify the type of interior a</i> <i>pendant which is in the shape of</i> <i>parallelogram</i> .	tuse angles angles in a f a	PS3.2 Identify reflex angles. <i>E.g. Identify the type of angle formed on the outside of each vertex of a coffee table which is in the shape of a regular pentagon.</i>	PS3.3 Identify angles larger than 360°. <i>E.g. The total angle turned when a passenger compartment on a Ferris wheel rotates for 3 whole turns.</i>	
PS4.1 Estimate angles smaller 180°. <i>E.g. Estimate the angle that a st</i>	or equal to aircase makes	PS4.2 Estimate angles larger than 180° and smaller than or equal to 360°. <i>E.g. Estimate the reflex angle in an earring</i>		
with the ground.		which is in the shape of an arrowhead.		
PS5.1 Sketch angles smaller of <i>E.g. Sketch an angle of 60° as p</i> <i>design</i> .	r equal to 180°. art of a logo	PS5.2 Sketch angles larger than 180° and smaller than or equal to 360°. <i>E.g. Sketch an angle of 200° as part of a logo design.</i>		

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
PS6.1 Measure angles smaller or equal to 180°.	PS6.2 Measure angles larger than 180° and smaller than or equal to 360°.	
E.g. Measure the angle of a minor sector formed at the centre of a round stained-glass window which is divided into 10 identical sectors.	E.g. Measure the angle of a major sector such as the main character in the Pacman video game.	
PS7.1 Draw angles smaller or equal to 180° using a protractor.	PS7.2 Draw angles larger than 180° and smaller than or equal to 360° using a protractor	
E.g. Use a protractor to draw an angle of 60° as part of a logo design.	E.g. Use a protractor to draw an angle of 200° as part of a logo design.	
PS8.1 Classify any 2D shape with three sides as a triangle.		
E.g. Recognise triangles in structural supports.		
PS9.1 Identify a triangle as being scalene, isosceles, equilateral or right-angled according to the length of its sides and/or the size of its interior angles.		PS9.3 Explain why a triangle is scalene, isosceles or equilateral based on its reflective symmetry properties.
<i>E.g. Identify different types of triangles in a triangle tile pattern.</i>		symmetry in a particular geometrical design must be isosceles.
PS10.1 State that the sum of the interior angles of a triangle is 180°.		
E.g. The interior angles of a give way road sign add up to 180°.		

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
PS11.1 Calculate the missing interior angles of a triangle.		
E.g. Use the angle sum fact to find a missing interior angle of a rooftop which is in the shape of a scalene triangle given the size of two of its interior angles.		
PS12.1 Define a quadrilateral as a 2D shape with four sides. <i>E.g. Classify a kite as a quadrilateral.</i>		
PS13.1 Identify squares and rectangles according to the length of the sides. <i>E.g. Identify squares and rectangles in the</i> <i>design of a wardrobe.</i>	PS13.2 Classify a quadrilateral as a square, a rectangle, a rhombus, a parallelogram, a trapezium, a kite or none of these, according to the length of its sides and the size of its interior angles. <i>E.g. Identify different types of quadrilaterals in a video game background having a geometric design.</i>	PS13.3 Classify a quadrilateral as a square, a rectangle, a rhombus, a parallelogram, a trapezium, a kite or none of these, according to its reflective symmetry properties. <i>E.g. Identify squares in a geometric design having quadrilaterals with 4 lines of symmetry.</i>
	PS14.2 State that the sum of the interior angles of a quadrilateral is 360°. <i>E.g. The interior angles of a rectangular canvas painting add up to 180</i> °.	
	PS15.2 Calculate the missing interior angles of a quadrilateral.E.g. Use the angle sum fact to find a missing interior angle of a studio which is in the shape of a trapezium given the size of three of its interior angles.	

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
PS16.1 Name a polygon depending on its integral number of sides <i>n</i> where $3 \le n \le 10$.		
E.g. Name the shape of an eight-sided tile as an octagon.		
PS17.1 Identify polygons according to the number of sides and/or the number of interior angles.		
E.g. Identify different polygons present on a carpet having a geometric design.		
PS18.1 Differentiate between regular and irregular polygons.	PS18.2 Define a regular polygon as having all sides equal and all interior angles equal.	
E.g. Distinguish between regular and irregular polygons present on bathroom tiles having a geometric design.	<i>E.g. Define a regular hexagon present on the design of a feature wall.</i>	
		PS19.3 State the symmetrical properties of a regular polygon in terms of reflective symmetry.
		E.g. State the symmetry properties of a regular octagon present on the design of a logo.
		PS20.3 Find the sum of interior angles of any polygon by dividing it in a number of triangles and/or quadrilaterals.
		E.g. Find the sum of interior angles of a pentagon present on a poster.

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
		 PS21.3 Find the missing interior angles of any polygon using the sum of interior angles of that polygon. <i>E.g. Find the missing interior angle of an</i>
		angles of the heptagon.
		PS22.3 State that the sum of the exterior angles of any polygon is 360°.
		E.g. The sum of exterior angles of an octagonal stop sign is 360°.
		PS23.3 Find the missing exterior angles of any polygon using the sum of the exterior angles of a polygon.
		E.g. Find the missing exterior angle of a regular nonagon present on a church ceiling.
		PS24.3 Investigate whether one or two polygons can be used to create a tessellation.
		E.g. Investigate whether a square and an octagon can be used to create a tessellation.
		PS25.3 Draw a tessellation using one or two given shapes.
		E.g. Draw a tessellating geometric design using hexagons.
		PS26.3 Create tessellating shapes.
		E.g. Design a tessellating geometric design.

Topics:	Time, Exchange Rates, Costs, Directions, Three-figure bearings, Temperature, Directed Numbers, Algebra (Substitution, Solving, Changing the Subject of the Formula)			
Broad Learning Outcome:	I can use mathe	I can use mathematical applications related to travel and Going Global.		
Learning Outcomes (N	1QF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)	
GG1.1 Identify units of time (ye weeks, days, hours, minutes, se <i>E.g. Long haul flights in hours; C in days</i> .	ars, months, conds). Cruise voyages			
GG2.1 Convert amounts of time larger and smaller units (hours, seconds) limited to half and qua <i>E.g. Convert the duration of a fli</i> <i>1.5h long to minutes</i> .	e between minutes and Irter units. ght which is	GG2.2 Convert amounts of time between larger and smaller units (days, hours, minutes, and seconds). <i>E.g. Convert the duration of a cruise which is 106 hours long to days and hours.</i>		
		GG3.2 Calculate the duration, the starting time and/or the finishing time of an activity. <i>E.g.</i> Calculate the arrival time of a train at a particular destination given the starting time and duration of the journey.	GG3.3 Solve problems involving time zones. <i>E.g.</i> Calculate the duration of a flight to and from countries having different time zones given the local departure and arrival times.	
GG4.1 Estimate the duration of using seconds, minutes and/or I <i>E.g. Estimate the duration of a fit to Italy.</i>	an activity nours. <i>light from Malta</i>	GG4.2 Determine time intervals in minutes, hours and/or days. <i>E.g. Work out the number of days spent at a</i> <i>hotel; Work out the travelling time on a train</i> <i>journey in hours and minutes.</i>		

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
GG5.1 Solve problems involving the addition and subtraction of time given in hours and minutes.	GG5.2 Solve problems involving the addition and subtraction of time given in days, hours, minutes and seconds.	
E.g. Calculate the total duration of a concert given the durations of the performances and intermissions in hours and minutes.	E.g. Calculate the waiting time in hours and minutes between connecting flights, given the total time of the journey and the duration of the individual flights.	
	GG6.2 Use exchange rates to make currency conversions.	
	E.g. Convert spending money from EUR to GBP.	
GG7.1 Solve problems related to travel involving the addition, subtraction, multiplication and/or division of numbers. <i>E.g. Use a brochure to calculate the total cost of a holiday.</i>	GG7.2 Solve problems related to travel involving direct proportion. <i>E.g. Calculate the taxi fare given the basic charge and the rate per kilometre.</i>	 GG7.3 Solve problems related to travel which involve best value for money and/or 'best buys'. E.g. Calculate the cheapest mode of travelling between two cities; Compare costs of different accommodation options.
GG8.1 Use the terms 'right', 'left', 'up' and 'down' when giving directions.		
<i>E.g. Describe a simple journey on a map using these terms.</i>		
GG9.1 Distinguish between clockwise and anticlockwise turns.		
E.g. Describe a turn made by a cruise ship.		

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
GG10.1 Use the terms 'whole turn', 'half turn's and/or 'quarter turns' when giving directions.		
E.g. Give directions using a simple map using these terms.		
GG11.1 Label the eight compass points.		
E.g. Label the compass point indicating the direction from which the wind is blowing; Label the compass point indicating the direction in which a hiker is walking.		
GG12.1 Use the eight compass points and different turns in multiples of 45° to indicate a change in direction.		
E.g. Indicate the new compass direction a ferry is facing after making a clockwise quarter turn from sailing NW; Describe the turn taken by a cargo ship when changing its direction from facing NE to facing SW.		
		GG13.3 Interpret three-figure bearings.
		E.g. Use three-figure bearings to identify the position of a hiker with respect to a particular landmark.
		GG14.3 Use three-figure bearings.
		<i>E.g. Use three-figure bearings to describe the position of an aircraft with respect to its destination.</i>

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
GG15.1 Identify the units of measurement for temperature (°C, °F).		
E.g. The units used for measuring the temperature in a refrigerated cargo truck.		
GG16.1 Identify a suitable measuring device to measure temperature.		
E.g. Use a room thermometer to measure the temperature in an aircraft cabin.		
GG17.1 Measure temperature using appropriate measuring instruments.		
E.g. Measure the body temperature of passengers using a forehead thermometer.		
		GG18.3 Estimate values of temperature.
		<i>E.g. Estimate the body temperature of a person; Estimate the temperature of frozen products.</i>
	GG19.2 Associate directed numbers to real life situations.	
	E.g. Associate directed numbers to changes in temperature, financial transactions and/or floor levels.	
	GG20.2 Represent directed numbers on a number line.	
	E.g. Represent floor levels of a shopping complex on a number line.	

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
	GG21.2 Add directed numbers.	
	E.g. Calculate the temperature in Tunis if it is 10°C higher than the temperature in Rome which is -2°C.	
	GG22.2 Subtract directed numbers.	
	E.g. Calculate the temperature difference between -2°C and 8°C.	
GG23.1 Write a simple linear formula in words.	GG23.2 Write a simple linear algebraic formula.	
E.g. Write the formula for speed in words i.e. speed = distance/time.	E.g. Write the algebraic formula for speed i.e. s = d/t.	
GG24.1 Substitute positive values in a simple formula expressed in words.	GG24.2 Substitute positive values in a simple algebraic formula.	
E.g. Use speed = distance/time to calculate the speed of a car given the distance covered and time taken to complete a journey.	E.g. Use s = d/t to calculate the speed of an aeroplane given the distance covered and time taken to complete a journey.	
	GG25.2 Change the subject of a formula using one operation.	GG26.3 Change the subject of a formula using two operations.
	E.g. Make 'd' the subject of the formula in s = d/t.	E.g. Find the distance (D) covered by a taxi during one journey using the formula
		T = C + 2D, given the total fare (T) and the initial charge (C).
	GG26.2 Solve linear equations which involve one unknown on one side.	
	E.g. Use s = d/t to find the distance covered during a train journey at a particular speed for a given duration of time.	

Year 11				
Topics:	Parts of a Circle, Circumference and Area of Circle, Constructions, Ratios			
Broad Learning Outcome:	I can work with	I can work with shapes and measures in Outdoor Spaces .		
Learning Outcomes (I	1QF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)	
		OS1.2 Identify the main components of a circle (centre, radius, diameter, circumference).<i>E.g. Identify the circumference and the centre of a pond.</i>	OS1.3 Recognise that a semicircle is half a circle, and a quadrant is a quarter of a circle. <i>E.g. Identify semicircles and quadrants in apertures</i> .	
		OS2.2 Name the main components of a circle (centre, radius, diameter, circumference). <i>E.g. Name the radius and the centre of a roundabout.</i>		
		OS3.2 Draw the main components of a circle (centre, radius, diameter, circumference). <i>E.g. Draw the diameter on a diagram representing a dart board.</i>		
		OS4.2 Construct a circle of a given radius using a pair of compasses. <i>E.g. Use a compass to construct a circle of radius 5cm.</i>		
		OS5.2 Define π as the ratio of the circumference to the diameter.		
		OS6.2 Calculate the circumference of a circle using the formula $C = \pi d$ or $C = 2\pi r$. <i>E.g.</i> Use $C = \pi d$ to find the circumference of a	OS6.3 Calculate the perimeter of a semicircle and/or a quadrant.<i>E.g. Find the perimeter of a semicircular tray in</i>	
			a playground.	

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
	OS7.2 Calculate the area of a circle using the formula $A = \pi r^2$.	OS7.3 Calculate the area of a semicircle and/or a quadrant.
	E.g. Use $A = \pi r^2$ to find the area of a circular pond.	E.g. Find the area of a part of a seesaw which is in the shape of a quadrant.
	OS8.2 Solve linear equations related to circles involving one unknown on one side.	
	E.g. Calculate the radius or diameter given the circumference of a Ferris wheel.	
	OS9.2 Change the subject of a formula related to circles using one operation.	OS9.3 Change the subject of a formula related to circles using one or two operations.
	E.g. Use the formula $C = \pi d$ to make 'd' the subject of the formula.	E.g. Use the formula $A = \pi r^2$ to make 'r' the subject of the formula.
	OS10.2 Construct a triangle given the length of one side and the size of two interior angles using a ruler and a protractor.	
	E.g. Use a ruler and protractor to construct the plan of a triangular yard represented by ΔABC given the length of one side and the size of two interior angles.	
	OS11.2 Construct a triangle given the length of two sides and the size of the included angle using a ruler and a protractor.	
	E.g. Use a ruler and protractor to construct the plan of a triangular rooftop represented by ΔXYZ given the length of two sides and the size of the included angle.	

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
	 OS12.2 Construct a triangle given the length of the three sides using a ruler and a pair of compasses only. <i>E.g. Use a ruler and compass only to construct the plan of a triangular garden represented by</i> 	
	ΔDEF given the length of three sides.	
	OS13.2 Construct regular hexagons given the side length using a ruler and a pair of compasses only.	
	E.g. Use a ruler and compass only to construct the outline of a hexagonal climbing frame given the length of one side of the hexagon.	
OS14.1 Simplify ratios which compare two integral quantities.	OS14.2 Simplify ratios including decimal numbers and/or quantities with different units.	
E.g. Flowerbed : Path in a public garden given by 12:20 can be simplified to 3 : 5.	E.g. Flowerbed : Path in a public garden given by 2.4:3.6 is simplified to 2 : 3.	
	OS15.2 Use a ratio to find one quantity given the other.	
	E.g. The ratio of areas of flowerbed to path in a garden is 2 : 3. If there are 10 square metres of flowerbeds in the garden, find the area covered by paths.	
	OS16.2 Divide a quantity in a given ratio.	
	E.g. Find the area of the flowerbed in a 100 square metres garden where the ratio of areas flowerbed : path is 2 : 3.	

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
	OS17.2 Solve problems involving ratios. <i>E.g. Use map ratios to find the actual distance between two landmarks.</i>	
		OS18.3 Draw simple scale drawings. <i>E.g. Draw 2D plans of a classroom, a bedroom, a garden, etc.</i>
		OS19.3 Interpret simple scale drawings <i>E.g. Interpret 2D plans of classrooms, bedrooms, gardens, etc.</i>
		OS20.3 Define Pythagoras' Theorem.
		OS21.3 Apply Pythagoras' Theorem in 2D to find missing lengths. <i>E.g. Use Pythagoras' theorem to find the distance between two trees.</i>
		OS22.3 State the trigonometric ratios of sine, cosine and tangent.
		OS23.3 Use the trigonometric ratios to find missing lengths in right-angled triangles. <i>E.g.</i> Use the trigonometric ratios to find the height of a building.
		OS24.4 Use the trigonometric ratios to find unknown angles in right-angled triangles. <i>E.g. Find the angle of a ramp which is 4m long</i> <i>and has a vertical height of 0.5m.</i>

Topics:	Cube Numbers, 3D shapes, Nets, Volume, Surface Area, Cylinders, Packaging		
Broad Learning Outcome:	I can apply formulae and geometrical reasoning in solving problems related to Three		ns related to Three-Dimensional Design.
Learning Outcomes (MQF 1)		Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
TD1.1 Identify the cube, cuboid, triangular prism, cylinder and/or square-based pyramid. <i>E.g. Identify the cylinder in a cylindrical can of peas.</i>			
TD2.1 Name the cube, cuboid, triangular prism, cylinder and/or square-based pyramid. <i>E.g. Name a cardboard box as a cuboid</i> .			
TD3.1 Calculate the volume of a cube of integral length <i>l</i> where $1 \le l \le 5$ without the use of a calculator. <i>E.g. Calculate the volume of a gift box in the shape of a cube of length 4m.</i>		TD3.2 Calculate the volume of a cube of any length using a calculator. <i>E.g. Calculate the volume of an ice cube of length 2.3cm.</i>	TD3.3 Evaluate positive integral indices without using a calculator. <i>E.g.</i> $2^3 = 2 \times 2 \times 2 = 8$
		TD4.2 Calculate the length of a side of a cube of integral length <i>l</i> where $1 \le l \le 5$ without the use of a calculator, given its volume. <i>E.g. Calculate the length of a cubic die having a volume of</i> 9 cm ³ .	TD4.3 Calculate the length of a side of a cube of any length given its volume by using a calculator to find the cube root of its length. <i>E.g. Calculate the length of a cubic block having a volume of 250cm</i> ³ .
		TD5.2 Calculate the volume of a cuboid. <i>E.g. Calculate the volume of food containers</i> <i>which are in the shape of different cuboids.</i>	

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
	TD6.2 Calculate a missing quantity through substitution in the formula used to find the volume of a cuboid.	
	E.g. Find the depth of a swimming pool which is in the shape of a cuboid given its length, breadth and volume.	
	TD7.2 Calculate the volume of compound shapes which can be divided into cubes and cuboids.	
	E.g. Find the volume of an outdoor bench which consists of two cuboids.	
TD8.1 Identify the net of an open cube and/or a closed cube.		
E.g. Identify the net of a cubic flowerpot as an open cube.		
		TD9.3 Make an accurate drawing of the net of a cube and/or a cuboid.
		E.g. Make an accurate drawing of the net of a cardboard box.
TD10.1 Calculate the area of one of the faces of a cube and/or a cuboid.	TD10.2 Calculate the surface area of a cube and/or a cuboid.	
E.g. Find the area of the label which is stuck on the front face of a cardboard box.	E.g. Find the surface area of a cubic gift box which is to be covered in wrapping paper.	
TD11.1 Write a simple linear formula related to packaging in words.	TD11.2 Write a simple linear algebraic formula.	
E.g. The formula for the surface area of an open cube is 5 times the square of the length.	E.g. The algebraic formula for the surface area of an open cube is S.A. = $5 \times L^2$.	

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
 TD12.1 Substitute positive values in a simple formula related to packaging which is expressed in words. <i>E.g.</i> Substitute given values for the length and breadth to find the area of the top and bottom faces of a box. 	TD12.2 Substitute positive values in a simple algebraic formula related to packaging. <i>E.g. Substitute given values for the length, breadth and height to find the volume of a box.</i>	
		TD13.3 Calculate the volume and/or capacity of a cylinder.
		E.g. Calculate the volume of a cylindrical can of beer.
		TD14.3 Calculate the curved surface area and/or the total surface area of a cylinder. <i>E.g. Calculate the area of a label stuck around</i> <i>a cylindrical can of baked beans.</i>
TD15.1 Solve problems related to packaging which involve the addition, subtraction, multiplication and/or division of numbers. <i>E.g. Calculate the number of gas cylinders that can fit along the length of a truck; Calculate the number of identical books that can fit on a particular shelf.</i>	TD15.2 Solve problems related to packaging which involve direct proportion. <i>E.g. Find the dimensions of a large cardboard box that will be used to carry a number of souvenir boxes.</i>	TD15.3 Solve problems related to packaging. <i>E.g. Calculate the number of cereal boxes that</i> <i>can fit in a large cardboard box when placed in</i> <i>different positions (upright/ on its side/ face</i> <i>down).</i>

Topics:	Writing numbers in words, Percentages, Percentage Increase and Decrease, Reverse Percentages, Salary, Utility bills, Linear Graphs		
Broad Learning Outcome:	I can apply calculations related to Business and Banking.		
Learning Outcomes (N	1QF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
		BB1.2 Find the percentage of a quantity. <i>E.g. Find the monetary value of buildings which</i> <i>is given as a percentage of the total assets</i> <i>owned by a company.</i>	
		BB2.2 Calculate the increase and/or decrease on a given amount by a given percentage. <i>E.g. Calculate the raise in the unit price of</i> <i>shares given as a percentage of the original unit</i> <i>price.</i>	BB2.3 Calculate the final amount after a percentage increase and/or decrease on a given amount in situations related to finance. <i>E.g. Find the new value of the assets in a company after depreciating by a given percentage on the original value.</i>
			BB3.3 Express the profit and/or loss made as a percentage of an original investment. <i>E.g. A bank invested a sum of money in a portfolio of shares. Express the profit gained as a percentage of the original investment.</i>
			BB4.3 Work out calculations involving reverse percentages. <i>E.g. Calculate the original price of shares given the percentage increase and the current price of shares.</i>
			BB5.3 Work out calculations involving successive percentage changes. <i>E.g. Calculate the unit price of shares following a rise in its value over two successive years.</i>

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
BB6.1 Solve problems related to salary which involve the four operations.	BB6.2 Solve problems related to salary which involve direct proportion.	BB6.3 Solve problems related to salary which involve percentages.
E.g. Calculate the net salary after incorporating overtime/allowances/bonus into gross pay and deducting income tax and social security contributions.	<i>E.g. Calculate the overtime pay for employees given the hourly overtime rate.</i>	E.g. Calculate income tax contributions; Calculate social security contributions.
	BB7.2 Solve problems related to utility bills which involve direct proportion.	BB7.3 Solve complex problems related to utility bills.
	E.g. Calculate a company's bill for the water consumption of a number of units given the rate per unit.	E.g. Calculate the total water bill given the service charge, the number of units of water consumption and different rates depending on tariff bands.
		BB8.3 Use the formula $SI = \frac{PTR}{100}$ to calculate the simple interest gained, the principal amount invested, the rate, the time and/or the final amount.
		E.g. Find the simple interest on an investment done by a company given the principal amount, rate and duration of the investment.
BB9.1 Read coordinates from a grid in the first quadrant.		
E.g. Read points on a grid indicating the price of shares over a number of months.		
BB10.1 Plot coordinates from a grid in the first quadrant.		
E.g. Plot points on a grid indicating the price of shares over a number of months.		

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
	BB11.2 Write the coordinates of points representing variables from a real-life context restricted to linear expressions.	
	E.g. List 3 points which represent the wage of an employee in relation to the number of hours worked as overtime.	
	BB12.2 Plot the coordinates of points representing variables from a real-life context restricted to linear expressions.	
	<i>E.g. Plot points which represent the wage of an employee in relation to the number of hours worked as overtime.</i>	
	BB13.2 Describe the meaning of the point where the line cuts the y-axis, on a graph that represents a real-life context.	
	E.g. In a graph representing the wage of a worker (y) against the number of hours worked overtime (x), the point where the graph cuts the y-axis is the regular pay.	
	BB14.2 Use straight line graphs that represent a real-life context to find the value of one coordinate given the other.	
	E.g. Use a line graph to find the interest gained from an investment after a given number of years.	

Learning Outcomes (MQF 1)	Learning Outcomes (MQF 2)	Learning Outcomes (MQF 3)
	BB15.2 Interpret straight line graphs representing real life situations.	BB15.3 Compare two straight line graphs representing real life situations.
	E.g. A graph representing the total simple interest gained over a number of years indicates that the longer the duration of the investment, the higher the interest gained.	E.g. Use two given line graphs to compare the interest gained from two different investments.