CDETB

An Bord Oideachais agus Oiliúna Chathair Bhaile Átha Cliath
City of Dublin Education and Training Board

Programme Module

The Application of Number in Everyday Life

leading to

Level 3 QQI Component: Application of Number 3N0928

Please note the following prior to using this programme module descriptor:

- This programme module can be delivered as a stand alone module or as part of the:
  1. **Level 3 QQI Certificate in General Learning 3M0874**
  2. **Level 3 QQI Certificate in Employability Skills 3M0935**
  3. **Level 3 QQI Certificate in Information and Communication Technologies 3M0877.**

- Upon successful completion of this programme module the learner will achieve 5 credits towards the Level 3 QQI Certificates in General Learning, Employability Skills or Information and Communication Technologies.

- The learner needs to accumulate a minimum of 60 credits in order to achieve the Level 3 QQI Certificates in General Learning or Employability Skills or Information and Communication Technologies.

- Teachers/tutors should familiarise themselves with the information contained in CDETB's programme descriptor for Everyday Living Skills, Skills for the Workplace or Introduction to Information and Communication Technologies prior to delivering this programme module.

- In delivering this programme module teachers/tutors will deliver class content in line with the Guidelines for Teaching and Learning included in this programme module.

- In assessing the learner, teachers/tutors will assess according to the information included in this programme module. Teachers/tutors are required to devise Assessment Brief/s for the Collection of Work and Skills Demonstration.

- Where overlap is identified between the content of this programme module and one or more other programme module(s), teachers/tutors are encouraged to integrate the delivery of this content.

- Where there is an opportunity to facilitate the learner to produce one piece of assessment evidence which demonstrates the learning outcomes from more than one programme module, teachers/tutors are encouraged to integrate assessment.

Overview of the Programme Module

The Programme Module is structured as follows:

Section 1 to 8: contains important information for the teacher/tutor about the credit value, title, code, etc. of the programme module.

Section 9: details the learning outcomes prescribed for the programme module by QQI. These outcomes are set by QQI and cannot be changed in any way by the CDETB or individual teachers/tutors.

Section 10: outlines suggestions and guidelines for teaching the module. It contains useful information and ideas for teachers/tutors and can be helpful in clarifying learning outcomes.

Section 11: contains the relevant information in relation to the assessment of the module. As the teacher/tutor is the assessor of the work, this section is essential reading.

Section 11a specifically prescribes the way in which learners are required to present evidence for assessment.

Learner Marking Sheet: this is the marking sheet that must be attached to the assessment portfolio and signed by the teacher/tutor and the learner.

Programme Module	Award
1. Title of Programme Module The Application of Number in Everyday Life	**2. Component Name and Code** Level 3 Application of Number 3N0928
3. Duration in Hours of Programme Module 50	**4. Credit Value** 5
5. Assessment Technique Collection of Work 100%	**6. Specific Requirements** Centres must have access to the range of services, professional products, tools, materials and equipment to ensure the learner has the opportunity to cover all of the practical activities.

7. Aims of the Programme Module

This programme module aims to equip the learner with the knowledge, skills and competencies to solve real life quantitative problems by applying practical mathematical techniques.

8. Objectives:
- to consider the concept of shape and space and practically apply these concepts to solving mathematical problems relating to area and volume
- to study scaled drawings to calculate real distances and measurements and to draw common items to an appropriate scale
- to use a calculator effectively and efficiently
- to provide clarity around the different kinds of numbers such as fractions, percentages, decimals, natural, integer and real that people are exposed to everyday.

9. Learning Outcomes of Level 3 Application of Number 3N0928

1. Number

The learner will be able to:
1.1 explain the concept of natural numbers (N), integers (Z), and real numbers (R)
1.2 demonstrate equivalence between common simple fractions, decimals, and percentages by conversion
1.3 use a calculator to perform operations requiring functions such as +, -, ×, ÷, memory keys and clear key
1.4 give approximations by using strategies including significant figures and rounding off large natural numbers
1.5 demonstrate accuracy of calculation by applying the principal mathematical functions i.e. +, -, ×, ÷, natural numbers (N) and integers (Z), common simple fractions, and decimal numbers to two places of decimal.

2.Measurement and Capacity

The learner will be able to:
2.1 describe shape and space constructs using language appropriate to shape and space to include square, rectangle, circle, cylinder, angles, bisect, radius, parallel, and perpendicular
2.2 draw everyday objects to scale using a range of mathematical instruments
2.3 calculate the area of a square, rectangle, triangle, and circle by applying the correct formula and giving the answer in the correct form
2.4 calculate the volume of a cylinder by applying the correct formula and giving the answer in the correct form
2.5 understand simple scaled drawings by working out real distance, location and direction
2.6 demonstrate metric measurement skills and, using the correct vocabulary and measurement instruments, accurately measure length, distance, capacity, and weight
2.7 calculate solutions to real life quantitative problems by applying the appropriate mathematical techniques to a variety of everyday situations and discussing the results to include budgets, costings, time, quantity etc.

Delivery Strategies and Learning Activities

This programme module could be delivered through classroom-based learning activities, team work, group discussions, one-to-one tutorials, field trips, case studies, role play and other relevant activities.

10. Guidelines for Teaching and Learning

Please note: the following guidelines suggest a sequence for the teaching of this module. In some cases, this may differ from the sequence of learning outcomes outlined in section 9.

NUMBER-Natural Numbers (N), Integers (Z), and Real Numbers (R)

Learning Outcome 1.1: Explain the concept of natural numbers (N), integers (Z), and real numbers (R).

*In order to help the learner achieve **Learning Outcome 1.1 in particular, consider the following:***

- facilitate the learner to think about times when they count things in their everyday life, for example, shopping, at the bank, at sports, cooking, woodwork, other things of interest to the learner

  In mathematics, **natural numbers** are the ordinary counting numbers, for example, 1, 2, 3 etc. (sometimes zero is also included but negative numbers are not)Natural numbers have two main purposes:

  - **counting** for answering the question 'how many?'

  - **ordering,** for example, which box contains the largest amount of Ping-Pong balls? Which contains the least amount? Place the other boxes in a sequence going from least to most?

- complete some examples of counting, for example:

  - 24 + 46 = _____
  - 57 + 96 = _____
  - 234 + 245 = _____

- ask the learner to put a list of 10 numbers in an increasing or decreasing order and discuss with the learner how this would be difficult to do without natural number

- review a list of numbers with the learner and group those that are **integers** into one list and those that are not into a second list, for example: 5, 77, and −79 are integers, 1.4 and 2 ¼ are not integers
  Integers are the natural numbers (N) including 0 (0, 1, 2, 3, etc.) together with the negative natural numbers (−1, −2, −3, etc). They are numbers that can be written without a fractional or decimal component, and fall within a set, for example, {-3, -2, -1, 0, 1, 2, 3}.
  They can be represented using a number line as follows:
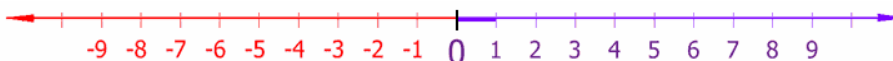
- explore with the learner where they may use negative numbers, for example, using temperature in the context of the fridge, going on holidays or driving in cold weather

- facilitate the learner to use the integers number line to complete a number of calculations, for example,

  - 2 + 5
  - 5 − 3
  - 6 − 8
  - 8 − 13

- explore with the learner when they would use **real** numbers, for example, dividing dinner portions in the kitchen, in cooking, in making something in woodwork, giving pocket money to children (€21:60 between three children)
  Real numbers can be thought of as points either on or between integers on an infinitely long number line.

- on a number line as above ask the learner to locate real numbers, for example,

    o ½
    o ¼
    o ¾
    o -1 ½

- highlight for the learner that these are simple fractions, where the numerator and denominator are both integers
- explore with the learner where they might use simple fractions, for example, in cooking, in discussing distance for a trip or discussing time.

NUMBER-Percentages, Fractions and Decimals
Learning Outcome 1.2: Demonstrate equivalence between common simple fractions, decimals, and percentages by conversion.

In order to help the learner achieve ***Learning Outcome 1.2 in particular, consider the following:***

- explore with the learner where they may see percentages or hear them referred to, for example, when shopping in the sales, discussing mortgage interest rates or banking

- discuss with the learner how percentages are written, for example, 50%, 25%, 20%, 10%.

- facilitate the learner to identify if there is a fraction which is the same as 50%, 25%, and other simple equivalents

- demonstrate for the learner how to convert simple percentages to fractions, for example:
  for 20%, put the given % over 100, so 20/100 or 2/10 or 1/5

- demonstrate for the learner how to convert simple fractions to percentages, for example:
  for 2/5, divide the top of the fraction by the bottom, so 0.4, multiply by 100, so 0.4 X100 = 40, and add a percentage sign, so 40%

- give the learner time to practice this by asking them to convert a number of percentages into fractions and a number of fractions into percentages

- explore with the learner where they may see decimals, for example, money

- demonstrate for the learner how to convert from percentage numbers to decimal numbers, for example, by moving the decimal point two places to the right, so 25% would become 0.25 or 75% would become 0.7.

- facilitate the learner to use this knowledge to convert back from decimal numbers to percentages, for example, 0.80 is 80%, 0.50 is 50%

- demonstrate for the learner how to convert fractions into decimals, for example, for ¼ , divide the 1 (numerator) by the 4(denominator) which would be 0.25

- facilitate the learner to use their calculator to complete a number of conversions of fractions into decimals.

NUMBER-Using a Calculator

Learning Outcome 1.3: Use a calculator to perform operations requiring functions such as +, -, ×, ÷, memory keys and clear key.

*In order to help the learner achieve **Learning Outcome 1.3 in particular, consider the following:***

- discuss with the learner some situations where a calculator may be helpful to keep track of numbers or money, for example:

  o on a shopping trip to the supermarket use a calculator to track the total cost of items as they are placed in the shopping trolley or basket
  o calculate the cost of an item when VAT @21% is to be paid on top of the listed price of goods or services
  o examine a pay slip to confirm whether deductions and total sums are correct.
  o analyse the nutritional values on the box of a given food item and work out how much of this food item would be required to provide a daily allowance of fat or protein or carbohydrate for an adult woman or man
  o other situations of interest to the learner.

- in completing these calculations, demonstrate for the learner how to represent the calculations on paper and how to transfer the calculation from paper to the calculator, to include using the following functions:

  plus

  minus

  multiplication

  division

  percentage

  input a number into memory

  recall a number from memory

  clear a number from memory

  clear the current calculation

- facilitate the learner to use the calculator to complete a number of personally relevant calculations, for example:
  o hourly net pay from their total net pay
  o the repayments on a loan or mortgage over a number of years
  o the best value in goods for sale in local shops considering special offers or sale prices
  o the total cost of a holiday, taking into account the cost of flights, hotels, food etc.

NUMBER-Approximating Numbers

Learning Outcomes1.4: Give approximations by using strategies including significant figures and rounding off large natural numbers.

*In order to help the learner achieve **Learning Outcome 1.4 in particular, consider the following:***

- explain to the learner what approximation means, for example, an inexact representation of the sum of something in the form of a number that is close enough to be useful

- discuss with the learner when they would use approximations in real life, for example, in describing time, temperature, budgets, crowds

- explore with the learner what strategy can be used to give an accurate approximation, to include:

  o using significant figures, for example, if calculating how much it will cost for 5 jumpers when one costs €25.45, the significant number is €25 so to approximate the cost it would be €25X5
  o using rounding off of large natural numbers to reduce the number of significant digits in a number, for example: rounding to the nearest 10 (83 rounded to the nearest ten is 80, because 83 is closer to 80 than to 90), rounding to the nearest whole number(5.9 rounded to the nearest whole number is 6 because 5.9 is nearer 6 than 5)
  o if the number, large of decimal, ends in 5 then you round upwards, if less than 5 then round downwards.

- facilitate the learner to give an approximate figure for a number of simple calculations, using both significant figures and rounding off large natural numbers, for example

  o If a watch reads the following times what is the approximate times?
    12:57, 2:08, 15:44
  o what are the approximate totals of the following sums?
    4 × 5.9, 6 × 4.1, 5 × 3.9
  o round the following to the nearest 10:
    67, 109, 123, 455.

_____

NUMBER-Accuracy of Calculation

Learning Outcomes 1.5: Demonstrate accuracy of calculation by applying the principal mathematical functions i.e. +, -, ×, ÷, natural numbers (N) and integers (Z), common simple fractions, and decimal numbers to two places of decimal.

*In order to help the learner achieve **Learning Outcome 1.5 in particular, consider the following:***

- it is important that the learner demonstrates accuracy of calculation at each stage of the programme module and this learning outcome should be integrated and evidenced where appropriate.

MEASUREMENT AND CAPACITY-Space and Shape

Learning Outcome 2.1: Describe shape and space constructs using language appropriate to shape and space to include square, rectangle, circle, cylinder, angles, bisect, radius, parallel, and perpendicular

*In order to help the learner achieve **Learning Outcome 2.1 in particular, consider the following:***

- consider with the learner times or situations where they encounter shapes, for example:

  o windows and doors
  o cans of food

- o road signs
- o health and safety signs
- o when playing sport – pitches or courts

- review the most common shapes that the learner would encounter, to include:

  - o a square
  - o a rectangle
  - o a circle
  - o a cylinder

- for each of these shapes explore with the learner some key features of them in terms of their shape, for example:
  - o a square : 4 sides, equal in length, 4 angles, equal in size, the diagonals of the square bisect each other and cross perpendicular to each other, every angle in the square is a right angle (90°), a square fits the definition of a rectangle. This is a 2 dimensional shape. It has length and breadth.
  - o a rectangle: 4 sides, opposite sides are both parallel and equal in length, the two diagonals are equal in length and bisect each other, every angle is a right angle. This is a 2 dimensional shape. It has length and breadth.
  - o a circle: a simple shape consisting of a number of points joined together where each point is the same distance from a given point called the centre. A line from the centre of the circle to any point on the circle is the same length and is called the radius, a line from a point on the circle, through the centre, to a point on the opposite side of the circle is called the diameter. This is a 2 dimensional shape. It has radius and diameter.
  - o a cylinder: the top and bottom of a cylinder are circular, a vertical section through a cylinder will be rectangular in shape and a horizontal section through will be circular in shape. This is a 3 dimensional shape.

MEASUREMENT AND CAPACITY-Area

Learning Outcomes 2.3: Calculate the area of a square, rectangle, triangle, and circle by applying the correct formula and giving the answer in the correct form.

*In order to help the learner achieve **Learning Outcome 2.3 in particular, consider the following:***

- for each of the shapes explored in 2.1, consider the space enclosed by the shape and discuss with the learner where they have encountered these spaces, for example, a football pitch is the space enclosed by a rectangle, a pizza is the space enclosed by a circle

- explore with the learner the concept of area, for example, a measure of how much surface is enclosed by

a figure

- consider the times when a learner needed to calculate the area of something, for example, when painting a room to calculate the area of the walls and how much paint was needed or when ordering floor covering to cover a floor

- outline for the learner how area is represented in terms of units, for example, m^2 (metre square), cm^2(centimeter square), ft^2(square feet)

- explain to the learner why the units are $unit^2$, for example, area = lengthXbreadth which means unitXunit which will lead to $unit^2$

- facilitate the learner to calculate the area of the following shapes, to include:

  o a square (lXb)
  o a rectangle (lXb)
  o a triangle ($^1/_2$ base X perpendicular height)
  o a circle (πr^2)

- in carrying out these calculations, relate the shapes to things that have personal relevance to the learner or are instantly identifiable by the learner, for example,

  o the area of the walls and floor to decorate a room in their house (rectangles and/or squares)
  o the area of a soccer pitch or a tennis court (rectangles)
  o the area of a running track (rectangle and semi-circle)

MEASUREMENT AND CAPACITY-Volume

Learning Outcomes 2.4 Calculate the volume of a cylinder by applying the correct formula and giving the answer in the correct form.

*In order to help the learner achieve **Learning Outcome 2.4 in particular, consider the following:***

- explore with the learner the concept of volume, for example, the amount of space a solid object of three dimensions (length, breadth and depth) occupies

- consider the times when a learner needed to calculate the volume of something, for example, the volume of cement required for a foundation

- outline for the learner how volume is represented in terms of units, for example, m^3 (cubic metre), cm^3(cubic centimeter), ft^3(cubic square)

- explain to the learner why the units are $unit^3$, for example, volume = length*breadth*depth which means unit*unit*unit which will lead to $unit^3$

- facilitate the learner to calculate the volume of a cylinder ($\pi r^2 h$)

- in carrying out these calculations, relate the shape to things that have personal relevance to the learner or are instantly identifiable by the learner, for example, calculating the volume of a can of food or the volume of a milk tanker or the volume of their oil tank.

MEASUREMENT AND CAPACITY-Scaled Drawing

Learning Outcomes 2.2: Draw everyday objects to scale using a range of mathematical instruments.

*In order to help the learner achieve **Learning Outcome 2.2 in particular, consider the following:***

- explore with the learner the concept of drawing objects to scale, for example, house plans, maps, diagrams that accompany flat pack furniture

- review the reasons for drawing objects to scale, for example:

  o it would be impractical to draw things like house plans or maps to scale
  o by drawing to scale, the drawing is an accurate representation of how an object will appear, only proportionally bigger or smaller

- consider with the learner what tools will be needed to draw an object to scale, for example, a scale ruler and pencil or graph paper and pencil

- identify a number of everyday objects that could be drawn to scale and consider with the learner what would be an appropriate scale (the ratio between the dimensions of the object and the scale drawing) for example, a scale of 1: 10mm where each 1 mm drawing length represents 10 mm actual length or a scale of 1: 1000mm where 1 mm represents 1000mm or 1m

- facilitate the learner to draw a minimum of 5 everyday objects to an appropriate scale, for example, a mobile phone, a box of sweets, a school bag, a soccer pitch, a printer, a book

- in drawing these items the learner will use a range of mathematical instruments, for example:

  o a scale ruler
  o a set square
  o a compass
  o a protractor.

MEASUREMENT AND CAPACITY-Understanding Simple Scaled Drawings

Learning Outcomes 2.5: Understand simple scaled drawings by working out real distance, location and direction

*In order to help the learner achieve **Learning Outcome 2.5 in particular, consider the following:***

- provide the learner with a sample of scaled drawings that would be of interest to the learner, for example:

  o a map showing home location and the location of the Centre/School attended to calculate the distance between the two
  o a scale drawing of a house so the learner can calculate the actual size of the finished building
  o a scale drawing of a famous building
  o a scale drawing of a piece of machinery, for example a car or tractor. Alternatively use a model of a piece of machinery and allow the learner to measure it and calculate the real size

- in using the scaled drawings, facilitate the learner to calculate real distances or lengths

- using a scaled map, explore with the learner real locations and directions and how different locations or items on the map appear nearer to each other on the scaled drawing compared to actual distances and

how directions between locations are represented on the map. Google Maps may be useful for an exercise like this.

MEASUREMENT AND CAPACITY-Practical Applications of Metric Measurement Skills

Learning Outcomes 2.6: Demonstrate metric measurement skills and, using the correct vocabulary and measurement instruments, accurately measure length, distance, capacity, and weight

*In order to help the learner achieve **Learning Outcome 2.6 in particular, consider the following:***
- explore with the learner some realistic applications of measuring things and using the information for a practical application, for example,

    o the learner could measure their height in meters or inches using a measuring tape and their weight in pounds or kilograms using weighing scales and from that calculate their body mass index (BMI)

$$BMI = \frac{(\text{weight in pounds} * 703)}{\text{height in inches}^2} \quad (\text{lbs/inches}^2)$$

or

$$BMI = \frac{\text{weight in kilograms}}{\text{height in meters}^2} \quad (\text{kg/m}^2)$$

    o the learner could calculate the volume of their oil tank at home using the formula $\pi r^2 h$, where the units used are cm (centimeters) and then convert that volume into capacity for ordering oil for the tank by converting from cm^3 to litres by multiplying by 0.001 ($1000cm^3$=1litre)

    o the learner could calculate how long a journey on a bus or train will take them by reading the departure time and the arrival time from a timetable and subtracting one from the other

    o the learner could measure the classroom they are using for this programme and calculate the surface area of the walls and from that calculate how many tins of paint they would need to give the walls two coats and the how much the paint will cost bearing in mind the unit cost of each tin of paint

    o The learner could calculate the distance between two locations if they know the speed they are travelling and how long a journey will take

- in facilitating the learner to demonstrate metric measurement skills, care should be taken to ensure:

    o use of the correct measurement instrument for the task in hand, for example, a measuring tape for length or a weighing scales for weight
    o correct units to match the type of measurement, for example $unit^2$ for area or $unit^3$ for volume
    o the inclusion of measurement of:
        ▪ length
        ▪ distance
        ▪ capacity
        ▪ weight.

MEASUREMENT AND CAPACITY-Problem Solving

Learning Outcomes 2.7: Calculate solutions to real life quantitative problems by applying the appropriate mathematical techniques to a variety of everyday situations and discussing the results to include budgets, costings, time, quantity etc.

*In order to help the learner achieve **Learning Outcome 2.7 in particular, consider the following:***

- discuss with the learner ways in which what has been learned can be applied to solve real life quantitative problems, for example:
    - facilitate the learner to document what s/he spends money on for one week and then total the amounts under a number of headings, for example food, transport, entertainment, other
    - consider a realistic budget that could be followed by the learner to see if s/he can save any money on current spending
    - take the advertising flyers from the local supermarkets such as Lidl, Aldi, Spar, Dunnes Stores, Tesco, etc. See what special offers are available and how much money can be saved by shopping in different shops
    - review with the learner the effect buying larger quantities of goods can have in terms of saving money in the long term, for example, by utilising special offers or 'buy one get one free' type offers
    - review the learner's schedule during the week in terms of what needs to be done each day to see if there are any steps that can be taken to manage time better
    - explore with the learner some of the financial products on the market to tease out which products could be beneficial to the learner and apply some of the information to see the effect on the total sum of money over time
    - organise a trip to London in which flights and accommodation are booked for five people. Accurately calculate the cost per person and the overall cost for the group
    - divide a lasagne equally between four people; identify what fraction each person would get
    - in a shop sale the notice says '1/3 off everything'. How much will an item that originally cost €60.00 cost now?

- discuss with the learner the time taken to complete these exercises and consider whether this was time well spent and whether or not the learner was surprised with the results

- in completing all calculations, facilitate the learner to complete the calculations accurately to include:
    - Using the calculator where appropriate
    - Applying +, -, ×, ÷ to:
        - natural numbers and integers
        - common simple fractions
        - decimal numbers.

11.a Specific Information Relating to the Assessment Technique - Application of Number 3N0928

The assessor is required to devise Assessment Brief/s for the Collection of Work and Skills Demonstration. In devising the Assessment Brief/s, care should be taken to ensure that the learner is given the opportunity to show evidence of ALL learning outcomes. Each learner is required to work alone in completing the Collection of Work. There is no facility for this Collection of Work to be completed as a group.

Evidence that the learner has achieved the learning outcomes may take a variety of forms including tutor verification of the learner's contribution, learner worksheets, diagrams, cloze tests, multiple choice statements, visual presentation or other appropriate evidence in the form of written, oral, graphic, audio, visual or any combination of these. Any audio or visual evidence must be provided in a suitable format. All of the evidence must be retained in the learner's assessment portfolio.

Collection of Work	100%

The Collection of Work may be produced throughout the duration of the programme module. It must be clearly indicated where evidence covers more than one learning outcome.

In compiling the Collection of Work, the learner should be accommodated to demonstrate the practical application of number to personally relevant situations. The assessor may set a context and require a learner to complete a number of tasks based on that context or the assessor may integrate the following tasks in a real life quantitative problem to be solved by the learner. The learner should be accommodated to complete tasks that demonstrate knowledge of budgets, costings, time and quantity.
 	
In compiling the Collection of Work, the learner will include evidence that demonstrates the following throughout:
 	
 • accuracy of calculations
 • the application of principal mathematical functions: addition, multiplication, subtraction and division
 • the use of Natural Numbers (N), Integers (Z), Common Simple Fractions, Decimal Numbers
 	
Evidence of the following must be included in the Collection of Work:
 	
 • the ability to use a calculator to perform addition, multiplication, subtraction and division. The memory function and clear key should also be used
 	
 • problem solving skills, to include:
 	
  ○ approximating using significant figures and rounding off large natural numbers
  ○ accurately measuring the following:
   ▪ length
   ▪ distance
   ▪ capacity
   ▪ weight
   ▪ time
  ○ reading scaled maps to calculate real distance, location and direction
  ○ drawing a minimum of 3 common objects to an appropriate scale, using a range of mathematical instruments

- an understanding of shape and space, to include:

  o using the following terms in describing the shape and space of squares, rectangles, circles, cylinders:
    - angles
    - bisect
    - radius
    - parallel
    - perpendicular

  o calculating the area of the following:
    - a square
    - a rectangle
    - a triangle
    - a circle

  o calculating the volume of a cylinder

- an explanation of the difference between Natural Numbers (N), Integers (Z) and Real Numbers (R)

- the ability to convert between simple fractions, decimals and percentages.

11.b Assessment - **General Information – Application of Number 3N0928**

All instructions for the learner must be clearly outlined in an Assessment Brief.

Mapping Each Learning Outcome to an Assessment Technique	
Learning Outcome **Number**	**Assessment Technique**
1.1 Explain the concept of natural numbers (N), integers (Z) and real numbers (R).	Collection of Work
1.2 Demonstrate equivalence between common simple fractions, decimals, and percentages by conversion.	Collection of Work
1.3 Use a calculator to perform operations requiring functions such as +, -, ×, ÷, memory keys and clear key.	Collection of Work
1.4 Give approximations by using strategies including significant figures and rounding off large natural numbers .	Collection of Work
1.5 Demonstrate accuracy of calculation by applying the principal mathematical functions i.e. +, -, ×, ÷, natural numbers (N) and integers (Z), common simple fractions and decimal numbers to two places of decimal	Collection of Work
Measurement and Capacity	
2.1 Describe shape and space constructs using language appropriate to shape and space to include square, rectangle, circle, cylinder, angles, bisect, radius, parallel, perpendicular.	Collection of Work
2.2 Draw everyday objects to scale using a range of mathematical instrument.	Collection of Work
2.3 Calculate the area of a square, rectangle, triangle, circle, by applying the correct formula and giving the answer in the correct form.	Collection of Work
2.4 Calculate the volume of a cylinder by applying the correct formula and giving the answer in the correct form.	Collection of Work
2.5 Understand simple scaled drawings by working out real distance, location and direction.	Collection of Work
2.6 Demonstrate metric measurement skills using the correct measurement instrument, and vocabulary appropriate to the measurement, to accurately measure length, distance, capacity, weight, time.	Collection of Work
2.7 Calculate solutions to real life quantitative problems by applying the appropriate mathematical techniques to a variety of everyday situations and discussing the results to include budgets, costings, time, quantity etc.	Collection of Work

Grading

At Level 3 a learner is graded as Successful or Referred.

 Successful means that ALL the learning outcomes from the Component Specification have been demonstrated to an appropriate standard in the learner's portfolio of assessment.

Referred means that the portfolio of assessment needs further work by the learner before s/he can demonstrate the standard and achieve certification from QQI

Level 3 Application of Number 3N0928	Learner Marking Sheet

Learner's Name: _____   Learner's PPSN: _____

Learners will be able to:	Evidence of the following is included in the assessment portfolio:	✔ **If present in portfolio**	**Please indicate where evidence is to be found**

1.1 explain the concept of natural numbers (N), integers (Z), and real numbers (R)	• explain the concept of:
	  o natural Numbers (N)
	  o integers (Z)
	  o real Numbers (R)		

1.2 demonstrate equivalence between common simple fractions, decimals and percentages by conversion	• convert simple fractions to decimals and percentages • convert percentages to fractions and decimals • convert decimals to percentages and fractions		

1.3 use a calculator to perform operations requiring functions such as +, -, ×, ÷, memory keys and clear key	• use the following functions on a calculator:
	  o +
	  o -
	  o X
	  o ÷
	  o M (memory keys)
	  o C (clear key)		

1.4 give approximations by using strategies including significant figures and rounding off large natural numbers	• use significant figures to give approximations • use rounding off of large numbers to give approximations		

1.5 demonstrate accuracy of calculation by applying the principal mathematical functions, i.e. +, -, ×, ÷, natural numbers (n) and integers (z), common simple fractions and decimal numbers to two places of decimal	• accurately calculate using:
	  o +
	  o -
	  o ×
	  o ÷
	  o natural numbers
	  o integers
	  o common simple fractions
	  o decimal numbers to two decimal places		

2.1 describe shape and space constructs using language appropriate to shape and space to include square, rectangle, circle, cylinder, angles, bisect, radius, parallel, perpendicular	• describe shape and space and include reference to the following, as appropriate:
	   o square
	   o rectangle
	   o circle
	   o cylinder
	   o angles
	   o bisect
	   o radius
	   o parallel
	   o perpendicular		

2.2 draw everyday objects to scale using a range of mathematical instrument	• draw a minimum of 3 common objects to scale using:
	   o common mathematical instruments
	   o an appropriate scale		

2.3 calculate the area of a square, rectangle, triangle, circle, by applying the correct formula and giving the answer in the correct form	• calculate the area of the following by applying an appropriate formula:
	   o a square
	   o a rectangle
	   o a triangle
	   o a circle
	• give the answer in the correct unit form		

2.4 calculate the volume of a cylinder by applying the correct formula and giving the answer in the correct form	• calculate the volume of a cylinder by applying an appropriate formula • give the answer in the correct unit form		
2.5 understand simple scaled drawings by working out real distance, location and direction	• calculate the real distance using simple scaled drawings • calculate the real location using simple scaled drawings • calculate real direction using simple scaled drawings		

2.6 demonstrate metric measurement skills using the correct measurement instrument, and vocabulary appropriate to the measurement, to accurately measure length, distance, capacity, weight, time	• accurately measure, using correct measurement instruments and vocabulary, the following:
	   o length
	   o distance
	   o capacity
	   o weight
	   o time		

| 2.7 calculate solutions to real life quantitative problems by applying the appropriate mathematical techniques to a variety of everyday situations and discussing the results to include budgets, costings, time, quantity etc. | • use the mathematical techniques learned to solve real life quantitative problems, to include:
    ○ budgets
    ○ costings
    ○ time
    ○ quantity. | | |

This is to state that the evidence presented in the attached portfolio is complete and is the work of the named learner.

Learner's Signature: _____   Date: _____

Assessor's Signature: _____   Date: _____

External Authenticator's Signature: _____   Date: _____