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Module Descriptor

Functional Mathematics

Award Type: Minor
Award Level: 3
Award Code: 3N0930
FÁS Assessment Code: 3N0930-024
Validation date 14th July 2011

Revision 2

Module Descriptor

Purpose: The purpose of this module is to equip the learner with the relevant knowledge, skills and competence to understand and apply to real-life situations, a limited range of basic mathematical functions relating to numbers and algebra.

Module Duration: The typical learning effort required from a typical learner to successfully achieve the stated learning outcomes for the module is **50 (fifty) hours.**

Learning Outcomes: By the end of this module, the learner will be able to:

1. Use natural numbers (N), integers (Z), rational (Q) and real (R) numbers in basic mathematical functions, drawn from real-life situations
2. Demonstrate an understanding of number bases, addition and multiplication, using the part-whole system
3. Manipulate basic fractions (to include ratios), decimals and percentages and their equivalence
4. Use a calculator to perform common mathematical functions, to include use of +, -, x, ÷, %, memory keys and the clear key
5. Estimate and round off answers to numerical problems to include natural numbers and decimal numbers to 2 (two) decimal places
6. Explain basic algebra and its application to everyday life
7. Demonstrate an understanding of the language and concepts of algebra
8. Solve a selection of algebraic problems, to include simple equations, inequalities of 1 variable and simultaneous equations
9. Write algebraic expressions for real-life examples
10. Solve a selection of algebraic problems based on real-life examples

Unit 1 Title Number

At the end of this unit, the learner will be able to:

1.1 Use natural numbers (N), integers (Z), rational (Q) and real (R) numbers in basic mathematical functions, drawn from real-life situations

1.2 Demonstrate an understanding of number bases, addition and multiplication, using the part-whole system

1.3 Manipulate basic fractions (to include ratios), decimals and percentages and their equivalence

1.4 Use a calculator to perform common mathematical functions, to include use of +,-,x,÷, %, memory keys and the clear key

1.5 Estimate and round off answers to numerical problems to include natural numbers and decimal numbers to 2 (two) decimal places

Key Learning Points

Learning Outcome 1.1: Use natural numbers (N), integers (Z), rational (Q) and real (R) numbers in basic mathematical functions, drawn from real-life situations
Key Learning Points
• Understanding the basic mathematical functions • Identifying natural numbers (N) • Identifying Integers (Z) • Identifying rational numbers (Q) • Identifying real numbers (R) • Adding and subtracting 1,2 and 3-digit numbers without a calculator • Multiplying and dividing by single-digit numbers without a calculator • Adding and subtracting fractions and decimals • Applying mathematical solutions to real life situations

Learning Outcome 1.2: Demonstrate an understanding of number bases, addition and multiplication, using the part-whole system
Key Learning Points
• Number bases in real-life, to include the decimal system, units of time, units of measurement and bases used in shopping • Solving problems involving a selection of number bases • Pictorial representation of simple problems • Abstract representation of simple problems

Learning Outcome 1.3: Manipulate basic fractions (to include ratios), decimals and percentages and their equivalence
Key Learning Points
• Identifying and using basic fractions • Identifying and using decimals • Identifying and using percentages • Solving numerical and verbal problems • Solving numerical and verbal problems using basic fractions, decimals and percentages • Converting simple fractions to ratios • Recognising values of numbers up to 2 (two) decimal places • Calculating common percentages • Calculating common percentages with and without a calculator • Converting basic fractions to decimals and percentages and vice versa

Learning Outcome 1.4: Use a calculator to perform common mathematical functions, to include use of +,-,x,÷, %, memory keys and the clear key
Key Learning Points
• Using a calculator • Function keys on a calculator • Adding, subtracting, multiplying and dividing using a calculator • Solving numerical problems using up to 4-digit numbers with a calculator • Calculating percentages • Adding to or subtracting from totals using a calculator • Using Clear and Clear Entry functions • Using Memory + and Memory – functions

Learning Outcome 1.5: Estimate and round off answers to numerical problems to include natural numbers and decimal numbers to 2 (two) decimal places
Key Learning Points
• Estimating answers • Rounding off answers • Estimating answers to numerical problems using addition, subtraction, multiplication and division • Estimating total of selection of items in context of shopping and eating out • Rounding off answers to numerical problems to 2 (two) significant figures, including decimal numbers • Explaining, estimating and rounding off answers verbally and in writing

Unit 2 Title Algebra

At the end of this unit, the learner will be able to:

2.1 Explain basic algebra and its application to everyday life
2.2 Demonstrate an understanding of the language and concepts of algebra
2.3 Solve a selection of algebraic problems, to include simple equations, inequalities of 1 (one) variable and simultaneous equations
2.4 Write algebraic expressions for real-life examples
2.5 Solve a selection of algebraic problems based on real-life situations

Learning Outcome 2.1: Explain basic algebra and its application to everyday life
Key Learning Points
• Definition of algebra using simple terminology • Giving examples of real-life situations in which algebra is used • Benefits of understanding algebra to everyday life

Learning Outcome 2.2: Demonstrate an understanding of the language and concepts of algebra
Key Learning Points
• Language of algebra • Understanding common terms used in algebra to include variable, constant, co-efficient, term, like terms, evaluate, expression, equation, simultaneous (equations), inequalities • Explaining concepts of algebra • Communicating concepts of algebra by tracing equation back to real-life example • Developing a glossary of algebraic terms

Learning Outcome 2.3: Solve a selection of algebraic problems, to include simple equations, inequalities of 1 (one) variable and simultaneous equations
Key Learning Points
• Building simple equations • Solving simple equations • What are inequalities • Solving inequalities of 1 (one) variable • What are simultaneous equations • Solving simultaneous equations • Application to real life problems

Learning Outcome 2.4: Write algebraic expressions for real-life examples
Key Learning Points
• Writing algebraic expressions

• Expressing ‘stories’ as mathematical sentences

Learning Outcome 2.5: Solve a selection of algebraic problems based on real-life situations
Key Learning Points
• Identifying problems • Constructing algebraic expression of problem • Solving selection of algebraic problems

Assessment Specification

Award Title	**Functional Mathematics**
Award Type	**Minor**
FÁS Assessment Code	**3N0930-024**
Credit Value	**5**
Award Code	**3N0930**

Learning Outcome*	Performance Criteria (Knowledge, Skill & Competence)	Assessment Techniques	Weighting	Assessment Instrument	Assessment Evidence
L01	Knowledge, Skill	Portfolio	15%	Exercise E1	Exercise Sheet
L02	Knowledge, Skill	Portfolio	15%	Exercise E2	Exercise Sheet
L03	Knowledge, Skill	Portfolio	10%	Exercise E3	Exercise Sheet
L04	Knowledge, Skill	Portfolio	7%	Exercise E4	Answers to E4
L05	Knowledge, Skill	Portfolio	8%	Exercise E4	Exercise Sheet
L06	Knowledge, Skill	Portfolio	7%	Exercise E5	Exercise Sheet
L07	Knowledge, Skill	Portfolio	8%	Exercise E5	Exercise Sheet
L08	Knowledge, Skill	Portfolio	15%	Exercise E6	Exercise Sheet
L09	Knowledge, Skill, Competence	Portfolio	8%	Exercise E7	Exercise Sheet
LO10	Knowledge, Skill, Competence	Portfolio	7%	Exercise E7	Exercise Sheet

Note: Learners in achieving the assessment requirements for Functional Mathematics will, by default, have fulfilled some of the assessment requirements for Mathematics (3N0929) as this Assessment Instrument Specification (AIS) is part of a combination of AIS's used to assess Mathematics (3N0929).

Suggested Learning Methodologies

- Activities and exercises
- Note taking
- Discussion groups
- Project work
- Text-book study
- Consulting Internet web-sites

Specific Module Requirements

Calculators, access to a computer

Suggested Learning Resources

All of the highlighted curriculum resources mentioned below are available on the Moodle Community Services Curriculum and Assessment page. You can access the CSCA Moodle web page from this link: http://www.ecollege.ie/site/home.html .

Internet websites: Information can be accessed on the following suggested websites as of 8th July 2011:

www.mathsisfun.com this website gives exercises on number and algebra

www.mathpower.com This website provides information about basic math, algebra, study skills, math anxiety and learning styles for the adult learner

www.bbc.co.uk/skillswise This website gives worksheets, quizzes and games on number

www.skoool.ie This website has interactive, multimedia lessons aimed at junior and leaving certificate

www.literacytools.ie ThIs website is for adults who would like to improve their spelling, reading and numeracy skills.

http://www.geogebra.org/cms/ This is a website with free to use software which defines algebraic objects geometrically, it draws equations

A range of textbooks including:
How to use a Calculator ISBN 1 86311 1557 published by Prim-Ed
Junior Cert Foundation Level Mathematics Workbook by Mary Day and Patrick Daly ISBN 1-84131-918-X published by Folens
Work Out Numeracy by Ted Penketh ISBN 0-333-66270-9 published by Macmillan
Revise Wise Maths Junior Certificate Ordinary level by Brian Brophy and Tony Daly ISBN 1-84536-164-4 published by the Educational Company of Ireland
Text & tests 1, Junior Certificate by O.D. Morris ISBN 1-872019-63-3 published by The Celtic Press
New Concise Maths 1 for Junior Cert by George Humphrey ISBN 0-7171-2813-X Published by Gill & Macmillan

Generic Skills: Literacy and Numeracy

The learners will keep and maintain a **Learning Diary** throughout the course in order to record and file any useful and relevant information on any aspect of maths and its application to real-life.

At the end of every week the learners will complete a short **Weekly Reflective Shee**t in order to reflect on their learning and progress during that week.

This Weekly Reflective Sheet will assist the learners to develop their generic skills of literacy, numeracy, communications and quality awareness and will give learners an opportunity to develop their writing skills.

The learners will create a **Personal Dictionary** of new words, key words and terms relating to maths. This Dictionary will be updated each week and kept in the Learning Diary.

The learners, as a group, will add words and terms to a **Key Word and Terminology Bank** in the classroom, relating to maths. The learners will find words listed in text books, class notes, DVDs and internet websites etc.

The learners will complete a **Word Search.** This is **Word Search 1.** When the learners have gained sufficient practice and experience at word searches, each learner will make up 1 (one) Word Search/Quiz which will be completed by the group.

When the learners have completed certain activities/exercises, they will complete a **True or False** Quiz . This is: **Quiz No1 for LO6, LO7, LO8, LO9, LO10.**

Generic Skill: Numeracy; Digital

Learners will practise **using a calculator**, identifying and locating all keys needed to carry out basic calculations.

The learners will practise solving various problems set by the instructor**, using the mathematical glossary.**

Generic Skill: Teamwork and Communications

Learners will discuss the importance of teamwork with the instructor using the **Teamwork Guide.**

Learners will take part in a **Teamwork exercise** by carrying out a project which will incorporate group discussions.

The learners will complete the Team Review Sheet after completing the Teamwork exercise.

Recommended by: _____

Manager Training Policy Development and Support

Approved by: _____

Director Training Policy Development and Support