

Work Area 12 NUMERICAL SKILLS

3.23 APPLY A RANGE OF BASIC NUMERICAL SKILLS

LO87: Demonstrate knowledge of, and the ability to apply, basic mathematical principles and processes in everyday contexts at work, to accomplish different business tasks (e.g. calculate the area of the office).



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Module Details

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Work Area Code:	12
Work area title:	NUMERICAL SKILLS
Unit Code:	3.23
Unit Title:	APPLY A RANGE OF BASIC NUMERICAL SKILLS
Learning Outcomes Nos:	LO87
Learning Outcomes titles:	Demonstrate knowledge of, and the ability to apply, basic mathematica principles and processes in everyday contexts at work, to accomplish different business tasks (e.g. calculate the area of the office).
Recommended Duration:	2,5 hour
Trainer:	



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INTRODUCTION

- It is very often in everyday working practice that an employee is called to resolve problems which require practical calculations, rapid perception and data processing, as well as, to find the analogies between numerical data.
- The evaluation of a person's numerical skills has became an essential part of both the recruitment and assessment procedures of all modern companies.

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- Numerical skills refer to the way a person perceives, processes and numerical symbols and calculates numbers.
- These skills reflect the person's general intelligence and its development ensures at a great extent the attainment of organizational goals.





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INTRODUCTION TO THE BASIC MATHEMATICAL PRINCIPLES — THE USEFULNESS OF NUMERICAL CALCULATIONS



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- This model shows the five main components of **Numeracy**
 - It was devised by National Numeracy, with help from an external expert group, and underpins our approach to the teaching and learning of numeracy for adults.
 - Its aim in not just to develop specific skills and knowledge needed in everyday life but to encourage numerate behavior and attitudes.

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INTRODUCTION TO THE BASIC MATHEMATICAL PRINCIPLES — THE USEFULNESS OF NUMERICAL CALCULATIONS



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other four areas :

Central to these is 'Being Numerate'

that is, having the mathematical

habits of mind needed to reason,

These are essential in order to

'Operations and Calculations'

'Shape, Space and Measures'

'Handling Information'

solve problems and make decisions.

be confident and competent in the

'Numbers and the Number System'

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FOR DISCUSSION

- 1. As a personal assistant, in everyday working practice which are the problems that could be resolved by a mathematical formula?
- 2. In your opinion, which are the arithmetic calculations that are the most often used by a personal assistant ?

Group discussion



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Rule of sum & rule of product

• Rule of Sum - Statement:

 If there are n choices for one action, and m choices for another action and the two actions cannot be done at the same time, then there are n+m ways to choose one of these actions.

• Rule of Product - Statement:

 If there are n ways of doing something, and ways of doing another thing after that, then there are n x m ways to perform both of these actions.





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 Your manager wants to go from Athens to Larissa. She can choose from 3 bus services or 2 train services to get to the train station. From there, she can choose from 2 bus services or 3 train services to head to Larissa. She asks you how many ways there are for her to get to Larissa





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Rule of sum & rule of product applications

Solution: Since she can either take a bus or a train to the station, she has 3+2=5 ways to head downtown (Rule of Sum). After which, she can either take a bus or a train to Larissa, hence she has another 2+3=5 ways to head to Larissa(Rule of Sum). Thus in total, she has 5x5=25 ways to head from home to Larissa(Rule of Product).





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- **Problem solving** consists of using generic or *ad hoc* methods, in an orderly manner, for finding solutions to problems.
- STAGES:
 - Problem Identification: detecting and recognising that there is a problem; identifying the nature of the problem; defining the problem.
 - Structuring the Problem: observation, careful inspection, fact-finding
 - Looking for Possible Solutions: generating a range of possible courses of action, but with little attempt to evaluate them at this stage.



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Problem solving

- Implementation: This stage involves accepting and carrying out the chosen course of action.
- Monitoring/Seeking Feedback: The last stage is about reviewing the outcomes of problem solving over a period of time, including seeking feedback as to the success of the outcomes of the chosen solution.



Read more at: <u>https://www.skillsyouneed.com/ips/problem-</u> solving.html



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Reasoning

- the action of thinking about something in a logical, sensible way.
 - Deductive reasoning determines whether the truth of a *conclusion* can be determined for that *rule*, based solely on the truth of the premises.
 - Inductive reasoning attempts to support a determination of the *rule*. It hypothesizes a *rule* after numerous examples are taken to be a *conclusion* that follows from a *precondition* in terms of such a *rule*.



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the action of thinking about something in a logical, sensible way.

Abductive reasoning, selects a cogent set

 of *preconditions*. Given a true *conclusion* and a *rule*, it
 attempts to select some possible *premises* that, if true
 also, can support the *conclusion*, though not uniquely.





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Practice in calculating of numerical amounts – geometrical calculations

UNIT 3 Calculation of surface area with formulas

The **surface area** of a flat shape or a solid object is a measure of the total area that the surface of the object



Practice in calculating of numerical amounts – geometrical calculations







Surface Area of a Sphere = 4 π r²



Surface Area of a Cube = $6 d^2$



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Surface Area of a Rectangular Prism = 2LW + 2LH + 2HW



Surface Area of a Cylinder = $2 \pi r^2 + 2 \pi r h$



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ANALYSIS OF NUMERICAL RESULTS OF AN ENTERPRISE

- Key Point 1
 - Rule of sum
 - Rule of product
 - Area calculation
 - Reasoning
 - Problem solving stages





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ANALYSIS OF NUMERICAL RESULTS OF AN ENTERPRISE

- Review Question 1
- List the stages of problem solving
- Describe the rule of sum
- Describe the rule of product and give an example of its application
- How can we calculate a surface area?





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< Calculate the area>

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Methodological 1001



Well Done!

You have completed this unit



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