



Competence goals

Numeracy



Competence goals for numeracy

Numeracy as a basic skill relates to the competence that makes the individual capable of meeting the challenges of everyday life and working life as for understanding of numbers, skills in measuring and handling of numbers.

The framework – a tool in the training of basic skills for adults

Having sufficient basic skills is a decisive requirement for all other learning and competence development. For many adults the quality of the training opportunity and the way the training has been adapted will decide whether they can and wish to participate.

Level 1

Understands simple mathematical information and does simple calculations

The adult should be able to

- understand simple information that includes mathematical elements in everyday life, working life and social life
- use mathematics in specific contexts without being able to transfer it to other situations
- operate calculators, cash registers and the like, without being able to apply mathematics in other contexts

Competence goals

Numbers

At this level the adult should be able to

- use the positional system for whole, positive numbers
- use simple mathematical symbols like +, -, % and fraction line
- perform simple addition and subtraction in familiar contexts
- use simple percentages like 25%, 50%, 75%, 100%, decimal numbers like 0.25, 0.5, 1.5 and fractions like $\frac{1}{4}$, $\frac{1}{3}$ and $\frac{1}{2}$
- use approximation with simple numbers and assess the answer
- perform counting and compare numbers
- use the number line for calculation and to show numeral quantity
- perform a rounding off to the nearest krone (or other currency unit) or ten-kroner
- double and halve
- perform simple operations on a calculator

Measurement

At this level the adult should be able to

- use basic units for length, area, capacity, weight, temperature, time and angles in concrete situations
- describe features of simple geometrical shapes like triangle, rectangle, square and circle
- use measurement equipment such as a watch, a thermometer, scales, a measuring tape and a measuring cup
- read simple tables, user manuals and maps
- check results and assess relative costs regarding buying and selling

Statistics

At this level the adult should be able to

- compile, organise, record and illustrate data by using tables and bar charts and commenting on the illustrations
- fill in simple forms
- fill in data in a template spreadsheet

Level 2

Relates actively to mathematical information, processes the information and can use mathematics in new situations

The adult should be able to

- handle challenges that include mathematical elements that he/she meets in everyday life, working life and social life
- make use of mathematics in various contexts, including the use of mathematics in new situations
- have sufficient mathematical understanding to feel capable of participating actively in democratic processes and in organisational work

Competence goals

Numbers

At this level the adult should be able to

- use the basic rules of addition, subtraction, multiplication and division with whole numbers, simple decimals and simple fractions
- use the basic multiplication table and perform multiplication and division in practical situations
- multiply and divide by 10 and 100
- use the positional system for simple decimal numbers
- compare the quantity of simple fractions with 1 as the numerator, e.g. $\frac{1}{10}$ and $\frac{1}{8}$
- compare the quantity of simple decimal numbers like 0.1, 1.8 and 0.33
- describe the connection between simple fractions, percentages and decimals like $\frac{1}{10}$, 10%, 0.1 and between $\frac{3}{4}$, 75%, 0.75
- use approximation that involves addition and subtraction by means of mental calculation
- perform simple calculations of percentages
- round off
- identify symmetry in patterns
- summarise in spreadsheets

Measurement

At this level the adult should be able to

- identify simple two-dimensional and three-dimensional shapes
- perform simple transformation of units for length, area, capacity, weight and time
- measure and calculate the perimeter and area of simple geometrical shapes
- give mathematical explanations by using sketches and examples
- assess and find practical solutions to concrete problems
- explain problems to others
- make use of information from a user manual or a blueprint
- confirm results by approximation

Statistics

At this level the adult should be able to

- use simple diagrams such as line graphs, bar charts and sector diagrams
- read tables and interpret diagrams and graphs
- interpret and assess an average value of simple numerical data
- categorise and present numerical data orally and in written form

Level 3

Understands and uses complex mathematical information actively to draw his/her own conclusions and to communicate independently

The adult should be able to

- relate to, compare and critically assess information containing mathematical elements
- perform complex calculations, and - on his/her own initiative - use mathematical tools appropriate for the purpose and for the situation
- use his/her knowledge of mathematics actively to communicate and present mathematical information orally and in written form

Competence goals

Numbers

At this level the adult should be able to

- describe the positional system for decimals, calculate with positive and negative whole numbers, decimals, fractions, percentages and per thousands, and place them on the number line
- read coordinate systems
- recognise and use concepts like percentage points, percentage factors and per thousands in practical contexts
- use simple formulas for calculating e.g. the size of an area and the perimeter of a circle
- set up simple budgets and perform calculations related to private finances
- use ratio numbers in practical situations

Measurement

At this level the adult should be able to

- select appropriate measuring units and carry out transformation of units for length, weight, area, capacity and time
- measure and calculate area and capacity
- use scales of reference to calculate distance and to make simple blueprints / working drawings
- use ratios in practical contexts, calculate speed and currencies
- compare results and make appropriate choices

Statistics

At this level the adult should be able to

- use simple statistics and probability
- present numerical data including the use of diagrams
- calculate an average from simple numerical data
- find probability through experimenting, simulation and calculation in everyday contexts and games
- categorise numerical data by means of spreadsheets
- use databases to search for statistical data
- assess media information that includes mathematical elements critically and independently

Arenas for numeracy

Level 1 Examples

In private and social life	In working life	In education and training
<p>Numbers Can interpret and control invoices</p> <p>Can understand price tags of pre-packaged goods</p> <p>Can assess costs of visits to museums, amusement parks etc.</p> <p>Measurement Can read measurement instruments for temperature and weight</p> <p>Can use recipes</p> <p>Can use a petrol pump</p> <p>Statistics Can count money, persons or objects in an efficient manner</p> <p>Can use rules and strategies for simple games</p> <p>Can understand the information in a simple sector diagram or bar chart in public information or in a newspaper</p>	<p>Numbers Can understand simple job descriptions</p> <p>Can read his/her payslip (wages and taxes)</p> <p>Can fill working hours into a form</p> <p>Measurement Can read measurement instruments, e.g. for tyre pressure</p> <p>Can decide whether something is sufficient or too little</p> <p>Can understand amounts shown in descriptions of products</p> <p>Statistics Can read the survey of incoming and outgoing goods from an established spreadsheet</p> <p>Can take an inventory of goods in stock</p> <p>Can count and categorise various objects</p>	<p>Numbers Can use a calculator to perform simple calculations</p> <p>Can relate to timetables and the time for classes and breaks</p> <p>Can double a simple recipe</p> <p>Measurement Can use measuring equipment such as scales, measuring cups</p> <p>Can use recipes</p> <p>Can determine right angles in building and construction work</p> <p>Statistics Can interpret simple numerical data that are essential for training</p> <p>Can understand the information provided in simple bar charts and sector diagrams in a textbook</p> <p>Can illustrate simple numerical information by means of a bar chart</p>

Level 2 Examples

In private and social life	In working life	In education and training
<p>Numbers Can compare various prices of travels</p> <p>Can calculate time span, e.g. for TV and video recordings</p> <p>Can use approximation to find out what to pay in a shop</p> <p>Can use Internet banking</p> <p>Measurement Can estimate distances on a road map</p> <p>Can make an approximation of the volume of garbage to be dumped</p> <p>Can plan travels that involve more than one means of transport</p> <p>Statistics Can interpret height and weight graphs for children</p> <p>Can understand diagrams in newspapers</p> <p>Can interpret data used in advertisements</p>	<p>Numbers Can understand a payslip</p> <p>Can compare prices, place orders and make reservations via the Internet</p> <p>Can double and halve recipes</p> <p>Measurement Can assess free height under a bridge/in a tunnel in relation to the height of a vehicle</p> <p>Can understand a working drawing and make necessary measurements for the real object</p> <p>Statistics Can judge whether the price of a service is above or below average</p> <p>Can interpret production figures presented in a diagram or a simple graph</p>	<p>Numbers Can use simple programmes for mathematics exercises</p> <p>Can calculate the reduced price when the reduction is given in percentages</p> <p>Measurement Can name appropriate measuring units</p> <p>Can suggest size in relation to a reference unit, e.g. the height of a wall in relation to the height of a person</p> <p>Statistics Can interpret graphic data related to for example the nutritional value of various foods</p> <p>Can calculate the average of a simple numerical material</p>

Level 3 Examples

In private and social life	In working life	In education and training
<p>Numbers Can independently find and choose the provider of mobile phone services that will prove cheapest for the individual user</p> <p>Can calculate by what percentage the price of a product has been reduced</p> <p>Measurement Can assess the nutritional value and energy content of a meal</p> <p>Can adapt a recipe to the appropriate number of portions</p> <p>Statistics Can interpret public data regarding for example health, unemployment, crime and education</p> <p>Can, by using tables, assess the paying back of a mortgage or loan when time and interest rate are taken into account</p>	<p>Numbers Can work out weekly wages on the basis of hourly pay</p> <p>Can write reports that contain numerical information and simple graphs of for example sales and production figures</p> <p>Can make cost assessments of large-scale purchases</p> <p>Measurement Can use proportions when mixing detergents etc</p> <p>Can use mathematical skills in connection with cleaning work</p> <p>Can make a working sketch by using a relative scale</p> <p>Statistics Can calculate purchases on the basis of an inventory</p> <p>Can present accounts by means of spreadsheets</p> <p>Can collect relevant data from an appropriate database</p>	<p>Numbers Can assess accuracy when using a calculator</p> <p>Can use a calculator to do fractions and decimals</p> <p>Can use a percentage factor to calculate the growth of a population over a certain period of time</p> <p>Measurement Can understand coordinates, distance and area on a map</p> <p>Can use a scale and can make a working sketch</p> <p>Can calculate the average speed when time and distance are known</p> <p>Statistics Can calculate the average of a simple numerical material</p> <p>Can present collected data in diagrams</p> <p>Can process collected data in a spreadsheet or a database and present the outcome to fellow pupils/students</p>

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