

## A. MATHEMATICAL LITERACY

### A. FINANCE

TERM	DEFINITION
Account	A record of income and expenditure.
Balance	This is the difference between debits and credits.
Bank statement	The details of all the transactions made from one bank account in a given time period.
Break-even point	Break-even point is where the business is at an activity level (doing business) at which total cost = total sales, i.e. you have made enough income to cover the costs. At the break-even point you are making neither a profit nor a loss; from that point on you will be making a profit with each sale (until new costs are incurred).
Budget	A plan of how to spend money. An estimate of income and expenditure.
Bursary	A sum of money given to you by an organisation for the purpose of covering your study costs.
Capital	Money that is owned by someone for the purposes of investing or lending.
Commission	The sum of money paid to an agent (usually a salesperson) that is a percentage of the total value of goods sold by the agent.
Compound interest	Interest charged on an amount due, but including interest charges to date.
Consumption rate	The rate at which a commodity, such as water, electricity or fuel, is consumed.
Cost-effective	Best value for money.
Cost price	This is the amount that it costs per unit to either manufacture, purchase the item or to prepare for a service that will be delivered. This amount is pure cost, no mark up or profit added yet.
Cost rate	The price of a product per mass, volume, length or time unit.
Credit	This is an entry in an account showing a payment made to the account.
Credit balance	The amount in the account is your own.

Credit card	A credit card is a service bank's offer to allow you to buy goods and pay for them at the end of the month.
Credit limit	The maximum amount you can spend on your credit card.
Debit	When someone or an organisation takes money out of your account. An entry in an account showing a payment made from an account.
Debit balance	The amount that you owe the bank for transactions made with borrowing money.
Debit order	It is an arrangement giving permission to a third party to withdraw money from a bank account on a regular basis.
Deposit	Payment made into a bank account.
Disposable income	Income that is left over after all payments have been made.
Exchange rate	The value of one currency in terms of the value of another currency.
Expenditure	How much money has been used on something.
Fine print	The legal terms and conditions applicable to a transaction or account.
Fixed deposit	A single deposit invested for a fixed period at a fixed interest rate.
Fixed expenses	These are amounts that are the same every month like rent, school fees and transport costs.
Fund	A source of money.
Gross Income	The total amount of all an individual's income before deductions.
Hire purchase	Goods and products such as furniture can be purchased through a longer term lease or hire agreement (hire purchase), insurance is usually also added, until it is paid off.
Inflation	That prices increase over time; that the value of money decreases over time. Increase in the price of a basket of goods or services that is representative of the economy as a whole.
Interest	Money paid regularly at a particular rate for the use or loan of money. It can be paid by a finance organisation or bank to you (in case of savings), or it may be payable by you to a finance organisation on money you borrowed from the organisation.
Interest rate value	This is the % rate of interest that will be charged on your loan amount, i.e. a percentage value of the original loan amount.

Interest value	This is the actual rand value amount of interest that will be added to your loan.
Invest	To put money into an organisation or bank (e.g. in buying shares) so as to gain interest on the amount at a higher rate.
Investment	Something in which you have invested money.
Invoice	A comprehensive document that details all the work done or items sold, and what costs are due.
Lay-bye	Mostly clothes and linen – lay-bye is a form of credit where the buyer pays a deposit and pays the rest off in instalments while the shop keeps the item(s) until it has been paid off.
Loan	A loan is an agreed sum of money that is lent by a bank or moneylender (e.g. personal loan or home loan).
Luxury item or service	An item or service that is not essential for daily life, but which makes life easier or more convenient.
Net Pay	The amount an employee “takes home’ after income tax has been deducted.
Overdraft	An overdraft is an arrangement with the bank allowing you to draw more money than there is in your account.
PAYE	(abbr.) Pay as you earn, tax taken off your earnings by your employer and sent to the South African Revenue Service before you are paid.
Remittance slip	A piece of paper that accompanies a payment and contains the most important details of the transaction.
Salary	An amount of money paid for the year’s work. (This is normally paid monthly.)
Selling price	This is the price that something is offered for sale.
Simple interest	Interest charged on the original amount due only, resulting in the same fee every time.
Statement	A summary of transactions (debits and credits, or payments and receipts) made on an account.
Tariff	A charge rate for a service rendered, e.g. import duties, water consumption cost, etc.
Tax	A compulsory levy imposed on citizen’s earnings or purchases to fund the activities of government.

Taxable	A service, purchase or item or earning that has tax applied to it.
Tax invoice	Printed record of what was bought, what it cost, what was taxable, the tax amount, method of payment, amount tendered and change, if any.
Trillion	One million million (a one followed by twelve zeros).
UIF	(abbr.) Unemployment Insurance Fund. A government-run insurance fund which employers and employees contribute to, so that when employees are retrenched they can still collect some earnings.
Variable Expenses	Expenses that change over time or from one week/month to the next. These are things that you usually pay or buy each month, but the amount changes – things like telephone and electricity costs.
VAT	Value Added Tax (VAT) is a tax that is levied at 14% (currently in South Africa) on most goods and services, also on the importation of goods and services into South Africa.
VAT exclusive price	Price before adding VAT.
VAT inclusive price	Price after adding VAT.
Wages	A wage is an amount of money paid to an employee normally based on a fixed number of hours worked per week.
Withdrawal	Money taken from a bank account.
Zero Rated VAT items	These are goods that are exempt from VAT. When you buy groceries that are basic foodstuffs, e.g. brown bread, milk, maize meal, samp, rice, etc., they are zero-rated in South Africa.

## B. MEASUREMENT

TERM / CONCEPT	DEFINITION/ EXPLANATION
Analogue	An analogue measuring instrument, such as an analogue clock or scale, displays values by the position of a needle or hands on a dial
Approximating Approximation	To round a value to the nearest convenient value A stated value of a number that is close to the true value of that number

Area	The amount of two-dimensional (2-D) space occupied by a 2-D shape  Area of a shape is the size of its surface. It is measured in square units.
2-D drawings	A diagram or picture having length and width only
2-dimensional plans	A plan or design having length and width only, but possibly representing three dimensional objects
3- dimensional models	A dimensional construction of a real-life object. It is a solid, it has length, breath/ width and height
Body mass index (BMI)	A number calculated from an adult's weight and height, expressed in units of $\text{kg}/\text{m}^2$
Bearing	Direction
Bisect	To cut or divide into two identical parts
Calculate	Work out
Capacity	The amount of space available to hold something OR  Measure of the volume a hollow object can hold. Usually measured in litres
Circle	A closed curve that is everywhere at the same distance from a fixed point
Circumference	Distance around a circle / perimeter of a circle
Context	A real life situation
Conversion	A change from one system / unit to another
Conversion factor	Values used to convert/ change quantities from one measuring system to another.
Cylinder	Three dimensional object with congruent parallel circles s bases that are joined by a curved surface
Degrees Celsius	Units in which temperature is measured in most countries.
Diameter	A straight line passing through the centre of a circle and touching the circle at both ends thus dividing the circle into two equal halves.

Digital	A digital measuring instrument , such as a digital clock or scale, displaying values by means of numbers or digits
Distance	How far it is from one place to another, e.g. from one town to another.  Usually measured in kilometres, and does not have to be in a straight line.
Elapsed time	Time that has passed since the start of an event.
Estimate	To make an educated guess about what the answer of a calculation will be without actually calculating accurately, or what the value of a measurement e.g. length will be without actually measuring.
Express	Write as
Grid	A network of parallel and perpendicular lines that form rectangles.
Growth charts	Graphs consisting of a series of percentile curves that show the distribution of growth measurements of children
Hexagon	A polygon with six sides
Horizontal	In the x-axis, i.e. across the page in a left-right orientation; lying down
Hypotenuse	The side of a right angled triangle that is opposite the right angle.
Imperial System	A system of measurement using inches, pounds, feet, gallons, miles
Indigenous measurement	Traditional informal methods of measuring used by our ancestors.
Investigate	Examine; look into; study
Length	The measurement between two points, in a straight line, e.g. the length of a room
Literacy	The ability to read and write
Mass	An indication of how heavy an object is. Also known as weight
Measure	Using an instrument to determine size

Measuring	Determining the value of a quantity directly, e.g. reading the length of an object from a ruler or the mass of an object from a scale.
Metric System	A system of measurement that uses e.g. metres, litres, kilograms,
Modify	Change; adapt
Perimeter	The total distance around the boundary or edge that outlines a specific shape.
Perpendicular	Two lines that cross each other at right angles
Pi	The value obtained when dividing the circumference of the circle by its diameter.
Polygon	A two dimensional shape enclosed by three or more straight sides.
Prism	A three dimensional object, such as a cylinder with two identical faces at opposite ends. There are triangular, rectangular and circular prisms.
Quadrilateral	A polygon with four sides
Radius	The distance from the centre of the circle to any point on the circumference of the circle
Regions	Specific areas
Result	Something that follows from an action
Revolution	360° turn
Rotation	A transformation under which a point or shape is turned around a fixed point
Rounding off	To decide to cut off a number at a certain digit to minimise errors
Rule of thumb	A handy, generally accepted rule
Scale	An instrument that is used to measure the mass(weight) of an object
Spread rate	The conversion ratio for converting from area to liquid volume

Substitution	To replace a variable by a specific value
Surface area	The areas of all the faces/ surfaces of an object added together
Tide table	A timetable that shows the times when the level of the sea reaches high and low tide.
Travel timetable	A document showing transport arrival and departure times and destinations
Thermometer	An instrument used to measure temperature
Unit of measurement	A standard amount of a physical quantity
Undefined	Cannot be written down; division by zero
Vertical	The y axis; i.e. down a page in a top-bottom orientation; standing up
Vertex	Point or corner at which edges of a polygon meet.
Volume	The amount of 3-D space occupied by an object. It is measured in cubic units

### C. MAPS, PLANS AND OTHER REPRESENTATIONS OF THE PHYSICAL WORLD

TERMS	MEANING
2-D models	A diagram or picture having length and width only.
2-dimensional plans	A plan or design having length and width only, but possibly representing three dimensional objects.
3-D models	A dimensional construction of a real life objects
Bar scales	Presented as a picture, it means that if you placed a ruler next to this scale, you could determine how many centimetres represent the specified kilometres.
Compound bar graphs	Graphs that contain multiple bars for each category of data, with each bar representing a different component of each category of the data.

Elevation map	Information about the profile of a route as seen from the side.
Elevation plans	Show the design and dimensions of the outside of a building from a side view
Floor plans	Shows the design and dimensions of the inside of a building, from a top view.
Highway	A major road that links major cities
Line graphs	A diagram used to display data with a consistent trend
National road map	Shows major roads linking major cities to each other.
North elevation plan:	Shows the side of the building that is in front of you when you are facing the compass direction 'North'.
Number scale	A number scale such as 1:50 000 means that 1 unit on the map represent 50 000 units in real life.
Route map	Shows a specific route, for instance for an event, as seen from above
Scale	A diagram of a real life object drawn in proportion.
Scaled elevation plans	Show the design and dimensions of the outside of a building from a side view using a specific scale.
Street map	A map of a small area such as a town or city
Strip map	A map of a section of a travelling route.

#### D. DATA HANDLING

TERMS	MEANING
Bar graph	90° graph using bars to show frequencies (horizontal and vertical graph), the vertical heights of a set of bars of equal

	breath represent the values of the dependant variable in a data set.
Box-and-whisker plot	Diagram that statisticians use to show the distribution of data along a number line divided into quartiles.
Certain	Definitely going to happen e.g. getting heads or tails when tossing a coin is certain.
Classify	Identify the type or class.
Compound events	Two or more events that happen; e.g. tossing a coin and rolling a dice.
Contingency table	A two-way table representing the outcomes of an event.
Continuous data	Numerical data (measurements like weight or age)
Data	Information, series of observations, measurements, facts; collection and recording of information for statistical investigation.
Data collection sheet	Two-column table showing what is observed and how many times it was observed; items of information.
Discrete	Separate; distinct; opposite of continuous.
Discrete data	Numerical data (fixed numbers like size of family); data that can have only certain values (quantities that can be counted, usually whole numbers)
Equivalent	Quantities that have the same value.
Estimate	Roughly work out; roughly calculate.
Even	Chances of any outcome happening are equal; if a normal six-sided dice is rolled, the chance that any one of the numbers 1,2,3,4,5 or 6 could show is the same.
Event	An activity e.g. rolling a single dice.
Fifty-fifty (even) outcome	Chances of something happening or not happening are the same.
Frequency (f)	Number of times a data value is recorded.
Frequency table	Table showing frequencies in organised form; table summarising the frequencies of all the data values in a data set.

Group	Put into classes, sort, arrange, organise.
Histogram	90° graph using adjacent bars to show frequencies of either continuous numerical data or discrete numerical data with many different values; areas of rectangles (continues; no gaps between them) show frequency of classes of data (breadth 5 class; height 5 frequency)
Horizontal bar graph	90° bar graph using horizontal bars to compare or rank items like household sizes in a block of flats.
Impossible outcome	No chance of the outcome happening e.g. getting a 7 with an ordinary six-sided dice.
Interview	Record data by talking to someone face to face or over the telephone.
Investigate	Examine; look into; study.
Likely/likelihood	Chance of something happening is greater than the chance of it not happening.
Mean	Average of the values in a data set; 5 sum of all the observed values divided by the number of observations.
Mean [of a set of data]	Average; sum of all data values divided by the number of data values.
Measures of central tendency	Numbers that tell more about the balance (middle values) in a data set (mode; median; mean)
Measures of spread	Numbers that tell how far data values in a data set lie apart; spread of numerical data set (range, quartiles, percentiles)
Median	Middle value in an ordered data set.
Median [of a set of data]	Value that cuts an ordered data set in half.
Mode	Value or values appearing most often in a data set.
Mode of a set of data	Most common data value in a data set.
Notation	System of figures/symbols to represent numbers, quantities or values.
Observation	Recording of data by watching someone or something closely.
Outcome	Result of a trial (experiment)

Outcome [fair]	All outcomes are equally likely to occur.
Outliers	Data value that lies an abnormal distance from the other data values in the data set.
Population	Entire source of data involved in an investigation; all the subjects included in a study or survey in order to draw conclusions about that population as a whole.
Possible outcome	The chance that the event will happen or occur.
Prediction	Statement describing the chance of an outcome to happen based on given information.
Probability [mathematical]	results of trial or experiment expressed as a fraction: number of favourable outcomes divided by number of all possible outcomes.
Probability [of an outcome]	likelihood of a particular outcome occurring, expressed as a number between zero and one.
Quartiles	The values that divide a list of numbers into four equal parts
Questionnaire	List of questions that can be used to collect data.
Range [of a data set]	Difference between the highest and lowest values in a data set.
Related [data sets]	Linked; connected.
Represent[data]	Draw; graph
Representative sample	Sample likely to give results similar to those obtained from studying the whole population.
Sample	Subset (small group) chosen from the population to represent the population.
Sampling	Choosing a representative sample
Sort	Put, organise into categories.
Survey	Collect data from a group of people or objects.
Survey [biased]	Survey containing factors that produce answers that do not represent a truthful picture of the situation.
Tree diagram	Diagram using branches to display all the outcomes of a series of trials

Two-way table	A contingency table representing all possible outcomes of two trials taking place together.
Unlikely	Chance of something happening is less than the chance of it not happening.
Variable	A quantity that can take different values in a situation.
Vertical bar graph	90° bar graph using vertical bars to show change over time at discrete times like absentees per day for three weeks.
Very likely	Chance of something happening is much greater than chance of it not happening.
Very unlikely	Chance of something not happening is much greater than the chance of it happening.

## Mathematical Literacy Formula Sheet

<i>Topic:</i>	<i>Unit:</i>	<i>Formula / Rule:</i>
<i>Finance</i>	<i>VAT</i>	<ul style="list-style-type: none"> <li>• Vat is 15%</li> </ul>
		<ul style="list-style-type: none"> <li>• VAT – Inclusive to VAT – Exclusive → VAT – inclusive price ÷ 1,5</li> <li>OR If an amount includes VAT, it is 115% of the amount</li> </ul>
		<ul style="list-style-type: none"> <li>• VAT Exclusive to VAT – Inclusive → VAT Exclusive price × 1,15</li> <li>• If an amount excludes VAT, it is 100% of the amount</li> </ul>
		<ul style="list-style-type: none"> <li>• Calculate only VAT → × amount by 0,15</li> </ul>

<i>Finance</i>	<i>Income, Expenditure, Profit , Loss, Cost-price, Selling price</i>	<ul style="list-style-type: none"> <li>• Profit or loss = Income – Expenses</li> </ul>
		<ul style="list-style-type: none"> <li>• <math>\% \text{ Profit} = \frac{\text{Profit}}{\text{Cost Price}} \times 100</math></li> </ul>
		<ul style="list-style-type: none"> <li>• <math>\% \text{ discount} = \frac{\%}{100} \times \text{Selling Price}</math></li> </ul>
		<ul style="list-style-type: none"> <li>• Profit or Loss = Selling Price – Cost Price</li> </ul>
		<ul style="list-style-type: none"> <li>• Planned Profit = Planned Income – Planned expenses</li> </ul>
		<ul style="list-style-type: none"> <li>• Actual Profit = Actual Income – Actual Expenses</li> </ul>
		<ul style="list-style-type: none"> <li>• Selling Price = Cost Price + Mark Up</li> </ul>
		<ul style="list-style-type: none"> <li>• <math>\text{Mark – up}\% = \frac{\text{Selling Price – Cost Price}}{\text{Cost Price}} \times 100</math></li> </ul>
		<ul style="list-style-type: none"> <li>• <math>\text{Cost per item} = \frac{\text{Total amount paid}}{\text{Number of items}}</math></li> </ul>
		<ul style="list-style-type: none"> <li>• Break – even Point → Cost = Income</li> </ul>
<ul style="list-style-type: none"> <li>• <math>\% \text{ Increase} = \frac{\text{New Price – Original Price}}{\text{Original Price}} \times 100</math></li> </ul>		

<i>Finance</i>	<i>Interest and</i>	<ul style="list-style-type: none"> <li>• Compound and simple interest must be done the same way → do calculations for each year but start every new year with the previous year's</li> </ul>
----------------	---------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

	<i>Loans</i>	total amount and calculate interest on larger amount eg. Total amount previous year end × % interest) + Total amount previous year end
		• Simple interest = Principle amount × interest rate × no of years)
		• Total amount = principle amount + interest
		• To calculate value of interest → Final amount – principle amount
		• Interest half yearly = interest ÷ 2
		• Quaterly interst = Interest ÷ 4
		• Monthly Interest = interest ÷ 12
		• Monthly Installments = Total amount ÷ no of months
		• Real cost = monthly payment × no of payments

<i>Finance</i>	<i>Taxes</i>	• UIF → 1% of gross salary
		• Taxable Income = Gross Income – Taxable deductions
		• Nett income = Gross Income – ALL deductions on salary slip

<i>Finance</i>	<i>Exchange Rates</i>	• Rand to other currency → ÷ exchange rate
		• Other currency to Rand → × exchange rate

<i>Finance</i>	<i>Line Graphs</i>	• How to find the formula, eg copier C = fixed fee + no of copies × price per copy
		• Less than a certain amount of copies: C = Fixed fee (if indicated)
		• More than a certain amount of copies: C = Fixed fee + (n – certain amount of copies × price per copy)

<i>Rates and Proportions</i>		• per means ÷ → can make up own formula eg. $\frac{\text{Rand}}{\text{kg}} = \text{money (R)} \div \text{mass (kg)}$
		• Fuel consumption eg. $\frac{13 \text{ litres}}{\text{km}} \rightarrow$ use direct proportion: 13L 1km ? 60km ∴ $13 \div 1 \times 60 =$

<i>Measurements or conversion</i>	<i>Temperature</i>	• From °F to °C → $^{\circ}\text{C} = (^{\circ}\text{F} - 32^{\circ}) \div 1,8^{\circ}$
		• From °C to °F → $^{\circ}\text{F} = (1,8^{\circ} \times ^{\circ}\text{C}) + 32^{\circ}$

<i>Data</i>		• $\text{Average \%} = \frac{\text{Total}}{\text{Total number}} \times 100$
		• Range = Largest data value – smallest data value
		• Mode = Most common data value in ordered set of data
		• Median = Cuts ordered set of data in half
		• Mean = Add all data values and divide by number of data values
		• Outlier = data value that lies an abnormal distance from the other data values
		• Inter quartile range (IQR) = $Q3 - Q1$

<i>Maps and Scale</i>		• To find actual length or distance = measurement in mm $\times$ scale
-----------------------	--	------------------------------------------------------------------------

<i>Probability</i>		• $\frac{\text{No of favourable outcomes}}{\text{No of possible outcomes}}$
--------------------	--	-----------------------------------------------------------------------------

<i>Area</i>	<i>Square</i>	• Length $\times$ Breadth
	<i>Rectangle</i>	• Length $\times$ Breadth
	<i>Triangle</i>	• $\frac{1}{2} \times \text{base} \times \text{height}$
	<i>Circle</i>	• $\pi \times r^2$
		• Half circle $\div 2$
• $\frac{1}{4}$ circle $\div 4$		

<i>Perimeter</i>	<i>Square</i>	• $4 \times \text{side}$
	<i>Rectangle</i>	• $2(L + B)$
	<i>Triangle</i>	• Side + Side + Side
	<i>Circle</i>	• $2 \times \pi \times r$
		• Half circle $\div 2$
• $\frac{1}{4}$ circle $\div 4$		

<i>Volume</i>	<i>Square</i>	• Length $\times$ Breadth $\times$ Height
	<i>Rectangle</i>	• Length $\times$ Breadth $\times$ Height
	<i>Triangle</i>	• $\left(\frac{1}{2} \times \text{base} \times \text{Height}\right) \times \text{Height of prism}$
	<i>Circle</i>	• $(\pi \times r^2) \times \text{Height of prism}$

<i>Surface area</i>	<i>Square</i>	• $(2 \times \text{length} \times \text{breadth}) + (2 \times \text{length} \times \text{height}) + (2 \times \text{breadth} \times \text{height})$
	<i>Rectangle</i>	• $(2 \times \text{length} \times \text{breadth}) + (2 \times \text{length} \times \text{height}) + (2 \times \text{breadth} \times \text{height})$
	<i>Triangle</i>	• $2 \left( \frac{1}{2} \times \text{basis} \times \text{height} \right) + (s + s + s) \times \text{height of prism}$
	<i>Circle</i>	• $(2 \times \pi \times r^2) + (2 \times \pi \times r) \times \text{height of prism}$
	<i>Buying Point</i>	• $\frac{\text{Total wall area} - \text{area of windows, doors, cupboards}}{\text{m}^2/\text{l wall coverage}}$