



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

ANNUAL NATIONAL ASSESSMENT 2015
ASSESSMENT GUIDELINES
MATHEMATICS
GRADE 6

INTRODUCTION

The 2015 cycle of Annual National Assessment (ANA 2015) will be administered in all public and designated¹ independent schools in September 2015. During this period all learners in Grades 4 - 6 will write nationally set tests in Language and Mathematics. The results will be used to report progress related to achieving the goals set in the *Action Plan 2014, Towards Schooling 2025*.

The ANA tests will be written during the third school term and therefore the Department of Basic Education (DBE) has developed Assessment Guideline documents provided for each grade and subject (Language and Mathematics) that outline the minimum curriculum content that must be covered by all learners prior to the writing of the test. The Assessment Guidelines set the limits of the scope of work that will be covered in the test for each grade and subject. The ANA 2015 Assessment Guidelines have been designed in line with the Curriculum and Assessment Policy Statement (CAPS).

INTERMEDIATE PHASE: Grade 6

In Grade 6, the test will cover work that is prescribed for the **first three terms** of the school year. It is important to note that the ANA 2015 Assessment Guidelines do not imply that the delimited scope is all that must be taught and learnt during the school year. Instead, the Assessment Guidelines provide the basic minimum curriculum that must have been covered by the end of the third school term. There will only be one non-routine question in the paper.

For this grade the Assessment Guidelines are arranged in three columns. The content area to be assessed is specified in the first column, the specific skills/competencies to be assessed are listed in the second column and the assessment techniques are indicated in the third column.

Teachers are expected to use these Guidelines together with the CAPS to ensure that all the topics that will be assessed have been covered.

¹ “Designated” independent schools are those that will apply and register either their Grade 3 or Grade 6 learners to participate in ANA for purposes of securing State subsidy.

CONTENT AREA	TOPICS	CONCEPTS AND SKILLS
NUMBERS, OPERATIONS AND RELATIONSHIPS	Whole numbers Counting, ordering, comparing, representing and place value	<ul style="list-style-type: none"> • Order, compare and represent numbers to at least 9-digit numbers • Represent prime numbers to at least 100 • Round off to the nearest 5, 10, 100, 1 000, 100 000, and 1 000 000
	Addition and subtraction Multiplication and Division	<ul style="list-style-type: none"> • Addition and subtraction of whole numbers of at least 6 digits • Multiplication of at least whole 4-digit by 3-digit numbers • Division of at least whole 4-digit by 3-digit numbers • Multiple operations on whole numbers with or without brackets
		<ul style="list-style-type: none"> • Multiples of 2-digit and 3-digit numbers • Factors of 2-digit and 3-digit whole numbers • Prime factors of numbers to at least 100
		Properties of whole numbers <ul style="list-style-type: none"> • Recognize and use the commutative, associative, distributive properties of whole numbers • 0 in terms of its additive property • 1 in terms of its multiplicative property
		<ul style="list-style-type: none"> • Solve problems involving whole numbers and decimal fractions, including <ul style="list-style-type: none"> -- financial contexts -- measurement contexts • Solve problems involving whole numbers, including <ul style="list-style-type: none"> -- comparing two or more quantities of the same kind (ratio) -- comparing two quantities of different kinds (rate) -- grouping and equal sharing with remainders
		<ul style="list-style-type: none"> • Addition and subtraction of mixed numbers • Fractions of whole numbers
	Percentages	<ul style="list-style-type: none"> • Find percentages of whole numbers
	NUMBERS, OPERATIONS AND RELATIONSHIPS	Decimal fractions
		<ul style="list-style-type: none"> • Addition and subtraction of decimal fractions with at least two decimal places
		<ul style="list-style-type: none"> • Solve problems in context involving decimal fractions

CONTENT AREA	TOPICS	CONCEPTS AND SKILLS
	Numeric patterns	<ul style="list-style-type: none"> • Investigate and extend numeric patterns looking for relationships or rules of patterns: <ul style="list-style-type: none"> -- sequences not limited to a constant difference or ratio -- represented in tables
		<ul style="list-style-type: none"> • Determine input values, output values and rules for the patterns and relationships using: <ul style="list-style-type: none"> -- flow diagrams -- tables

CONTENT AREA	TOPICS	CONCEPTS AND SKILLS
	Geometric patterns	<ul style="list-style-type: none"> • Investigate and extend geometric patterns looking for relationships or rules of patterns -- represented in physical or diagram form -- represented in tables
		Determine input values, output values and rules for the patterns and relationships using <ul style="list-style-type: none"> • flow diagrams • tables
	Number sentences	<ul style="list-style-type: none"> • Solve and complete number sentences by -- inspection -- trial and improvement • Check solution by substitution
	Properties of 2-D Shapes	<ul style="list-style-type: none"> • Recognize, visualize and name 2-D shapes in the environment and geometric settings, focusing on -- regular and irregular polygons - triangles, squares, rectangles, parallelograms, other quadrilaterals, pentagons, hexagons, heptagons, octagons -- similarities and differences between rectangles and parallelograms
		<ul style="list-style-type: none"> • Describe, sort and compare 2-D shapes in terms of -- number of sides -- lengths of sides -- sizes of angles ◊ acute ◊ obtuse ◊ reflex ◊ right ◊ straight ◊ revolution
	Angles	<ul style="list-style-type: none"> • Recognize and name the following angles in 2-D shapes: -- acute -- obtuse -- reflex -- right -- straight -- revolution
	Properties of 3-D objects.	<ul style="list-style-type: none"> • Recognize, visualize and name 3-D objects in the environment and geometric settings, focusing on -- rectangular prisms -- pyramids

CONTENT AREA	TOPICS	CONCEPTS AND SKILLS
SPACE AND SHAPE (GEOMETRY)		<ul style="list-style-type: none"> • Describe, sort and compare 3-D objects in terms of -- number and shape of faces -- number of vertices -- number of edges
	Symmetry	Recognize, draw and describe line(s) of symmetry in 2-D shapes
	Viewing of objects	Position and views Links the position of viewer to views of: <ul style="list-style-type: none"> • single everyday objects or collections of objects • single or composite geometric objects

CONTENT AREA	TOPICS	CONCEPTS AND SKILLS
	Length	millimetres (mm), centimetres (cm), metres (m), kilometres (km) Practical measuring of 2-D shapes and 3-D objects by <ul style="list-style-type: none"> • estimating • measuring • recording • comparing and ordering
		Measuring instruments: rulers, metre sticks, tape measures, trundle wheels Calculations and problem-solving involving length <ul style="list-style-type: none"> • Solve problems in contexts involving length • Conversions include converting between any of the following units: <ul style="list-style-type: none"> -- millimetres (mm) -- centimetres (cm) -- metres (m) -- kilometres (km) • Conversions should include common fraction and decimal fractions to 2 decimal places
	Mass	Mass grams (g) and kilograms (kg); Practical measuring of 3-D objects by <ul style="list-style-type: none"> • estimating • measuring • recording • comparing and ordering
		Measuring instruments: bathroom scales (analogue and digital); , kitchen scales (analogue and digital) and balances
		Calculations and problem-solving involving mass include: <ul style="list-style-type: none"> • problems in contexts involving mass • converting between grams and kilograms • conversions should include fraction and decimal forms (to 2 decimal places)

CONTENT AREA	TOPICS	CONCEPTS AND SKILLS
	Capacity/Volume	<p>Capacity/Volume millilitres (<i>ml</i>), litres (<i>l</i>) and kilolitres (<i>kl</i>) Practical measuring of 3-D objects by</p> <ul style="list-style-type: none"> • estimating • measuring • recording • comparing and ordering
		<p>Measuring instruments: measuring jugs</p> <p>Calculations and problem solving involving capacity/volume include:</p> <ul style="list-style-type: none"> • problems in contexts involving capacity/volume • converting between kilolitres, litres and millilitres - conversions should include fraction and decimal forms (to 2 decimal places)
	Time	<p>Reading time and time instruments</p> <ul style="list-style-type: none"> • Read, tell and write time in 12-hour and 24-hour formats on both analogue and digital instruments in <ul style="list-style-type: none"> -- hours -- minutes -- seconds • Instruments include clocks, watches and stopwatches
		<p>Calculations and problem solving time include</p> <ul style="list-style-type: none"> • problems in contexts involving time • reading time zone maps and calculating time differences based on time zones • calculation of time intervals where time is given in <ul style="list-style-type: none"> -- seconds and/or minutes -- minutes and/or hours -- hours and/or days -- days, weeks and/or months -- years and/or decades -- centuries, decades and/or years

CONTENT AREA	TOPICS	CONCEPTS AND SKILLS
	Temperature	Temperature degrees Celsius Practical measuring of temperature by <ul style="list-style-type: none"> • estimating • measuring • recording • comparing and ordering
		Measuring instruments: <ul style="list-style-type: none"> • thermometers (analogue and digital) Calculations and problem-solving related to temperature include: <ul style="list-style-type: none"> • problems in contexts related to temperatures • calculating temperature differences limited to positive whole numbers

CONTENT AREA	TOPICS	CONCEPTS AND SKILLS
DATA HANDELING	Collecting and organising data	<ul style="list-style-type: none"> • Collect data -- using tally marks and tables for recording -- using simple questionnaires (yes/no type response) • Order data from smallest group to largest group
	Interpreting data	Critically read and interpret data represented in <ul style="list-style-type: none"> • words • pictographs • bar graphs • double bar graphs • pie charts
	Analysing data	Analyse data by answering questions related to: <ul style="list-style-type: none"> • data categories, including data intervals • data sources and contexts • central tendencies – (mode and median)
	Ungrouped data	Examine ungrouped numerical data to determine <ul style="list-style-type: none"> • the most frequently occurring score in the data set (mode) • the middlemost score in the data set (median)