

Mathematics

Navigation pack

**SENIOR PHASE
GRADE 7**

Platinum



**X-kit
Achieve!**



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Mathematics Grade 7 Navigation Pack

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Dear Teacher

The National State of Disaster due to the COVID-19 pandemic has resulted in the disruption of Education in South Africa and the loss of valuable teaching time and disruption of the school calendar.

As a result of this, the DBE has created and released revised Annual Teaching Plans (ATPs) to assist schools and teachers in ensuring the 2021 school year is completed. The 2021 ATPs are based on the revised ATPs that were developed in 2020. It is important to note that fundamental and core topics are retained in the 2021 ATPs. Some of the strategies that have been used in the process of developing the 2021 DBE ATPs are:

- reduction of content covered in certain topics
- merging of topics
- deleting topics
- revising the assessment guidelines
- reduction in teaching time for certain topics
- resequencing of topics/concepts

At Pearson South Africa, we believe that education is the key to every individuals' success. To ensure that despite the challenges, teachers and learners can meet all the necessary learning outcomes for the year, we have created the Navigation Guide, a free resource to support teachers and learners during this challenging time.

The Navigation Pack aims to summarise and highlight the changes in the 2021 DBE ATP and provide teachers and learners with worksheets that focus on impacted topics in the curriculum.

Due to resequencing of topics, the order of topics in the textbook that is currently used in the classroom may not be aligned to the new sequence of topics in the ATP. The Navigation Pack has a set of assessments based on the Section 4 changes and the revised assessment guidelines.

COVID-19 safety guidelines for teachers and learners

Gatherings at school

Where schools are open for learning, it is up to management to take decisive action to ensure sites are not simultaneously used for other functions such as shelters or treatment units in order to reduce the risk.

Implement social distancing practices that may include:



- A staggered timetable, where teachers and learners do not arrive/leave at the same time for the beginning and end of the school day.
- Cancelling any community meetings/events such as assemblies, cake sales, market day, tuckshop, after-care classes, matric dance, Eisteddfod and other events.
- Cancelling any extra-mural activities such as ballet classes, swimming lessons, sport games, music class and other events that create a crowd gathering.
- Teaching and modeling creating space and avoiding unnecessary touching.
- Limiting movement and interaction between classes.
- Schools with an established feeding scheme plan are to ensure that hygiene and social distancing is always implemented. Teachers and staff members assisting with food distribution are to wear masks, sanitise prior to issuing food items and learners are to stand 1,5m apart in the queue.

Wear a mask at all times.



1. Restrooms/toilets

Hand washing

Washing hands with soap and water  or using alcohol-based hand sanitisers  is one of the most important ways to help everybody stay healthy at school. Critical to this is preparing and maintaining handwashing stations with soap and water at the toilet and in each classroom.



Teachers and learners should always wash their hands after:

- eating
- entering the classroom
- using the toilet
- blowing your nose or coughing
- touching tears, mucous, saliva, blood or sweat.

2. Premises and classroom setting

When schools open, classroom settings should be altered in order to promote hygiene, safety and social distancing.

Changed classroom settings may include:

- Cleaning and disinfecting school buildings, classrooms and especially sanitation of facilities at least once a day, particularly surfaces that are touched by many people (railings, lunch tables, sports equipment, door and window handles, toys, teaching and learning tools etc.).
- Ensure the proper ventilation and fresh flow of air through classrooms.
- Providing learners with vital information about how to protect themselves by incorporating the importance of hygiene, handwashing and other measures of protecting themselves, into the lessons.
- Promoting best handwashing and hygiene practices and providing hygiene supplies.

- Prepare and maintain handwashing stations with soap and water, and if possible, place alcohol-based hand sanitisers in each classroom, at entrances and exits, and near lunchrooms and toilets.



- Ensure teachers and learners wear a mask at all times.



Social distancing

- Space the learners out in the classroom (or outdoors) – try to keep learners separated by a minimum of 1,5m.

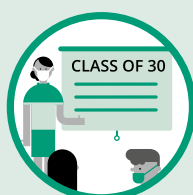


- Create space for learner's desks to be at least 1,5m apart

- Learners should not share cups, eating utensils, or food

- Do not let learners eat items that fall on the floor or chew on pencils or other objects

- Learners are not to exceed 30 per class or 50% of original class size



- Avoid close contact, like shaking hands, hugging or kissing



3. Social behaviour

It is extremely vital during a pandemic that focus is not only directed towards optimal physical health and hygiene but finding ways to facilitate mental health support.

- Treat everybody with respect and empathy – no teasing about COVID-19.
- Encourage kindness towards each other and avoid any stereotyping when talking about the virus.
- Stay home if you have a temperature or are ill.
- Do not touch people who are ill, but be empathetic.

Wear a mask at all times.




How to use this Navigation Pack

Revised DBE Teaching Plan:

Comprehensive summary of the CAPS topics according to the revised ATPs.

Navigation Plan: Link to the resources in the Navigation Pack.

REVISED DBE ANNUAL TEACHING PLAN				NAVIGATION PLAN	
TOPIC	UNITS	CONTENT SPECIFIC CONCEPTS	TIME	LINKS TO PEARSON NAVIGATION PACK	PAGE REFERENCE
NUMERIC AND GEOMETRIC PATTERNS	Investigate and extend patterns	Investigate and extend numeric and geometric patterns, looking for relationships between numbers, including patterns: <ul style="list-style-type: none"> represented in physical or diagram form not limited to sequences involving a constant difference or ratio of learner's own creation represented in tables Describe and justify the general rules for observed relationships between numbers in own words	9 hours		
FUNCTIONS AND RELATIONSHIPS	Input and output values	Determine input values, output values or rules for patterns and relationships using: <ul style="list-style-type: none"> flow diagrams tables formulae 	9 hours		
	Equivalent forms	Determine, interpret and justify equivalence of different descriptions of the same relationship or rule presented: <ul style="list-style-type: none"> verbally in flow diagrams in tables by formulae by number sentences 		Navigation Pack: Targeted Worksheet 1	Page 50
REVISION			3,5 hours		
ASSESSMENTS	Investigation ^{*4}		2 hours		
	Test: Paper 1 Test: paper 2		4,5 hours	Navigation Pack: Mid-year Test Paper 1: Exemplar Navigation Pack: Mid-year Test Paper 2: Exemplar	Pages 44–47 Pages 48–51
 TOTAL HOURS = 44					

^{*4} Investigation minimum marks 40

Assessments for the Term as per the revised ATPs and the Section 4 amendments.

Link to a targeted worksheet in the Navigation Pack, that focus on impacted or challenging topics in the curriculum.

Footnotes provide any additional information.

Link to an exemplar assessment in the Navigation Pack, that was created with Section 4 and curriculum changes in mind.

Navigation Guide

Mathematics Phase overview

GRADE	NO OF WEEKS	TOTAL TIME (HOURS)
7	42	174
8	33	132
9	42	175

TOPIC	Grade 7	Grade 7	Grade 9
WHOLE NUMBERS	Revision; calculation techniques; multiples and factors; solve problems	Revision; calculation techniques; multiples and factors; solve problems	Revision; properties of numbers; calculations using whole numbers; multiples and factors; solve problems
EXPONENTS	Mental calculations; comparing and representing numbers in exponential form; calculations using numbers in exponential form	Comparing and representing numbers in exponential form; calculations using numbers in exponential form; solve problems	Calculations using numbers in exponential form; Revise and extend to include integer exponents
INTEGERS	Counting; ordering and comparing integers; calculations with integers	Revise calculations with integers; properties of integers	Revise calculations with integers; revise properties of integers
COMMON FRACTIONS	Ordering; comparing and simplifying common fractions; calculations with fractions; calculation techniques; percentages; solve problems	Calculations with fractions; calculation techniques; percentage; solve problems	Removed as a stand-alone topic but to be incorporated into Expressions (Page 122 & 123 of CAPS)
DECIMAL FRACTIONS	Ordering and comparing decimal fractions	Calculations with decimal fractions; calculation techniques	Removed as a stand-alone topic but to be incorporated into Expressions (Page 122 & 123 of CAPS)
PATTERNS	Investigate and extend patterns	Revise, investigate and extend numeric and geometric patterns; investigate and extend numeric and geometric patterns; describe and justify the general rules for observed relationships between numbers in own words or in algebraic language	Investigate and extend numeric and geometric patterns; describe and justify the general rules for observed relationships between numbers in own words or in algebraic language

TOPIC	Grade 7	Grade 7	Grade 9
FUNCTIONS AND RELATIONSHIPS	Input and output values; equivalent forms	Input and output values; equivalent forms	Input and output values; equivalent forms
ALGEBRAIC EXPRESSIONS	Recognise and interpret rules or relationships represented in symbolic form; identify variables and constants in given formulae and equations	Algebraic language; expand and simplify algebraic expressions	Algebraic language; expand and simplify algebraic expressions; factorise algebraic expressions
ALGEBRAIC EQUATIONS	Number sentences	Equations	Revision, extend solving equations to include factorisation and equations of the form: a product of factors = 0
GRAPHS	Removed	Interpreting graphs; drawing graphs	Interpreting graphs; drawing graphs
CONSTRUCTION OF GEOMETRIC FIGURES	Measuring angles; constructions (Provide learners with accurately constructed figures); geometry of straight lines	Removed as a stand-alone topic and part of it has been incorporated into Geometry of 2D shapes	Removed as a stand-alone topic and part of it has been incorporated into Geometry of 2D shapes
GEOMETRY OF 2D SHAPES	Classifying 2D shapes (triangles; quadrilaterals); similar and congruent 2D shapes; solving problems	Classifying 2D shapes (Triangles; Quadrilaterals); constructions; investigating properties of geometric figures; solve problems; similar and congruent 2D shapes	Revise classifying 2D shapes (triangles; quadrilaterals); constructions
GEOMETRY OF 3D OBJECTS	Removed	Removed	Removed
GEOMETRY OF STRAIGHT LINES	Part of Construction of geometric figures	Angle relationships; Solving problems	Revise angle relationships; Solving problems
TRANSFORMATION GEOMETRY	Transformations; enlargements and reductions	Transformations	Transformations
THEOREM OF PYTHAGORAS	N/A	Develop and use the Theorem of Pythagoras	Use the Theorem of Pythagoras to solve problems involving unknown lengths in geometric figures that contain right-angled triangles

TOPIC	Grade 7	Grade 7	Grade 9
AREA AND PERIMETER OF 2D SHAPES	Area and perimeter; calculations and solving problems	Area and perimeter; calculations and solving problems	Use appropriate formulae and conversions between SI units to solve problems and calculate perimeter and area of polygons and circles
SURFACE AREA AND VOLUME OF 3D OBJECTS	Surface are and volume; calculations and solving problems	Removed	Use appropriate formulae and conversions between SI units to solve problems and calculate the surface area, volume and capacity of rectangular prisms; triangular prisms and cylinders
DATA HANDLING	Collect data (provide learners with data to save time); Organise and summarise data; Represent data; Interpret data; Analyse data; Report data	Removed	Removed
PROBABILITY	Removed	Removed	

Term 1

REVISED DBE ANNUAL TEACHING PLAN				NAVIGATION PLAN	
TOPIC	UNITS	CONTENT SPECIFIC CONCEPTS	TIME	LINKS TO PEARSON NAVIGATION PACK	PAGE REFERENCE
REVISION			2,5 hours		
WHOLE NUMBERS* ¹	Revision	Ordering and comparing whole numbers	13,5 hours		
		Properties of operations with whole numbers			
		Calculations using all operations with whole numbers			
	Calculation techniques	Use a range of strategies to perform and check written and mental calculations of whole numbers including: <ul style="list-style-type: none"> • Long division • Adding, subtracting and multiplying in columns • Estimation • Rounding off and compensating • Using a calculator 			
EXPONENTS	Multiples and factors	List prime factors of numbers to at least 3-digit whole numbers Find the LCM and HCF of whole numbers by inspection or factorisation	4,5 hours		
	Solving problems	Solve problems involving whole numbers, including: <ul style="list-style-type: none"> • comparing of two or more quantities of the same kind (ratio) • comparing two quantities of different kinds (rate) • sharing in a given ratio where the whole is given 			
	Mental calculations	<ul style="list-style-type: none"> • Determine squares to at least 12^2 and their square roots • Determine cubes to at least 6^3 and their cube roots 			
	Comparing and representing numbers in exponential form	Compare and represent whole numbers in exponential form: $a^b = a \times a \times \dots$ for b number of factors			
	Calculations using numbers in exponential form	Recognise and use the appropriate laws of operations with numbers involving exponents and square and cube roots Calculations involving all four operations using numbers in exponential form, limited exponents up to 5, and square and cube roots			

*¹ Financial Mathematics has been removed; concept of LCM and HCF has been modified.

REVISED DBE ANNUAL TEACHING PLAN				NAVIGATION PLAN	
TOPIC	UNITS	CONTENT SPECIFIC CONCEPTS	TIME	LINKS TO PEARSON NAVIGATION PACK	PAGE REFERENCE
COMMON FRACTIONS	Ordering, comparing and simplifying common fractions	Extend to thousandths	9 hours		
	Calculations with fractions	Addition and subtraction of fractions including mixed numbers where one denominator is not a multiple of the other.			
		Multiplication common fractions, including mixed numbers, not limited to fractions where one denominator is a multiple of another.			
	Calculation techniques	<ul style="list-style-type: none"> Convert mixed numbers to common fractions to perform calculations with them. Use knowledge of multiples and factors to write fractions in the simplest form before or after calculations 			
		Use knowledge of equivalent fractions to add and subtract common fractions.			
	Percentages	<ul style="list-style-type: none"> Calculate the percentage of part of a whole. Calculate percentage increase or decrease of whole numbers. 			
	Solving problems	Solve problems in contexts involving: <ul style="list-style-type: none"> common fractions and mixed numbers, including grouping and sharing; and finding fractions of whole numbers, percentages 			
DECIMAL FRACTIONS	Ordering and comparing decimal fractions	<ul style="list-style-type: none"> Count forwards and backwards in decimal fractions to at least 3 decimal places. Place value of decimals to at least 3 decimal places. Order and compare decimal fractions to at least 3 decimals. 	4 hours		
		Rounding off decimal fractions to at least 2 decimal places			
REVISION			2 hours		
ASSESSMENTS		Assignment* ²	2 hours		
		Test* ³	3 hours		
TOTAL HOURS = 40.5					


^{*2} Assignment minimum marks 50

^{*3} Test minimum marks 40 (Time: 1 hour, According to GET CAPS AMENDMENTS)

Term 2

REVISED DBE ANNUAL TEACHING PLAN				NAVIGATION PLAN	
TOPIC	UNITS	CONTENT SPECIFIC CONCEPTS	TIME	LINKS TO PEARSON NAVIGATION PACK	PAGE REFERENCE
DECIMAL FRACTIONS	Calculations with decimal fractions	<p>Addition and subtraction of decimal fractions to at least three decimal places</p> <p>Multiply decimal fractions to include:</p> <ul style="list-style-type: none"> decimal fractions to at least 3 decimal places by whole numbers decimal fractions to at least 2 decimal places by decimal fractions to at least 1 decimal place. <p>Divide decimal fractions to at least 3 decimal places by whole numbers</p>	7 hours		
	Calculation techniques	Use knowledge of place value to estimate the number of decimal places in the result before			
	Solving problems	Use rounding off and a calculator to check results where appropriate			
	Equivalent forms	Solve problems in context involving decimal fractions			
		Recognise equivalence between common fraction and decimal fraction forms of the same number.			
		Recognise equivalence between common fraction, decimal fraction and percentage forms of the same number.			
INTEGERS	Counting, ordering and comparing integers	Count forwards and backwards in integers for any interval Recognise, order and compare integers	9 hours	Navigation Pack: Targeted worksheet 1	Page 21
	Calculation with integers	Add and subtract integers		Navigation Pack: Targeted worksheet 1	Pages 24–27
	Properties of integers	Recognise and use commutative and associative properties of addition for integers		Navigation Pack: Targeted worksheet 1	Pages 24–27

Term 2

REVISED DBE ANNUAL TEACHING PLAN				NAVIGATION PLAN	
TOPIC	UNITS	CONTENT SPECIFIC CONCEPTS	TIME	LINKS TO PEARSON NAVIGATION PACK	PAGE REFERENCE
NUMERIC AND GEOMETRIC PATTERNS	Investigate and extend patterns	Investigate and extend numeric and geometric patterns, looking for relationships between numbers, including patterns: <ul style="list-style-type: none"> • represented in physical or diagram form • not limited to sequences involving a constant • difference or ratio of learner's own creation • represented in tables Describe and justify the general rules for observed relationships between numbers in own words	9 hours		
FUNCTIONS AND RELATIONSHIPS	Input and output values	Determine input values, output values or rules for patterns and relationships using: <ul style="list-style-type: none"> • flow diagrams • tables • formulae 	9 hours		
	Equivalent forms	Determine, interpret and justify equivalence of different descriptions of the same relationship or rule presented: <ul style="list-style-type: none"> • verbally • in flow diagrams • in tables • by formulae • by number sentences 			
REVISION			3,5 hours		
ASSESSMENTS	Investigation* ⁴		2 hours		
	Test: Paper 1 Test: paper 2		4,5 hours	Navigation Pack: Mid-year Test Paper 1: Exemplar Navigation Pack: Mid-year Test Paper 2: Exemplar	Pages 44-47 Pages 48-51
 TOTAL HOURS = 44					


^{*4} Investigation minimum marks 40

Term 3

REVISED DBE ANNUAL TEACHING PLAN				NAVIGATION PLAN	
TOPIC	UNITS	CONTENT SPECIFIC CONCEPTS	TIME	LINKS TO PEARSON NAVIGATION PACK	PAGE REFERENCE
ALGEBRAIC EXPRESSIONS		Recognise and interpret rules or relationships represented in symbolic form Identify variables and constants in given formulae and equations	6 hours		
ALGEBRAIC EQUATIONS	Number sentences	Write number sentences to describe problem situations Analyse and interpret number sentences that describe a given situation Identify variables and constants in given formulae or equations Solve and complete number sentences by: <ul style="list-style-type: none"> inspection trial and improvement Solve equations by substitution	6 hours		
CONSTRUCTION OF GEOMETRIC FIGURES	Measuring angles	Accurately use a protractor to measure and classify angles: <ul style="list-style-type: none"> $< 90^\circ$ (acute angles) $= 90^\circ$ (right angles) $> 90^\circ$ (obtuse angles) $^\circ$ (straight angles) $> 180^\circ$ but less than 360° (reflex angles) 	8 hours		
	Constructions ^{*5}	Accurately construct geometric figures appropriately using a compass, ruler and protractor, including: <ul style="list-style-type: none"> angles, to one degree of accuracy Accurately construct geometric figures appropriately using a compass, ruler and protractor, including: <ul style="list-style-type: none"> parallel lines perpendicular lines Accurately construct geometric figures appropriately using a compass, ruler and protractor, including: <ul style="list-style-type: none"> Circles Describe and name parts of a circle			

^{*5} Provide learners with accurately constructed figures.

Term 3

REVISED DBE ANNUAL TEACHING PLAN				NAVIGATION PLAN	
TOPIC	UNITS	CONTENT SPECIFIC CONCEPTS	TIME	LINKS TO PEARSON NAVIGATION PACK	PAGE REFERENCE
CONSTRUCTION OF GEOMETRIC FIGURES (continued)	Geometry of straight lines	Define: <ul style="list-style-type: none">• line segment• ray• straight line• parallel lines• perpendicular lines		Platinum LB Platinum TG	
	Classifying 2D shapes	Describe, sort, name and compare triangles according to their sides and angles, focusing on: <ul style="list-style-type: none">• equilateral triangles• isosceles triangles• right-angled triangles Describe, sort, name and compare quadrilaterals in terms of: <ul style="list-style-type: none">• length of sides• parallel and perpendicular sides• size of angles (right angles or not)	9 hours	Platinum LB Platinum TG	
TRANSFORMATION GEOMETRY	Similar and congruent 2D shapes	Recognise and describe similar and congruent figures by comparing: <ul style="list-style-type: none">• shape• size		Platinum LB Platinum TG	
	Solving problems	Solve simple geometric problems involving unknown sides and angles in triangles and quadrilaterals, using known properties		Platinum LB Platinum TG	
	Transformations	Recognise, describe and perform translations, reflections and rotations with geometric figures and shapes on squared paper Identify and draw lines of symmetry in geometric figures	9 hours	Navigation Pack: Targeted worksheet 2	Page 25
	Enlargements and reductions	Draw enlargements and reductions of geometric figures on squared paper and compare them in terms of shape and size.		Navigation Pack: Targeted worksheet 2	Pages 28–31
REVISION ASSESSMENTS	Project* ⁶		2,5 hours		
	Test* ⁷ : Control Test 2		6 hours	Navigation Pack: Term 3 Control Test 2: Exemplar	Pages 52–56
				<div> TOTAL HOURS = 46.5</div>	

^{*6} Project minimum marks 50


^{*7} Test minimum marks 40 (Time: 1 hour, According to GET CAPS AMENDMENTS)

Term 4

REVISED DBE ANNUAL TEACHING PLAN				NAVIGATION PLAN	
TOPIC	UNITS	CONTENT SPECIFIC CONCEPTS	TIME	LINKS TO PEARSON NAVIGATION PACK	PAGE REFERENCE
AREA AND PERIMETER OF 2D SHAPES	Area and perimeter	Calculate the perimeter of regular and irregular polygons	8 hours	Navigation Pack: Targeted worksheet 3	Pages 32–37
		Use appropriate formulae to calculate perimeter and area of: <ul style="list-style-type: none">• squares• rectangles• triangles		Navigation Pack: Targeted worksheet 3	Pages 32–37
	Calculations and solving problems	Solve problems involving perimeter and area of polygons Calculate to at least 1 decimal place Use and convert between appropriate SI units, including: <ul style="list-style-type: none">• $\text{mm}^2 \leftrightarrow \text{cm}^2$• $\text{cm}^2 \leftrightarrow \text{m}^2$		Navigation Pack: Targeted worksheet 3	Pages 32–37
SURFACE AREA AND VOLUME OF 3D OBJECTS	Surface area and volume	Use appropriate formulae to calculate the surface area, volume and capacity of: <ul style="list-style-type: none">• cubes• rectangular prisms Describe the interrelationship between surface area and volume of the objects mentioned above	9 hours		
	Calculations and solving problems	Solve problems involving surface area, volume and capacity Use and convert between appropriate SI units, including: <ul style="list-style-type: none">• $\text{mm}^2 \leftrightarrow \text{cm}^2$• $\text{cm}^2 \leftrightarrow \text{m}^2$• $\text{mm}^3 \leftrightarrow \text{cm}^3$• $\text{cm}^3 \leftrightarrow \text{m}^3$ Use equivalence between units when solving problems: <ul style="list-style-type: none">• $1 \text{ cm}^2 \leftrightarrow 1 \text{ ml}$• $1 \text{ m}^2 \leftrightarrow 1 \text{ kl}$			

REVISED DBE ANNUAL TEACHING PLAN				NAVIGATION PLAN	
TOPIC	UNITS	CONTENT SPECIFIC CONCEPTS	TIME	LINKS TO PEARSON NAVIGATION PACK	PAGE REFERENCE
DATA HANDLING	Collect data	Pose questions relating to social, economic, and environmental issues in own environment Select appropriate sources for the collection of data (including peers, family, newspapers, books, magazines) Distinguish between samples and populations and suggest appropriate samples for investigation Design and use simple questionnaires to answer questions with: <ul style="list-style-type: none">• yes/no type responses• multiple choice responses	9 hours		
	Organise and summarise data	Organise (including grouping where appropriate) and record data using: <ul style="list-style-type: none">• tally marks• tables• stem-and-leaf displays• Group data into intervals			
		Summarise and distinguishing between ungrouped numerical data by determining: <ul style="list-style-type: none">• mean• median• mode Identify the largest and smallest scores in a data set and determine the difference between them in order to determine the spread of the data (range)			
	Represent data	Draw a variety of graphs by hand/ technology to display and interpret data (grouped and ungrouped) including: <ul style="list-style-type: none">• bar graphs and double bar graphs• histograms with given intervals• pie charts			
	Interpret data	Critically read and interpret data represented in: <ul style="list-style-type: none">• words• bar graphs• double bar graphs• pie charts• histograms			

Term 4

REVISED DBE ANNUAL TEACHING PLAN				NAVIGATION PLAN	
TOPIC	UNITS	CONTENT SPECIFIC CONCEPTS	TIME	LINKS TO PEARSON NAVIGATION PACK	PAGE REFERENCE
DATA HANDLING (continued)	Analyse data	<p>Critically analyse data by answering questions related to:</p> <ul style="list-style-type: none"> • data categories, including data intervals. • data sources and contexts. • central tendencies (mean, mode, median) • scales used on graphs 			
	Report data	<p>Summarise data in short paragraphs that include:</p> <ul style="list-style-type: none"> • drawing conclusions about the data • making predictions based on the data • identifying sources of error and bias in the data • choosing appropriate summary statistics for the data (mean, median, mode) 			
REVISION			9 hours		
ASSESSMENTS	Test: Paper 1 Test: Paper 2		7,5 hours	Navigation Pack: Final year Test Paper 1: Exemplar	Pages 57–60
				Navigation Pack: Final year Test Paper 2: Exemplar	Pages 61–65
 TOTAL HOURS = 38					

Targeted Worksheets

TARGETED WORKSHEET	TOPIC IN CAPS
1	Integers
2	Algebraic equations
3	Area and perimeter

Targeted Worksheet 1

Topic: Integers

Content summary

Learners should know the following content.

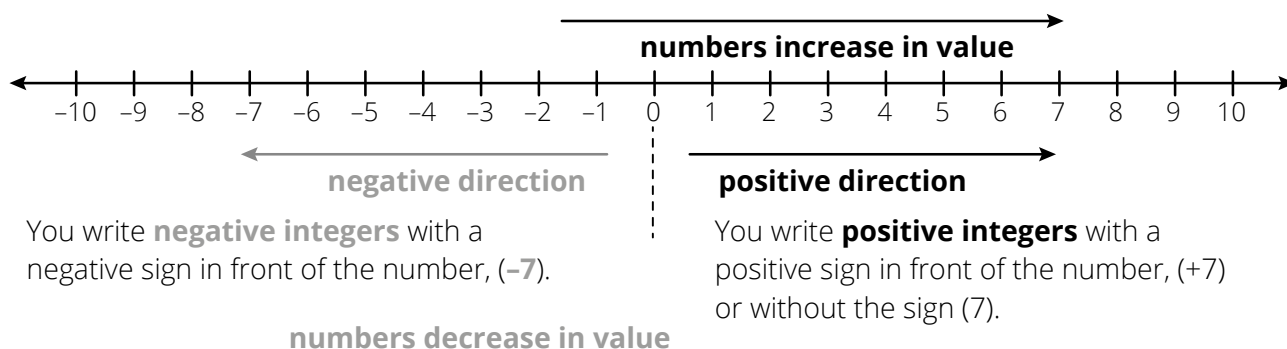
- Counting, ordering and comparing integers
 - Count forwards and backwards in integers for any interval
 - Recognise, order and compare integers.
- Calculations with integers
 - Add and subtract with integers.
- Properties of integers
 - Recognise and use commutative and associative properties of addition for integers.
- Calculations with integers
 - Add and subtract with integers.
- Properties of integers
 - Recognise and use commutative and associative properties of addition for integers.

Definition of integers

An integer can be described as a whole number which is not a fraction. Integers are negative whole numbers, positive whole numbers and zero.

Order and compare

On the integer number line all the numbers to the left of zero are negative and to the right of zero are positive. Zero is neither negative nor positive. Negative integers are whole numbers less than 0 and positive integers are whole numbers greater than 0. Ascending order is when numbers are organised from the smallest value to the largest value. Descending order is when numbers are arranged from the largest value to the smallest value.



Adding integers

Rule 1: Adding negative integers are done similarly to adding positive integers.

Example: $(-3) + (-2) = (-5)$	Example: $3 + 2 = 5$
-------------------------------	----------------------

Rule 2: When a positive integer is added to a negative integer, the sign of the answer depends on the size of the numbers.

Example: $(-15) + 8$ $= -7$	Example: $(-15) + 23$ $= 8$
--------------------------------	--------------------------------

Subtracting integers

Rule 1: Subtracting a negative integer from a positive is the same as adding a natural number.

Example: $7 - (-3)$ $= 7 + 3$ $= 10$	Example: $7 + 3$ $= 10$
--	----------------------------

Rule 2: When subtracting a positive integer from a negative it is similar to adding negative integers.

Example: $-3 - (+5)$ $= -3 - 5$ $= -8$
--

Properties of addition for integers

The commutative property: This property states that the order of adding numbers does not matter, the result will stay the same. Example: $(-7) + 4 = 4 + (-7) = -3$

The associative property: This property states that grouping numbers when adding does not matter, the result will stay the same. Example: $(-2 + 3) + 5 = (-2 + 5) + 3 = 6$

Targeted Worksheet 1

Topic: Integers

Name: _____

Surname: _____

Marks: 40**Time: 50 minutes****Instructions**

1. Study the content summary.
2. Read the questions carefully.
3. Write neatly and legibly.
4. Number your answers exactly as the questions are numbered.
5. You may not use a calculator.
6. You may use a number line.

Question 1

- 1.1 Fill in the missing values of the following number patterns.
- 1.1.1 $-28; \underline{\quad}; -20; -16; \underline{\quad}$ (2)
- 1.1.2 $24; 12; 0; \underline{\quad}; \underline{\quad}$. (2)
- 1.1.3 $-36; -25; -16; \underline{\quad}; \underline{\quad}$. (2)
- 1.2 Write the correct sign between the numbers: greater than, less than or = equal to.
- 1.2.1 $-9 \underline{\quad} -\frac{9}{1}$ (1)
- 1.2.2 $-30 \underline{\quad} 30$ (1)
- 1.2.3 $-100 \underline{\quad} 101$ (1)
- 1.2.4 $-26 \underline{\quad} 62$ (1)
- 1.3 Arrange these numbers in ascending order: 300; -320; 302; -300; -302; 320. (3)
- 1.4 Arrange these numbers in descending order: -15; -51; 0; -115; 15; 51. (3)

[16]**Question 2**

Add the integers without using a calculator. (You may use a number line.)

- 2.1 $(-15) + (-6)$ (2)
- 2.2 $-8 + 12$ (2)
- 2.3 $11 + (-15)$ (2)
- 2.4 $(-6) + (-8)$ (2)
- 2.5 $(-5) + 5$ (2)

[10]

Question 3

Subtract the integers without using a calculator. (You may use a number line.)

3.1 $12 - (-14)$ (2)

3.2 $-10 - 2$ (2)

3.3 $7 - (-13)$ (2)

3.4 $-9 - 5$ (2)

3.5 $(-12) - 5$ (2)

[10]

Question 4

4.1 Use the properties of integers to complete the statements.

4.1.1 $8 + (-3) = \underline{\hspace{1cm}} + 8$ (1)

4.1.2 $(-6 + 2) + 4 = (-6 + 4) + \underline{\hspace{1cm}}$ (1)

4.2 State which property was used:

4.2.1 in 4.1.1 (1)

4.2.2 in 4.1.2. (1)

[4]

Total: 40

Targeted Worksheet 2

Topic: Algebraic equations

Content summary

Learners should know the following content:**Number sentences**

Write number sentences to describe problems situations.

Analyse and interpret number sentences that describe a given situation.

Identify variables and constants in a given formula or equation.

Solve and complete number sentences by:

- inspection
- trial and improvement.

Solve equations by substitution.

Definition of algebraic equations

An algebraic equation is a mathematics statement or sentence containing variables and constants. It consists of two sides separated by the equal sign. The right-hand side of the equation is always equal to the left-hand side of the equation.

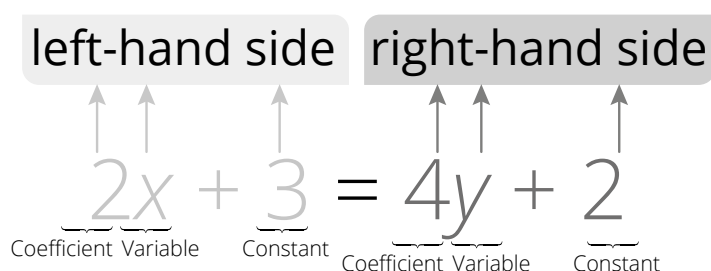
Terminology

A **variable** is a letter used for a quantity that may change. This letter or symbol represents an unknown number in a problem statement.

A **coefficient** is the number in front of a variable. It is the number by which the variable is multiplied.

Constants are the numbers in an equation that do not have a variable.

Example:



The diagram shows the equation $2x + 3 = 4y + 2$. Above the equation, two boxes labeled 'left-hand side' and 'right-hand side' have arrows pointing to the left and right sides of the equation respectively. Below the equation, labels 'Coefficient', 'Variable', and 'Constant' are placed under the terms. For the left-hand side, '2' is the Coefficient, 'x' is the Variable, and '3' is the Constant. For the right-hand side, '4' is the Coefficient, 'y' is the Variable, and '2' is the Constant.

Solving problems by inspection

To solve a mathematics problem by inspection means to look carefully at the question and decide which answer or answers would make mathematical sense.

Example: $x + 2 = 16$

We need to think of a number that when we add 2 we get the answer of 16. What do you think the number is? $x = 14$

Solving problems by trial and improvement

Solving a mathematics problem by trial and improvement means that we assess the problem and decide on the values which will give us the correct answer. With this method we keep trying to find the correct solution by substituting values based on our reasoning in each previous attempt.

Example: What is the value of x in the following equation: $2x + 20 = 50$

Test 10: $2 \times 10 + 20 = 40$ (too little)

Test 12: $2 \times 12 + 20 = 44$ (better, but must be more)

Test 15: $2 \times 15 + 20 = 50$ So, $x = 15$

Substitution

When we substitute, we use one thing in place of another thing.

Example:

If $y = 3x^2 + 8$, find the value of y when $x = 2$.

$$y = 3 \times (2)^2 + 8$$

$$y = 12 + 8$$

$$y = 20$$

Targeted Worksheet 2

Topic: Algebraic equations

Name: _____

Surname: _____

Marks: 40

Time: 50 minutes

Instructions

1. Study the content summary.
2. Read the questions carefully.
3. Write neatly and legibly.
4. Number your answers exactly as the questions are numbered.
5. You may use a non-programmable scientific calculator.

Question 1

1.1 Given: $3x + 2 = 17$.

1.1.1 What is the variable? (2)

1.1.2 What is the coefficient of x ? (2)

1.1.3 What is or are the constant(s)? (2)

1.2 The formula for the perimeter of a square is: Perimeter = $4s$.

1.2.1 What is the variable in the formula? (2)

1.2.2 What is the coefficient of s ? (2)

[10]

Question 2

Write a word problem which represents the following number sentences.

2.1 $2x = 120$ (3)

2.2 $3x - \frac{1}{2}x = 30$ (3)

[6]

Question 3

3.1 Andrew thinks of a number. He multiplies the number by 2 and gets the answer 30. Write Andrew's problem as a number sentence. (2)

3.2 Jessica thinks of a number. She adds 3 to the number and gets an answer of 25. Write a number sentence to represent this problem. (3)

- 3.3 Chad thinks of a number. He divides the number by 3 and then adds 4. His answer is 29. Write this problem as a number sentence. (3)

[8]

Question 4

- 4.1 If $x + 5 = 12$, what is the value of x ? (2)

- 4.2 What is the value of y in the following equations?

4.2.1 $3y + 5 = 23$ (3)

4.2.2 $4y - 10 = 90$ (3)

[8]

Question 5

Find the value of y in the following equations:

5.1 if $y = 4x$, when $x = 11$ (2)

5.2 if $y = 2x + 16$, when $x = 10$ (3)

5.3 if $y = 3x^2 - 20$, when $x = 5$. (3)

[8]

Total: 40

Targeted Worksheet 3

Topic: Area and perimeter of 2D shapes

Content summary

Learners should know the following content:

Area and perimeter

Calculate the perimeter of regular and irregular polygons.

Use appropriate formulae to calculate perimeter and area of:

- squares
- rectangles
- triangles.

Calculations and solving problems

Solve problems involving perimeter and area of polygons.

Calculate to at least 1 decimal place.

Use and convert between appropriate SI units, including:

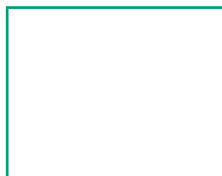
$$\text{mm}^2 \leftrightarrow \text{cm}^2$$

$$\text{cm}^2 \leftrightarrow \text{m}^2$$

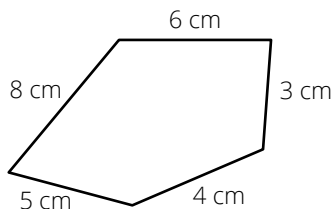
Definition of perimeter

The perimeter of any polygon is the distance around its outside. This means it is the sum of the lengths of its sides.

Perimeter

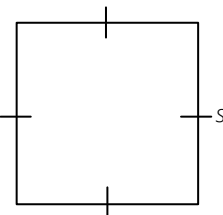
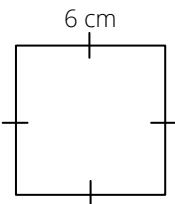
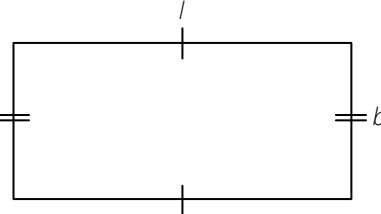
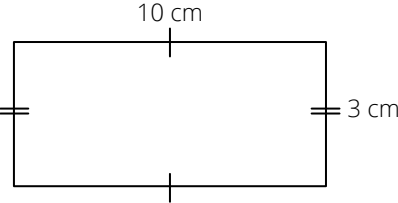
**Finding perimeter of irregular polygons**

Example: Calculate the perimeter of the 2D shape.



$$\begin{aligned}\text{Perimeter} &= 8 \text{ cm} + 6 \text{ cm} + 3 \text{ cm} + 4 \text{ cm} + 5 \text{ cm} \\ &= 26 \text{ cm}\end{aligned}$$

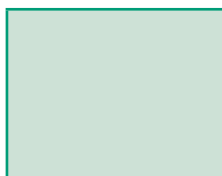
Finding the perimeter of regular polygons using formulae

Name of polygon	Formula	Illustration	Example
Square	Perimeter of a square $= 4 \times s$		 Perimeter $= 4 \times 6 \text{ cm}$ $= 24 \text{ cm}$
Rectangle	Perimeter of a rectangle $= 2(l + b)$ $= 2 \times l + 2 \times b$		 Perimeter $= 2(10 \text{ cm} + 3 \text{ cm})$ $= 26 \text{ cm}$

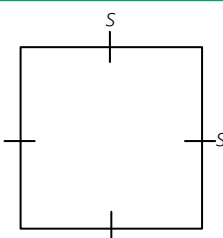
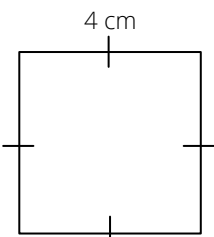
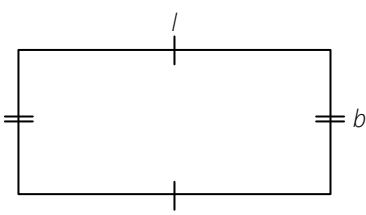
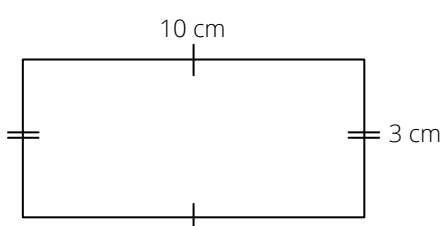
Definition of area

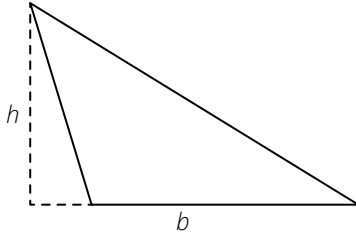
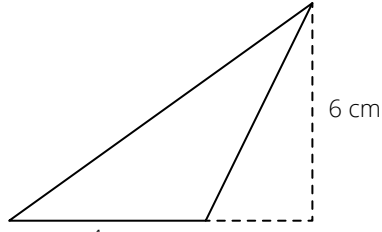
Area refers to the amount of space that a flat surface or shape covers.

Area



Finding the area of regular polygons using formulae

Name of polygon	Formula	Illustration	Example
Square	Area of a square $= s \times s$		 Area $= 4 \text{ cm} \times 4 \text{ cm}$ $= 16 \text{ cm}^2$
Rectangle	Area of a rectangle $= l \times b$		 Area $= 10 \text{ cm} \times 3 \text{ cm}$ $= 30 \text{ cm}^2$

Name of polygon	Formula	Illustration	Example
Triangle	Area of a triangle $= \frac{1}{2} \times b \times h$		 $\text{Area} = \frac{1}{2} \times 4 \text{ cm} \times 6 \text{ cm}$ $= 12 \text{ cm}^2$

Conversions

km to m	$\times 1\,000$	mm to cm	$\div 10$
m to cm	$\times 100$	cm to m	$\div 100$
cm to mm	$\times 10$	m to km	$\div 1\,000$

Targeted Worksheet 3

Topic: Area and perimeter of 2D shapes

Name: _____

Surname: _____

Marks: 40

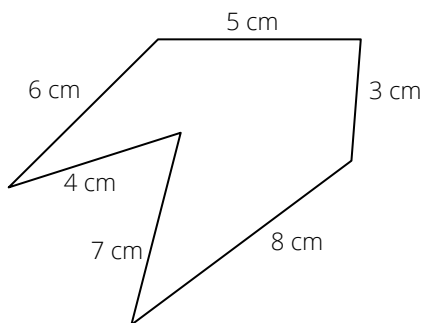
Time: 50 minutes

Instructions

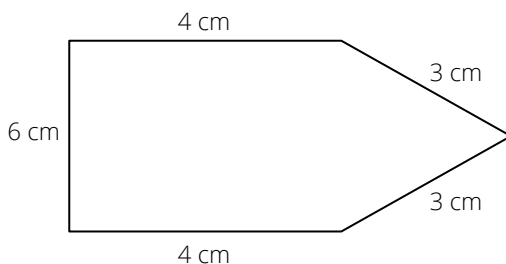
1. Study the content summary.
2. Read the questions carefully.
3. Write neatly and legibly.
4. Number your answers exactly as the questions are numbered.
5. You may use a non-programmable scientific calculator.

Question 1

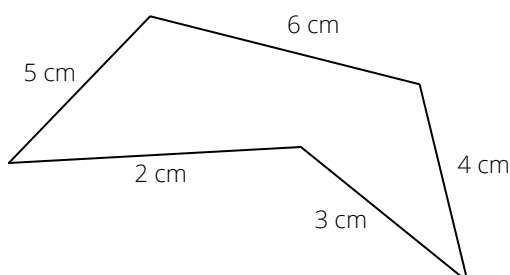
- 1.1 Determine the perimeter of the figure. (2)



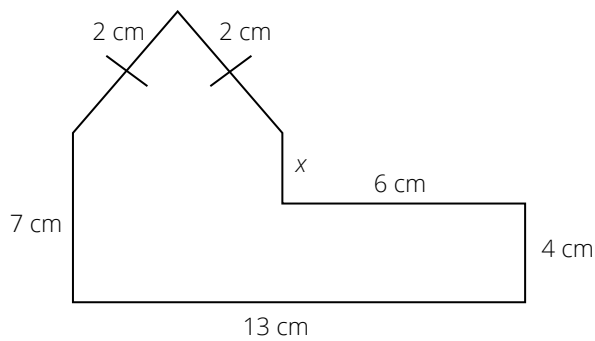
- 1.2 Work out the perimeter of this shape. (2)



- 1.3 Determine the perimeter of the irregular polygon. (2)



1.4 Study the polygon and answer the questions.



1.4.1 Determine the value of x , the length of the unknown side. (2)

1.4.2 Calculate the perimeter of this polygon. (2)

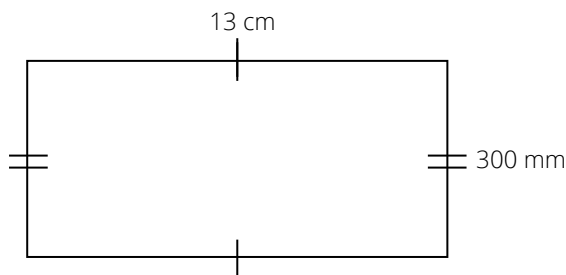
[10]

Question 2

2.1 Determine the perimeter of a square if the length of one of its sides is 3 cm. (2)

2.2 A square has a perimeter of 64 cm. What is the length of each side of the square? (2)

2.3 Look at the 2D picture of Randy's pool and answer the questions.



2.3.1 Convert 300 mm to cm. (2)

2.3.2 Hence, determine the perimeter of the rectangle. (2)

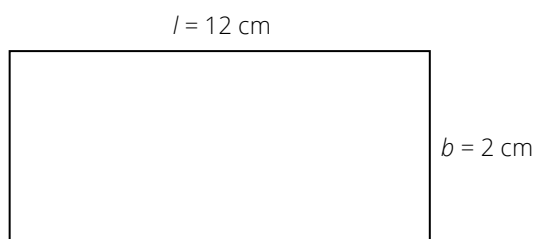
2.3.3 Randy wants to put a fence around the pool. It costs R20 for 21,5 cm of fencing. Determine how much Rand it will cost to fence the pool. (2)

[10]

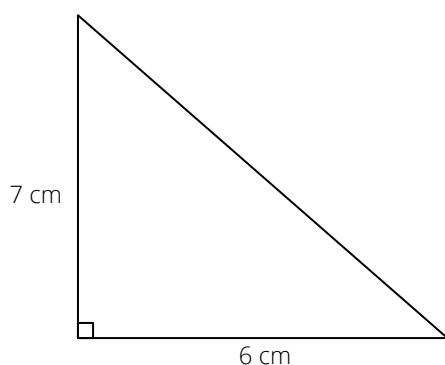
Question 3

3.1 Determine the area of a square if the length of one of its sides is 5 cm. (2)

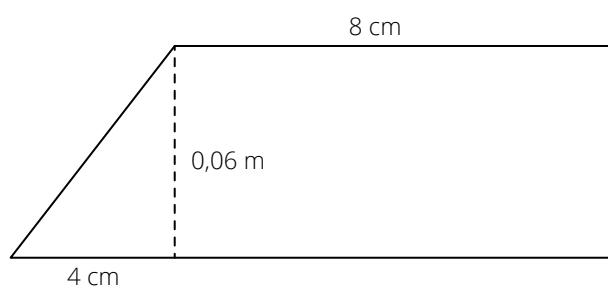
3.2 Work out the area of the rectangle. (2)



- 3.3 Calculate the area of the triangle. (2)



- 3.4 Study the complex polygon and answer the questions.



- 3.4.1 Convert m to cm. (2)

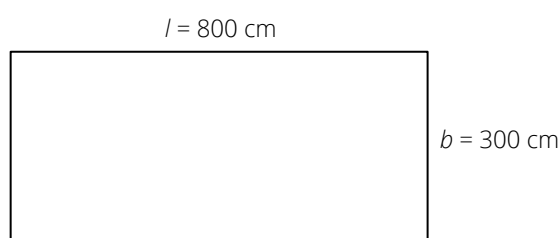
- 3.4.2 Calculate the area of the polygon. (3)

[11]

Question 4

- 4.1 Calculate the height of the triangle if the base length is 8 cm and its area is 36 cm^2 . (3)

- 4.2 Sarah has a rectangular garden patch.



- 4.2.1 Work out the perimeter of Sarah's garden patch, in metres. (3)

- 4.2.2 The garden will be covered with shade cloth. Work out how many square metres of shade cloth Sarah will need. (3)

[9]

Total: 40

Targeted Worksheet 1 Memorandum

Marks: 40

Instructions

- This is a marking guideline.
- Give the learners marks if they used other mathematically correct methodologies.

Topic: Integers

1.1.1 $-24 ✓$ and $-12 ✓$ (2)

1.1.2 $-12 ✓$ and $-24 ✓$ (2)

1.1.3 $-9 ✓$ and $-4 ✓$ (2)

1.2.1 $= ✓$ (1)

1.2.2 $< ✓$ (1)

1.2.3 $> ✓$ (1)

1.2.4 $< ✓$ (1)

1.3 $-320; -302; -300; 300; 302; 320 ✓✓✓$ (3)

1.4 $51; 15; 0; -15; -51; -115 ✓✓✓$ (3)

[16]

2.1 $(-15) + (-6) = -21 ✓✓$ (2)

2.2 $-8 + 12 = 4 ✓✓$ (2)

2.3 $11 + (-15) - 4 ✓✓$ (2)

2.4 $(-6) + (-8) = -14 ✓✓$ (2)

2.5 $(-5) + 5 = 0 ✓✓$ (2)

[10]

3.1 $12 - (-14) = 26 ✓✓$ (2)

3.2 $-10 - 2 = -12 ✓✓$ (2)

3.3 $7 - (-13) = 20 ✓✓$ (2)

3.4 $-9 - 5 = -14 ✓✓$ (2)

3.5 $(-12) - 5 = -17 ✓✓$ (2)

[10]

4.1.1 $-3 ✓$ (1)

4.1.2 $2 ✓$ (1)

4.2.1 The commutative property of addition for integers ✓ (1)

4.2.2 The associative property of addition for integers ✓ (1)

[4]
Total: 40

Targeted Worksheet 2 Memorandum

Marks: 40

Instructions

- This is a marking guideline.
- Give the learners marks if they used other mathematically correct methodologies.

Topic: Algebraic equations

1.1.1 x ✓✓ (2)

1.1.2 3 ✓✓ (2)

1.1.3 2 ✓ and 7 ✓ (2)

1.2.1 p ✓ and s ✓ (2)

1.2.2 4 ✓✓ (2)

[10]

2.1 A number is multiplied by two. The answer is equal to one hundred and twenty. ✓✓✓ (3)

2.2 A number is multiplied by three and then decreased by half the number. The answer equal to 30. ✓✓✓ (3)

[6]

3.1 $2x = 30$ ✓✓ (2)

3.2 $x + 3 = 25$ ✓✓✓ (3)

3.3 $\frac{x}{3} + 4 = 29$ ✓✓✓ (3)

[8]

4.1 $x = 7$ ✓✓ (2)

4.2.1 $3y + 5 = 23$

$$3y = 23 - 5$$

$$y = 18 \div 3$$

$y = 6$ ✓✓✓ (3)

4.2.2 $4y - 10 = 90$

$$4y = 90 + 10$$

$$y = 100 \div 4$$

$y = 25$ ✓✓✓ (3)

[8]

5.1 $y = 4 \times (11)$

$y = 44$ ✓✓ (2)

(3)

(3)

Total: 40

Targeted Worksheet 3 Memorandum

Marks: 40

Instructions

- This is a marking guideline.
- Give the learners marks if they used other mathematically correct methodologies.

Topic: Area and perimeter

1.1 Perimeter = 6 cm + 5 cm + 3 cm + 8 cm + 7 cm + 4 cm
= 33 cm ✓✓ (2)

1.2 Perimeter = 6 cm + 4 cm + 3 cm + 3 cm + 4 cm
= 20 cm ✓✓ (2)

1.3 Perimeter = 5 cm + 6 cm + 4 cm + 3 cm + 2 cm
= 20 cm ✓✓ (2)

1.4.1 $x = 7 \text{ cm} - 4 \text{ cm} = 3 \text{ cm}$ ✓✓ (2)

1.4.2 Perimeter = 7 cm + 2 cm + 2 cm + 3 cm + 6 cm + 4 cm + 13 cm
= 37 cm ✓✓ (2)

[10]

2.1 Perimeter = $4 \times 3 \text{ cm}$
= 12 cm ✓✓ (2)

2.2 $36 \text{ cm} = x \times 4$
 $36 \div 4 = x$
 $x = 16 \text{ cm}$ ✓✓ (2)

2.3.1 $300 \text{ mm} \div 10 = 30 \text{ cm}$ ✓✓ (2)

2.3.2 Perimeter = $2(13 + 30)$
= 2×43
= 86 cm (2)

2.3.3 $86 \text{ cm} \div 21,5 \text{ cm} = 4$ ✓
Cost in rand = $4 \times \text{R}20 = \text{R}80$ ✓ (2)

[10]

3.1 Area = $5 \text{ cm} \times 5 \text{ cm}$
= 25 cm^2 ✓✓ (2)

3.2 Area = $12 \text{ cm} \times 2 \text{ cm}$
= 24 cm^2 ✓✓ (2)

3.3 $\text{Area} = \frac{1}{2} \times 6 \text{ cm} \times 7 \text{ cm}$
 $= 21 \text{ cm}^2 \checkmark\checkmark$ (2)

3.4.1 $0,06 \text{ m} \times 100 = 6 \text{ cm} \checkmark\checkmark$ (2)

3.4.2 Area of the triangle:

$A = \frac{1}{2} \times 4 \text{ cm} \times 6 \text{ cm} = 12 \text{ cm}^2 \checkmark$

Area of the rectangle:

$A = 8 \text{ cm} \times 6 \text{ cm} = 48 \text{ cm}^2 \checkmark$

Total area = $12 \text{ cm}^2 + 48 \text{ cm}^2 = 60 \text{ cm}^2$ (3)

[11]

4.1 $36 \text{ cm}^2 = \frac{1}{2} \times 8 \text{ cm} \times \text{height}$

$36 \text{ cm}^2 = 4 \text{ cm} \times \text{height}$

$36 \text{ cm}^2 \div 4 \text{ cm} = \text{height}$

Height = $9 \text{ cm} \checkmark\checkmark\checkmark$ (3)

4.2.1 Perimeter = $2(8 \text{ m} + 3 \text{ m})$

$= 22 \text{ m} \checkmark\checkmark\checkmark$ (3)

4.2.2 Area = $8 \text{ m} \times 3 \text{ m}$

$= 24 \text{ m}^2$ (3)

[9]

Total: 40

Exemplar Assessments

Exemplar Assessments

Mid-year Test 1

Name: _____

Surname: _____

Time: 1 hour

Marks: 50

Instructions and information

Read the following instructions carefully before answering the questions.

1. This paper consists of 5 questions.
2. Answer ALL the questions.
3. Clearly show ALL calculations in the spaces provided.
4. Write neatly and legibly.

Question 1

Multiple choice: Write down the letter of the correct answer next to the question number.

1.1 What fraction is the smallest? (1)

- A $\frac{1}{2}$
- B $\frac{1}{12}$
- C $\frac{1}{4}$
- D $\frac{1}{6}$

1.2 $\sqrt{36-11}$ is equal to _____. (1)

- A 3
- B 4
- C 5
- D 6

1.3 12 367 rounded off to the nearest 100 is _____. (1)

- A 12 300
- B 12 000
- C 12 500
- D 12 400

- 1.4 Convert $\frac{21}{6}$ into a mixed fraction. (1)
- A $21\frac{1}{6}$
- B $6\frac{1}{2}$
- C $1\frac{6}{2}$
- D $3\frac{3}{6}$
- 1.5 $4(5 + 2)$ is equal to _____. (1)
- A $(4 \times 5) + (4 \times 2)$
- B $(5 + 4) \times (5 + 2)$
- C $(2 \times 4) + (2 \times 2)$
- D $(4 + 5) \times (4 + 2)$
- 1.6 The sum of $31\,313 + 26\,262$ is _____. (1)
- A $57\,557$
- B $57\,575$
- C $55\,757$
- D $75\,757$
- 1.7 In the number 7^3 , the number seven is a _____. (1)
- A exponent
- B power
- C square
- D base
- 1.8 The number _____ is an example of an even prime number. (1)
- A 4
- B 6
- C 2
- D 7
- 1.9 30% of R50 is _____. (1)
- A $\frac{30}{100} \times \frac{50}{1}$
- B $\frac{100}{30} \times \frac{50}{1}$
- C $\frac{3}{100} \times \frac{50}{1}$
- D $\frac{300}{10} \times \frac{50}{1}$

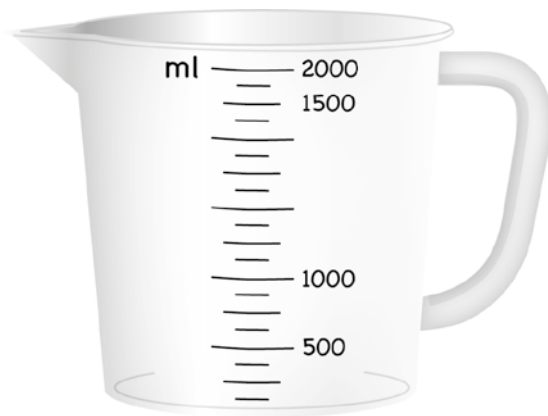
1.10 Writing numbers in ascending order means: (1)

- A to write the numbers from the biggest to the smallest
- B to write the numbers from top to bottom
- C to write the numbers from the smallest to the biggest
- D to write the numbers from bottom to top.

[10]

Question 2

2.1 Which number on the measuring beaker is in the incorrect place? (1)



2.2 What number is exactly in the middle between 300 and 350?
(Show all your calculations.) (2)

2.3 Write down the multiples of 12 and 15, then determine the lowest common multiple of the two numbers. (3)

2.4 Simplify the ratio 300 : 210. (2)

2.5 Susan travelled on a journey at an average speed of 65 km/h and drove a distance of 650 km. Calculate in hours the time it took for Susan to travel on her journey. (2)

[10]

Question 3

3.1 Write $2 \times 2 \times 2 \times 2 \times 2$ in exponential form. (2)

3.2 Calculate the following:

3.2.1 $2^3 \times 3^2$ (2)

3.2.2 $\sqrt{25} - \sqrt[3]{8}$ (2)

3.2.3 $(5^3 \div 5^2) \times 4$. (2)

3.3 Jason packs a box of truffles. The box contains 4 truffles. In each row there are 4 rows. How many truffles are there in the box? (2)

[10]

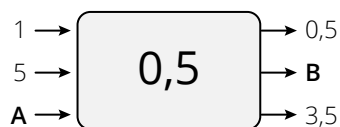
Question 4

- 4.1 Calculate and show all your calculations: $2\frac{1}{3} + 3\frac{7}{15} - 1\frac{2}{5}$. (4)
- 4.2 Determine the value of $\frac{3}{7}$ of 350 g. (3)
- 4.3 Calculate the percentage decrease if the price of a sponge cake was R40 and is now R32. (3)

[10]

Question 5

- 5.1 Complete the number pattern: 0,25; 0,50; 0,75; ____; _____. (2)
- 5.2 Calculate the following and show all your calculations. (2)
- 5.2.1 $3 + 0,025$ (2)
- 5.2.2 $4,416 \div 4$ (2)
- 5.3 Complete the flow diagram and fill in the missing values: A and B. (2)



- 5.4 Complete the table and fill in the missing values: C and D. (2)
- $y = 2x + 0,253$

Input (x)	1	2	5	C	12
Output (y)	2,253	4,253	10,253	18,253	D

[10]

Total: 50

Exemplar Assessments

Mid-year Test 2

Name: _____

Surname: _____

Time: 1 hour
Marks: 50

Instructions and information

Read the following instructions carefully before answering the questions.

1. This paper consists of 4 questions.
2. Answer ALL the questions.
3. Clearly show ALL calculations in the spaces provided.
4. Write neatly and legibly.

Question 1

Multiple choice: Write down the letter of the correct answer next to the question number.

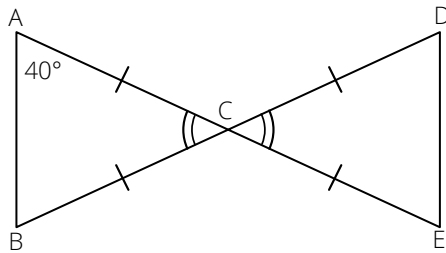
- 1.1 What is the name of the line segment that divides a circle into two equal parts? (1)
- A Radius
 - B Circumference
 - C Diameter
 - D Arc
- 1.2 If 5 m is converted to cm the answer is _____. (1)
- A 50 cm
 - B 5 cm
 - C 0,5 cm
 - D 500 cm
- 1.3 We call the instrument that we use to measure angles a _____. (1)
- A compass
 - B retractor
 - C protractor
 - D purpose
- 1.4 An angle less than 60° is called an ____ angle. (1)
- A straight angle
 - B acute angle
 - C obtuse angle
 - D reflex angle

- 1.5 An equilateral triangle has _____. (1)
- A three equal sides
 - B two equal sides
 - C one equal side
 - D no equal sides
- 1.6 Two intersecting straight lines are said to be ____ when the angle they form is equal to 90° . (1)
- A parallel
 - B perpendicular
 - C point
 - D parallelogram
- 1.7 Each corner on the inside of a square is a ____ angle. (1)
- A 90°
 - B 60°
 - C 30°
 - D 70°
- 1.8 The sum of the angles of a triangle is _____. (1)
- A 150°
 - B 160°
 - C 170°
 - D 180°
- 1.9 If one cup can hold 250 ml, how many cups of cool drink can I get from a 1-litre bottle of orange juice? (1)
- A 2 cups
 - B 6 cups
 - C 4 cups
 - D 8 cups
- 1.10 The area of a square is calculated by using the following formula: (1)
- A $\text{Area} = (\text{side})^3$
 - B $\text{Area} = (\text{side})^1$
 - C $\text{Area} = (\text{side})^4$
 - D $\text{Area} = (\text{side})^2$.

[10]

Question 2

2.1 Study $\triangle ABC$ and $\triangle CDE$ and answer the questions.



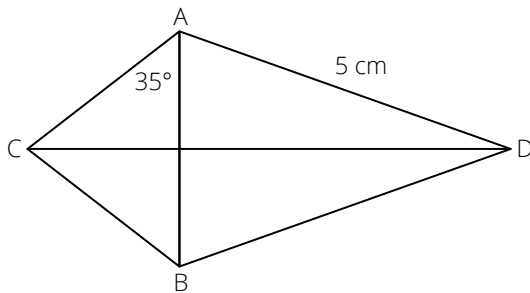
2.1.1 What type of triangles are $\triangle ABC$ and $\triangle CDE$? (1)

2.1.2 Determine the value of angle B. (2)

2.1.3 Are $\triangle ABC$ and $\triangle EDC$ congruent? (1)

2.1.4 If they are, state your reason. (3)

2.2 Study the quadrilateral and answer the questions.

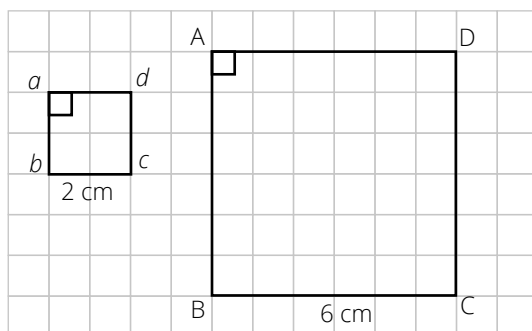


2.2.1 Name the quadrilateral in the illustration. (1)

2.2.2 Complete the statement: Diagonal CD bisects diagonal AB at ____ angles. (1)

2.2.3 Determine the length of BD. (1)

2.3 Study the illustration and answer the questions.



2.3.1 Are these two shapes similar or congruent? (1)

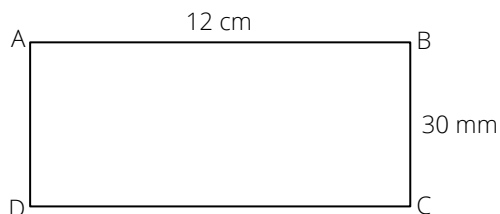
2.3.2 What is the ratio of the corresponding sides bc to BC ? (2)

2.3.3 Write down the value of the angle d . (1)

[14]

Question 3

3.1 Study the figure and answer the questions.



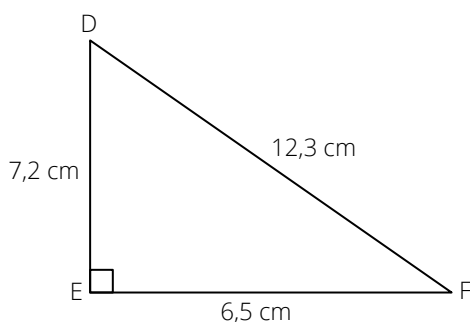
3.1.1 Name the figure shown in the diagram. (1)

3.1.2 Convert 30 mm to cm. (2)

3.1.3 Calculate the perimeter of the figure. (2)

3.1.4 Calculate the area of the figure. (2)

3.2 Look at triangle DEF and answer the questions.



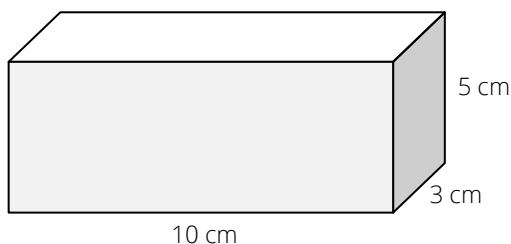
3.2.1 Calculate the perimeter of the triangle. (2)

3.2.2 Calculate the area of the triangle. (3)

[12]

Question 4

4.1 Study the rectangular prism and calculate its surface area and its volume. (6)



4.2 Sarah has a cube that has a volume of 125 cm^3 .

4.2.1 Determine the length of each side of the cube. (2)

4.2.2 Determine the surface area of the cube. (3)

4.2.3 Sarah wants to paint her cube. How much paint will she need if 1 litre covers 30 cm^2 ? (2)

4.2.4 What is the total cost of the paint if 1 litre costs R20? (1)

[14]

Total: 50

Exemplar Assessments

Term 3 Contol Test

Name: _____

Surname: _____

Time: 1 hour
Marks: 40

Instructions and information

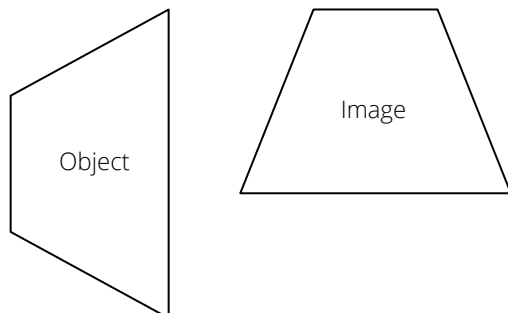
Read the following instructions carefully before answering the questions.

1. This paper consists of 4 questions.
2. Answer ALL the questions.
3. Clearly show ALL calculations in the spaces provided.
4. Write neatly and legibly.

Question 1

Multiple choice: Write down the letter of the correct answer next to the question number.

- 1.1 The image of the trapezium is a _____. (1)

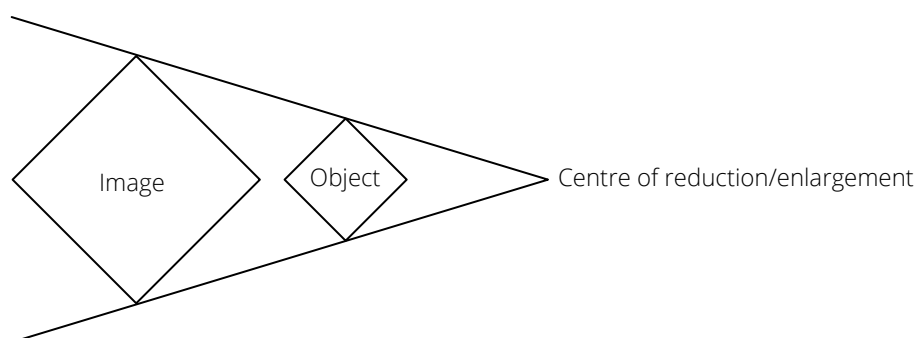


- A reflection of the object 180° clockwise
- B reflection of the object 90° anti-clockwise
- C reflection of the object 180° anti-clockwise
- D reflection of the object 90° clockwise

- 1.2 If $x - 10 = 17$, then the value of x is _____. (1)

- A 27
- B 36
- C 25
- D 37

- 1.3 An obtuse angle is an angle _____. (1)
- A greater than 30° but less than 60°
 - B greater than 60° but less than 90°
 - C greater than 90° but less than 180°
 - D greater than 180° but less than 270°
- 1.4 Which statement is correct about a scalene triangle? (1)
- A Three sides are equal.
 - B Two sides are equal.
 - C Three sides are not equal.
 - D Two sides are not equal.
- 1.5 Perpendicular lines are lines that _____. (1)
- A are equidistant from each other
 - B intersect at 90°
 - C intersect at any angle.
 - D bisect each other
- 1.6 In the expression: $5x - 11$, the variable and constant are _____. (1)
- A x and 11
 - B $5x$ and 11
 - C $5x$ and -11
 - D x and -11
- 1.7 In the transformation, the size of the diamond is changed by using a _____. (1)



- A reduction factor
- B enlargement factor
- C reflection factor
- D rotation factor

- 1.8 Which statement is a property of a parallelogram? (1)
- A Each angle is 90° .
 - B All sides are equal.
 - C One pair of opposite sides are parallel.
 - D Both pairs of opposite sides are parallel and equal.
- 1.9 Two shapes are congruent if _____. (1)
- A they have the same shape and not the same size
 - B they have the same shape and size
 - C they do not have the same shape but are the same size
 - D they do not have the same shape nor the same size
- 1.10 In a particular year, Jane is twice as old as her daughter, Jessica. If Jane is 38 old, how old is Jessica? (1)
- A 19 years old
 - B 18 years old
 - C 17 years old
 - D 16 years old

[10]

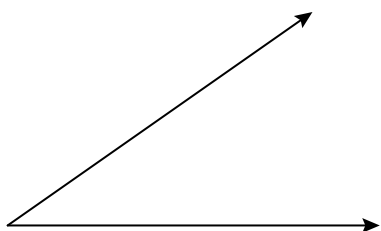
Question 2

- 2.1 Given the expression, $2x - 5$, write down:
- 2.1.1 the coefficient of x (1)
 - 2.2.2 the constant (1)
 - 2.1.3 the variable. (1)
- 2.2 Write the phrase "certain number is added to 16" as an expression. (2)
- 2.3 Solve the equations.
- 2.3.1 $x - 6 = 17$ (2)
 - 2.3.2 $y = 2x$, when $x = 2$ (3)

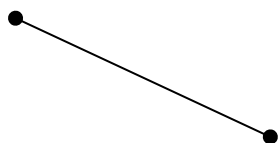
[10]

Question 3

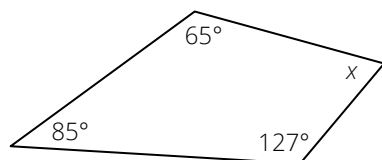
- 3.1 Classify and measure the angle. (2)



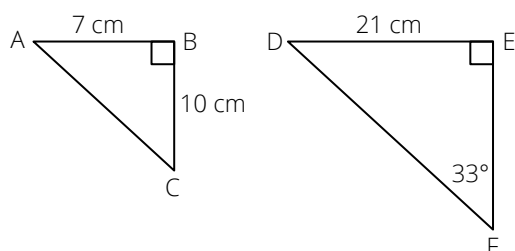
- 3.2 Draw a line AB and construct a line parallel to it. (2)



- 3.3 In the quadrilateral, calculate the angle marked x . (2)



- 3.4 The triangles are similar. Answer the questions and give reasons for your answers.



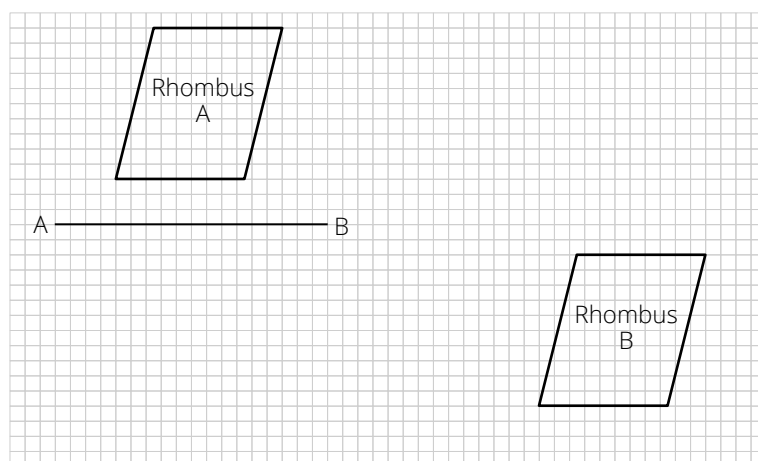
Calculate:

- 3.4.1 the size of angle C (2)
3.4.2 the length of EF. (2)

[10]

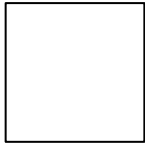
Question 4

- 4.1 Study the diagram.



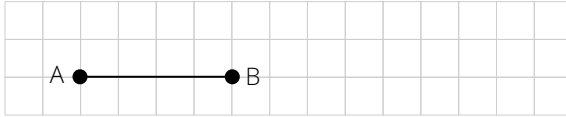
- 4.1.1 Describe how rhombus A has been translated to obtain Rhombus B. (2)
4.1.2 Reflect rhombus A in the line AB and label its image A' . (4)

- 4.2 Draw a square and draw all the lines of symmetry.



(2)

- 4.3 Redraw and enlarge the line AB by a factor of 2. Use A as your centre of enlargement.



(2)

[10]

Total: 40

Exemplar Assessments

Final Year Test 1

Name: _____

Surname: _____

Time: 1 hour

Marks: 50

Instructions and information

Read the following instructions carefully before answering the questions.

1. This paper consists of 8 questions.
2. Answer ALL the questions.
3. Clearly show ALL calculations in the spaces provided.
4. Write neatly and legibly.

Question 1

Multiple choice: Write down the letter of the correct answer next to the question number.

- 1.1 What is 2 in $2x + 3 = 7$? (1)
- A Constant
 - B Coefficient
 - C Variable
 - D Equation
- 1.2 An algebraic number sentence which consist of constants and variables with no 'equal-to' sign. (1)
- A Formulae
 - B Equation
 - C Expression
 - D Algebra
- 1.3 If $x - 5 = -9$, then the value of x is _____. (1)
- A 4
 - B -4
 - C 14
 - D -14

- 1.4 What are the next two terms in the sequence: 11, 14, 17, 20, ____, ____, ... (1)
- A 22, 25
B 23, 26
C 24, 27
D 25, 28
- 1.5 Determine the value of x if $\frac{32}{x} = 4$. (1)
- A 2
B 4
C 6
D 8
- 1.6 $\sqrt[3]{65+36} = \underline{\hspace{1cm}}$ (1)
- A 6
B 8
C 10
D 12
- 1.7 The prime factorisation of 120 is _____. (1)
- A $PF120 = 2 \times 2 \times 3 \times 5 \times 5$
B $PF120 = 2 \times 2 \times 3 \times 3 \times 5$
C $PF120 = 2 \times 2 \times 2 \times 3 \times 5$
D $PF120 = 2 \times 2 \times 2 \times 2 \times 5$
- 1.8 A prime number is: (1)
- A a number with 3 or more factors.
B a number divisible by 3.
C a number with 2 factors.
D an odd number.
- 1.9 The lowest common multiple is: (1)
- A the smallest number into which two numbers can divide.
B the largest number which divides perfectly into two numbers.
C the number with the least factors.
D the number with the most factors.
- 1.10 Convert $11\frac{2}{3}$ to an improper fraction. (1)
- A $\frac{22}{3}$
B $\frac{22}{2}$
C $\frac{35}{3}$
D $\frac{35}{2}$

Question 2

- 2.1 Determine the highest common factor of 24 and 36. (1)
- 2.2 Determine the lowest common multiple of 24 and 36. (1)

[2]

Question 3

- 3.1.1 Write in exponential form: $2 \times 2 \times 3 \times 3 \times 3$ (1)
- 3.1.2 Write in expanded notation: $2^3 \times 5^4$ (1)
- 3.1.3 Study the power 7^5 and write down the base. (1)
- 3.2 Use BODMAS/BEDMAS to calculate:
- 3.2.1 $(4^2 + \sqrt[3]{64}) \div 2$ (2)
- 3.2.2 $\sqrt[3]{100-36}$ (2)

[7]

Question 4

- 4.1 Calculate and leave your answers in its simplest form, as mixed numbers, where appropriate.
- 4.1.1 $\frac{7}{12} - \frac{5}{24}$ (1)
- 4.1.2 $2\frac{3}{4} + 1\frac{7}{12}$ (2)
- 4.1.3 $3\frac{1}{2} \times 2\frac{1}{4}$ (3)
- 4.2 Calculate and show your calculations, where appropriate.
- 4.2.1 $54,92 + 24,71$ (2)
- 4.2.2 $6,2 \times 7,1$ (2)
- 4.2.3 $74,23 \div 10$ (1)

[11]

Question 5

- 5.1 $8 - (-3)$
- 5.2 $(-10) + 4 - (-3)$
- 5.3 $7 \times (-4)$
- 5.4 $(-24) \div (-4)$

[4]

Question 6

- 6.1 Write down the next term in the sequence: 5; 8; 11; 14; (1)

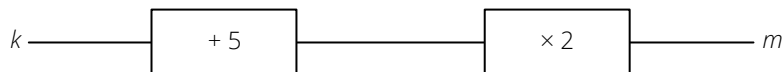
n	1	2	3	4	5
n th term	5	8	11	14	...

- 6.2 Determine the general rule for describing the numbers in the sequence. (2)
- 6.3 A term in the sequence is 98. Using the rule, find n , the position of the term in the sequence. (2)
- 6.4 Use the rule and find the term in position 50. (2)

[7]

Question 7

- 7.1 Study the expression $5x + 2 = y$ and answer the questions.
- 7.1.1 Write down the constant and why it is a constant. (1)
- 7.1.2 Write down the variables and why they are variable. (1)
- 7.2 Look at the flow diagram and answer the questions.



- 7.2.1 Write the flow diagram as an algebraic number sentence. (1)
- 7.2.2 Write the flow diagram as a formula. (1)
- 7.2.3 Design a flow diagram for $b = 4 \times a + 5$. (1)

[5]

Question 8

8. Solve the number sentences by inspection.
- 8.1 $x - 13 = 12$ (2)
- 8.2 $2a + 3 = 9$ (2)

[4]

Total: 50

Exemplar Assessments

Final Year Test 2

Name: _____

Surname: _____

Time: 1 hour

Marks: 50

Instructions and information

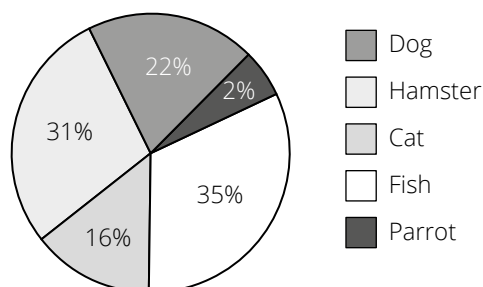
Read the following instructions carefully before answering the questions.

1. This paper consists of 5 questions.
2. Answer ALL the questions.
3. Clearly show ALL calculations in the spaces provided.
4. Write neatly and legibly.

Question 1

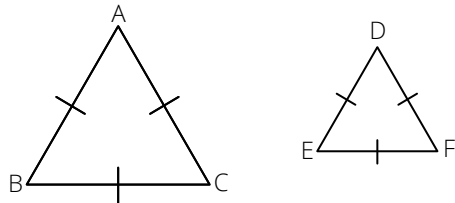
Multiple choice: Write down the letter of the correct answer next to the question number.

- 1.1 The mode of a data set is the _____. (1)
- A mean number
 - B middle number
 - C most frequent number
 - D maximum number
- 1.2 A reflex angle is an angle _____. (1)
- A greater than 180° but smaller than 360°
 - B greater than 90° but smaller than 180°
 - C greater than 60° but smaller than 90°
 - D greater than 30° but smaller than 60°
- 1.3 The diagram is an example of a _____. (1)

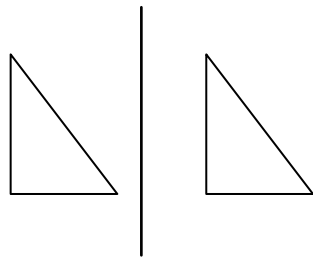


- A bar graph
- B histogram
- C double bar graph
- D pie chart

- 1.4 Triangle ABC is 2 times bigger than triangle DEF. What will be the size of angle E after the reduction? (1)



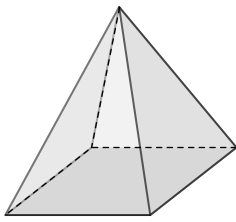
- A 30°
 - B 90°
 - C 60°
 - D 45°
- 1.5 The area of a square with sides 10 cm is equal to _____. (1)
- A 100 cm^2
 - B 100 cm
 - C 100 cm^3
 - D 100 cm^4
- 1.6 The transformation shown in the diagram is a _____. (1)



- A reflection
 - B translation
 - C rotation
 - D enlargement
- 1.7 Johnny has a bag of marbles. The bag contains 2 blue, 3 yellow and 5 red marbles. What is the probability that he will pick a yellow marble from the bag? (1)
- A $\frac{2}{10}$
 - B $\frac{5}{10}$
 - C $\frac{3}{10}$
 - D $\frac{6}{10}$

1.8 The 3D object is a ____.

(1)



- A square-based pyramid
- B triangular-based pyramid
- C triangular prism
- D rectangular prism

1.9 The formula for the surface area of a rectangular prism is ____.

- A Surface area = $l \times b \times h$
- B Surface area = $l \times l \times l$
- C Surface area = $6 \times l^2$
- D Surface area = $2(l \times h) + 2(b \times h) + 2(l \times b)$

1.10 A line that forms a circle is called ____.

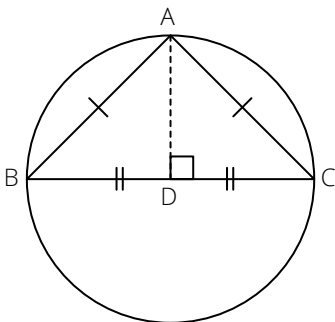
(1)

- A the diameter
- B the circumference
- C the radius
- D a sector

[10]

Question 2

2.1 Study the diagram and answer the questions.



2.1.1 In the circle, what parts of the circle are the line BC and the line AD?

(2)

2.1.2 What type of triangle is triangle ABC?

(1)

2.1.3 What type of angle is ACD and what is its size?

(2)

2.1.4 Are the triangles ABD and ADC similar or congruent?
Give a reason for your answer.

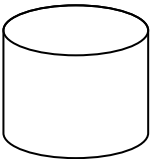
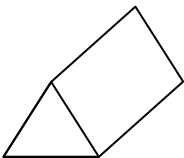
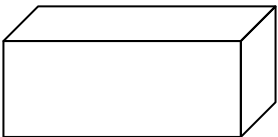
(3)

- 2.2 A school field is rectangular in shape. It measures 50 m long and 30 m wide.
- 2.2.1 Determine the perimeter of the school field. (2)
- 2.2.2 Determine the area, in square metres, of the school field. (2)
- 2.2.3 If a learner runs around the field five times, how many metres would he or she run? (1)

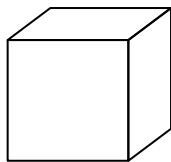
[13]

Question 3

- 3.1 Classify the 3D object by matching its shape in column A with its name in column B. Write your answers like this: 3.1.4 D (3)

Column A	Column B
3.1.1 	A Rectangular prism
3.1.2 	B Cylinder
3.1.3 	C Triangualr prism

- 3.2 Look at the diagram of a cube and answer the questions.

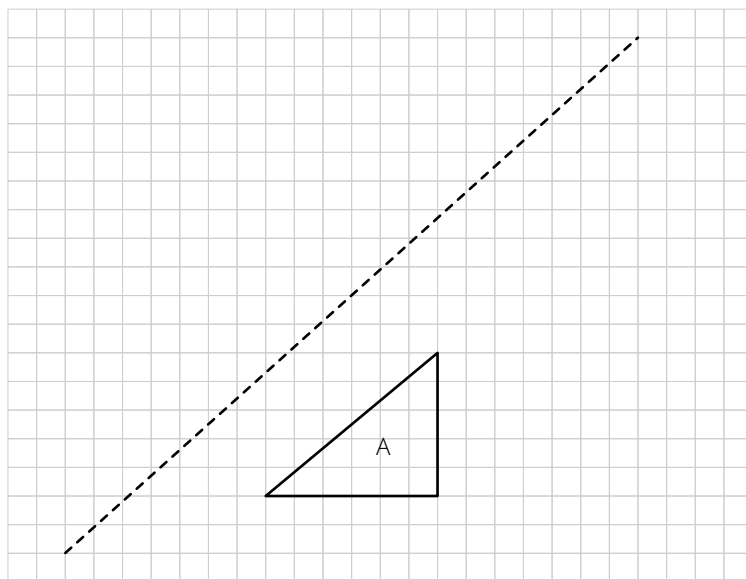


- 3.2.1 Complete: A cube has ____ faces, ____ vertices and ____ edges. (3)
- 3.2.2 Determine the total surface area of the cube. (3)
- 3.2.3 Determine the volume of the cube. (2)

[11]

Question 4

4. Look at triangle A on the square grid and answer the questions.



- 4.1 Reflect triangle A on the square grid over the mirror line and call the new triangle A'. (2)
 4.2 Rotate triangle A' 90° clockwise and label the new image A''. (3)
 4.3 Translate triangle A 9 units to the left and 5 units up and label the image triangle B. (2)

[7]

Question 5

- 5.1 Mrs Abrahams recorded her class test results. The test was out of 50 marks. The learners results are displayed in a stem-and-leaf diagram.

1	1	3	6	9			
2	0	1	1	1	4	8	
3	3	4	5	7	7	8	9
4	0	5	6	8			

- 5.1.1 How many learners wrote the test? (1)
 5.1.2 What was the highest mark? (1)
 5.1.3 Determine the median mark. (1)
 5.1.4 Determine the mean mark, round off to two decimal places. (3)
 5.2 As a reward Mrs Abrahams brought a jar of sweets to school. The jar contains 5 red, 4 green, 10 blue and 3 yellow sweets.
 5.2.1 How many sweets are in the jar? (1)
 5.2.2 What is the probability of choosing a green sweet from the jar? (2)

[9]

Total: 50

Exemplar Assessments

Mid-year Test 1 Memorandum

Marks: 50

- 1.1 B ✓ (1)
 1.2 C ✓ (1)
 1.3 D ✓ (1)
 1.4 D ✓ (1)
 1.5 A ✓ (1)
 1.6 B ✓ (1)
 1.7 D ✓ (1)
 1.8 C ✓ (1)
 1.9 A ✓ (1)
 1.10 C ✓ (1)

[10]

- 2.1 1 500 ml ✓ (1)
 2.2 $(300 + 350) \div 2 = 325$ ✓✓ (2)
 2.3 Multiples of 12: 12, 24, 36, 48, 60, 72, 84 ✓
 Multiples of 15: 15, 30, 45, 60, 75, 90, 105 ✓
 LCM: 60 ✓ (3)
 2.4 $10 : 7$ ✓ (2)
 2.5 Time = Distance \div Speed
 $= 650 \div 65$ ✓
 $= 10$ hours ✓ (2)

[10]

- 3.1 2^5 ✓✓ (2)
 3.2.1 $2^3 \times 3^2$
 $= 8 \times 9$ ✓
 $= 72$ ✓ (2)
 3.2.2 $\sqrt{25} - \sqrt[3]{8}$
 $= 5 - 2$ ✓
 $= 3$ ✓ (2)
 3.2.3 $(5^3 \div 5^2) \times 4$
 $= (125 \div 25) \times 2$ ✓
 $= 10$ ✓ (2)
 3.2.4 (4×4) ✓ $= 4^2 = 16$ truffles ✓ (2)

[10]

4.1 $2\frac{1}{3} + 3\frac{7}{15} - 1\frac{2}{5}$ ✓ (4)

$$= 2\frac{1 \times 5}{3 \times 5} + 3\frac{7}{15} - 1\frac{2 \times 3}{5 \times 3}$$
 ✓

$$= 2\frac{5}{15} + 3\frac{7}{15} - 1\frac{6}{15}$$
 ✓

$$= (2 + 3 - 1)\left(\frac{5+7-6}{15}\right)$$

$$= 4\frac{6}{15}$$
 ✓

4.2 $\frac{3}{7} \times \frac{350}{1}$ ✓ (3)

$$= \frac{3 \times 350}{7 \times 1}$$
 ✓

$$= \frac{1050}{7}$$
 ✓

$$= 150 \text{ g}$$

4.3 Percentage decrease = $\frac{R40 - R32}{R40} \times 100$ ✓ (3)

$$= \frac{800}{40}$$
 ✓

$$= 20\%$$
 ✓

[10]

5.2.1 $3 + 0,025$ (2)

$$3,000$$

$$+ \underline{0,025}$$
 ✓

$$\underline{3,025}$$
 ✓

5.2.2 $4,416 \div 4$ (2)

$$\begin{array}{r} 1104 \\ 4 \overline{)4416} \end{array}$$

$$\underline{-4} \quad \text{✓ method}$$

$$04$$

$$\underline{-4}$$

$$016$$

$$\underline{-16}$$

$$\underline{0} \quad \text{Answer: } 1,104 \text{ ✓}$$

5.3 $A = 7$ ✓ and $B = 2,5$ ✓ (2)

5.4 $C = 9$ ✓ and $D = 24,253$ ✓ (2)

[10]

Total: 50

Exemplar Assessments

Mid-year Test 2 Memorandum

Marks: 50

- | | | |
|------|-----|-----|
| 1.1 | C ✓ | (1) |
| 1.2 | D ✓ | (1) |
| 1.3 | C ✓ | (1) |
| 1.4 | B ✓ | (1) |
| 1.5 | A ✓ | (1) |
| 1.6 | B ✓ | (1) |
| 1.7 | A ✓ | (1) |
| 1.8 | D ✓ | (1) |
| 1.9 | C ✓ | (1) |
| 1.10 | D ✓ | (1) |

[10]

- | | | |
|-------|---|-----|
| 2.1.1 | Isosceles ✓ | (1) |
| 2.1.2 | $B = 40^\circ$ because side AC is equal to sides BC. ✓✓ | (2) |
| 2.1.3 | Yes. ✓ | (1) |
| 2.1.4 | Two sides of triangle ABC are equal to two sides of triangle EDC and both triangles have an equal corresponding included angle, C. We call this the SAS rule. ✓✓✓ | (3) |
| 2.2.1 | Kite ✓ | (1) |
| 2.2.2 | 90° ✓ | (1) |
| 2.2.3 | $BD = 5 \text{ cm}$ ✓ | (1) |
| 2.3.1 | Similar ✓ | (1) |
| 2.3.2 | Ratio is 2 : 6. ✓ | (2) |
| 2.3.3 | Angle $d = 90^\circ$. ✓ | (1) |

[14]

- | | | |
|-------|--------------------------------|-----|
| 3.1.1 | Rectangle ✓ | (1) |
| 3.1.2 | $30 \div 10 = 3 \text{ cm}$ ✓✓ | (2) |

3.1.3 Perimeter = $2(12 + 30)$ cm

$$= 2 \times 42$$

$$= 84 \text{ cm} \checkmark\checkmark$$

(2)

3.1.4 Area = $12 \text{ cm} \times 3 \text{ cm}$

$$= 36 \text{ cm}^2 \checkmark\checkmark$$

(2)

3.2.1 Perimeter = $7,2 \text{ cm} + 6,5 \text{ cm} + 12,3 \text{ cm}$

$$= 26 \text{ cm} \checkmark\checkmark$$

(2)

3.2.2 Area = $\frac{1}{2} \times 6,5 \text{ cm} \times 7,2 \text{ cm}$

$$= 23,4 \text{ cm}$$

(3)

[12]

4.1 Surface area = $[2(10 \text{ cm} \times 5 \text{ cm})] + [2(3 \text{ cm} \times 5 \text{ cm})] + [2(10 \text{ cm} \times 3 \text{ cm})]$

$$= (2 \times 50 \text{ cm}^2) + (2 \times 15 \text{ cm}^2) + (2 \times 30 \text{ cm}^2)$$

$$= 100 \text{ cm}^2 + 30 \text{ cm}^2 + 60 \text{ cm}^2$$

$$= 190 \text{ cm}^2 \checkmark\checkmark\checkmark\checkmark$$

$$\text{Volume} = 10 \text{ cm} \times 3 \text{ cm} \times 5 \text{ cm} = 150 \text{ cm}^3 \checkmark\checkmark$$

(6)

4.2.1 $\sqrt[3]{125 \text{ cm}^3} = 5 \text{ cm} \checkmark\checkmark$

(2)

4.2.2 Surface area = $6 \times (5 \text{ cm})^2$

$$= 6 \times 25 \text{ cm}^2$$

$$= 150 \text{ cm}^2 \checkmark\checkmark\checkmark$$

(3)

4.2.3 $150 \text{ cm}^2 \div 30 \text{ cm}^2 = 5 \text{ litres} \checkmark\checkmark$

(2)

4.2.4 $5 \times \text{R}20 = \text{R}100 \checkmark$

(1)

[14]

Total: 50

Exemplar Assessments

Term 3 Control Test Memorandum

Marks: 40

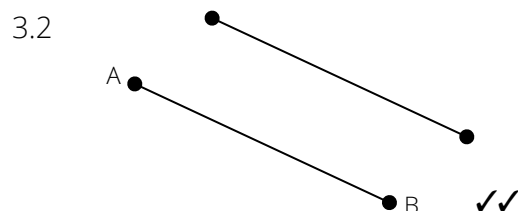
- | | | |
|------|-----|-----|
| 1.1 | D ✓ | (1) |
| 1.2 | A ✓ | (1) |
| 1.3 | C ✓ | (1) |
| 1.4 | C ✓ | (1) |
| 1.5 | B ✓ | (1) |
| 1.6 | D ✓ | (1) |
| 1.7 | A ✓ | (1) |
| 1.8 | D ✓ | (1) |
| 1.9 | B ✓ | (1) |
| 1.10 | A ✓ | (1) |

[10]

- | | | |
|-------|--|-----|
| 2.1.1 | 2 ✓ | (1) |
| 2.1.2 | -5 ✓ | (1) |
| 2.3.1 | $x = 17 + 6$ ✓
$x = 23$ ✓ | (2) |
| 2.3.2 | $y = 2(2)^3 + 16$ ✓
$y = 16 + 16$ ✓
$y = 32$ ✓ | (3) |

[10]

- | | | |
|-----|----------------------------------|-----|
| 3.1 | Acute angle ✓ and 35° . ✓ | (2) |
|-----|----------------------------------|-----|



(2)

- | | | |
|-----|---|-----|
| 3.3 | $x = 360^\circ - (65^\circ + 85^\circ + 127^\circ)$ ✓
$x = 83^\circ$ ✓ | (2) |
|-----|---|-----|

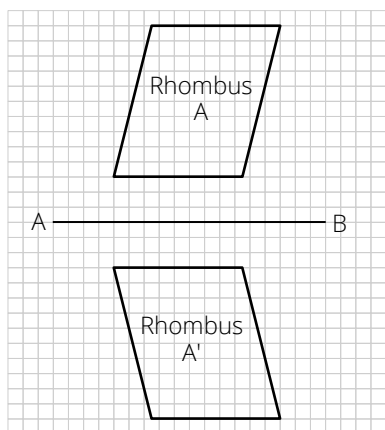
- | | | |
|-------|--|-----|
| 3.4.1 | $\angle C = 33^\circ$ ✓; because $\angle F$ is 33° and the triangles are similar. ✓ | (2) |
|-------|--|-----|

- | | | |
|-------|---|-----|
| 3.4.2 | $EF = 30$ cm ✓; because the sides of similar triangles are in proportion. ✓ | (2) |
|-------|---|-----|

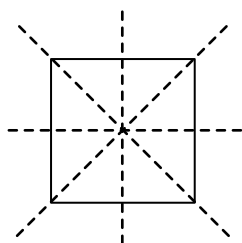
[10]

4.1.1 The rhombus was translated 28 units to the right and 15 units downwards. ✓✓ (2)

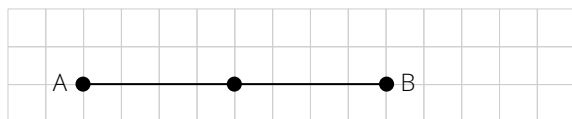
4.1.2



4.2 ✓✓✓✓ 1 mark for each correct vertex (4)



4.3



✓✓

(2)

[10]

Total: 40

Exemplar Assessments

Final Year Test 1 Memorandum

Marks: 50

- | | | |
|------|-----|-----|
| 1.1 | B ✓ | (1) |
| 1.2 | C ✓ | (1) |
| 1.3 | B ✓ | (1) |
| 1.4 | B ✓ | (1) |
| 1.5 | D ✓ | (1) |
| 1.6 | C ✓ | (1) |
| 1.7 | C ✓ | (1) |
| 1.8 | C ✓ | (1) |
| 1.9 | A ✓ | (1) |
| 1.10 | C ✓ | (1) |

[10]

- | | | |
|------|--|-----|
| 2.1. | F24 = 1, 2, 3, 4, 6, 8, 12, 24
F36 = 1, 2, 3, 4, 6, 9, 12, 18, 36
HCF (24 and 36) = 12 ✓ | (1) |
| 2.2. | M24 = 24, 48, 72, ...
M36 = 36, 72, 108, ...
LCM (24 and 36) = 72 ✓ | (1) |

[2]

- | | | |
|-------|---|-----|
| 3.1.1 | $2^2 \times 3^3$ ✓ | (1) |
| 3.1.2 | $2 \times 2 \times 2 \times 5 \times 5 \times 5 \times 5$ ✓ | (1) |
| 3.1.3 | Base = 7 ✓ | (1) |
| 3.2.1 | $(42 + \sqrt[3]{64}) \div 2$
$= (16 + 4) \div 2$
$= 20 \div 2$
$= 10$ ✓✓ | (2) |
| 3.2.2 | $\sqrt[2]{100 - 36}$
$= \sqrt[2]{64}$
$= 8$ ✓✓ | (2) |

[7]

$$\begin{aligned}
 4.1.1 \quad \frac{7}{12} - \frac{5}{24} &= \frac{14-5}{24} \\
 &= \frac{9}{24} \\
 &= \frac{3}{8} \checkmark
 \end{aligned}
 \tag{1}$$

$$\begin{aligned}
 4.1.2 \quad 2\frac{3}{4} + 1\frac{7}{12} &= \frac{11}{4} + \frac{21}{12} \\
 &= \frac{33+21}{12} \\
 &= \frac{54}{12} = \frac{9}{2} = 4\frac{1}{2} \checkmark\checkmark
 \end{aligned}
 \tag{2}$$

$$\begin{aligned}
 4.1.3 \quad 3\frac{1}{2} \times 2\frac{1}{4} &= \frac{7}{2} \times \frac{9}{4} \\
 &= \frac{7 \times 9}{2 \times 4} \\
 &= \frac{63}{8} \\
 &= 7\frac{7}{8} \checkmark\checkmark
 \end{aligned}
 \tag{2}$$

$$\begin{array}{r}
 4.2.1 \quad 54,92 \\
 + 24,71 \\
 \hline
 79,63 \checkmark\checkmark
 \end{array}
 \tag{2}$$

$$\begin{array}{r}
 4.2.2 \quad 6,2 \\
 \times 7,1 \\
 \hline
 62 \\
 4340 \\
 \hline
 4402 \text{ Answer: } 44,02 \checkmark\checkmark
 \end{array}
 \tag{2}$$

$$\begin{array}{r}
 4.2.3 \quad 7,423 \\
 10 \overline{) 74,230} \\
 \underline{- 70} \\
 42 \\
 \underline{- 42} \\
 40 \\
 \underline{- 23} \\
 20 \\
 \underline{- 20} \\
 0 \\
 \underline{- 0} \\
 0 \checkmark
 \end{array}
 \tag{1}$$

[11]

$$5.1. \quad 8 - (-3) = 11 \checkmark \tag{1}$$

$$5.2. \quad (-10) + 4 - (-3) = (-3) \checkmark \tag{1}$$

$$5.3. \quad 7 \times (-4) = (-28) \checkmark \tag{1}$$

$$5.4. \quad (-24) \div (-4) = 6 \checkmark \tag{1}$$

[4]

$$6.1 \quad \text{The 5th term is } 17. \checkmark \tag{1}$$

6.2 Constant difference = $8 - 5 = 3$ and $11 - 8 = 3$

Consider the first term: $5 = 3(1) + k$

$$5 = 3 + k$$

$$k = 5 - 3 = 2$$

Therefore, the rule is $3n + 2 = nth$ term. ✓✓

(2)

6.3 The term is 98, so n , the position is unknown.

$$3n + 2 = nth \text{ term}$$

$$3n + 2 = 98$$

$$3n = 98 - 2$$

$$3n = 96$$

$$n = 96 \div 3$$

$$n = 32$$

The position of the term is 32. ✓✓

(2)

6.4 $n = 50$, so term itself is the unknown.

$$\text{Term} = 3(50) + 2$$

$$= 150 + 2$$

$$= 152$$

∴ The term is 152. ✓✓

(2)

[7]

7.1.1 2 ✓

(1)

7.1.2 x and y ✓

(1)

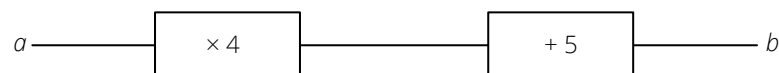
7.2.1 An input value k is multiplied by 2 and then 5 is added to produce an outcome value of m .

(1)

7.2.2 $m = 2k + 5$ ✓

(1)

7.3



(1)

[5]

8.1 $x - 13 = 12$

$$x = 12 + 13$$

$$x = 25$$
 ✓✓

(2)

8.2 $2a + 3 = 9$

$$2a = 9 - 3$$

$$a = 6 \div 2$$

$$a = 3$$
 ✓✓

(2)

[4]

Total: 50

Exemplar Assessments

Final Year Test 2 Memorandum

Marks: 50

- | | | |
|------|-----|-----|
| 1.1 | C ✓ | (1) |
| 1.2 | C ✓ | (1) |
| 1.3 | D ✓ | (1) |
| 1.4 | C ✓ | (1) |
| 1.5 | A ✓ | (1) |
| 1.6 | B ✓ | (1) |
| 1.7 | C ✓ | (1) |
| 1.8 | A ✓ | (1) |
| 1.9 | D ✓ | (1) |
| 1.10 | B ✓ | (1) |

[10]

- | | | |
|-------|-----------------------------------|-----|
| 2.1.1 | BC = diameter ✓ and AD = radius ✓ | (2) |
| 2.1.2 | Isosceles triangle ✓ | (1) |
| 2.1.3 | Right angle ✓ and 90° ✓ | (2) |
| 2.1.4 | They are congruent. ✓ | |

In the right-angled triangle ABD, the hypotenuse and BD are equal to the hypotenuse AC and the corresponding side CD in the second triangle ACD. This the RHS rule. ✓✓ (3)

- | | | |
|-------|---|-----|
| 2.2.1 | Perimeter = $2(50 \text{ m} + 30 \text{ m})$
$= 2 \times 80 \text{ m}$
$= 160 \text{ m}$ ✓✓ | (2) |
| 2.2.2 | Area = $50 \text{ m} \times 30 \text{ m}$
$= 1\,500 \text{ m}^2$ ✓✓ | (2) |
| 2.2.3 | $5 \times 160 \text{ m} = 800 \text{ m}$ ✓ | (1) |

[13]

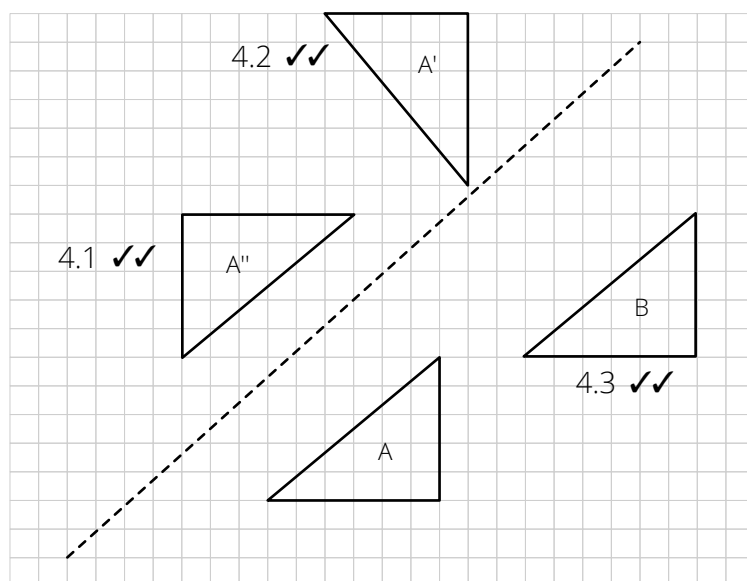
- | | | |
|-------|---|-----|
| 3.1.1 | B ✓ | (1) |
| 3.1.2 | C ✓ | (1) |
| 3.1.3 | A ✓ | (1) |
| 3.2.1 | Faces: 6; ✓ Vertices: 8 ✓ and Edges: 12 ✓ | (3) |
| 3.2.2 | Surface area = $6 \times (3)^2$ ✓
$= 6 \times 9 \text{ cm}^2$ ✓
$= 54 \text{ cm}^2$ ✓ | (3) |

3.2.3 Volume = $3 \text{ cm} \times 3 \text{ cm} \times 3 \text{ cm}$ ✓
 = 27 cm^3 ✓

(2)

[11]

4.



(7)

[7]

5.1.1 21 learners ✓

(1)

5.1.2 48 ✓

(1)

5.1.3 33 ✓

(1)

5.1.4 $\frac{11 + 13 + 16 + 19 + 20 + 21 + 21 + 24 + 28 + 33 + 34 + 35 + 37 + 37 + 38 + 39 + 40 + 45 + 46 + 48}{21}$ ✓
 = $626 \div 21$ ✓
 = 29,81 ✓

(3)

5.2.1 22 sweets ✓

(1)

5.2.2 Probability (choose green) = $\frac{4}{22} = \frac{2}{11}$ ✓✓

(2)

[9]

Total: 50

Notes

Dotted lines for writing notes.

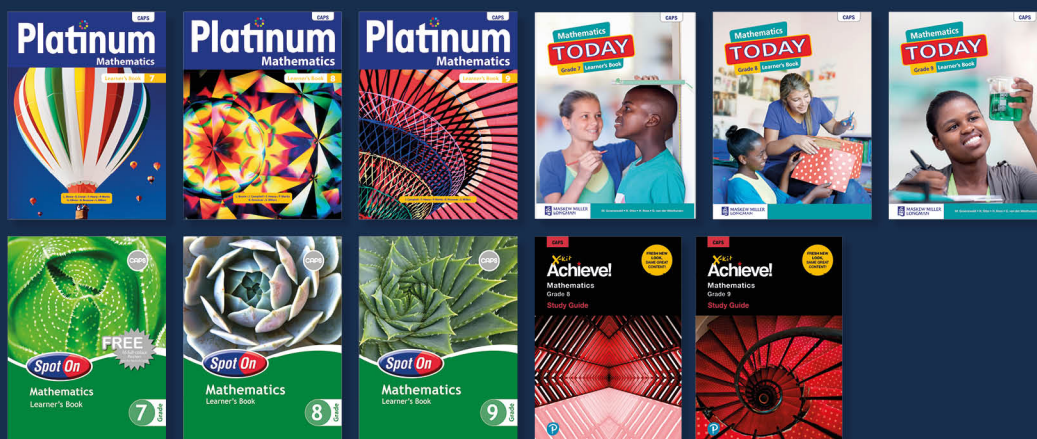
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