PLANNER & TRACKER FOR RECOVERY ANNUAL TEACHING PLAN (ATP)

MATHEMATICS

GRADE 9 TERM 3

Helping teachers and learners to catch up with learning losses, master new content and acquire skills for the future.

2021

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CONTENTS

ABOUT THE PLANNER AND TRACKER

This 2021 Revised Recovery Curriculum and Assessment Planner and Tracker is provided by the National Education Collaboration Trust (NECT) on behalf of the Department of Basic Education (DBE)! We hope that this programme provides you with additional skills, methodologies and content knowledge that you can use to teach your learners more effectively.

WHAT IS NECT?

In 2012 our government launched the National Development Plan (NDP) to eliminate poverty and reduce inequality by the year 2030. Improving education is an important goal in the NDP which states that 90% of learners will pass Maths, Science and languages with at least 50% by 2030. This is an ambitious goal for the DBE to achieve on its own, so the NECT was established in 2015 to assist in improving education.

The NECT has successfully brought together groups of people interested in education so that we can work collaboratively to improve education. These groups include the teacher unions, businesses, religious groups, trusts, foundations and NGOs.

PURPOSE OF PLANNER AND TRACKER

1) To mediate the amendments of the trimmed and re-organised 2021 Annual Teaching Plan including School-Based Assessments for Mathematics Grade 9.
2) To ensure that meaningful teaching continues during the remaining teaching time as per the school calendar for TERM 3.
3) To assist teachers with guided pacing and sequencing of curriculum content and assessment.
4) To enable teachers to cover the core skills and knowledge in each grade within the available time.
5) To assist teachers with planning for the different forms of assessment.
6) To ensure learners are adequately prepared for the subsequent year/s in terms of skills, knowledge, attitudes and values.

PREAMBLE

It must be emphasized that Term 1 and term 2 content coverage by teachers were impacted by COVID-19. Schools were particularly disrupted by the fact that learners only attended school for 50% of the time and had to endure variations of the rotation system implemented in the schools. Disruption in schools has also meant disruption in different forms of assessment, so it has been hard to fully pin down exactly how much the school closures and transitions in and out of virtual learning have affected students' mathematical learning, but the evidence so far doesn't bode well.

Curriculum coverage in term 1 and 2, must be viewed and implemented in term 3, in the light of some contextual realities that includes the following:

1) 2020 was an abnormal year in terms of content coverage. Learners have progressed to a higher grade level without learning all the core skills required for that grade.
2) Some learners were not in school for most of 2020 and perhaps part of 2021.
3) Mathematics is almost always formally learned at school. Many of our parents are often less well-equipped to help their children with mathematics, at a time when parent support can be even more crucial to student progress. This means that the burden falls directly on our teachers.

4) Broader stress and trauma related to the pandemic may worsen existing mathematics anxiety in some students, and mathematics anxiety can exacerbate students' other stress while in class.

Awareness of the above challenges and the consequent assumptions that emerge out of it, is crucial for the implementation of the Revised ATPs emphasizing the recovery of skills not yet mastered in mathematics. This Planner and Tracker is in alignment with the theme of recovery of skills not learnt and covers the following:

1) aims to ensure that the critical skills, knowledge, values and attitudes outlined in the ATPs are covered over this time period.
2) Curriculum Reorganisation and Trimming for this term purports to reduce the envisaged curriculum to manageable core content , skills, knowledge, attitudes and values to enhance deep and meaningful learning.
3) Create opportunities through adjusted ATPs to strengthen pre-knowledge, consolidation, revision, and deeper learning.
4) The Planner and Tracker clearly define the core knowledge, skills, attitude to be taught and assessed more specifically to guide and support teachers.
5) It also aligns curriculum content and assessment to the available teaching time. Entrench assessment for learning as a Pedagogical Approach to address the learning losses.
6) Be used as planning tool to inform instruction during the remaining school terms.

ADJUSTED SCHOOL CALENDAR

SCHOOL TERMS	DATES	TEACHING DAYS
Term 1	15 February - 23 April	50(10 weeks)
Term 2	3 May – 9 July	50(10 weeks)
Term 3	**26 July – 01 October**	**50(10 weeks)**
Term 4	11 Oct - 15 Dec	48(10 weeks)

NOTES:

- TEACHING APPROACH in this term assumes that ALL learners are attending schools and the Rotation system may not be implemented meaning that schools may implement normal timetable.
- NECT TERM 3 Planner and Tracker has 48 teaching and learning days (2 public holidays), of which 15 days are used for formative and summative Assessment days.
- NECT Term 3 Planner and Tracker focuses on Deep learning through assessment for learning - There is no time for assessment that does not inform the way forward. Teachers should consolidate, revise and remediate through error analysis that leads to skills mastery.

MANAGING TIME ALLOCATED IN THE TRACKER

- The tracker for each term contains details of work to be covered over 60 lessons per term, six per week for ten weeks.
- The CAPS prescribes **four and a half hours** of Mathematics per week in Grade 9.
- Each school will organise its timetable differently, so the programme of lessons is based on work in the Learner's Book and DBE workbook, which should take just about an hour per day to complete. Perhaps, at end of week 30 minutes – will be great if this is also an hour.

- You might have to divide the sessions in the programme slightly differently to accommodate the length of the lessons at your school.
- Depending on the pace at which your learners work, and how much support is needed,
- you might also have to supplement the set activities by using other resources to ensure that the full four and a half hours allocated to teaching Mathematics is used constructively.
- The breakdown of work to be done each week corresponds to the 'annual teaching plan and programme of assessment' drawn up by the Provincial Department of Education; however, the tracker gives a more detailed outline of what should be taught each day.
- This tracker is designed for a term that is 10 weeks long.
- In most weeks, one lesson is set aside – at the end of the week - for you to catch up on work not done in the previous four lessons, or to provide remedial support or enrichment.
- The formal teaching programme, the project, some revision, and the term test should be completed by the end of Week 10.

REMEMBER: The teacher should employ group teaching based on principles of differentiation – cater for the needs of every learner by making sure every learner masters the fundamental skills in mathematics. The teacher is also mindful to plan well for effective assessment for learning to inform the remediation and teaching, through the skills mastery approach applied in this Planner and Tracker.

LINKS TO THE DBE WORKBOOKS

The tracker gives links to worksheets in the DBE workbooks relevant to the content described for each day. The worksheets are referred to by worksheet number and page number. These workbooks should be used in conjunction with the Learner's Book activities. You should review the suggested worksheets before each lesson and decide how best to use them – for teaching, revision, extension or consolidation, in class or for homework.

TEACHING TIME

Since there are **4 and $\frac{1}{2}$** hours allocated for Mathematics per week, the following is a suggested plan for daily lessons.

WEEK: 4 and $\frac{1}{2}$ hours	
Consolidation of Concepts – skills mastery and other New Concept – class activity	 10 min 50 min

CONTENT COVERAGE

TERM 3	Week 1 4 days	Week 2 5 days	Week 3 5 days	Week 4 5 days	Week 5 4 days	Week 6 5 days	Week 7 5 days	Week 8 5 days	Week 9 5 days	Week 10 5 days	Week 11 4 days
Hours per work	3.5 hrs	4.5 hrs	4.5 hrs	4.5 hrs	3.5 hrs	4.5 hrs	4.5 hrs	4.5 hrs	4.5 hrs	4.5 hrs	4 hrs
Hours per topic	6.5 hrs.		9 hrs.		5 hrs.	9 hrs.		9 hrs.		4.5 hrs.	4 hrs.
Topics, concepts and skills	**FUNCTIONS AND RELATIONSHIPS** **Input and output values** • Determine input values, output values or rules for patterns and relationships using: – flow diagrams – tables – formulae – equations **Equivalent forms** • Determine, interpret and justify equivalence of different descriptions of the same relationship or rule presented: – verbally – in flow diagrams – in tables – by formulae – by equations – by graphs on a Cartesian plane		**GRAPHS** **Interpreting graphs** • Extend the focus on features of graphs with special focus on the following features of **linear graphs**: – *x*-intercept and *y*-intercept – Gradient **Drawing graphs** • Use tables of ordered pairs to plot points and draw graphs on the Cartesian plane • Extend drawing of graphs with special focus on: – drawing linear graphs from given equations – determining equations from given **linear graphs**.		**TRANSFORMATION GEOMETRY** **Transformations** • Recognize, describe and perform transformations with points, line segments and simple geometric figures on a co-ordinate plane, focusing on: – reflection in the X-axis or Y- axis – translation within and across quadrants	**GEOMETRY OF STRAIGHT LINES** **Angle relationships** • Revise and write clear descriptions of the relationship between angles formed by: – perpendicular lines – intersecting lines – parallel lines cut by a transversal **Solving problems** • Solve geometric problems using the relationships between pairs of angles described above		**GEOMETRY OF 2D SHAPES AND COSTRUCTION OF GEOMETRIC FIGURES** **Classifying 2D shapes** • Revise properties and definitions of triangles in terms of their sides and angles, distinguishing between: – equilateral triangles – isosceles triangles – right-angled triangles **Constructions** **PROVIDE LEARNERS WITH ACCURATELY CONSTRUCTED FIGURES TO INVESTIGATE THE PROPERTIES OF TRIANGLES** • Investigate the angles in a triangle, focusing on the relationship between the exterior angle of a triangle and its interior angles **Classifying 2D shapes** • Revise and write clear definitions of quadrilaterals in terms of their sides, angles and diagonals, distinguishing between: – parallelogram – rectangle – square – rhombus – trapezium – kite **Constructions** **PROVIDE LEARNERS WITH ACCURATELY CONSTRUCTED FIGURES TO INVESTIGATE THE PROPERTIES OF QUADRILATERALS**		**REVISION**	**FORMAL ASSESSMENT TASK** **TEST** All topics
								• investigate sides and angles. and diagonals in quadrilaterals, focusing on: – exploring the sum of the interior angles of polygons – the diagonals of rectangles, squares, – parallelograms, rhombi and kites			
Prerequisite skill or pre-knowledge		•	• Translations, reflections, rotations enlargements and reductions with geometric figures and shapes on grid paper	• Recognize and describe pairs of angles formed by: – perpendicular lines – intersecting lines – parallel lines cut by a transversal • Solve geometric problems using the relationships between pairs of angles described above		• the sum of the interior angles of triangles • Identify and write clear definitions of types of triangles focusing on sides and angles			

CORE QUESTIONS	DID ALL LEARNERS MASTER TERM 1 SKILLS?	DID ALL LEARNERS MASTER TERM 1 AND 2 SKILLS?	NEW CONCEPTS/CONTENT

RECOMMEN-DATION	1. Implement at least two Skills Mastery (SM) formative assessments every week. 2. Consolidation of Concepts – 10 minutes – twice a week apply 5-item SM assessments. 3. Teacher – can use SM as individual, pair, small group, or whole class activity. 4. Aim – to consolidate, remediate and work towards mastery. 5. Record – monitor learners who have learning gaps in the REFLECTION section of the Tracker	NEW CONCEPTS/CONTENT

WEEKLY PLANNER AND TRACKER

RECOMMENDATION
BASELINE TERM 3: Implement Baseline/Diagnostic – or any similar diagnostic – Based on term 1 and term 2 core skills. Meaning teachers can select different items in the diagnostic for their purposes.
WHEN: Day 1, allow learners to complete individually and/or work with ability groups based on your classroom context. Day 2 is set aside for remediation purposes.
NUMBER OF ITEMS: Grade 9 = 15 - 20 items – depending on your context and ability groups
ITEM BANK: Items can be from previous:

1) BASELINE/READINESS assessment, 2) Assessment Resources in this TRACKER or 3) the DBE Item Bank and 4) Textbooks.

26 – 30 July 2021

Week 1					
Lesson	**ATP Content**	**concepts, skills**	**DBE workbook**	**Resources**	**Date**
1		Baseline: (Revision, consolidation of term 1 and 2 skills)			
2		Baseline: Remediation – error analysis			
3	FUNCTIONS AND RELATIONSHIPS Input and output values: Determine input values, output values or rules for patterns and relationships using: – flow diagrams– tables– formulae – equations	Input and output values using flow diagrams,	Bk 1 No. 7a (pp. 20 – 21) No. 7b (pp. 22 – 23)		
4	FUNCTIONS AND RELATIONSHIPS Input and output values: Determine input values, output values or rules for patterns and relationships using: – flow diagrams– tables– formulae – equations	Functions and relationships: Determine output values for given equations	Bk 2 No. 69 (pp. 10 – 11)		
5	FUNCTIONS AND RELATIONSHIPS Input and output values: Determine input values, output values or rules for patterns and relationships using: – flow diagrams– tables– formulae – equations	Determine rules for number patterns	Bk 2 No. 65 (pp. 2 – 3)		

Notes for the teacher.

1. The Baseline Assessment can be administered one-on one or to a group of at least 5 learners at a time – it is an assessment FOR learning.
2. The onus is on the teacher to prepare substantial activities for the rest of the learners while the Baseline Assessment is being administered.
3. Prepare well - study the Baseline Assessment i.e. familiarise yourself with the apparatus and templates that must be used.

Reflection	
DID ALL THE LEARNERS LEARN THE WEEKLY SKILLS? ARE THEY ABLE TO: • Solve input/output models with all operations • Model and solve equations that yield functions • Provide rules for number patterns	What will you change next time? Why? **Struggling Learners Names:**

	HOD: **Date:**

2 – 6 AUGUST 2021

Week 2					
Lesson	**ATP Content**	**concepts, skills**	**DBE workbook**	**Resources**	**Date**
6	FUNCTIONS AND RELATIONSHIPS Equivalent forms: Determine, interpret and justify equivalence of different descriptions of the same relationship or rule presented: – verbally– in flow diagrams– in tables – by formulae– by equations – by graphs on a Cartesian plane	Determine rules for patterns and relationships and draw the flow diagrams/graphs	Bk 2 No. 66 (pp. 4 - 5)		
7	FUNCTIONS AND RELATIONSHIPS Equivalent forms: Determine, interpret and justify equivalence of different descriptions of the same relationship or rule presented: – verbally– in flow diagrams– in tables – by formulae– by equations – by graphs on a Cartesian plane	Determine rules for patterns and relationships and draw the flow diagrams/graphs	Bk 2 No. 67 (pp. 6 - 7)		
8	FUNCTIONS AND RELATIONSHIPS Equivalent forms: Determine, interpret and justify equivalence of different descriptions of the same relationship or rule presented: – verbally– in flow diagrams– in tables – by formulae– by equations – by graphs on a Cartesian plane	Determine the output values or formulae and draw the table of values and/or graphs	Bk 2 No. 68 (pp. 8 – 9)		
9	GRAPHS Interpreting graphs: Extend the focus on features of graphs with special focus on the following features of linear graphs: – x-intercept and y-intercept-gradient	Analyze and interpret global graphs of problem situations	Bk 2 No.88a (pp. 60 - 61)		
10	Assessment Activity: Consolidate and revise – assess learners understanding, remediate for understanding – use SM Activities				

Reflection	
DID ALL THE LEARNERS LEARN THE WEEKLY SKILLS? ARE THEY ABLE TO: • Determine Rules for patterns • Draw flow diagrams • Draw graphs from given data • Complete input/output tables from rules analyze and interpret graphs	What will you change next time? Why? **Struggling Learners Names?** **HOD:** **Date:**

10 – 13 August 2021 - 4-day week (skip the assessment activity at end of the week)

Week 3					
Lesson	**ATP content**	**concepts, skills**	**DBE workbook**	**Resources**	**Date**
11	GRAPHS Drawing graphs: Use tables of ordered pairs to plot points and draw graphs on the Cartesian plane Extend drawing of graphs with special focus on: – drawing linear graphs from given equations – determining equations from given linear graphs.	Plot points and draw graphs on the Cartesian plane using tables of ordered pairs	Bk 2 No. 88b (pp. 62 - 63)		
12	GRAPHS Drawing graphs: Use tables of ordered pairs to plot points and draw graphs on the Cartesian plane Extend drawing of graphs with special focus on: – drawing linear graphs from given equations – determining equations from given linear graphs.	Interpret and determine the x-intercept and the y-intercept of linear graphs; Draw linear graphs	Bk 2 No. 89 (pp. 64 - 65)		
13	GRAPHS Drawing graphs: Use tables of ordered pairs to plot points and draw graphs on the Cartesian plane Extend drawing of graphs with special focus on: – drawing linear graphs from given equations – determining equations from given linear graphs.	Interpret and determine the gradient and y-intercept of linear graphs	Bk 2 No. 90a (pp. 66 – 67)		
14	GRAPHS Drawing graphs: Use tables of ordered pairs to plot points and draw graphs on the Cartesian plane Extend drawing of graphs with special focus on: – drawing linear graphs from given equations – determining equations from given linear graphs.	Interpret and determine the gradient and y-intercept of linear graphs	Bk 2 No. 90b (pp. 68 – 69)		
15	Assessment Activity – can be cancelled because of four-day week				

Reflection	
DID ALL THE LEARNERS LEARN THE WEEKLY SKILLS? ARE THEY ABLE TO: • Plot points on cartesian plane • Draw graphs from tables • Determine x intercepts • Determine y intercepts • Draw linear graphs • Determine gradients of lines	What will you change next time? Why? **Struggling Learners names:** **HOD:** **Date:**

16 – 20 August 2021

Week 4					
Day	**ATP Content**	**CAPS content, concepts, skills**	**DBE workbook**	**Resources**	**Date**
16	GRAPHS Drawing graphs: Use tables of ordered pairs to plot points and draw graphs on the Cartesian plane Extend drawing of graphs with special focus on: – drawing linear graphs from given equations – determining equations from given linear graphs.	Draw linear graphs from given equations	Bk 2 No. 91 (pp. 70 – 71)		
17	GRAPHS Drawing graphs: Use tables of ordered pairs to plot points and draw graphs on the Cartesian plane Extend drawing of graphs with special focus on: – drawing linear graphs from given equations – determining equations from given linear graphs.	Draw linear graphs from given equations	Bk 2 No. 96a (pp. 80 – 81)		
18	GRAPHS Drawing graphs: Use tables of ordered pairs to plot points and draw graphs on the Cartesian plane Extend drawing of graphs with special focus on: – drawing linear graphs from given equations – determining equations from given linear graphs.	Draw linear graphs from given equations	Bk 2 No. 96b (pp. 82 – 83) No. 97 (pp. 84 – 85)		
19	GRAPHS Drawing graphs: Use tables of ordered pairs to plot points and draw graphs on the Cartesian plane Extend drawing of graphs with special focus on: – drawing linear graphs from given equations – determining equations from given linear graphs.	Determine equations from linear graphs	Bk 2 No. 98 (pp. 86 – 87) No. 99a – 99b (pp. 88 – 91)		
20	Assessment Activity: Consolidate and revise – assess learners understanding, remediate for understanding – use SM Activities				

Reflection	
DID ALL THE LEARNERS LEARN THE WEEKLY SKILLS? ARE THEY ABLE TO: • Draw linear graphs • Determine equations from given graphs	What will you change next time? Why? **Struggling Learners Names**:
	HOD: **Date:**

23 – 27 AUGUST 2021

Week 5					
Day	**ATP Content**	**concepts, skills**	**DBE workbook**	**Resources**	**Date**
21	TRANSFORMATION GEOMETRY Transformations: Recognize, describe and perform transformations with points, line segments and simple geometric figures on a co-ordinate plane, focusing on: – reflection in the X-axis or Y- axis – translation within and across quadrants	Recognise, describe and perform transformations with points, line segments and simple geometric figures, focusing on reflection in the Y-axis or X-axis	Bk 2 No. 105 (pp. 108 – 109)		
22	TRANSFORMATION GEOMETRY Transformations: Recognize, describe and perform transformations with points, line segments and simple geometric figures on a co-ordinate plane, focusing on: – reflection in the X-axis or Y- axis – translation within and across quadrants	Recognise, describe and perform translations within and across quadrants	Bk 2 No. 109 (pp. 116– 117)		
23	TRANSFORMATION GEOMETRY Transformations: Recognize, describe and perform transformations with points, line segments and simple geometric figures on a co-ordinate plane, focusing on: – reflection in the X-axis or Y- axis – translation within and across quadrants	Recognise, describe and perform reflections about the straight-line y = x	Bk 2 No. 106 (pp. 110 – 111)		
24	TRANSFORMATION GEOMETRY Transformations: Recognize, describe and perform transformations with points, line segments and simple geometric figures on a co-ordinate plane, focusing on: – reflection in the X-axis or Y- axis – translation within and across quadrants	Recognise, describe and perform reflections about the straight-line y = x	Bk 2 No. 107 (pp.112 – 113)		
25	Complete and consolidate the week's assessment and work. **FORMAL ASSESSMENT - PROJECT**				

Reflection	
DID ALL THE LEARNERS LEARN THE WEEKLY SKILLS? ARE THEY ABLE TO: • Recognise different transformations • Describe different transformations • Draw different transformations • Recognise reflections about y = x • Describe reflections about y = x • Draw reflections about y - x	What will you change next time? Why? **Struggling Learner names:** **HOD:** **Date:**

30 AUGUST to 3 SEPTEMBER 2021

Week 6					
Less	**ATP Content**	**concepts, skills**	**DBE workbook**	**Resources**	**Date**
26	TRANSFORMATION GEOMETRY Transformations: Recognize, describe and perform transformations with points, line segments and simple geometric figures on a co-ordinate plane, focusing on: – reflection in the X-axis or Y- axis – translation within and across quadrants	Investigate the co-ordinates of the vertices of figures that have been enlarged or reduced by a given scale factor	Bk 2 No. 112a (pp. 124 -125) No. 112b (pp. 126 – 127)		
27	TRANSFORMATION GEOMETRY Transformations: Recognize, describe and perform transformations with points, line segments and simple geometric figures on a co-ordinate plane, focusing on: – reflection in the X-axis or Y- axis – translation within and across quadrants	Enlargements and reductions	Bk 2 No 113a (pp. 128 – 129) No. 113b (pp. 130 – 131)		
28	TRANSFORMATION GEOMETRY Transformations: Recognize, describe and perform transformations with points, line segments and simple geometric figures on a co-ordinate plane, focusing on: – reflection in the X-axis or Y- axis – translation within and across quadrants	All transformation covered- Revision	Bk 2 No. 108 (pp. 114 – 115) No. 110a (pp. 118 – 119) No. 110b (pp. 120 – 121)		
29	GEOMETRY OF STRAIGHT LINES Angle relationships: Revise and write clear descriptions of the relationship between angles formed by: – perpendicular lines– intersecting lines – parallel lines cut by a transversal	relationship between angles formed by perpendicular lines and solve geometric problems	Bk 1 No. 53 (pp. 142 -143)		
30	Assessment activity: Catch-up on work not completed; remediation of concepts which some learners have not fully understood and enrichment cards for the learners who are on track				

Reflection	
DID ALL THE LEARNERS LEARN THE WEEKLY SKILLS? ARE THEY ABLE TO: • Investigate figures through enlargement • Apply scale factors to enlarged figures • Investigate figures through reduction • Apply scale factors to reduced figures • Identify angles formed by perpendicular lines	What will you change next time? Why? **Struggling Learners Names:** **HOD:** **Date:**

6 – 10 SEPTEMBER 2021

Week 7					
Day	**ATP Content**	**concepts, skills**	**DBE workbook**	**Resources**	**Date**
31	GEOMETRY OF STRAIGHT LINES Angle relationships: Revise and write clear descriptions of the relationship between angles formed by: – perpendicular lines– intersecting lines – parallel lines cut by a transversal Solving problems Solve geometric problems using the relationships between pairs of angles described above	relationship between angles formed by perpendicular lines and solve geometric problems	Bk 1 No. 54 (pp. 144 -145)		
32	GEOMETRY OF STRAIGHT LINES Angle relationships: Revise and write clear descriptions of the relationship between angles formed by: – perpendicular lines– intersecting lines – parallel lines cut by a transversal Solving problems Solve geometric problems using the relationships between pairs of angles described above	relationship between angles formed by parallel lines cut by a transversal and solve geometric problems	Bk 1 No. 55a (pp. 146 -147)		
33	GEOMETRY OF STRAIGHT LINES Angle relationships: Revise and write clear descriptions of the relationship between angles formed by: – perpendicular lines– intersecting lines – parallel lines cut by a transversal Solving problems Solve geometric problems using the relationships between pairs of angles described above	relationship between angles formed by parallel lines cut by a transversal and solve geometric problems	Bk 1 No. 55b (pp. 148 -149)		
34	GEOMETRY OF STRAIGHT LINES Solving problems: Solve geometric problems using the relationships between pairs of angles described above	Solving problems	Bk 1 No. 56 (pp. 150 – 151)		
35	Assessment Activity: Consolidate and revise – assess learners fraction understanding, remediate for understanding – use SM Activities				

Reflection	
DID ALL THE LEARNERS LEARN THE WEEKLY SKILLS? ARE THEY ABLE TO: • Identify angles formed by perpendicular lines • Identify angles when transversal cuts parallel lines • Solve geometric problems using parallel lines	What will you change next time? Why? **Struggling Learners Names:**
	HOD: **Date:**

13 – 17 SEPTEMBER 2021

Week 8					
Day	**ATP content**	**concepts, skills**	**DBE workbook**	**Resources**	**Date**
36	GEOMETRY OF 2D SHAPES AND COSTRUCTION OF GEOMETRIC FIGURES Classifying 2D shapes: Revise properties and definitions of triangles in terms of their sides and angles, distinguishing between: – equilateral triangles– isosceles triangles – right-angled triangles	Using accurate Construction of triangles and angles of a triangle	Bk 1 No. 41a (pp. 106 – 107)		
37	GEOMETRY OF 2D SHAPES AND COSTRUCTION OF GEOMETRIC FIGURES Classifying 2D shapes: Revise properties and definitions of triangles in terms of their sides and angles, distinguishing between: – equilateral triangles– isosceles triangles – right-angled triangles	Using accurate Construction of triangles and angles of a triangle to classify.	Bk 1 No. 41b (pp. 108 – 109)		
38	GEOMETRY OF 2D SHAPES AND COSTRUCTION OF GEOMETRIC FIGURES Investigate the angles in a triangle, focusing on the relationship between the exterior angle of a triangle and its interior angles	Classifying triangles: Revise properties and definitions of triangles	Bk 1 No 47. (pp. 122 – 123)		
39	GEOMETRY OF 2D SHAPES AND COSTRUCTION OF GEOMETRIC FIGURES Investigate the angles in a triangle, focusing on the relationship between the exterior angle of a triangle and its interior angles	Classifying triangles: Revise properties and definitions of triangles	Bk 1 No 48a. (pp. 124 – 125) No. 48b. (pp. 126 – 127)		
40	Complete and consolidate the week's assessment and work				

Reflection	
DID ALL THE LEARNERS LEARN THE WEEKLY SKILLS? ARE THEY ABLE TO: • Identify 2-D shapes • Construct triangles • Bisect angles by construction and measurement • Classify triangles according to sides • Classify triangles according to angles	What will you change next time? Why? Struggling Learners Names:
	HOD: **Date:**

20 -23 SEPTEMBER 2021- 4-DAY WEEK THEREFORE NO ASSESSMENT

Week 9					
Day	**ATP content**	**concepts, skills**	**DBE workbook**	**Resources**	**Date**
41	GEOMETRY OF 2D SHAPES AND COSTRUCTION OF GEOMETRIC FIGURES Classifying 2D shapes:	using accurate constructions, investigate the sides,	Bk 1 No. 42a (pp. 110 – 111)		

	Revise and write clear definitions of quadrilaterals in terms of their sides, angles and diagonals, distinguishing between:– parallelogram– rectangle – square– rhombus– trapezium– kite	angles and diagonals in quadrilaterals: square and rectangle			
42	GEOMETRY OF 2D SHAPES AND COSTRUCTION OF GEOMETRIC FIGURES investigate sides and angles. and diagonals in quadrilaterals, focusing on: exploring the sum of the interior angles of polygons– the diagonals of rectangles, squares, – parallelograms, rhombi and kites	Using accurate constructions, investigate the sides, angles and diagonals in quadrilaterals: parallelogram and rhombus	Bk 1 No. 42b. (pp. 112 – 113)		
43	GEOMETRY OF 2D SHAPES AND COSTRUCTION OF GEOMETRIC FIGURES investigate sides and angles. and diagonals in quadrilaterals, focusing on: exploring the sum of the interior angles of polygons– the diagonals of rectangles, squares, – parallelograms, rhombi and kites	Using accurate constructions, investigate the sides, angles and diagonals in quadrilaterals: kite; explore the sum of the interior angles of polygons	Bk 1 No. 43 (pp. 114 – 115) No. 44 (pp. 116 – 117)		
44	GEOMETRY OF 2D SHAPES AND COSTRUCTION OF GEOMETRIC FIGURES investigate sides and angles. and diagonals in quadrilaterals, focusing on: exploring the sum of the interior angles of polygons– the diagonals of rectangles, squares, – parallelograms, rhombi and kites	By construction, investigate the sides, angles and diagonals in quadrilaterals: kite; By construction, explore the sum of the interior angles of polygons	Bk 1 No. 45 (pp. 118 – 119) No. 46 (pp. 120 – 121)		
45	GEOMETRY OF 2D SHAPES AND COSTRUCTION OF GEOMETRIC FIGURES investigate sides and angles. and diagonals in quadrilaterals, focusing on: exploring the sum of the interior angles of polygons– the diagonals of rectangles, squares, – parallelograms, rhombi and kites	Classifying quadrilaterals: Solve problems involving properties of quadrilaterals	Bk 1 No.49 (pp. 128 – 129) No. 50a (pp. 130 – 131)		

Reflection	
DID ALL THE LEARNERS LEARN THE WEEKLY SKILLS? ARE THEY ABLE TO: • Construct quadrilaterals • Investigate properties of quads according to sides • Investigate properties of quads according to angles • Investigate properties of quads according to diagonals • Solve problems using properties of quads	What will you change next time? Why? **HOD:** **Date:**

27 SEPTEMBER – 1 OCTOBER 2021

Week 10					
Day	**ATP content**	**concepts, skills**	**DBE workbook**	**Resources**	**Date**
46	Teacher selects content	Revision and consolidation (Skills mastery activities)			
47		FORMAL ASSESSMENT TASK: TEST – All topics			
48	Teacher selects content	Revision and consolidation (Skills mastery activities)			
49	Teacher selects content	Revision and consolidation (Skills mastery activities)			
50	Complete and consolidate the week's assessment and work				
Reflection					
Identify some skills that need revising during the next term:		What will you change next time? Why? **Struggling Learners Names:**			

ASSESSMENT RATIONALE AND RESOURCES

Assessment Term Plan

The assessment term plan gives an overview of

1) how the formal and informal assessment programme fits into the weekly lesson plans.
2) How the skills mastery assessments fit into the weekly lesson plans

Note:

- There are two FORMAL Assessment tasks: 1) Project and 2) Test.
- The Skills mastery assessments – aimed at consolidating, revising and remediating skills already covered this year - are added at the end of the document.

Written assessment tasks are to be selected and marked by teachers in appropriate lessons according to the lesson plans. Teachers may wish to group the items or use them individually.

Week	**Informal Assessment (End of week) and Skills Mastery Activities (Tuesdays and Thursdays)**	**Formal Assessment Activities (End of week) – 2 FORMAL ASSESSMENTS: 1) Project 2) Test**
1	Baseline Assessment	Baseline Assessment
2	**Tuesday** Skills mastery Assessment 1 **Thursday** Skills mastery Assessment 2	
3	No Informal Assessment – 4-day week	

	Tuesday Skills mastery Assessment 3 **Thursday** Skills mastery Assessment 4	
4	**Tuesday** Skills mastery Assessment 5 **Thursday** Skills mastery Assessment 6	
5	**Tuesday** Skills mastery Assessment 7 **Thursday** Skills mastery Assessment 8	**Formal Assessment 1 - Project**
6	**Tuesday** Skills mastery Assessment 9 **Thursday** Skills mastery Assessment 10	
7	**Tuesday** Skills mastery Assessment 11 **Thursday** Skills mastery Assessment 12	
8	**Tuesday** Skills mastery Assessment 13 **Thursday** Skills mastery Assessment 14	
9	No Assessment – 4-day week **Tuesday** Skills mastery Assessment 15 **Thursday** Skills mastery Assessment 16	
10	**Tuesday** Skills mastery Assessment 17 **Thursday** Skills mastery Assessment 18	**FORMAL ASSESSMENT 2 – Test (All Topics)**

SKILLS MASTERY ASSESSMENTS

Rationale

- A Skills Mastery Assessment (SMA) is one in which there is an iterative revisiting of skills, topics, subjects or themes throughout the year.
- SMA is not simply the repetition of a topic taught. It requires the deepening of it, with each successive encounter building on the previous one.
- SMA is critical in today's educational environment, especially in mathematics, where we must consistently give our learners the opportunity to revisit and practice skills they have already learned aimed at mastery.
- The traditional practice is to incorporate consolidating, revising or reviewing, through homework, morning work, small group instruction, and even after school math classes. Through SMA we are going to continuously review skills and concepts with our students.
- It makes sense that we would continue to assess their understanding on those same skills by changing the context of the question using C-P-A-W (Concrete – Pictorial – Abstract -Worded)

- When we first teach and assess a skill, many of our students have yet to master it. By incorporating a SMA activity into your classroom, you are providing your students with the opportunity to demonstrate their growth and understanding on a regular basis.
- These regular SMAs help you see where your students are always struggling. You can use the results to guide your small group instruction and customize your lessons and activities to meet the needs of your students, not just the covering of curriculum.

Implementation

- In every lesson plan there are 10 minutes set aside for consolidation and revision, meaning one could apply SMA every day for 10 minutes, before teaching a new concept for that day.
- Each SMA is using a five-item design to ensure teachers can complete it in 10 minutes.
- As a minimum, this Planner and Tracker, recommends the use of Tuesdays and Fridays, but teachers could use every day.
- Each Tuesday and Thursday you are encouraged to take 10 minutes and give a SMA to the whole class, or groups. Learners should be able to take about 5 minutes to complete – then the teacher must remediate by addressing errors, misconceptions and misunderstandings.
- Teachers could also use the data from the SMA to help plan small group lessons for the next week.
- Teachers could also pull different students for different skills until the teacher felt confident that the learners were more confident in their responses. Then next week, repeat….new set of SMAs, similar skills being assessed, new data for small group instruction.
- These daily SMAs should be seen as a progress monitoring tool as well. This will prove to be effective in letting teachers know how their most struggling students are progressing.

SKILLS MASTERY SKILLS PER 5 – ITEM ASSESSMENT

SM Assessment 1	**Classify numbers as rational or irrational** **Convert between standard and scientific notation** **Describe the pattern by giving the rule.** **Simplify variable expressions involving like terms and the distributive property**
SM Assessment 2	**Factorise out a monomial** **Factorise quadratics with leading coefficient 1** **Write down the terms and coefficients of the variables in the following algebraic expressions.** **Identify like terms and add** **Find values using function graphs**
SM Assessment 3	**Evaluate absolute value expressions** **Simplify variable expressions involving like terms and the distributive property** **Solve proportions: word problems** **Flow Diagrams**
SM Assessment 4	**Congruent figures: side lengths and angle measures** **Calculate surface area of triangular prisms** **Graph an equation in y=mx+c form**

	Compare numbers written in scientific notation
SM Assessment 5	**Simplify variable expressions using properties** **Solve linear equations: word problems** **Geometric sequences**
SM Assessment 6	**Solve simultaneous equations using substitution** **Identify the pattern polynomial** **Find the number of solutions to simultaneous equations** **Simplify variable expressions involving like terms and the distributive property**
SM Assessment 7	**Square roots of perfect squares** **Estimate square roots** **Identify arithmetic and geometric sequences** **Find the *nth* term** **Find the number of solutions to simultaneous equations** **Polynomial vocabulary**
SM Assessment 8	**Degrees of polynomials** **Multiply and divide rational expressions** **Word problems with money** **Rate of travel: word problems** **Weighted averages: word problems**
SM Assessment 9	**Standard form: find x- and y-intercepts** **Congruent triangles: SSS, SAS and ASA** **Similar figures: side lengths and angle measures** **Create your own algebraic expression** **Fractions: Addition**
SM Assessment 10	**Identify linear functions** **Identify the next value in a pattern** **Find the formula for a circumference of a circle** **Solve algebraic expressions by isolating the variable**
SM Assessment 11	**Draw lines of symmetry** **Identify reflections, rotations and translations** **Power rule** **Evaluate expressions using properties of exponents** **Surface area**
SM Assessment 12	**Identify equivalent linear expressions** **Solve simultaneous equations using substitution** **Simplify variable expressions involving like terms and the distributive property** **Factorise by grouping** **Compare and order fractions**
SM Assessment 13	**Value of the fractions on number lines** **Add, subtract, multiply and divide integers** **Congruent triangles: SSS, SAS and ASA** **Similar figures: side lengths and angle measures** **Similar triangles and indirect measurement** **Determine which polynomial expression matches the algebra tile model**
SM Assessment 14	**Count lines of symmetry** **Factorise out a monomial** **Factorise quadratics with leading coefficient 1**
SM Assessment 15	**Standard form: find x- and y-intercepts** **Geometric objects**

SM Assessment 16	**Find the missing length** **Isosceles and Equilateral Triangles** **Multiply Square Roots** **Translation**
SM Assessment 17	**Describe the pattern by giving the rule** **Determine the *nth* term** **Sequences** **Identify terms and coefficients of the variables in the algebraic expressions**
SM Assessment 18	**Gradients of parallel and perpendicular lines** **Perimeter**
SM Assessment 19	**Interpreting a pie graph** **Ste and leaf diagram**
SM Assessment 20	**Input and output values of a flow diagram.** **Problem**

SKILLS MASTERY (SM) EXEMPLARS

In these 5-item Skills Mastery Assessments, teachers are encouraged to delete those items not applicable for their purpose and items that refer to content that was dropped for 2021.

Skills Mastery (SM) Assessment 1

Number	Assessment
1.	Classify the following numbers as rational or irrational. $4\frac{1}{2}$ $\sqrt{2}$ 0,2
2.	Calculate and write the answer in scientific notation. $2{,}5 \times 10^3 \times 7$
3.	**Describe the pattern by giving the rule and then extend it by three value of term.** a. 36, 43, 50, 57, ... b. 29, 17, 5, –7, ...
4.	**Describe the pattern by giving the rule and then extend it by three value of term.** a. 6, –12, 24, –48, ... b. –17, –102, –612, –3 672, ...
5.	Simplify the following: $\frac{3x+6y}{x+2y}$

SM Assessment 2

Number Assessment

1. Factorise the following completely:

$3a^2b^3 - 12a^4b$

$x^2 - 3x - 10$

2. **2. Write down the terms and coefficients of the variables in the following algebraic expressions:**

a. $3x^2 - 4y$ b. $\frac{2}{3}x + y$ c. $3x + 4y - \frac{5}{7}y$

3. **Circle the like terms in the following algebraic expressions, and then add them together.**

a. $3x^2 - 4xy + 5x^2 - 9$

$3x^2 + 5x^2 = 8x^2$

b. $xyz - 5xy + 6zx + 15xyz - 1$

4. Refer to the table below and write down the value of p and q

Figure	1	2	3	4
Number of Triangles	4	8	p	q

5. Determine the general rule (T_n) of the pattern.

5.

Study the geometric pattern below and answer the questions that follow:

Figure 1 Figure 2 Figure 3

SM Assessment 3

Number Assessment

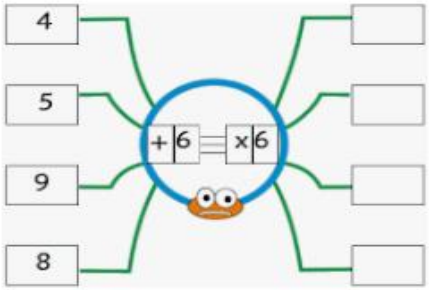
1. a. $\frac{3}{2}x^2 + x + 1$ and $\frac{3}{7}x^2 + \frac{1}{4}x + 5$

2. a. $7x^3 - 3x^2 + 2$ from $x^2 - 5x + 2$

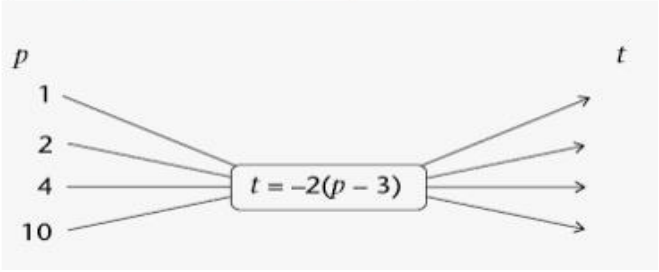
3. There are 120 learners in Grade 8 at Greenview High School. If the ratio of girls to boys is 3 : 5, how many boys are there in Grade 8?

A 75
B 55
C 15
D 8

4.



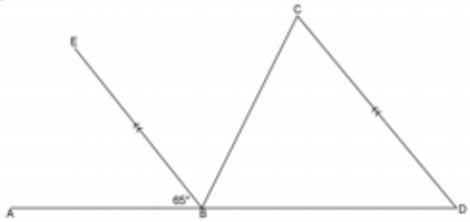
5.



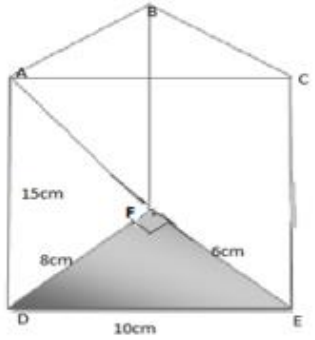
SM Assessment 4

Number	Assessment
1.	Write 1 042 000 000 in scientific notation.
2.	Simplify: $2(x-3)^2-3(x+1)(2x-5)$
3.	$\left(\frac{2x^{-1}y}{3y^2}\right)^{-2}$
4.	Bongiwe invested a certain amount into a savings account at 6,5% compound interest per annum. If the final amount is R15 300 after 5 years, how much did she originally invest?
5.	Write down the next term in the given sequence: 3 ; 8 ; 13 ; ...

SM ASSESSMENT 5

Number	Assessment
1.	In the diagram $\angle ABE = 65°$. EB∥CD and $\angle ABE = \angle EBC$. Find with reasons, the size of:  $\angle ADC$ $\angle BCD$

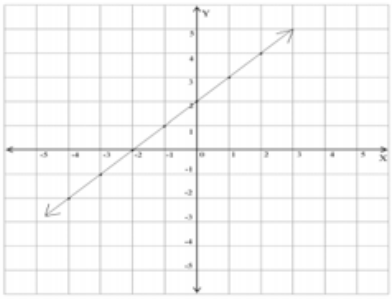
2. A triangular prism is shown in the figure below. The base is a right-angled triangle with DF= 8 cm, DE= 10 cm FE= 6 cm, and the height 15 cm.



Calculate the surface area of the triangular prism.

3. a. $4x^2 - 64$ b. $2x^2 - 2$

4. The equation of the straight line drawn below is:



A $y = 2x - 2$
B $y = x + 2$
C $y = -2x + 2$
D $y = -x - 2$

5. The value (in scientific notation) of $5,2 \times 10^{-5} \times 3 \times 10^{3}$ is:

A $15,6 \times 10^{-1}$
B $1,56 \times 10^{-1}$
C $0,156 \times 10^{1}$
D $15,6 \times 10^{1}$

SM Assessment 6

Number Assessment

1. Evaluate each of these expressions for x = 10:

$200 - 5x$

2. Consider the pattern-polynomial starting with $7x^5 + 5x^4 + 3x^3 + x^2 + \ldots$

What is the coefficient of the fourth term?

3. Complete this table.

x	2	3
$12x - 7 + 3x + 10 - 5x$		

4. Rewrite each of the following in the way in which it is normally written in algebraic expressions.

$x \times 4 + x \times y - y \times 3$

5. Do each of the following calculations.

- multiply 4 by 3, then add 5 to the answer

SM Assessment 7

Number Assessment

1. **1. Determine the tenth and n^{th} terms using a table and number sentence.**

a. n^{th} term is:

n (Position in sequence)	1	2	3	4	10	n
Value of term	13	23	33	43		

2. **Give the next three terms**

$2^2; 3^2; 4^2; 5^2; \ldots$

$\sqrt{4}; \sqrt{9}; \sqrt{16}; \sqrt{25}; \ldots$

$2^3; 3^3; 4^3; 5^3; \ldots$

$\sqrt[3]{8}; \sqrt[3]{27}; \sqrt[3]{64}; \sqrt[3]{125}; \ldots$

3. $5(x - y)$ for $x = 10$ and $y = 8$

4.

Expression	Number of Terms	Variable(s)	Coefficient(s)	Constant(s)	Type of Polynomial
$3x^2 + 5x - 7$					

5. Divide.

a. $\dfrac{5x^2 - 10x}{5x}$

SM Assessment 8

Number Assessment

1. What is the degree of each polynomial?

   a. $6x^2$ b. $xy - 7x + 3$

2. Combine the like terms.

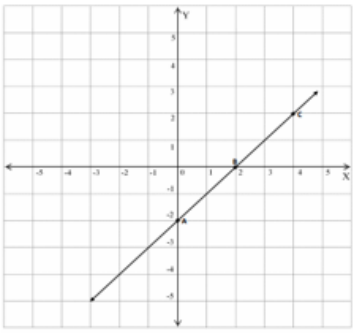
   a. $(3n)(4n)$ b. $(5xy)(5y)$

3. How long will it take to travel 432 kilometres at an average speed of 96 kilometres per hour?

4. A box contains 3 blue, 4 white and 5 green marbles of the same size. If you take out 1 marble, what is the probability that you will take out a green marble?

5. The 200 Grade 9 boys in a school play soccer, hockey or both. If 150 boys play soccer and 130 play hockey, calculate how many of them play BOTH soccer and hockey.

SM Assessment 9

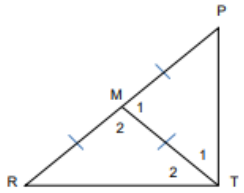


Number Assessment

1.

	A	B	C
x-coordinate			
y-coordinate			

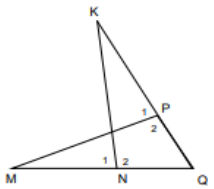
2. In ΔPRT below, M is the midpoint of PR and $MR = MT$.



If $\hat{P} = 25°$, calculate with reasons:

The size of $\hat{T}_1$

3. In the figure below ΔKNQ and ΔMPQ have a common vertex Q.
P is a point on KQ and N is a point on MQ.
$KQ = MQ$ and $PQ = QN$.



Prove with reasons that $\Delta KNQ \equiv \Delta MPQ$.

4. **Problem solving**

Create an algebraic expression with variables and constants using all the basic operations. Simplify the expression.

5. Add: $\frac{3}{4} + \frac{1}{2} =$

a) $1\frac{1}{4}$

b) $\frac{5}{4}$

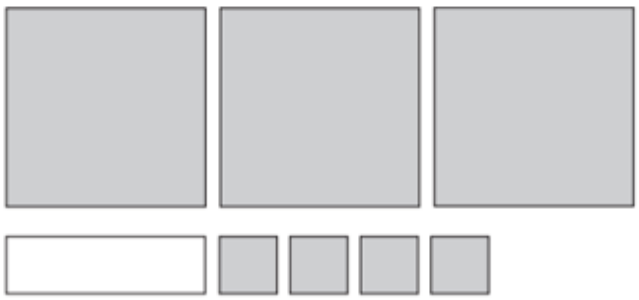
c) neither (a) nor (b) above

d) both (a) and (b) above

SM Assessment 10

Number Assessment

1. An expression representing this arrangement of tiles is:



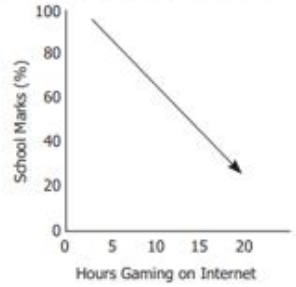
a) $-3x^2 + x - 4$

b) $-3x^2 - x + 4$

c) $3x^2 - x - 4$

d) $3x^2 - x + 4$

2. Choose a sentence that describes in words what this graph is showing.



a) increased hours gaming on the Internet increases school marks
b) school marks decline based on increased hours gaming on the Internet
c) hours gaming on the Internet do not affect school marks
d) no hours gaming on the Internet guarantees you 100%

3. Give the next value in the following pattern: 120 90 60 ____

a) 50
b) 30
c) 80
d) 0.3

4. The formula for finding the circumference of a circle is:

a) $2\pi r$
b) πr^2
c) $\frac{b_1 + b_2}{2}$
d) $\frac{bh}{2}$

5. Solve $4m - 2 = 5m + 7$ by isolating the variable.

SM Assessment 11

Number Assessment

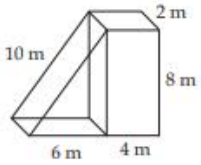
1. Draw the reflected half across the line of symmetry.

2. Fill in the empty spots. *(6 marks)*

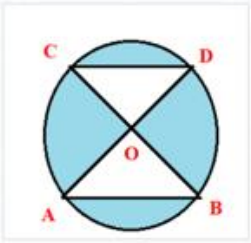
Term	Base	Exponent	Power
2^5	2		
$(-4)^3$		3	$(-4)^3$
26^7			26^7
-3^6		6	-3^6

3. Describe the difference between the solution for $4m = -28$ and $4m \leq -28$.

4. Find the surface area of the following composite object.



5. Find the area of the shaded portion if radius of the circle OA measures 7 cm and AB = DC = 7 cm.

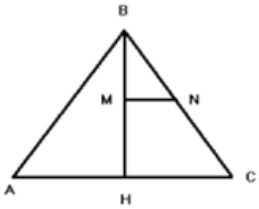


SM Assessment 12

Number Assessment

1. ABC is an equilateral triangle with side length equal to 50 cm. BH is perpendicular to AC. MI

is parallel to AC. Find the area of triangle BMN if the length of MN is equal to 12 cm.



2. Evaluate for the given values of **a** and **b**.

a. $a^2 + b^2$, for a = 2 and b = 2

b. $|2a - 3b|$, for a = -3 and b = 5

3.

Example: $\frac{6x^3 - 8x^2 + 2x + 10}{2x}$

$= \frac{6x^3}{2x} - \frac{8x^2}{2x} + \frac{2x}{2x} + \frac{10}{2x}$

$= 3x^{3-1} - 4x^{2-1} + 1 + \frac{5}{x}$

$= 3x^2 - 4x + 1 + \frac{5}{x}$

a. $\frac{6x^3 + 2x^2 + 2x}{2x}$

b. $\frac{12x^3 + 6x^2 + 6x}{3x}$

4.

Example: Expand: $2x(x + 3) = 2x^2 + 6x$ **Factorise:** $2x^2 + 6x = 2x(x + 3)$

a. $2(x - 3)$

b. $4x(x - 1)$

5. Which number is not between $-\frac{2}{5}$ and $-\frac{3}{4}$?

a. $-\frac{4}{5}$

b. $-\frac{13}{20}$

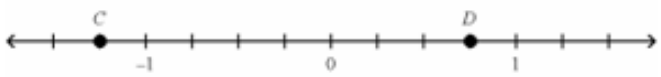
c. $-\frac{1}{2}$

d. $-\frac{3}{5}$

SM Assessment 13

Number Assessment

1. Which value describes the positions of C and D?



a. $-2\frac{3}{4}$ and $1\frac{1}{4}$

b. $-1\frac{1}{4}$ and $\frac{3}{4}$

c. $-\frac{5}{4}$ and $\frac{5}{4}$

d. -1.2 and 0.75

2. Which operation would you perform last in this calculation?

$9 \div (-2.3) + (5.8 - 3.1)$

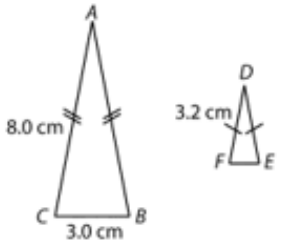
a. $+$

b. $-$

c. $\times$

d. $\div$

3. Triangles *ABC* and *DEF* are similar.
What is the length of *EF*?



a. 7.5 cm
b. 0.9 cm
c. 1.2 cm
d. 1.4 cm

4. Estimate a solution to the equation $-2x + 7 = -5$.
a. 3
b. 6
c. 8
d. 11

5. Determine which polynomial expression matches the algebra tile model.

a. $-2x^2 - x - 4$
b. $-3x^2 + x - 4$
c. $3x^2 + 2x + 4$
d. $3x^2 - x + 5$

SM Assessment 14

Number Assessment

1. Which of the these designs has line symmetry?

a.


b.

c.


d.

2. **Factorise**

a. $\frac{81a^2 - 1}{9a + 1}$
b. $\frac{36a^2 - 1}{6a + 1}$

3. **2. Solve for x.**

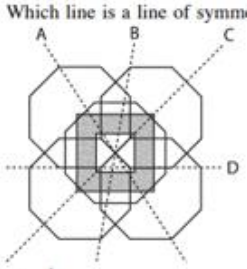
Example: $-6x = -12$

$$\frac{-6x}{-6} = \frac{-12}{-6}$$

$$x = 2$$

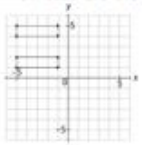
a. $-4x = -16$

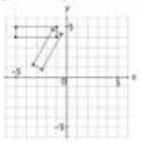
4. Which line is a line of symmetry for the design?

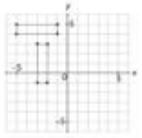


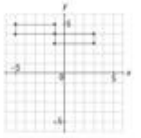
a. A
b. B
c. C
d. D

5. In which case are the two shapes related by line symmetry and rotation symmetry?

a. 

c. 

b. 

d. 

SM Assessment 15

Number Assessment

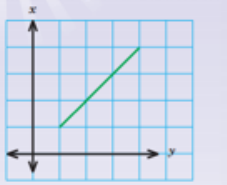
1. **1. Find the x- and y-intercepts.**

Example: To find the y-intercept, substitute x with 0
$y = 2(0) - 7$
$y = -7$

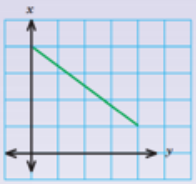
To find the x-intercept, substitute y with 0
$0 = 2x - 7$
$2x = 7$
$x = \frac{7}{2} = 3.5$

a. $y = 2x + 4$

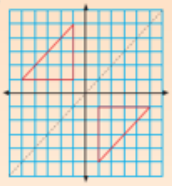
2. **What are the gradients of these lines?**



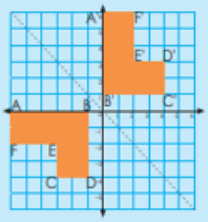
b.



3. a.



i. Write down the coordinates for both figures:



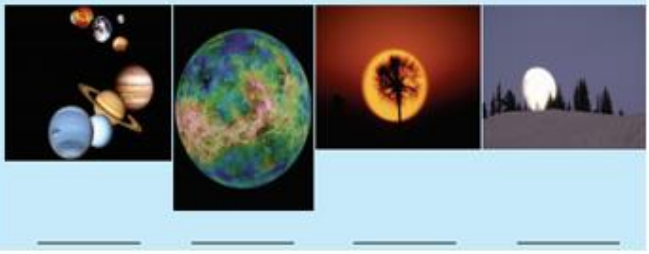
What do you notice about the line of reflection?
$x = -y$
E.g. (1, –1); (2, –2)

The coordinates for ABCDEF are:
(–6, 0); (–1, 0); (–1, –4); (–3, –4); (–3, –2); (–6, –2)

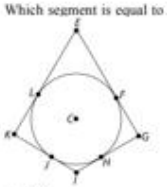
The coordinates for A'B'C'D'E'F' are:
(0, 6); (1, 0); (4, 1); (4, 3); (2, 3); (2, 6)

When you reflect a point across a line $x = -y$, the x-coordinate and the y-coordinate change places and the signs change (they are negated).

4. Look at the following pictures. Identify the geometric object and then name it.



5. Which segment is equal to FG?



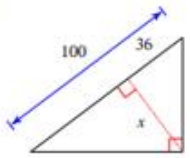
a. EF
b. GH
c. KL
d. HI

SM Assessment 16

Number Assessment

1. **Find the missing length indicated.**

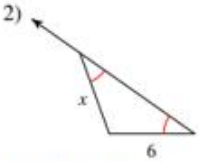
1)



2. Isosceles and Equilateral Triangles

Find the value of x.

2)

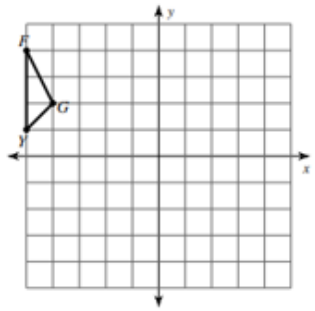


3. Multiplying Square Roots

Simplify.

$\sqrt{8} \cdot \sqrt{8}$

4. 2) translation: 4 units right and 1 unit down



5. The sequence 11; 14; 17; 20; ..., 101 consist of ...

A 30 terms
B 31 terms
C 33 terms
D 34 terms

SM Assessment 17

Number Assessment

1. **Describe the pattern by giving the rule and then extend it by three value of term.**

i. 36, 19, 2, –15, ...

j. 22, –16, –54, –92, ...

2. **Describe the pattern by giving the rule and then extend it by three value of value of term.**

i. 27, 38, 50, 63, ...

j. 44, 66, 132, 330, ...

3. **Determine the tenth and n^{th} terms using a table and number sentence.**

n^{th} term is:

n (Position in sequence)	1	2	3	4	10	n
Value of term	–16	–23	–30	–37		

4.

n (Position in sequence)	1	2	4	8	10	n
Value of term	2	5	17	65	?	?

First term: 2 = _____
Second term: 5 = _____
Fourth term: 17 = _____
Eighth term: 65 = _____
Tenth term: ____ = _____
n^{th} term: ____ = _____

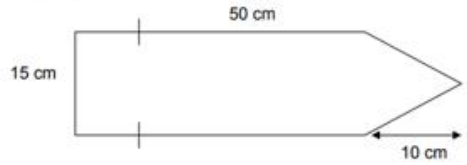
5. **Write down the terms and coefficients of the variables in the following algebraic expressions:**

b. $xyz - 5xy + 6zx + 15xyz - 1$

SM Assessment 18

Number Assessment

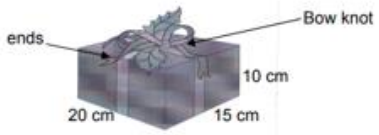
1.



The area of the figure given above is …

A 528 cm²
B 150 cm²
C 825 cm²
D 750 cm²

2. Zelha has prepared her mother's birthday-present tied with a ribbon as shown. The bow knots and ends used 47 cm of ribbon.



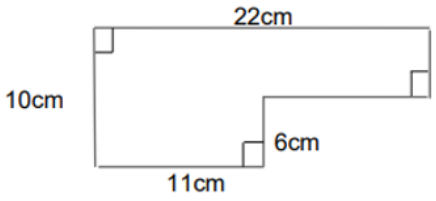
The total length of the ribbon used in metres is …

A 30,47 m.
B 0,45 m.
C 0,92 m.
D 1,57 m.

3. Water is being pumped into a tank at a rate of 150 litres per minute. How long will it take to fill a tank with a volume of 81 000 litres?
Give your answer in hours.

4. $$\frac{x+3}{4} - \frac{x-2}{8} = \frac{x+4}{16}$$

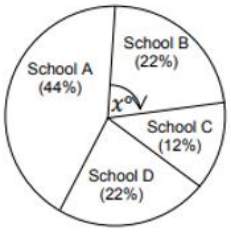
5. Calculate the perimeter of the diagram.



SM Assessment 19

Number Assessment

1. The pie chart below shows how R94 000 was allocated to 4 schools in a school district nutrition programme.



2. How much did school A receive?

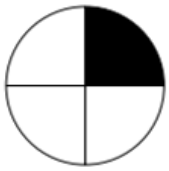
3. School A decided to donate an amount of R 5 300 to School C.
How much will School C have now?

4. The stem and leaf diagram below represents the ages of 50 parents who attended a parents' meeting in Active Children J.S.S.

Stem	Leaf
7	1 2 3
6	1 2 2 3 5 9
5	1 2 3 4 5 6 7 7 9 9
4	1 1 2 2 3 4 4 5 6 6 9
3	2 2 3 4 5 6 7 8 8 9
2	1 2 3 4 8 9
1	7 8 8 9

Determine the range of the data.

5. The circles below are divided into parts. When the shaded in circle 1 is added to the shaded part in circle 2, their sum is equivalent to:



Circle 1

Circle 2

A $\frac{2}{7}$

B $\frac{1}{2}$

C $\frac{2}{5}$

D $\frac{7}{12}$

SM Assessment 20

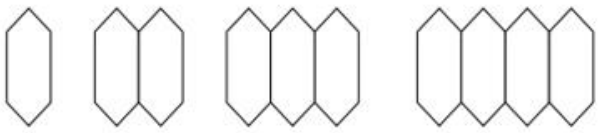
Number Assessment

1. In the machine below the output value is 19. What is the input value?

A 13
B 55
C 25
D 7

2. A certain school has 720 pupils. The ratio of the number of senior pupils to the number of junior pupils is 4 : 5.
How many junior pupils are there in the school?

3. During school holidays Teddy assists his uncle who is working with steel. One day he thought of using the waste steel material to make racks for placing hot pots. He bought nails, cut pieces of steel and joined them one by one forming hexagonal patterns as shown below.



rack 1 rack 2 rack 3 rack 4

The table below shows the relationship between the rack number and the number of joined pieces.

Rack no.	1	2	3	4	*n*
Number of pieces	6	11	16	21	

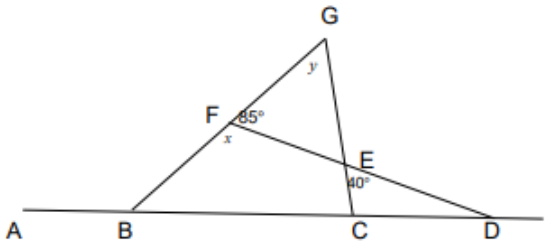
Determine the general rule for the number of steel pieces.

4. 4.1 Factorise completely:

4.1.1 $24x^3y^2 - 8x^2y - 16x^2y^2$

4.1.2 $m^2(m-2) - 4(m-2)$

5. Study the figure below:



AD; BG; FD and GC are straight lines. Calculate the value of y.