PLANNER & TRACKER
FOR RECOVERY ANNUAL TEACHING PLAN (ATP)

MATHEMATICS

GRADE 9 TERM 1

2022

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

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CONTENTS

ABOUT THE PLANNER AND TRACKER

This 2022 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 2022 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 1.
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 2021 mathematics 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 2022 must be viewed and implemented in term 1, in the light of some contextual realities that includes the following:
1) 2021 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 for most 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	**10 January - 17 March**	**47 (10 weeks)**
Term 2	5 April – 24 June	53 (12 weeks) – 6 holidays
Term 3	19 July – 30 September	54 (11 weeks) – 2 holidays
Term 4	11 October - 14 Dec	47 (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 1 Planner and Tracker has 47 teaching and learning days of which 15 days are used for formative and summative Assessment days.
- NECT Term 1 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 50 lessons per term, five 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 9

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	10 min
New Concept – class activity	50 min

CONTENT COVERAGE

TERM 1	Week 1 3 days	Week 2 5 days		Week 3 5 days	Week 4 5 days		Week 5 5 days	Week 6 5 days	Week 7 5 days	Week 8 5 days	Week 9 4 days	Week 10 3 days
Hours per week	2.5 hrs.	4.5 hrs.		4.5 hrs.	4.5 hrs.		4.5 hrs.	4.5 hrs.	4.5 hrs.	4.5 hrs.	3.5 hrs	3 hrs.
Hours per topic	2.5 hrs.	6 hrs			9 hrs.		2 hrs.	9 hrs.		4.5 hrs.	6.5 hrs	
Topics, concepts and skills	REVISION OF GRADE 8 WORK	**WHOLE NUMBERS** **Properties of numbers** • Describe the real number system by recognising, defining and distinguishing properties of: – natural numbers, whole numbers, integers, rational numbers, irrational numbers **Calculations using whole numbers** • Revise: Calculations using all four operations on whole numbers, estimating and using calculators where appropriate **Multiples and factors** • Use prime factorisation of numbers to find LCM and HCF **Solving problems** • Solve problems in contexts involving: – Ratio and rate – Direct and indirect proportion		**INTEGERS** **Calculations with integers** • Revise: – addition and subtraction with integers – Multiplication and division with integers – perform calculations involving all four operations with integers – perform calculations involving all four operations with numbers that involve the squares, cubes, square roots and cube roots of integers **Properties of integers** • Revise: – Commutative, associative and distributive properties of addition and multiplication for integers – Additive and multiplicative inverses for integers		**FORMAL ASSESSMENT TASK** **ASSIGNMENT** • Whole numbers • Integers	**EXPONENTS** **Calculations using numbers in exponential form** • **Revise** the following general laws of exponents. – $a^m \times a^n = a^{m+n}$ – $a^m \div a^n = a^{m-n}$, if $m>n$ – $(a^m)^n = a^{m \times n}$ – $(a \times t)^n = a^n \times t^n$ – $a^0 = 1$ • **Extend** the general laws of exponents to include: – integer exponents – $a^{-m} = \frac{1}{a^m}$ • Perform calculations involving all four operations using numbers in exponential form		**NUMERIC AND GEOMETRIC PATTERNS:** **NUMERIC PATTERNS** **Investigate and extend patterns** • Investigate and extend numeric and geometric patterns looking for relationships between numbers including patterns: – represented in physical or diagram form, not limited to sequences involving a constant difference or ratio, of learner's own creation, represented in tables, represented algebraically • Describe and justify the general rules for observed relationships between numbers in own words or in algebraic language –	**FORMAL ASSESSMENT TASK** **TEST** All Term 1 topics	

CORE QUESTIONS	DID ALL LEARNERS MASTER 2021 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 1: Implement DBE Diagnostic – see exemplar in Planner and Tracker – or any similar diagnostic – Based on 2021 core skills. Teachers are encouraged to use the exemplar, based on what content they have completed. 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) PREPARATION: Test, Marking Guideline/s, Marksheet and apparatus.

10 – 14 January 2022

Week 1					
Less on	**ATP Content**	**concepts, skills**	**DBE workbook**	**Resour ces**	**Dat e**
1	No Learners at School				
2	No learners at school				
3	Revision: Diagnostic	Baseline: (Revision, consolidation of Grade 8 skills)			
4	Revision: Remediation	Baseline: Remediation – error analysis			
5	WHOLE NUMBERS **Calculations using whole numbers** **Revise:** Calculations using all four operations on whole numbers, estimating and using calculators where appropriate **Multiples and factors -** Use prime factorisation of numbers to find LCM and HCF	Calculate by using the algorithm for +, -, x and long division. Use calculator to check. Use a flow diagram to show natural/whole numbers & integers Use commutative, associative & distributive property Apply identity element for addition and subtraction.	Bk 1 No. R1 (pp. ii & iii)		

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: • Calculate by using the algorithm for +, -, x and long division. • Use calculator to check. • Use a flow diagram to show natural/whole numbers & integers • Use commutative, associative & distributive property • Apply identity element for addition and subtraction.	What will you change next time? Why?
	Struggling Learners Names:
	HOD: **Date:**

17 - 21 January 2022

Week 2					
Less on	**ATP Content**	**concepts, skills**	**DBE workbook**	**Res our ces**	**D at e**
6	WHOLE NUMBERS **Calculations using whole numbers** **Revise:** Calculations using all four operations on whole numbers, estimating and using calculators where appropriate **Multiples and factors -** Use prime factorisation of numbers to find LCM and HCF	Find multiples Find factors Find LCM Find HCF Find factors using division and factor trees.	Bk 1 No. R2a (pp. iv & v)		

7	WHOLE NUMBERS **Calculations using whole numbers** **Revise:** Calculations using all four operations on whole numbers, estimating and using calculators where appropriate **Multiples and factors -** Use prime factorisation of numbers to find LCM and HCF	Find multiples Find factors Find LCM Find HCF Find factors using division and factor trees.	Bk 1 No. R2b (pp. vi & vii)		
8	WHOLE NUMBERS: **Properties of numbers** -Describe the real number system by recognising, defining and distinguishing properties of:– natural numbers, whole numbers, integers, rational numbers, irrational numbers	Analyze the Venn diagram for real numbers. Identify natural, whole, integers, rational & irrational	Bk 1 No. 1a (pp. 2 – 3)		
9	WHOLE NUMBERS: **Properties of numbers** -Describe the real number system by recognising, defining and distinguishing properties of:– natural numbers, whole numbers, integers, rational numbers, irrational numbers	Match number descriptions on the number line. Identify numbers on the number line. Match numbers to their number system	Bk 1 No. 1b (pp. 4 – 5)		
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: • Find multiples • Find factors • Find LCM • Find HCF • Find factors using division and factor trees. • Analyze the Venn diagram for real numbers. • Identify natural, whole, integers, rational & irrational • Match number descriptions on the number line. • Identify numbers on the number line. • Match numbers to their number system	What will you change next time? Why? **Struggling Learners Names?**
	HOD: Date:

24 – 28 January 2022

Week 3					
Lesson	**ATP content**	**concepts, skills**	**DBE workbook**	**Resources**	**Date**
11	WHOLE NUMBERS: **Multiples and factors: -**Use prime factorisation of numbers to find LCM and HCF	Find factors and common factors. List prime factors and factorise. Find HCF using tree factorization, division and ladder method. Find multiples determine LCM find LCM using ladder method	Bk 1 No. 2 (pp. 6 – 7)		
12	WHOLE NUMBERS: **Solving problems -** Solve problems in contexts involving:– Ratio and rate – Direct and indirect proportion	Calculate distance, speed and time problems. Identify formula for speed, distance and time. Identify ratios and proportional ratios Complete table showing rates	Bk 1 No. 3 (pp. 8 – 9)		

			Solve real context problems.			
	13	WHOLE NUMBERS: **Solving problems -** Solve problems in contexts involving:– Ratio and rate – Direct and indirect proportion	Define direct proportion Use different methods to solve direct proportion problems Use Unitary method Use Cross-multiply method Use the Rule of three method Use a graph to show direct proportion	Bk 1 No. 4 (pp. 10 – 11)		
	14	WHOLE NUMBERS: **Solving problems -** Solve problems in contexts involving:– Ratio and rate – Direct and indirect proportion	Define indirect (inverse) proportion Use different methods to solve indirect proportion problems Use Unitary method Use Vedic method Use the Rule of three method Use a graph to show indirect proportion	Bk 1 No. 5 (pp. 12 – 13)		
	15	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:	What will you change next time? Why?
• Find factors and common factors. • List prime factors and factorise. • Find HCF using tree factorization, division and ladder method. • Find multiples • determine LCM • find LCM using ladder method • Calculate distance, speed and time • Identify formula for speed, distance and time. • Identify ratios and proportional ratios • Complete table showing rates • Solve real context problems. • Use Unitary method for direct proportion • Use Cross-multiply method for DP • Use the Rule of three method for DP • Use a graph to show direct proportion • Define indirect (inverse) proportion • Use Unitary method for IP • Use Vedic method for IP • Use the Rule of three method for IP • Use a graph to show indirect proportion	**Struggling Learners names:**
	HOD: **Date:**

31 January – 4 February 2022

	Week 4				
Day	**ATP Content**	**CAPS content, concepts, skills**	**DBE workbook**	**Resources**	**Date**
16	INTEGERS: **Properties of integers** Revise:– Commutative, associative and distributive properties of addition and multiplication for integers – Additive and multiplicative inverses for integer	Define integer Define positive/negative integer. Apply commutative, associative & distributive properties	Bk 1 No. R4 (pp. xii)		
17	INTEGERS: **Calculations with integers** Revise - addition and subtraction with integers-Multiply and divide with integers - Perform calculations involving all four operations with integers - Perform calculations involving all four operations with numbers that involve squares, cubes, square roots and cube roots of integers	Define integer Define positive/negative integer. Complete number lines. Calculate using number lines Add and subtract integers Solve equations	Bk 1 No. R4 (pp. xiii)		
18	INTEGERS: **Calculations with integers** Revise - addition and subtraction with integers-Multiply and divide with integers - Perform calculations involving all four operations with integers - Perform calculations involving all four operations with numbers that involve squares, cubes, square roots and cube roots of integers	Use a scientific calculator to calculate exponents. Calculate squares, square roots, cubes and cube roots	Bk 1 No. 19a (pp. 46 – 47 No 19b (pp. 48 – 49)		
19	INTEGERS: **Calculations with integers** Revise - addition and subtraction with integers-Multiply and divide with integers - Perform calculations involving all four operations with integers - Perform calculations involving all four operations with numbers that involve squares, cubes, square roots and cube roots of integers	Calculate squares, square roots, cubes and cube roots Round off to the nearest unit Round off to the nearest tenth Round off to the nearest hundredth.	Bk 1 No. 20a (pp. 50 – 51) No 20b (pp. 52 – 53)		
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: • Define integer • Define positive/negative integer. • Apply commutative, associative & distributive properties • Complete number lines. • Calculate using number lines • Add and subtract integers • Solve equations • Use a scientific calculator to calculate exponents. • Calculate squares, square roots, cubes and cube roots • Calculate squares, square roots, cubes and cube roots • Round off to the nearest unit • Round off to the nearest tenth • Round off to the nearest hundredth.	What will you change next time? Why? **Struggling Learners Names**: **HOD:** **Date:**

7 – 11 February 2022

	Week 5				
Day	**ATP Content**	**concepts, skills**	**DBE workbook**	**Resources**	**Date**
21	Catch-up on work not completed; remediation of concepts which weaker learners have not fully understood and enrichment cards for the learners who are on track				
22	ASSESSMENT TASK ASSIGNMENT Whole numbers and integers				
23	ASSESSMENT TASK ASSIGNMENT Whole numbers and integers				
24	ASSESSMENT TASK ASSIGNMENT Whole numbers and integers				
25	Complete and consolidate the week's assessment and work. **FORMAL ASSESSMENT - ASSIGNMENT**				
	Reflection				
DID ALL THE LEARNERS LEARN THE WEEKLY SKILLS? ARE THEY ABLE TO: •		What will you change next time? Why? **Struggling Learner names:**			
		HOD: Date:			

14 – 18 February 2022

	Week 6				
Less	**ATP Content**	**concepts, skills**	**DBE workbook**	**Resources**	**Date**
26	EXPONENTS: **Calculations using numbers in exponential form** -Perform calculations involving all four operations using numbers in exponential form	Write in exponential form Show answers are negative or positive Simply exponents Calculate square roots Write in simplest root form Calculate and test solutions	Bk 1 No. 3a (pp. viii – ix) No. 3b (pp. x – xi)		
27	EXPONENTS: **Calculations using numbers in exponential form** -Perform calculations involving all four operations using numbers in exponential form	Compare numbers $-(2)^4$ and $(-2)^4$ Calculate using exponential form Convert to scientific notation or vice-versa	Bk 1 No. 21 (pp. 54 – 55)		
28	EXPONENTS: **Calculations using numbers in exponential form** -Revise the following general laws of exponents. – $a^m \times a^n = a^{m+n}$ $a^m \div a^n = a^{m-n}$, if $m > n$ $(a^m)^n = a^{m \times n}$ $(a \times t)^n = a^n \times t^n$ $a^0 = 1$	Use exponent laws to simplify.	Bk 1 No 22 (pp. 56 – 57)		

29	EXPONENTS: **Calculations using numbers in exponential form** -Revise the following general laws of exponents. – – $a^m \times a^n = a^{m+n}$ – $a^m \div a^n = a^{m-n}$, if $m>n$ – $(a^m)^n = a^{m \times n}$ – $(a \times t)^n = a^n \times t^n$ – $a^0 = 1$	Use exponent laws to simplify.	Bk 1 No 23 (pp. 58 – 59)		
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: • Write in exponential form • Show answers are negative or positive • Simply exponents • Calculate square roots • Write in simplest root form • Calculate and test solutions • Compare numbers $-(2)^4$ and $(-2)^4$ • Calculate using exponential form • Convert to scientific notation or vice-versa • Use exponent laws to simplify.	What will you change next time? Why? **Struggling Learners Names:** HOD: Date:

21 – 25 February 2022

Week 7					
Day	ATP Content	concepts, skills	DBE workbook	Reso urces	Dat e
31	EXPONENTS: **Calculations using numbers in exponential form** -Revise the following general laws of exponents. – – $a^m \times a^n = a^{m+n}$ – $a^m \div a^n = a^{m-n}$, if $m>n$ – $(a^m)^n = a^{m \times n}$ – $(a \times t)^n = a^n \times t^n$ – $a^0 = 1$ Extend the general laws of exponents to include: – $a^{-m} = \dfrac{1}{a^m}$ – integer exponents	Use exponent laws to simplify.	Bk 1 No 24 (pp. 60 – 61)		
32	EXPONENTS: **Calculations using numbers in exponential form** -Revise the following general laws of exponents. – – $a^m \times a^n = a^{m+n}$ – $a^m \div a^n = a^{m-n}$, if $m>n$ – $(a^m)^n = a^{m \times n}$ – $(a \times t)^n = a^n \times t^n$ – $a^0 = 1$ Extend the general laws of exponents to include: – $a^{-m} = \dfrac{1}{a^m}$ – integer exponents	Use exponent laws to simplify.	Bk 1 No 25 (pp. 62 – 63)		
33	EXPONENTS: **Calculations using numbers in exponential form** -Revise the following general laws of exponents. –	Use exponent laws to simplify.	Bk 1 No 26a (pp. 64 – 65)		

Day	ATP content	concepts, skills	DBE workbook	Resources	Date
	$a^m \times a^n = a^{m+n}$ $a^m \div a^n = a^{m-n}$, if $m>n$ $(a^m)^n = a^{m \times n}$ $(a \times t)^n = a^n \times t^n$ $a^0 = 1$ Extend the general laws of exponents to include: $a^{-m} = \frac{1}{a^m}$ – integer exponents				
34	EXPONENTS: **Calculations using numbers in exponential form** -Revise the following general laws of exponents. – $a^m \times a^n = a^{m+n}$ $a^m \div a^n = a^{m-n}$, if $m>n$ $(a^m)^n = a^{m \times n}$ $(a \times t)^n = a^n \times t^n$ $a^0 = 1$ Extend the general laws of exponents to include: $a^{-m} = \frac{1}{a^m}$ – integer exponents	Use exponent laws to simplify.	Bk 1 No 26b (pp. 66 – 67)		
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: • Use exponent laws to simplify.	What will you change next time? Why? **Struggling Learners Names:**
	HOD: Date:

28 February – 4 March 2022

Week 8					
Day	ATP content	concepts, skills	DBE workbook	Resources	Date
36	NUMERIC AND GEOMETRIC PATTERNS: **NUMERIC PATTERNS:** Investigate and extend patterns **-** Investigate and extend numeric and geometric patterns looking for relationships between numbers including patterns:– represented in physical or diagram form, not limited to sequences involving a constant difference or ratio, of learner's own creation, represented in tables, represented algebraically - Describe and justify the general rules for observed relationships between numbers in own words or in algebraic language	Identify constant difference Identify constant ratio Identify variable difference or ratio. Describe the pattern by giving a rule Extend the pattern, add more terms. Complete tables Determine missing terms and nth terms	Bk 1 No. 27 (pp. 68)		
37	NUMERIC AND GEOMETRIC PATTERNS: **NUMERIC PATTERNS:** Investigate and extend patterns **-** Investigate and extend numeric and geometric patterns looking for relationships between numbers including patterns:– represented in physical or diagram form, not limited to sequences involving a constant difference or ratio, of learner's own creation, represented in tables,	Identify constant difference Identify constant ratio Identify variable difference or ratio. Describe the pattern by giving a rule	Bk 1 No. 27 (pp. 69)		

Day	ATP content	concepts, skills	DBE workbook	Resources	Date
	represented algebraically - Describe and justify the general rules for observed relationships between numbers in own words or in algebraic language	Extend the pattern, add more terms. Complete tables Determine missing terms and nth terms			
38	NUMERIC AND GEOMETRIC PATTERNS: **NUMERIC PATTERNS:** Investigate and extend patterns **-** Investigate and extend numeric and geometric patterns looking for relationships between numbers including patterns:– represented in physical or diagram form, not limited to sequences involving a constant difference or ratio, of learner's own creation, represented in tables, represented algebraically - Describe and justify the general rules for observed relationships between numbers in own words or in algebraic language	Create and complete geometric patterns. Use the given rule to complete tables.	Bk 1 No 28 (pp. 70)		
39	NUMERIC AND GEOMETRIC PATTERNS: **NUMERIC PATTERNS:** Investigate and extend patterns **-** Investigate and extend numeric and geometric patterns looking for relationships between numbers including patterns:– represented in physical or diagram form, not limited to sequences involving a constant difference or ratio, of learner's own creation, represented in tables, represented algebraically - Describe and justify the general rules for observed relationships between numbers in own words or in algebraic language	Create and complete geometric patterns. Use the given rule to complete tables.	Bk 1 No 28 (pp. 71)		
40	Complete and consolidate the week's assessment and work				

Reflection	
DID ALL THE LEARNERS LEARN THE WEEKLY SKILLS? ARE THEY ABLE TO: • Identify constant difference • Identify constant ratio • Identify variable difference or ratio. • Describe the pattern by giving a rule • Extend the pattern, add more terms. • Complete tables • Determine missing terms and nth terms • Create and complete geometric patterns. • Use the given rule to complete tables.	What will you change next time? Why? Struggling Learners Names: HOD: Date:

7 – 11 March 2022

Week 9					
Day	ATP content	concepts, skills	DBE workbook	Resources	Date
41	Consolidate and revise – assess learners fraction understanding, remediate for understanding				
42	Consolidate and revise – assess learners fraction understanding, remediate for understanding				

43	FORMAL ASSESSMENT TASK Test All topics				
44	FORMAL ASSESSMENT TASK Test All topics				
45	FORMAL ASSESSMENT TASK Test All topics				

Reflection	
DID ALL THE LEARNERS LEARN THE WEEKLY SKILLS? ARE THEY ABLE TO: •	What will you change next time? Why?
	HOD: **Date:**

14 – 17 March 2022 (Four-day week)

Week 10					
Day	**ATP content**	**concepts, skills**	**DBE workbook**	**Resources**	**Date**
46	FORMAL ASSESSMENT TASK Test All topics				
47	FORMAL ASSESSMENT TASK Test All topics				
48	FORMAL ASSESSMENT TASK Test All topics				
49	FORMAL ASSESSMENT TASK Test All topics				
50	END OF TERM				

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) Assignment 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) Assignment 2) Test
1	Baseline Assessment	Baseline Assessment
2	**Tuesday** Skills mastery Assessment 1 **Thursday** Skills mastery Assessment 2	
3	**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 - Assignment**
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	**Tuesday** Skills mastery Assessment 15 **Thursday** Skills mastery Assessment 16	

10		**FORMAL ASSESSMENT 2 – Test (All Topics)**

Exemplar Written Assessment ITEMS with marking memos.

The exemplar items can be used as a diagnostic pre-assessment, but can be used, later in the term, as a post-assessment to monitor learning.

The skills mastery items can be used as a secondary assessment, both to monitor progress in learning skills and mastery of skills. For example, the teacher can select 5 items from the first three Skills Mastery Assessments (a selection from 15 items) and use it for end of week assessments. End-of-week days have been planned for this purpose, as well as for consolidating the learning of the week's content.

- Written assessments are to be done in addition to oral and practical assessment to carry out meaningful continuous assessment throughout the term.
- You need to plan when you will do a written assessment. We suggest you do it at the end-of week.
- The questions provided in the exemplar and Skills Mastery Assessments are taken from past written assessment papers and assessments generally, that were previously in the lesson plans. We suggest you use selected items as smaller written assessment tasks. This aligns better with the curriculum objective of continuous assessment.
- There is one lesson "slot" per week that is assigned for you to catch up or consolidate the lesson plan content covered in the week's lessons. This lesson should also be used for the purpose of carrying out written assessment tasks or to complete oral or practical tasks for that week.

ITEM BANK FOR BASELINE: EXEMPLAR

INSTRUCTIONS TO LEARNERS:

1. Time: 60 minutes.

2. Show all your working.

3. No calculators allowed.

QUESTION 1:

1.1 State whether the expressions below are rational or irrational:

    1.1.1 $-2{,}3564$ (1)

    1.1.2 $\sqrt{64 + 4}$ (1)

1.2 Write down one factor of 18 which is a prime number.   (1)

                                   [3]

QUESTION 2:

The ratio of the length to the breadth of a rectangular box is 8:5.
If the length is 50 cm, calculate the breadth of the box. (2)

QUESTION 3:

Simplify the following expressions fully:

3.1 $\frac{5a}{7} - \frac{7a}{6}$ (2)

3.2 $\left(\frac{6}{11} + \frac{3}{5}\right) - \frac{6}{5} \div \frac{11}{3}$ (2)

QUESTION 4:

Write $4,6\dot{6}\dot{7}$ as a common fraction. **[2]**

QUESTION 5:

Simplify (answers with positive exponents):

5.1 $(-5x^2)(-5x)^3$ (2)

5.2 $\frac{(13x^{-2})^2}{(26x^4)^2}$ (2)

5.3 $\sqrt{16}\,x^{-1}y^{-7}z^0$ (2)

[6]

QUESTION 6:

Solve for the variable p:

6.1 $6^{3p} = \frac{1}{216}$ (2)

6.2 $(7^2)^{3p-4} = 1$ (2)

6.3 $p = 2,1 \times 1^{-3} \times 5,3 \times 10^{-2}$ (answer in decimal notation) (2)

[6]

QUESTION 7:

7.1 Give the general rule (the n-th term) of the number sequence:

$\frac{3}{2}; 2; \frac{5}{2}; 3; \dots$ (2)

7.2 A pattern of triangles is given below:

1   2   3

7.2.1 Write down the number of triangles in each pattern.
How many triangles form the 4th and 5th patterns of triangles? (1)

7.2.2 Give the general rule (the n-th term) of the sequence. (1)

7.2.3 How many triangles will make up the 25th pattern? (1)

7.2.4 Which term (pattern number) will have 127 triangles? (2)

[7]

18

QUESTION 8:

Use this flow diagram to fill in the values where the empty squares are given:
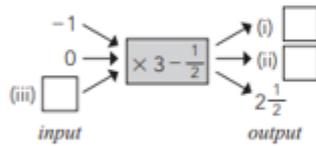
[4]

SOLUTIONS AND MEMORANDUM

SOLUTIONS	MARKS	COGNITIVE LEVELS
QUESTION 1: 1.1 1.1.1 $-2{,}3564$ – a rational number ✓ *answer*	(1)	K
1.1.2 $\sqrt{64} + 4 + \sqrt{68}$ – an irrational number ✓	(1)	K
answer	(1)	K
1.2 2 or 3 ✓ *one mark for either answer*		

QUESTION 2:
  Let the breadth be x
    $\frac{x}{50} = \frac{5}{8}$ ✓ *equation*
    $x = \frac{5}{8} \times 50$
      $= 31{,}25$ cm ✓ *answer*
	(2)	CP

QUESTION 3:
3.1 $\frac{5a}{7} + \frac{7a}{6}$
    $= \frac{30a - 49a}{42}$ ✓ *simplification using LCD*
    $= \frac{-19a}{42}$ ✓ *answer* or $= -\frac{19a}{42}$
	(2)	RP

3.2 $\left(\frac{6}{11} + \frac{3}{5}\right) - \frac{6}{5} \div \frac{11}{3}$
    $= \frac{30 + 33}{42} - \frac{6}{5} \times \frac{3}{11}$ ✓ *simplification*
    $= \frac{63}{55} - \frac{18}{55}$
    $= \frac{45}{55} = \frac{9}{11}$ ✓ *answer*
	(2)	RP

19

QUESTION 4:		
$4,6\dot{7}$ Let $x = 0,6\dot{7}$ $100x = 67,676767\ldots$ ✓ *procedure* $99x = 67$ $x = \frac{67}{99}$ ✓ *answer* $4,6\dot{7} = 4\frac{67}{99}$	(2)	CP
QUESTION 5:		
5.1 $(-5x^2)(-5x)^3$ $\quad = -5x^2 \times 5^3x^3$ ✓ *simplification* $\quad = 5^4x^5$ $\quad = 625x^5$ ✓ *answer*	(2)	RP
5.2 $\frac{(13x^{-2})^2}{(26x^{-4})^2}$ $\quad = \left(\frac{1}{2x^6}\right)^2$ ✓ *simplification* $\quad = \frac{1}{4x^{12}}$ ✓ *answer*	(2) (2)	CP
5.3 $\sqrt{16}\,x^{-1}y^{-7}z^0$ $\quad = \frac{4}{xy}$ ✓✓ *final answer with positive exponents*	(2)	RP
QUESTION 6:		
6.1 $6^{3p} = \frac{1}{216}$ $\quad 6^{3p} = \frac{1}{6^3}$ $\quad 6^{3p} = 6^{-3}$ ✓ *simplification* $\quad 3p = -3$ $\quad p = -1$ ✓ *answer*	(2)	RP
6.2 $(7^2)^{3p-4} = 1$ $\quad = 7^{6p-8} = 7^0$ ✓ *simplification* $\quad = 6p - 8 = 0$ $\quad p = \frac{8}{6}$ $\quad p = \frac{4}{3}$ ✓ *answer*	(2) (2)	CP

6.3 $p = 2{,}1 \times 1^{-3} \times 5{,}3 \times 10^{-2}$ $p = (2{,}1 \times 5{,}3) \times 5{,}3 \times 10^{-5}$ ✓ *re-organising terms* $p = 11{,}13 \times 10^{-5}$ $p = 0{,}000\ 111\ 3$ ✓ *answer*	(2)	CP

QUESTION 7:

7.1 $\dfrac{3}{2}; 2; \dfrac{5}{2}; 3; \ldots$ $T_n = \dfrac{1}{2}n + 1$ ✓✓ *formula for general rule*	(2)	PS
7.2 $3; 7; 11; 15; \ldots$		
7.2.1 $19; 23$ ✓ *answer*	(1)	RP
7.2.2 $T_n = 4n - 1$ ✓ *formula for general rule*	(1)	PS
7.2.3 $T_{25} = 4(25) - 1 = 100 - 1 = 99$ ✓ *answer*	(1)	RP
7.2.4 $\quad T_n = 127$ $\quad\quad 4n - 1 = 127$ ✓ *equation* $\quad\quad\quad 4n = 128$ $\quad\quad\quad n = \dfrac{128}{4}$ $\quad\quad\quad n = 32$ ✓ *answer*	(2)	RP

QUESTION 8:

(i) $\quad x = -1:$ *output*: $-1 \times 3 - \dfrac{1}{2} = -3 - \dfrac{1}{2} = -3\dfrac{1}{2}$ ✓ *answer*	(1)	RP
(ii) $\quad x = 0:$ *output*: $0 \times 3 - \dfrac{1}{2} = 0 - \dfrac{1}{2} = -\dfrac{1}{2}$ ✓ *answer*	(1)	RP
(iii) *output*: $2\dfrac{1}{2} = x \times 3 - \dfrac{1}{2}$ ✓ *equation* $\quad\quad 2\dfrac{1}{2} + \dfrac{1}{2} = 3x$ $\quad\quad 3 = 3x$ $\quad\quad x = 1$ *input* ✓ *answer*	(2)	RP

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 ASSESSMENTS

SM Assessment 1	Solve equations with variable exponents Scientific notation Find the lowest common multiple Find the constant difference between the consecutive terms. Number pattern – find the 20th term
SM Assessment 2	**Factors of 28** **Fill in the missing number in the number sentence** **Multiply fractions – mixed number** **Describe the relationship in a geometric pattern**
SM Assessment 3	**Money** **Find the next shape in a repeating pattern** **Complete a repeating pattern** **Make a repeating pattern** **Write and solve equations that represent diagrams** **Does (x, y) satisfy the linear function?** **Identify independent and dependent variables**
SM Assessment 4	**Simplify an algebraic expression** **Properties of a right-angled triangle** **Calculate an angle in a triangle** **Diameter of a circle** **Time**
SM Assessment 5	**Properties of a parallelogram** **Find the value of *x*** **In a given expression, find the HCF** **Substitute *x*** **Word sum**
SM Assessment 6	**Describe symmetry and transformation** **Given the radius of a circle – find the area of the triangle** **Identify monomials** **Model polynomials with algebra tiles** **Geometric solids – identify faces** **Find the value of angle a in a triangle – interior angles**
SM Assessment 7	**Add and subtract three or more integers** **Identify prisms** **Find the HCF of an expression** **Interpret line plots** **Word sum**
SM Assessment 8	**Interpret graphs of proportional relationships** **Write and solve equations for proportional relationships** **Square and cube roots of monomials**
SM Assessment 9	**Fraction word sum** **Find the rule in the geometric pattern** **Coordinate grid – find points on graph** **Scientific notation**

SM Assessment 10	Probability - Problem solving
	Solve equations involving cubes and cube roots
	Determine the rule and find the 9th item
	Simplify algebraic expression
SM Assessment 11	3D Shapes – identify the different properties
	Determine where shapes are similar or congruent
	In the given diagram, find the value of certain angles
	Scientific notation
SM Assessment 12	Problem Solving
	Compare decimal fractions
	Subtract algebraic expressions
	Pattern - identify the sequence
	Substitute
SM Assessment 13	Classify the numbers as rational or irrational
	Calculate scientific notation
	Describe the pattern by giving the rule
	Simplify variable expressions involving like terms and the distributive property
SM Assessment 14	Draw the reflected half across the line symmetry
	Identify the term given and determine the base, exponent and power
	Describe the solution between the solution for an algebraic equation
	Find the surface area of the composite object
	Find the area of the shaded portion of the circle
SM Assessment 15	Find the area of a triangle given a length
	Solve simultaneous equations using substitution
	Simplify variable expressions involving like terms and the distributive property
SM Assessment 16	Which value on the number line describes the positions given?
	Determine which operation would be used in a calculation
	Congruent figures: side lengths and angle measures
	Determine which polynomial expression matches the algebra tile model
SM Assessment 17	State which design has line symmetry
	Factorisation
	State which case are the two shapes related by line symmetry and rotation symmetry
SM Assessment 18	Describe the pattern by giving the rule and extend it by three more values
	Determine the tenth term in a sequence
	Write down the terms and coefficient of the variables in the following algebraic expressions
SM Assessment 19	Analyse the pie chart
	Determine the range of the data given
	Find the equivalence of the shaded area in two circles
SM Assessment 20	Determine the rule in the pattern given
	Right-angled triangle – find the reasons why sides are equal
	Calculate the size of the missing angles with reasons in the triangle
	Square root/cubed root

SKILLS MASTERY EXEMPLARS

Skills Mastery (SM) Assessment 1

Number	Assessment

1.
$$x + x + x =$$

A $\quad x^3$

B $\quad 3x$

C $\quad 3x^3$

D $\quad 4x$

2. Write 12 000 in scientific notation.

_____

3. Write down the LCM of 12 and 48.

_____

4. What is the constant difference between the consecutive terms?

a. 6; 10; 14; 18   b. 12; 21; 30; 39   c. 15; 18; 21; 24

5.

Term	2	4	6	8	n
Value of the term	6	62	214	510	

What will the 20th term value be?_____   Rule: _____

SM Assessment 2

Number   Assessment

1. Write down all the factors of 28.

2. Fill in the missing number in the number sequence below.

   $-1 ; -4 ; -7 ; \underline{\quad} ; -13 ; -16$

3. $-4 - (-2) + (-3 - 4)$

4. $1\frac{2}{3} \times \frac{5}{6}$ (Write the answer as a mixed number.)

5. Describe the relationship between the numbers in the top row and those in the bottom row in the table.

x	0	1	2	20	50	100
y	4	7	10	64	154	304

SM Assessment 3

Number   Assessment

1. Currently my bank balance is R2 000. What will the new balance be if I withdraw R600 from the account in each of the next 3 months?

2. Nonagonal pattern
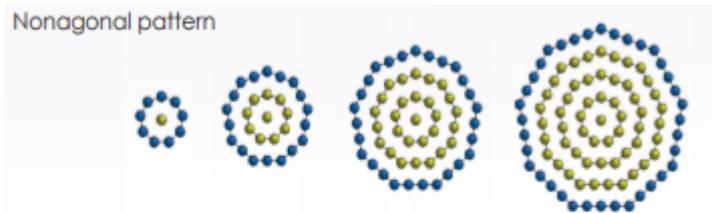
Position of the term in the pattern							n
Number of sections							

3.
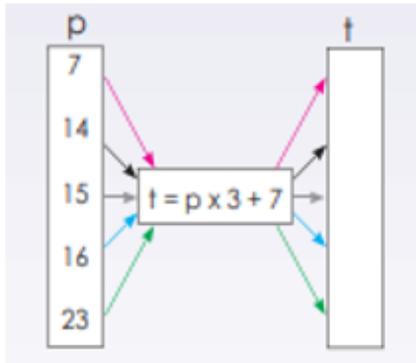
4. Consider the expression $7x^2 + 5x + 4$ and then answer the questions that follow.

Write down the constant term.

5. Calculate the value of the expression $7x^2 + 5x + 4$ if $x = -1$.

SM Assessment 4

Number   Assessment

1. Complete the simplification steps below:

$2y \times 3y^2 - 14y \times y^2$

$= \underline{\hspace{2cm}} - \underline{\hspace{2cm}}$

$= \underline{\hspace{2cm}}$

2. Choose the correct angle size from the list below only once to complete each statement.

| 60° | 90° | 180° | 360° |

The largest angle in a right-angled triangle = _____

3. In $\triangle ABC$, $\hat{B} = 70°$ and $\hat{C} = 30°$. Calculate the size of $\hat{A}$.
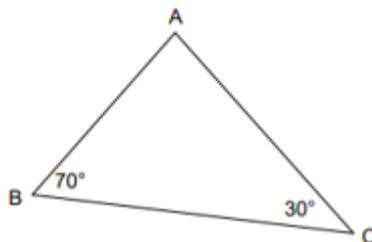
4.

The diagram below shows a circle with the diameter of 14 cm.

14 cm
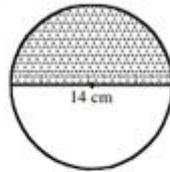
Calculate the area of the shaded part of the circle. Give your answer in cm².

(Use $\pi = \frac{22}{7}$)

A. 22	B. 44
C. 77	D. 154

5.

How many minutes are there in 2 days?

A. 1440	B. 2880
C. 4320	D. 5760

SM ASSESSMENT 5

Number   Assessment

1.

Which of the following figures is not a parallelogram?

A
B
C
D

2.

What is the value of x?

2x– 45

3x
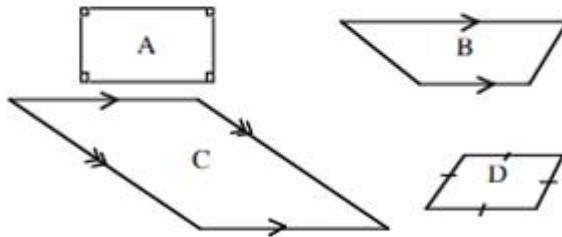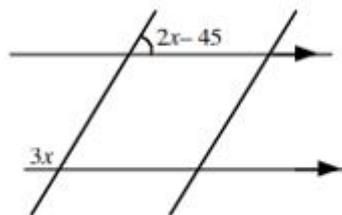
A. 30^0	B. 45^0
C. 90^0	D. 180^0

3. In the expression $4x^2yz^3 + 2xyz^2$,

What is the highest common factor?

A. $4x^2yz^3$ B. $2xyz^2$

C. $8x^3y^2z^5$ D. $8xyz$

4. $x = 5$ and $y = 6$. What is $5y + 2(6x)$

5. A car uses 10 litres of petrol to travel 25 km.
Calculate the amount of petrol in litres needed
to travel 100 km.

SM Assessment 6

Number   Assessment

1.

$$10 + 3 \times 5 - 20 =$$

A.   65   B.   45

C.   15   D.   5

2.

i   ii   iii

iv   v   vi

Which of the above figures are prisms?

A.   i , ii and iii   B.   ii, iv and v

C.   i, iii and vi   D.   i, iii, iv

3.

What is the highest common factor of this expression $2x^2 + 6xy$?

A. $2x$ B. $3x$

C. $2x^2$ D. $3x^2$

4.

The diagram shows two places, P and Q.
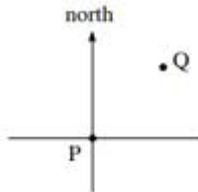
Which statement correctly describes the locations of P and Q?

A. P is north east of Q

B. P is south west of Q

C. Q is north west of P

D. P is directly south of Q

5.

John Bought a carton (48 tins) of tinned fish for K132.00. He sold each tin of fish for K5.00.

How much profit did John make from selling all the tinned fish?

Number	Assessment
1.	Look at the following architectural designs and describe each one using symmetry or transformations.

2. The diagram shows 3 identical circles with a radius of 4 cm each.
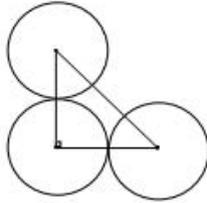
Find the area of the triangle in cm^2?

3.
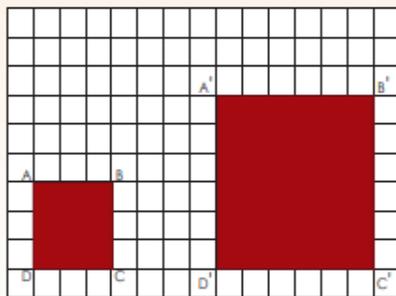
A'B' = (2) × AB   2 x 3 = 6

B'C' = (2) × BC ____ = ____

C'D' = (2) × CD ____ = ____

A'D' = (2) × AD ____ = ____

4. **Look at these geometric solids and answer the questions.**

Identify all the solids with eight faces .

_____

5. Find the value of angle *a* in the triangle below.

80°   35°
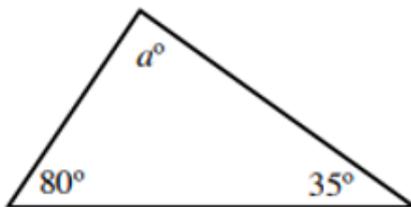
1.

The travel graph shows Loi's trip from his town to his village and back.
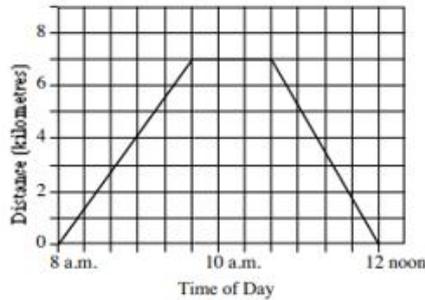
What was the total distance in km travelled by Loi?

2.

The table below shows the number of students in Grade 8 in Asasha Primary School.

Class	number of boys	number of girls
8 A	20	26
8 B	30	24

What is the total number of grade 8 students in the school?

3.

Simplify $2 \times 2a^2 \times 2a^2$

A. $8a^2$ B. $2a^4$

C. $8a^6$ D. $8x^5$

4.

$3x - 4 = 32.$

What is the value of x?

A.   12   B.   36

C.   84   D.   108

5.

The diagram shows a regular pentagon.

What is the value of the angle x?

A.   1440   B.   360

C.   144   D.   72

SM Assessment 9

Number   Assessment

1. John, Maria and Kiri shared some mangoes in the ratio. 4: 2: 1 respectively.

    What fraction of mangoes does Kiri receive?

    A. $\frac{1}{7}$ B. $\frac{2}{7}$

    C. $\frac{1}{3}$ D. $\frac{4}{7}$

2. What is the equation used for the table below.

x	4	3	2	1	0	−1
y	5	3	1	−1	−3	−5

    A. $y = 2x - 3$ B. $y = 2 - 3x$

    C. $y = 2 + 3x$ D. $y = 2x + 3$

3. Use the coordinate grid below to answer the question.
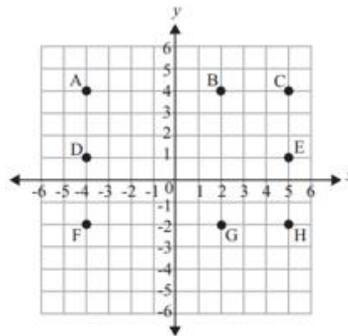
    Which four points would be the vertices of a square?

    A. points A, B, G, F

    B. points A, C, E, D

    C. points B, C, H, G

    D. points A, C, H, F

4. The sum of a number, n, and 5 is subtracted from 8. Which expression represents this statement?

5. How is 0.5600 written in scientific notation?

    A. 5.6×10

    B. 5.6×10^{-1}

    C. 5.6×10^{-2}

    D. 5.6×10^{-3}

33

Number   Assessment

1.   **Use the spinner below to answer the question.**
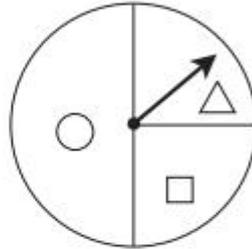
What is the probablilty of the arrow NOT landing on the space with the △ ?

A. $\frac{1}{4}$

B. $\frac{1}{3}$

C. $\frac{1}{2}$

D. $\frac{3}{4}$

2. Which is bigger: $13{,}2$ or $\sqrt{163}$?
   (Explain your answer.)

3. Without the use of a calculator find the answer for the following. Leave your answer in exponential form.

$$\sqrt[3]{13\,824}$$

4. Given the following pattern: 2   6   12   20   30.

Determine the rule used to find the pattern.

Find the value of the 9th item in the pattern.

5. Simplify the following:

$$2x(3x^2 - 4x + 7) - 3x(2x^2 + 8x - 9)$$

34

SM Assessment 11

Number   Assessment
1.   MATCH

Column A	Column B
6.2.1 Trapezium	A. Opposite sides parallel and equal
6.2.2. Rhombus	B. One set of sides parallel.
6.2.3. Parallelogram	C. Adjacent sides equal.
6.2.4. Kite	D. All sides equal and parallel, and all angles equal
6.2.5. Square	E. All sides equal and parallel.

2.
Say if the following pairs of shapes are similar or congruent or neither and give a reason for your answer.
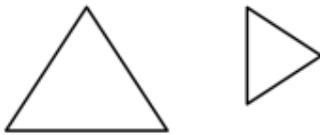
3.
What is the value of $D\check{C}E$?

What is the value of $D\check{C}A$?

Given that BE || AC, AB || CE, CD ⊥ AB and AC = BC.

4.
Give the names of the following 3D-shapes.
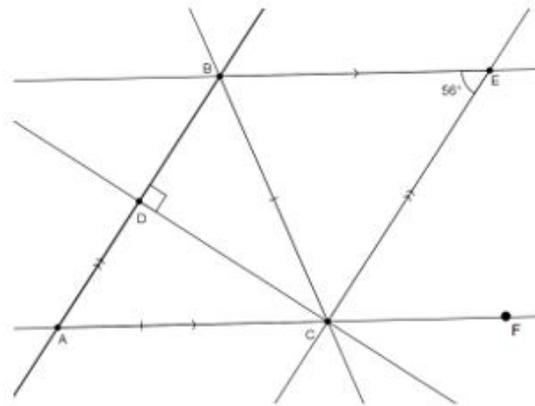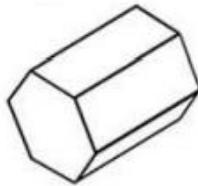
5.
Write the following scientific notation numbers as normal numbers:

4.32 x 10^4

SM Assessment 12

Number	Assessment
1.	

Redraw the following table on your test paper and fill in the missing values: (6)

Fraction	Decimal	Percentage
$\dfrac{2}{3}$		
	0.65	
		82%

2.

Look at the pictures and say how you feel when you get a problem to solve.

3.

Subtract $-4x + 8y + 6$ from $2x + 3y - 1$

A. $x + 8$ B. $6x - 5y - 7$ C. $-x^2 + 3x - 2$ D. $x^2 - 5y + 8$

4.

Study the patterns below and answer the questions that follow.
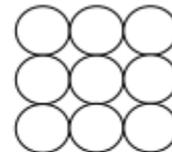
Pattern 1   Pattern 2   Pattern 3

Write down the first five numbers in the sequence.

5.

If $x = -3$ and $y = 4$ find the value of:

$$x(3x + 4y)$$

SM Assessment 13

Number	Assessment
1.	Classify the following numbers as rational or irrational. $4^{\frac{1}{3}}$ $\sqrt{2}$ 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: $\dfrac{3x + 6y}{x + 2y}$

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 area of the shaded portion if radius of the circle OA measures 7 cm and AB = DC = 7 cm.
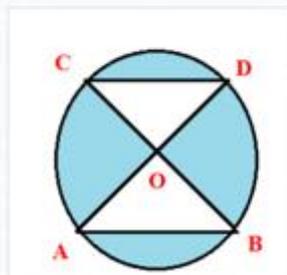
Number	Assessment
1.	ABC is an equilateral triangle with side length equal to 50 cm. BH is perpendicular to AC. MI is parallel to AC. Find the area of triangle BMN if the length of MN is equal to 12 cm.
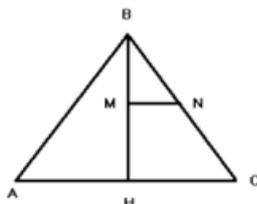
2. Evaluate for the given values of **a** and **b**.

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

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

3.

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

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

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

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

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

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

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 $-\dfrac{2}{5}$ and $-\dfrac{3}{4}$?

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

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

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

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

Number   Assessment

1.   Which value describes the positions of *C* and *D*?
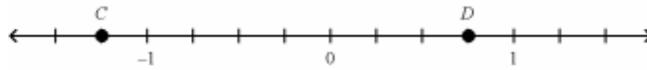
a. $-2\frac{3}{4}$ and $1\frac{1}{4}$ c. $-\frac{5}{4}$ and $\frac{5}{4}$

b. $-1\frac{1}{4}$ and $\frac{3}{4}$ 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.   +   c.   ×
b.   −   d.   ÷

3.   Triangles *ABC* and *DEF* are similar.
         What is the length of *EF*?
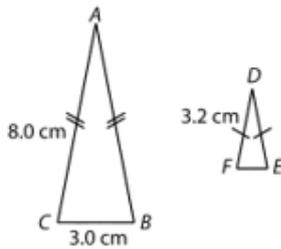
a.   7.5 cm   c.   1.2 cm
b.   0.9 cm   d.   1.4 cm

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

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

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

Number   Assessment

1.   Which of the these designs has line symmetry?

a.

c.

b.

d.
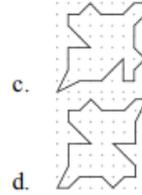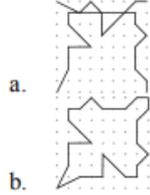
2.   **Factorise**

a. $\dfrac{81a^2 - 1}{9a + 1}$

b. $\dfrac{36a^2 - 1}{6a + 1}$

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

Example: $-6x = -12$

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

$x = 2$

a. $-4x = -16$

4.   Which line is a line of symmetry for the design?
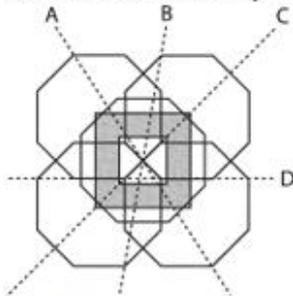
a. A   c. C
b. B   d. D

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

a.

c.

b.

d.
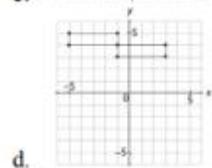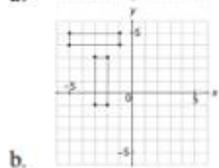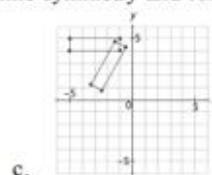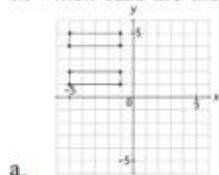
Number	Assessment

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

Number   Assessment

1.
The pie chart below shows how R94 000 was allocated to 4 schools in a school district nutrition programme.
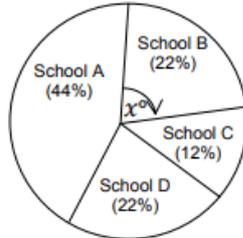
2.
How much did school A receive?

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 $\frac{7}{12}$

Number   Assessment

1.
　　　Consider the pattern: 9; 14; 19; 24;.....
　　　Determine the rule the nth term to describe the above pattern.

2.

Pattern 1　　Pattern 2　　　　Pattern 3　　　　　　Pattern 4
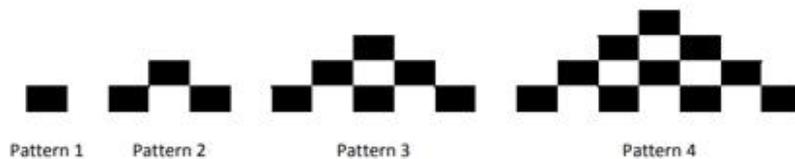
Draw the next pattern in the sequence.

3.
　　　ΔPQT is a right-angled triangle with angle T = 90°. Find with reasons PT if
　　　PQ = 50cm and TQ = 40cm.
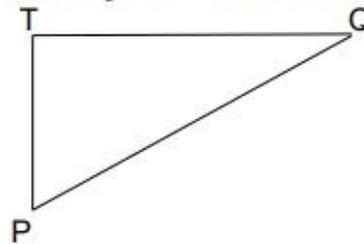
4.　　　Calculate the size of the missing angles with reasons.
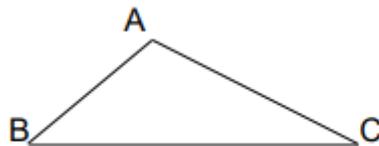
Angle A = 83°
Angle C = 38°

5.　　　State whether the following are **TRUE** or **FALSE**

$$\sqrt{64+36} > \sqrt[3]{27}$$