PLANNER & TRACKER FOR RECOVERY ANNUAL TEACHING PLAN (ATP)

2021 - 2023

MATHEMATICS

GRADE 8 TERM 2

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

1453202202059

basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL EDUCATION COLLABORATION TRUST

Read to Lead
A Reading Nation is a Leading Nation

NDP 2030

- Please note that a Maths structured learning programme that includes daily lesson plans, big books, reading worksheets and classroom resources is available for download from www.nect.org.za

- This is a zero-rated website, so there are no data costs for downloads.

- This document can be used independently of the structured learning programme.

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 8.
2) To ensure that meaningful teaching continues during the remaining teaching time as per the school calendar for TERM 2.
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 2, 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 2 Planner and Tracker has 53 teaching and learning days of which 15 days are used for formative and summative Assessment days.
- NECT Term 2 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 8.

- 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 12 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	10 min
New Concept – class activity	50 min

CONTENT COVERAGE

TERM 2	Week 1 4 days	Week 2 5 days		Week 3 3 days	Week 4 5 days	Week 5 5 days	Week 6 5 days	Week 7 5 days		Week 8 5 days	Week 9 5 days	Week 10 4 days	Week 11 5 days
Hours per week	3.5 hrs	4.5 hrs.		2.5 hrs	4.5hr s.	4.5 hrs.	4.5 hrs.	4.5 hrs.		4.5 hrs.	4.5 hrs.	3.5 hrs.	4.5 hrs.
Hours per topic	3.5 hrs.	1.5 hrs.	3 hrs	7 hrs		9 hrs.		2 hrs.	2.5 hrs.	4.5 hrs.	4.5 hrs.	3.5 hrs.	4.5 hrs
Topic, concepts, skills and values	**DECIMAL FRACTIONS** Calculations with decimal fractions • **Revise** - Multiplication of decimal fractions by decimal fractions not limited to one decimal place - Division of decimal fractions by decimal fractions - Calculate the squares, cubes, square roots and cube roots of decimal fractions **Solving problems** • Solve problems in context involving decimal	**EXPONENTS** **Comparing and representing numbers in exponential form** • Revise compare and represent whole numbers in exponential form • Compare and represent integers in exponential form • Compare and represent numbers in scientific notation, limited to positive exponents **Calculations using numbers in exponential form** • Establish general laws of exponents, limited to: - $a^m \times a^n = a^{m+n}$ - $a^m \div a^n = a^{m-n}$ if $m > n$ - $(a^m)^n = a^{m \times n}$ - $(a \times t)^n = a^n \times t^n$ - $a^0 = 1$ • Recognise and use the appropriate laws of operations using numbers involving exponents and square and cube roots • Perform calculations involving all four operations with numbers that involve squares, cubes, square and cube roots of integers • Calculate the squares, cubes, square and cube roots of rational numbers **Solving problems** • Solve problems in contexts involving numbers in exponential form		**NUMERIC AND GEOMETRIC PATTERNS** **Investigate and extend patterns** • Revise 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 • Extend investigate and extend numeric and geometric patterns looking for relationships between numbers, including patterns represented algebraically • Describe and justify the general rules for observed relationships between numbers in own words or in algebraic language		*FORMAL ASSESSMENT TASK* **INVESTIG ATION** • Exponents • Patterns	**FUNCTIONS AND RELATIONSHIPS** **Input and output values** • Revise, determine input values, output values or rules for patterns and relationships using: - flow diagrams - tables - formulae • Extend determine input values, output values or rules for patterns and relationships using equations **Equivalent forms** • Revise determine, interpret and justify equivalence of different descriptions of the same relationship or rule presented: - verbally - in flow diagrams - in tables - by formulae - by number sentences • Extend determine, interpret and justify equivalence of different descriptions of the same relationship or rule presented by equations		**ALGEBRAIC EXPRESSIONS** **Algebraic language** • Recognize and identify conventions for writing algebraic expressions • Identify and classify like and unlike terms in algebraic expressions • Recognize and identify coefficients and exponents in algebraic expressions **Expand and simplify algebraic expressions** • Use commutative, associative and distributive laws for rational numbers and laws o exponents to: • Add and subtract like terms in algebraic expressions	*FORMAL ASSESMENT TASK* **TEST** All Term 1 and Term 2 topics	

CORE QUESTIONS	DID ALL LEARNERS MASTER 2021 AND TERM 1 CORE 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 2: Implement DBE Diagnostic – see exemplar in Planner and Tracker – or any similar diagnostic – Based on 2021 and term 1 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 8 = 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.

5 – 8 April 2022 (four-day week)

Less on	ATP Content	concepts, skills	DBE Workbook 1	Reso urces	Dat e
1	HOLIDAYS				
2	Revision: Diagnostic	Baseline: (Revision, consolidation of Term 1 and Grade 7 skills)			
3	Revision: Remediation	Baseline: Remediation – error analysis			
4	DECIMAL FRACTIONS: **Calculations with decimal fractions** Multiplication of decimal fractions by decimal fractions not limited to one decimal place - Division of decimal fractions by decimal fractions - Calculate the squares, cubes, square roots and cube roots of decimal fractions	Match equivalence between diagram to common to decimal to %. Write percentages as decimals. Calculate percentage of a number. Write decimals in expanded form.	No. 6a (pp. xvi, xvii)		
5	DECIMAL FRACTIONS: **Calculations with decimal fractions** Multiplication of decimal fractions by decimal fractions not limited to one decimal place - Division of decimal fractions by decimal fractions - Calculate the squares, cubes, square roots and cube roots of decimal fractions	Write as decimals. Write from decimals to common. Round off to nearest unit or tenth. Write decimals in expanded form. Add decimals. Multiply decimals. Check answers using a calculator. Divide decimals.	No. 6b (pp. xviii, xix)		

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: • Match equivalence between diagram to common to decimal to %. • Write percentages as decimals. Calculate percentage of a number. • Write decimals in expanded form. • Write as decimals. • Write from decimals to common fraction. • Round off to nearest unit or tenth. • Add decimals. • Multiply decimals. Check answers using a calculator. Divide decimals.	What will you change next time? Why? **Struggling Learners Names:** **HOD:** **Date:**

11 – 14 April 2022 (four-day week)

	Week 2				
Lesson	**ATP Content**	**concepts, skills**	**DBE workbook**	**Resources**	**Date**
6	DECIMAL FRACTIONS: **Calculations with decimal fractions** Multiplication of decimal fractions by decimal fractions not limited to one decimal place - Division of decimal fractions by decimal fractions- Calculate the squares, cubes, square roots and cube roots of decimal fractions	Write as decimals. Write from decimals to common. Give % of a number.	Bk 2 No. 69a (pp. 10, 11) No. 69b (pp. 12, 13)		
7	DECIMAL FRACTIONS: **Calculations with decimal fractions** Multiplication of decimal fractions by decimal fractions not limited to one decimal place - Division of decimal fractions by decimal fractions- Calculate the squares, cubes, square roots and cube roots of decimal fractions **Solve problems:** Solve problems in context involving decimals	Add decimals. Subtract decimals Multiply decimals. Multiply decimals by 10 and 100. Write decimals in expanded form. Divide decimals. Round off numbers. Complete flow diagrams	Bk 2 No. 74 (pp. 24, 25) No. 75 (pp. 26, 27)		
8	DECIMAL FRACTIONS: **Calculations with decimal fractions** Multiplication of decimal fractions by decimal fractions not limited to one decimal place - Division of decimal fractions by decimal fractions- Calculate the squares, cubes, square roots and cube roots of decimal fractions **Solve problems:** Solve problems in context involving decimals	Square decimals. Square square-roots of decimals. Cube decimals. Find square-roots of decimals. Find cube-roots of decimals.	Bk 2. No. 76a (pp. 28, 29) No. 76b (30, 31)		
9	Assessment Activity: Consolidate and revise – assess learners understanding, remediate for understanding – use SM Activities				
10	PUBLIC HOLIDAY				

Reflection

DID ALL THE LEARNERS LEARN THE WEEKLY SKILLS? ARE THEY ABLE TO: • Write as decimals. Write from decimals to common. • Give % of a number. Add decimals. Subtract decimals • Multiply decimals. Multiply decimals by 10 and 100. • Write decimals in expanded form. Divide decimals. • Round off numbers. Complete flow diagrams • Square decimals. Square square-roots of decimals. • Cube decimals. Find square-roots of decimals. • Find cube-roots of decimals.	What will you change next time? Why? **Struggling Learners Names?**
	HOD: Date:

19 – 22 April 2022 (four-day week)

	Week 3				
Lesson	**ATP content**	**concepts, skills**	**DBE Workbook 1**	**Resources**	**Date**
11	PUBLIC HOLIDAY				
12	EXPONENTS: **Comparing and representing numbers in exponential**	Represent numbers in exponential form. Connect	No. R3a (pp. vi, vii)		

	form - Revise compare and represent whole numbers in exponential form - Compare and represent integers in exponential form -Compare and represent numbers in scientific notation, limited to positive exponents	exponents and diagrams. Write in exponential form. Expand exponential expressions. Calculate square roots. Calculate cube roots. Calculate powers of 10.	No. 3b (pp. viii, vix)		
13	EXPONENTS: **Comparing and representing numbers in exponential form** - Revise compare and represent whole numbers in exponential form - Compare and represent integers in exponential form -Compare and represent numbers in scientific notation, limited to positive exponents	Expand exponential expressions and multiply. Calculate squares and cubes. Write in exponential form. Calculate square roots. Calculate cube roots. Calculate powers of 10. Calculate by resolving into prime factors.	No. 14 (pp. 30, 31) No. 15 (pp. 32, 33)		
14	EXPONENTS: **Comparing and representing numbers in exponential form** - Revise compare and represent whole numbers in exponential form - Compare and represent integers in exponential form -Compare and represent numbers in scientific notation, limited to positive exponents	Representing square roots with the square. Find squares of numbers Calculate square roots. Representing cubes with the cube. Find cubes of numbers. Calculate cube roots. Calculate by resolving into prime factors.	No. 16 (pp. 34, 35) No. 17 (pp. 36, 37)		
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: • Represent numbers in exponential form. • Connect exponents and diagrams. • Expand exponential expressions. • Calculate square roots. • Calculate cube roots. Calculate powers of 10. • Expand exponential expressions and multiply. • Calculate squares and cubes. • Calculate by resolving into prime factors. • Representing square roots with the square. • Find squares of numbers • Representing cubes with the cube. • Find cubes of numbers.	What will you change next time? Why? **Struggling Learners names:** **HOD:** **Date:**

25 – 29 April 2022 (four-day week)

Week 4					
Day	**ATP Content**	**CAPS content, concepts, skills**	**DBE workbook**	**Res ourc es**	**Date**
16	EXPONENTS: **Comparing and representing numbers in exponential form** - Revise compare and represent whole numbers in exponential form - Compare and represent integers in exponential form	Representing cube roots with the volume of cube. Calculate cube roots. Calculate by resolving into cube numbers. Write in powers of ten. Write in expanded and exponential form.	No. 18 (pp. 38, 39) No. 19 (pp. 40, 41)		

	-Compare and represent numbers in scientific notation, limited to positive exponents	Write numbers in scientific notation. Write in standard notation.			
17	EXPONENTS: **Calculations using numbers in exponential form**- Establish general laws of exponents, limited to: - $a^m \times a^n = a^{m+n}$ - $a^m \div a^n = a^{m-n}$ if $m > n$ - $(a^m)^n = a^{m \times n}$ - $(a \times t)^n = a^n \times t^n$ - $a^0 = 1$	Simplify, using the multiplication rule. Simplify and test your answer. Use substitution to test answers. Simplify using the division rule. Use a calculator to test answers.	No. 20 (pp. 42, 43) No. 21 (pp. 44, 45)		
18	PUBLIC HOLIDAY				
19	EXPONENTS: **Calculations using numbers in exponential form**- Establish general laws of exponents, limited to: - $a^m \times a^n = a^{m+n}$ - $a^m \div a^n = a^{m-n}$ if $m > n$ - $(a^m)^n = a^{m \times n}$ - $(a \times t)^n = a^n \times t^n$ - $a^0 = 1$	Simplify, using the power rule. Simplify and test your answer. Use substitution to test answers. Simplify using the power of zero rule. Use two methods to solve the power of zero rule. Use a calculator to test answers.	No. 22 (pp. 46, 47) No. 23 (pp. 48, 49)		
20	EXPONENTS: **Solving problems** -Solve problems in contexts involving numbers in exponential form	Give examples of square numbers, square roots, cube numbers and cube roots. Use BODMAS to calculate integers. Calculate across multiple operations.	No. 24 (pp. 50, 51) No. 25 (pp. 52, 53)		

Reflection	
DID ALL THE LEARNERS LEARN THE WEEKLY SKILLS? ARE THEY ABLE TO: • Representing cube roots with the volume of cube. • Calculate cube roots. Calculate by resolving into cube numbers. • Write in powers of ten. • Write in expanded and exponential form. • Write numbers in scientific notation. Write in standard notation. • Simplify, using the multiplication rule. • Simplify and test your answer. Use substitution to test answers. • Simplify using the division rule. Use a calculator to test answers. • Simplify, using the power rule. Simplify using the power of zero rule. • Use two methods to solve the power of zero rule. • Give examples of square numbers, square roots, cube numbers and cube roots. • Use BODMAS to calculate integers. • Calculate across multiple operations.	What will you change next time? Why? **Struggling Learners Names**: HOD: Date:

3 – 6 May 2022 (four-day week)

Week 5					
Day	ATP Content	concepts, skills	DBE workbook 1	Reso urces	Dat e
21	PUBLIC HOLIDAY				
22	EXPONENTS: **Solving problems** -Solve problems in contexts involving numbers in exponential form	Write down the rules for exponents. Dividing numbers with exponents	No. 26 (pp. 54, 55)		

23	NUMERIC AND GEOMETRIC 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 **Describe and justify** the general rules for observed relationships between numbers in own words	Complete sequences that involve integers using number lines. Give the constant difference. Give the constant ratio. Determine the rule for patterns. Complete the tables and state the rule.	No. 11 (24, 25) No. 27a (pp. 58, 59)		
24	NUMERIC AND GEOMETRIC 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 **Describe and justify** the general rules for observed relationships between numbers in own words	Use matches to make geometric patterns. Complete the pattern of the hexagon. Calculate the number of matches used for each hexagon in the pattern. Complete tables and find the nth term.	No. 27b (pp. 58, 59)		
25	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: • Write down the rules for exponents. • Dividing numbers with exponents • Complete sequences that involve integers using number lines. • Give the constant difference. • Give the constant ratio. • Determine the rule for patterns. • Complete the tables and state the rule. • Use matches to make geometric patterns. • Complete the pattern of the hexagon. • Calculate the number of matches used for each hexagon in the pattern. • Complete tables and find the nth term.	What will you change next time? Why? **Struggling Learner names:** HOD: Date:

9 – 13 May 2022

Week 6					
Less	**ATP Content**	**concepts, skills**	**DBE workbook**	**Reso urces**	**Date**
26	NUMERIC AND GEOMETRIC PATTERNS: Extend investigate and extend numeric and geometric patterns looking for relationships between numbers, including patterns represented algebraically. Describe and justify the general rules for observed relationships between numbers in own words or in algebraic language	Give a rule to describe relationships. Give the constant difference. Give the constant ratio. Complete the tables and state the rule.	Bk 2 No 105a. (pp. 112, 113)		

Day	ATP Content	concepts, skills	DBE workbook		
27	NUMERIC AND GEOMETRIC PATTERNS: Extend investigate and extend numeric and geometric patterns looking for relationships between numbers, including patterns represented algebraically. Describe and justify the general rules for observed relationships between numbers in own words or in algebraic language	Give a rule to describe relationships. Complete the tables and state the rule.	Bk 2 No 105b. (pp. 114, 115)		
28	NUMERIC AND GEOMETRIC PATTERNS: Extend investigate and extend numeric and geometric patterns looking for relationships between numbers, including patterns represented algebraically. Describe and justify the general rules for observed relationships between numbers in own words or in algebraic language	Extend the drawing and write a rule. Give a rule to describe relationships. Complete the tables and state the rule.	Bk 2 No 107. (pp. 120, 121)		
29	NUMERIC AND GEOMETRIC PATTERNS: Extend investigate and extend numeric and geometric patterns looking for relationships between numbers, including patterns represented algebraically. Describe and justify the general rules for observed relationships between numbers in own words or in algebraic language	Define a geometric sequence. Extend the drawing and write a rule. Give a rule to describe relationships. Complete the tables and state the rule.	Bk 2 No 108. (pp. 122, 123)		
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: • Give a rule to describe relationships. • Give the constant difference. Give the constant ratio. • Complete the tables and state the rule. • Extend the drawing and write a rule. • Define a geometric sequence.	What will you change next time? Why? **Struggling Learners Names:**
	HOD: **Date:**

16 – 20 May 2022

Week 7					
Day	ATP Content	concepts, skills	DBE workbook	Resources	Date
31	**FORMAL ASSESSMENT** **Investigation: Exponents and Patterns**				
32	**FORMAL ASSESSMENT** **Investigation: Exponents and Patterns**				
33	**FORMAL ASSESSMENT** **Investigation: Exponents and Patterns**				
34	**FORMAL ASSESSMENT** **Investigation: Exponents and Patterns**				
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: •	What will you change next time? Why?
		Struggling Learners Names:
		HOD:
		Date:

23 – 27 May 2022

	Week 8				
Day	**ATP content**	**concepts, skills**	**DBE workbook 1**	**Reso urces**	**Date**
36	FUNCTIONS AND RELATIONSHIPS: **Input and output values** -Determine input values, output values or rules for patterns and relationships using:– flow diagrams– tables– formulae	Describe input, output and process. Complete the flow diagrams given the rule. Use the rule to find values of letters. Complete the tables and determine the formulae or rule.	No. R7 (pp. xx, xxi)		
37	FUNCTIONS AND RELATIONSHIPS: **Input and output values** -Determine input values, output values or rules for patterns and relationships using:– flow diagrams– tables– formulae	Describe input, output and process. Complete the flow diagrams given the rule. Use the rule to find values of letters. Complete the tables and determine the formulae or rule.	No. 28 (pp. 60, 61)		
38	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 number sentences	Complete the tables and show calculations. Give the nth term.	Bk 2 No. 106a (pp. 116, 117) No. 106b (pp. 118, 119)		
39	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 number sentences	Complete the flow diagrams given the rule. Use the rule to find values of letters. Complete the tables and determine the formulae or rule.	No. 109 (pp. 124, 125)		
40	Complete and consolidate the week's assessment and work				
	Reflection				
DID ALL THE LEARNERS LEARN THE WEEKLY SKILLS? ARE THEY ABLE TO: • Describe input, output and process. • Complete the flow diagrams given the rule. • Use the rule to find values of letters. • Complete the flow diagram and give a table using the same rule. • Complete the tables and show calculations. • Determine the rule and solve the letters.		What will you change next time? Why? Struggling Learners Names:			
		HOD: **Date:**			

30 May – 3 June 2022

	Week 9				
Day	ATP content	concepts, skills	DBE workbook	Reso urces	Da te
41	ALGEBRAIC EXPRESSIONS: **Algebraic language** -Recognize and identify conventions for writing algebraic expressions - Identify and classify like and unlike terms in algebraic expressions -Recognize and identify coefficients and exponents in algebraic expressions	Give the difference between equation and expression. Write expressions for nth term of a sequence. Solve for x. Substitute and simplify.	No. 8a (pp. xxii, xxiii) No. 8b (pp. xxiv, xxv)		
42	ALGEBRAIC EXPRESSIONS: **Algebraic language** -Recognize and identify conventions for writing algebraic expressions - Identify and classify like and unlike terms in algebraic expressions -Recognize and identify coefficients and exponents in algebraic expressions	Define the algebraic vocabulary. Define algebraic expression. Find the variable, constant, coefficient, operator, exponent & like terms. Write an algebraic expression for statements.	No. 29a (pp. 62, 63) No. 29b (pp. 64, 65)		
43	FUNCTIONS AND RELATIONSHIPS: **Expand and simplify algebraic expressions -**Use commutative, associative and distributive laws for rational numbers and laws of exponents to: - Add and subtract like terms in algebraic expressions	Apply the associative property to show equality. Use commutative property to show equality. Use the distributive property to simplify.	No. 2a (pp, 4, 5) No. 2b (pp. 6, 7)		
44	FUNCTIONS AND RELATIONSHIPS: **Expand and simplify algebraic expressions** -Use commutative, associative and distributive laws for rational numbers and laws of exponents to: - Add and subtract like terms in algebraic expressions	Give examples of like terms. Add like terms. Subtract like terms. Simplify by multiplying and applying exponent rules.	No 30 (pp. 66, 67)		
45	Complete and consolidate the week's assessment and work				
	Reflection				

DID ALL THE LEARNERS LEARN THE WEEKLY SKILLS? ARE THEY ABLE TO:	What will you change next time? Why?
• Give the difference between equation and expression. • Write expressions for nth term of a sequence. • Solve for x. Substitute and simplify. • Define the algebraic vocabulary. • Define algebraic expression. • Find the variable, constant, coefficient, operator, exponent & like terms. • Write an algebraic expression for statements. • Apply the associative property to show equality. • Use commutative property to show equality. • Use the distributive property to simplify. • Give examples of like terms. Add like terms. • Subtract like terms. Simplify by multiplying and applying exponent rules.	
	HOD: **Date:**

6 – 10 June 2022

Week 10					
Day	**ATP content**	**concepts, skills**	**DBE workbook 1**	**Resources**	**Date**
46	FUNCTIONS AND RELATIONSHIPS: **Expand and simplify algebraic expressions** -Use commutative, associative and distributive laws for rational numbers and laws of exponents to: - Add and subtract like terms in algebraic expressions	Revise the rules for multiplying integers. Add and subtract like terms. Simplify by multiplying and applying exponent rules.	No 31 (pp. 68, 69)		
47	**Revision of term 1 and 2:** 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				
48	**Revision of term 1 and 2:** 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				
49	**Revision of term 1 and 2:** 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				
50	Complete and consolidate the week's assessment and work				
Reflection					
DID ALL THE LEARNERS LEARN THE WEEKLY SKILLS? ARE THEY ABLE TO: • Revise the rules for multiplying integers. • Add and subtract like terms. • Simplify by multiplying and applying exponent rules.		What will you change next time? Why? **Struggling Learners Names:**			

13 – 15 June 2022 (three-day week)

Week 11					
Day	**ATP content**	**concepts, skills**	**DBE workbook**	**Resources**	**Date**
51	**Revision of term 1 and 2:** 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				
52	**Revision of term 1 and 2:** 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				
53	**Revision of term 1 and 2:** 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				
54	PUBLIC HOLIDAY				
55	PUBLIC HOLIDAY				

Reflection	
Identify some skills that need revising during the next term:	What will you change next time? Why? **Struggling Learners Names:**

20 – 24 June 2022

Week 12					
Day	**ATP content**	**concepts, skills**	**DBE workbook**	**Resources**	**Date**
56	FORMAL ASSESSMENT TASK: Test All topics				
57	FORMAL ASSESSMENT TASK: Test All topics				
58	FORMAL ASSESSMENT TASK: Test All topics				
59	FORMAL ASSESSMENT TASK: Test All topics				
60	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	
6	**Tuesday** Skills mastery Assessment 9 **Thursday** Skills mastery Assessment 10	
7	**Tuesday** Skills mastery Assessment 11 **Thursday** Skills mastery Assessment 12	Formal Assessment 1 - Assignment
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	
11	**Tuesday** Skills mastery Assessment 19	
12		**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. Answer all the questions.

3. Show all your workings.

3. No calculators.

QUESTION 1:

1.1 Rewrite the following numbers in ascending order, by calculating values where necessary:

$0; \sqrt[3]{-125}; -37; \sqrt{144}; 3^3; (-6)^2$ (3)

1.2 The ratio of boys to girls in the swimming team is 3:2. If there are
15 boys, what is the total number of members in the swimming team? (2)

[5]

QUESTION 2:

2.1 Mrs Ndlovu bought 48 jerseys at R160 each and sold them at R223 each.

    a) How much did she pay in total for the jerseys? (2)

    b) What profit did she make on each jersey? (1)

2.2 Lucy's monthly salary is R16 500. If 9% is deducted for tax and 1% is deducted for UIF,
how much does Lucy receive each month? (2)

[5]

QUESTION 3:

Simplify:

3.1 $(3y^2 + 7)^2$ (2)

3.2 $\sqrt{49a^{18}}$ (1)

3.3 $(-9x \div 3^4 x^2)^3$ (3)

3.4 $(3x^2 \times 7x)^0$ (1)

3.5 $\dfrac{-2pq^2 \times -3p^3q^6}{12p^3q^3}$ (3)

3.6 Write 23 045 000 in scientific notation. (1)

[11]

QUESTION 4:

4.1 The following is a pattern made of hearts:

    4.1.1 How many hearts will the fourth pattern have?   (1)

    4.1.2 Explain in your own words how you would determine the number of hearts in each pattern which follows.   (1)

    4.1.3 Give an equation that will give the number of hearts in each pattern. Let H be the number of hearts and n be the position of each pattern in the sequence.   (2)

    4.1.4 Can a pattern in this sequence have 45 hearts?   (2)

    4.2.1 Give the next two terms of the number pattern: -3; 12; -48; ...   (1)

    4.2.2 Explain, in words, how this pattern is formed.   (1)

    [8]

QUESTION 5:

Determine the missing values in the flow diagram provided, that is 5.1 and 5.2. Show all calculations.

    [3]

QUESTION 6:

6.1 Consider the expression: $-11x^6 - 3x^5 + 4(x^7 - x^2) + 5$

    6.1.1 What is the degree of this polynomial?   (1)

    6.1.2 How many terms are there in this expression?   (1)

    6.1.3 What is the coefficient of x^5?   (1)

6.2 Simplify:

    6.2.1 $\frac{5x - 4y}{2} + \frac{5x - 10y}{5}$ (3)

    6.2.2 $(3x + 1)^2 - (3x - 5)(x + 1) + 4(x - 1)(x + 1)$ (4)

    6.2.3 $\frac{8pq^2 + 10pq - 2q}{2q}$ (3)

6.3 From $de^2 - 2de - 3$ subtract $-3de + 5 - 7de^2$ (2)

    [12]

SOLUTIONS AND MEMORANDUM

SOLUTIONS	MARKS AND COMMENTS	COGNITIVE LEVELS
QUESTION 1:		
1.1 $0; \sqrt[3]{-125}; -37; \sqrt{144}; 3^3; (-6)^2$ = 0; −5; −37; 12; 27; 36 ✓✓ *simplification* Ascending order: −37; −5; 0; 12; 27; 36 ✓ *final order*	(3)	K
1.2 Let the total number be x. $\frac{x}{15} = \frac{5}{3}$ ✓ *equation (or in any other correct form)* $x = \frac{5}{3} \times 15$ $x = 25$ ✓ *answer* There are 25 members in the swimming team.	(2)	PS

QUESTION 2:		

2.1   a)   160
        $\times$ 48
       1 280
      <u>6 400</u> ✓ *amount added*
      <u>7 680</u> ✓ *final answer*
     Mrs Ndlovu paid R7 680 in total.
	(2)	RP

b) $223 - 160 = 63$ She made R63 profit on each jersey. ✓ *answer*	(1)	K

2.2 $9\% + 1\% = 10\%$
     10% of R16 500 $= \frac{10}{100} \times 16\,500$
     $= 1\,650$ ✓ *percentage*
     $16\,500 - 1\,650 = R14\,850$ ✓ *answer*
     Lucy receives R14 850 per month **or**
     $100\% - 10\% = 90\%$ ✓ *percentage*
     $\frac{90}{100} \times 16\,500 = 9 \times 1\,650 = R14\,850$ ✓ *answer*
	(2)	CP

QUESTION 3:		

3.1 $(3y^2 + 7)^2 = (3y^2 + 7)(3y^2 + 7)$
     $= 9y^4 + 21y^2 + 21y^2 + 49$ ✓ *multiplication*
     $= 9y^4 + 42y^2 + 49$ ✓ *final answer*
	(2)	RP

3.2 $\sqrt{49a^{18}} = 7a^9$ ✓ *answer*	(1)	K
3.3 $(-9x \div 3^4x^2)^3 = (\frac{-9x^4}{81x^4})^3$ ✓ $= (\frac{-1}{9x^4})^3$ ✓ $= \frac{-1}{729x^{12}}$ ✓ *simplification and final answer* **or** $= (\frac{-3^2x^4}{3^4x^8})^3$ ✓ $= \frac{-3^6x^{12}}{3^{12}x^{24}}$ ✓ $= \frac{-1}{3^6x^{12}} = \frac{-1}{729x^{12}}$ ✓ *simplification and final answer*	(3)	CP
3.4 $(3x^2 \times 7x)^0 = 1$ ✓ *answer*	(1)	K
3.5 $\frac{-2pq^2 \times -3p^3q^4}{12p^3q^3} = \frac{6p^4q^6}{12p^3q^3}$ ✓ $= \frac{pq^3}{2}$ ✓✓ *simplification* *and final answer*	(3)	RP
3.6 $23\,045\,000 = 2{,}3045 \times 10^7$ ✓ *answer*	(1)	K
QUESTION 4:		
4.1.1 The fourth pattern will have 17 hearts. ✓ *answer*	(1)	K
4.1.2 I will add four hearts to each pattern to obtain the next pattern. ✓ *explanation*	(1)	K
4.1.3 $H = 4n + 1$ ✓✓ *equation*	(2)	RP

4.1.4 $H = 4n + 1$
      $45 = 4n + 1$ ✓ *equation*
      $44 = 4n$
      $11 = n$ The 11th pattern will have
              45 hearts ✓ *answer*
	(2)	CP

4.2.1 192; −768 ✓ *number*	(1)	K
4.2.2 Each term is multiplied by −4 to generate the next term. ✓ *explanation*	(1)	K

QUESTION 5:		
5.1 $\quad y = -(-2)^3 + 5 = -(-8) + 5 = 13$ ✓ substitution and answer	(1)	RP
5.2 $\quad -x^3 + 5 = 32$ ✓ equation $\qquad -x^3 = 27$ $\qquad x^3 = -27$ $\qquad x = -3$ ✓ answer	(2)	CP
QUESTION 6:		
6.1.1 Degree of polynomial: 7 ✓ answer	(1)	K
6.1.2 Four terms ✓ answer	(1)	K
6.1.3 -3 ✓ answer	(1)	K
6.2.1 $\dfrac{5x - 4y}{2} + \dfrac{5x - 10y}{5} = \dfrac{5(5x - 4y) + 2(5x + 10y)}{10}$ ✓ lowest common denom. $\qquad = \dfrac{25x - 30y + 10x + 20y}{10}$ ✓ simplification $\qquad = \dfrac{35x}{10}$ $\qquad = \dfrac{7x}{2}$ ✓ answer	(4)	RP
6.2.2 $(3x + 1)^2 - (3x - 5)(x + 1) + 4(x - 1)(x + 1)$ $\quad = (3x + 1)(3x + 1) - (3x^2 + 3x - 5x - 5) +$ $\qquad 4(x^2 - 1)$ ✓✓ multiplication $\quad = 9x^2 + 3x + 3x + 1 - 3x^2 - 3x + 5x + 5 +$ $\qquad 4x^2 - 4$ ✓ simplification $\quad = 10x^2 + 8x + 2$ ✓ final answer	(4)	RP
6.2.3 $\dfrac{8pq^2 + 10pq - 2q}{2q} = \dfrac{8pq^2}{2q} + \dfrac{10pq}{2q} - \dfrac{2q}{2q}$ ✓✓ separate terms $\qquad = 4pq + 5p - 1$ ✓ final simplified answer	(3)	CP
6.3 $\quad de^2 - 2de - 3 - (-3de + 5 - 7de^2)$ $\quad = de^2 - 2de - 3 + 3de - 5 + 7de^2$ ✓ multiplication $\quad = 8de^2 + de - 8$ ✓ final 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 EXEMPLARS

Skills Mastery (SM) Assessment 1

Number	Assessment
1.	Given the list of numbers below:

$$25; \quad 78; \quad 23; \quad -7; \quad \sqrt{-2}; \quad \frac{0}{5}; \quad \frac{8}{0}; \quad 36; \quad -64; \quad 51$$

1.1.1. Which numbers in the list are integers?

1.1.2. Which numbers in the list are non-real?

2.　Give the factors for each of these numbers:

84

54

3.　Using prime factors find the lowest common multiple and the highest common factor for each set of numbers given:

98 and 70

72 and 120

4.　Write the following in exponential form:

3 x 3 x 3 x 2 x 2 x 2 x 2

a x a x b x b x b x b

5.　For each of the given patterns:

Find the next three terms

Give the rule in words

20,　26,　32,　38...

3,　6,　12,　24...

Number	Assessment

1.   Convert each fraction into decimal:

1) $\dfrac{79}{10}$ = ◯	2) $\dfrac{90}{100}$ = ◯

2.   A) Find the values of the following.

        1) $\sqrt{2500}$ 2) $\sqrt{64}$

3.   Convert each fraction into percent:

1) $\dfrac{1}{10}$ = ◯	2) $\dfrac{13}{20}$ = ◯

4.   A) Find the values of the following.

        1) $\left(2\sqrt{3}\right)^2$ 2) $\left(4\sqrt{15}\right)^2$

       _____   _____

5.   Write each equation in standard form.

        1) $8x = -5y + 3$ 2) $19x = y$

Number	Assessment

1.

Using the Distributive Property

Simplify each expression.

1) $-6(a + 8)$

2) $4(1 + 9x)$

2.

Combining Like Terms

Simplify each expression.

1) $-6k + 7k$

2) $12r - 8 - 12$

3.

Multiplying and Dividing Positives and Negatives

Find each quotient.

1) $\dfrac{10}{5}$

2) $\dfrac{-24}{12}$

4.

Adding and Subtracting Positive and Negative Numbers

Evaluate each expression.

1) $(-2) + 3$

2) $(-14) + (-7)$

5.

Simplifying Radical Expressions

Simplify.

1) $\sqrt{125n}$

Number	Assessment

1.

Dividing Polynomials

Divide.

1) $(m^2 - 7m - 11) \div (m - 8)$

2.

Identify the variable and constant of the algebraic expressions below:

Algebraic expression	Variable	Constant
b + 12		
$3b + \frac{1}{4}$		

3.

Order these integers from smallest to biggest.

$-5, -51, 21, -61, 42, -66, 5, 39, -31, -71, 31, 66$

4.

Example: $3a^2 \div 4a^2$

$= \frac{3a^2}{4a^2} = \frac{3}{4} \times \frac{a^2}{a^2}$

$= \frac{3}{4}$

a. $1a \div 7a =$

b. $3f \div 5f =$

5.

Explain the following algebraic terms in your own words:

a. What does 3^n mean in $3, 9, 27, 81...3^n$?

SM Assessment 5

Number	Assessment
1.	$f(x) = \dfrac{1}{3} \cdot 6^x$ at $x = 2$
2.	**Factor each completely.** 1) $b^2 + 8b + 7$
3.	**Solve each equation by factoring.** 1) $(k + 1)(k - 5) = 0$
4.	**Write each as an algebraic expression.** 1) the difference of 10 and 5 2) the quotient of 14 and 7
5.	**Name the set or sets to which each number belongs.** 1) -15 2) 11

SM Assessment 6

Number	Assessment
1.	**Example:** $-4 \underline{\quad} = 0$ $= -4 + 4 = 0$ a. $-5 \underline{\quad} = 0$ b. $-9 \underline{\quad} = 0$ c. $11 \underline{\quad} = 0$
2.	Do the same sums but this time $x = -4$. $x^2 - x =$ b. $-x + x^2 =$
3.	**Simplify. Your answer should contain only positive exponents.** 1) $2m^2 \cdot 2m^3$ 2) $m^4 \cdot 2m^{-3}$
4.	**Look at the following. What do you notice?** $2(x + 5)$ $2 \mid x \mid 5$ $2x + 10$ $2(x^2 + 3x + 4)$ $2 \mid x^2 \mid 3x \mid 4$ $2x^2 + 6x + 8$ **Why are these called algebraic expressions?**
5.	**Use the example to complete the following:** **Examples:** $4x^6$ $= 2x^3 \times 2x^3$ a. $16x^4 = \underline{\quad} \times \underline{\quad}$ b. $18x^{10} = \underline{\quad} \times \underline{\quad}$

Number	Assessment
1.	**Revision.** What is the inverse operation of addition? _____
2.	a. $2(x^2 + x + 4) - x(2x + 1) =$
3.	$\left(\dfrac{x^5 + 2x^3 + 4}{x^3}\right) + 2(4x^2 + 2x^2) + \left(\dfrac{x^4 - 6x^4 - 2}{x^2}\right) - \left(\dfrac{1}{3x^2} \div \dfrac{1}{4x^2}\right) =$
4.	**What is the HCF for:** **Example: Factors of 12: {1, 2, 3,④ 6, 12}** a. 15 and 45
5.	## Order of Operations **Evaluate each expression.** 1) $3(6 + 7)$

SM Assessment 8

Number	Assessment
1.	Decimals to fractions 0.5
2.	**Decimals** Find the quotient. 1. $262 \div 0.49 =$ _____ 2. $524 \div 0.63 =$ _____ 3. $845 \div 0.87 =$ _____ 4. $854 \div 0.83 =$ _____
3.	Solve for the variable. 1. $y + 0.4 = 0.5$ _____ 2. $0.2 + y = 1.0$ _____ 3. $0.6 + y = 0.8$ _____
4.	**Find the pattern.** 1. 21, 22, 25, 30, 37, 46, 57, _____
5.	A ratio is a comparision of two numbers by _____. (a) addition (b) subtraction (c) multiplication (d) division

SM Assessment 9

Number   Assessment

1.

	Ratio	Fraction	Percent	Decimal
a.	1:1			
b.	1:2			
c.	7:8			
d.	1:5			
e.	1:3			
f.	5:7			
g.	6:7			
h.	3:7			
i.	4:7			
j.	5:8			

Convert the values.

2.
1. $87^2 =$ _____
2. $5^2 =$ _____
3. $1^2 =$ _____
4. $2^2 =$ _____

3.   Simplify the fractions.

1. $\frac{48}{36} =$ _____
2. $\frac{12}{24} =$ _____
3. $\frac{12}{8} =$ _____

4.
1. 61% of 180 = _____
2. 79% of 99 = _____

5.

Find the greatest common factor.

1. 18 _____ __
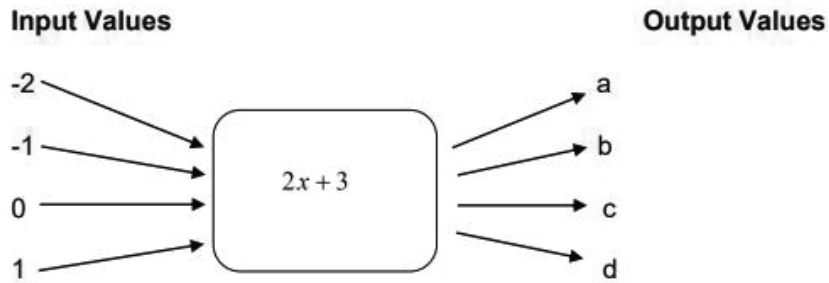   72 _____

2. 80 _____
    60 _____

Number	Assessment

1.

Study the flow diagram and answer the questions that follow.

Input Values   **Output Values**

-2 ⟶   ⟶ a

-1 ⟶   ┌──────────────┐   ⟶ b

            │ $2x + 3$ │

0 ⟶   └──────────────┘   ⟶ c

1 ⟶   ⟶ d

2.

Find the greatest common factor.

1. 18 _____ —   2. 80 _____ .

   72 _____   60 _____

3.

1. **-5 (6) =**   2. **- 4 (- 7) =**

   _____   _____

3. **-45 ÷ 9 =**   4. **10 (-3) =**

   _____   _____

4.

Find the lowest common multiple.

1. 12 _____ ____

   4 _____

5.

Solve.

Example:

$(3x^2)^3$

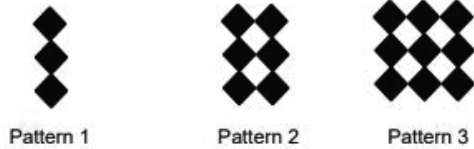$= 3^{1 \times 3} \times x^{2 \times 3}$

$= 3^3 \times x^6$

$= 27x^6$

a. $(2e^4)^1$ b. $(4g^3)^5$

31

Number	Assessment
1.	Study the patterns below and answer the questions that follows.

Pattern 1   Pattern 2   Pattern 3

How many black squares will be in the fourth and fifth pattern?

2.

Add $3x - 7x^2 + 4$ and $3 + 2x - x^2$

3.

3. Write the following in the correct column.

		thousands	hundreds	tens	units		tenths	hundredths	thousandths
a.	2,869				2	,	8	6	9
b.	24,328								

4.

1. Circle the variable.

a. $x + 7 = 10$ b. $2x + 5 = 9$ c. $8 + x = 10$

2. Circle the constant.

a. $x + 8 = 14$ b. $3x + 10 = 19$ c. $5 + 9 = 20$

5.

10. Revision: Write an algebraic expression for each of the following descriptions:

a. Six more than a certain number.

Number	Assessment
1.	**Calculate the following:** **Example:** $\sqrt[3]{-8}$ $= -2$ a. $\sqrt[3]{8}$ b. $\sqrt[3]{-27}$
2.	**1. Calculate.** i. $(\sqrt{25}) + (5 + 4) + (6^2) =$ ☐ ii. $(9^2) + (\sqrt{36}) - (6 + 2) =$ ☐
3.	**2. What is the constant ratio between the consecutive terms?** a. $3, 9, 27, 81$ b. $9, -27, 81, -243$ c. $5, -25, 125, -625$ ☐ ☐ ☐
4.	**3. Do these patterns have a constant difference or a constant ratio or neither?** a. $1, 4, 10, 19$ b. $2, 5, 7, 11$ c. $3, 7, 13, 21$ ☐ ☐ ☐
5.	**Complete the table and then state the rule.** **Example:** **Rule? The term × 3.**

Example:

Position	1	2	3	4	5	n
Value of the term	3	6	9	12	15	$n \times 3$

Rule? The term × 3.

i. Complete the table.
ii. State the rule.
iii. Determine term value as asked.

a.

Position	2	4	6	8	n
Value of the term	4	8		16	

Rule?   What will the value of the 20th term be?

1.

Are the following true or false?
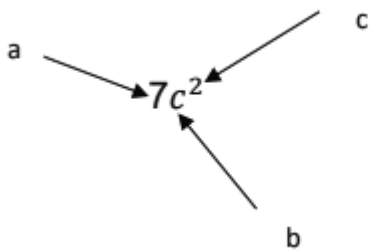
The sum of the interior angles of a triangle is 360°.
Opposite sides of a kite are equal.
Negative ÷ Negative = Positive.

2. Label the diagram

a

$7c^2$

c

b

3.

Write an integer to represent each description.

Eight units to the left of –3 on a number line.   _____

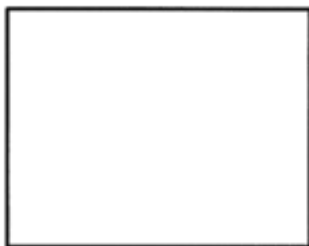Eight units to the right of –3 on a number line.   _____

4. Write the answers of the following exponents:

$3^2 =$ _____

$7^2 =$ _____

5. -14 – (-10) + 17

SM ASSESSMENT 14

1. $x + x + x =$

   A x^3

   B $3x$

   C $3x^3$

   D $4x$

2.   Complete: $(12 \div 2) + (6 \times 3) - 3 =$

   A   105

   B   27

   C   21

   D   33

3.   What is the value of x if $\frac{2}{7} = \frac{x}{21}$?

   A   6

   B   7

   C   11

   D   14

4.   The next term in the sequence $1 ; 3 ; 9 ; \_\_$ is ...

   A   24

   B   12

   C   18

   D   27

5.   The value of $\sqrt[3]{125} =$

   A   5

   B -5

   C   25

   D   15

SM ASSESSMENT 15

1.
Round 3479,985 off to:
a) Nearest tenth
b) Nearest hundred

2.
Nineteen million two hundred and eight thousand and six – in digits.
a) 19 280 006
b) 19 208 006
c) 19 028 060
d) 19 208 600

3.
Simplify the following. Show <u>ALL</u> your working out.
a) $(12 + 7) - (2 - 23)$
b) $8 \times 5 \div (4 - 14)$

4.
Fill in the additive inverse for the following numbers:

-6 additive inverse : _____

7 additive inverse : _____

5.
Find the next term in the following number sequence:
a) 5; 25; 125; 625; _____
b) 1122; 1095; 1068; 1041; _____

SM ASSESSMENT 16

1.
How many terms are there in the expression $-6x^4 + 4x^3$?

A   1

B   2

C   3

D   4

2.
$0,15 \times 0,3 =$

A   4,5

B   0,45

C   0,0045

D   0,045

3. Order these integers from smallest to biggest.

–5, –51, 21, –61, 42, –66, 5, 39, –31, –71, 31, 66

4. Write the answers of the following exponents:

$3^2 =$ _____

$7^2 =$ _____

5. Find the value of x in the following:

$x \div 4 = 36 \div 3$

$x =$ _____

SM ASSESSMENT 17

1. Which number is missing in the number sequence below?

$1 ; 1 ; 2 ; 3 ; \_\_ ; 8 ; 13$

A   3

B   2

C   5

D   7

2. Complete:

.1 $\frac{0}{7} =$ _____

.2 $\left(\frac{1}{2}\right)^3 =$ _____

3. Write 12 000 in scientific notation.

_____

4. Answer the following questions.

Write down the LCM of 12 and 48.

_____

5. Write down all the factors of 28.

Then, write down the prime factors of 28.

_____

SM ASSESSMENT 18

1. Identify the variable and constant of the algebraic expressions below:

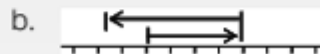| Algebraic expression	Variable	Constant
b + 12		
$3b + \frac{1}{4}$		

2. Write an equation (number sentence) for each of the following.

A certain number multiplied by two then three is added to get 13.

3.

$$(-8) + _____ + 5 = -2$$

4. **Write sums for the following.**

a.

b.

5. Collect like terms : $8y - 4 + 2 - y$.

(a) $7y^2 - 2$ (b) $9y - 2$ (c) $7y - 2$ (d) $9y - 6$

SM ASSESSMENT 19

1.	Fill in the missing number in the number sequence below. $-1 ; -4 ; -7 ; \_\_\_\_ ; -13 ; -16$
2.	Find the value of: $10 - \dfrac{3^3}{3}$
3.	$q + 7 + b$, when $q = 1$ and $b = 4$
4.	4% of 500
5.	$-0.4 \times 0.3 = _____$

1.

What will the value of the tenth pattern be?

Position in the sequence	1	2	3	4		10
Term	1	3	7	15		

2.

1. Solve for m and n.

a. $x = 3y - 1$

y	2	4	6	n	10	20
x				23		m

3. Which of the following is a solution of $29 = k - 9$?

20   48   39   38

a. 38   c. 20
b. 39   d. 48

4.

1. Describe the following in words:

Example: −4, −8, −12, −16, −20, …
subtracting 4 from the previous term.

a. 9; 6; 3; 0; −3; …   b. 4; 10; 16; 22; 28; …   c. 7; 14; 21; 28; 35; …

5. Which one of the following is equivalent to the expression given below? $(2^5)(2^6)$

(a) 2^{11} (b) 2^{30} (c) 4^{11} (d) 4^{30}