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# PLANNER & TRACKER FOR RECOVERY ANNUAL TEACHING PLAN (ATP)

2021 - 2023

## MATHEMATICS

## GRADE 9 TERM 2

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

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2030 NDP

- 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 9.
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 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 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<br>New Concept – class activity | <br>10 min<br>50 min |

# CONTENT COVERAGE

| TERM 2 | Week 1<br>4 days | Week 2<br>5 days | Week 3<br>3 days | Week 4<br>5 days | Week 5<br>5 days | Week 6<br>5 days | Week 7<br>5 days | Week 8<br>5 days | Week 9<br>5 days | Week 10<br>4 days | Week 11<br>5 days |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hours per week | 3.5 hrs | 4.5 hrs | 2.5 hrs | 4.5 hrs | 4.5 hrs | 4.5 hrs | 4.5 hrs | 4.5 hrs | 4.5 hrs | 3.5 hrs | 4.5 hrs |
| Hours per topic | 6 hrs. | | 16 hrs. | | | 2 hrs. | 4.5 hrs. | 4.5 hrs. | 4.5 hrs. | 3.5 hrs. | 4.5 hrs. |
| Topics, concepts and skills | **NUMERIC AND GEOMETRIC PATTERNS**<br>**GEOMETRIC PATTERNS**<br>**Investigate and extend patterns**<br>• Investigate and extend numeric and geometric patterns looking for relationships between numbers including patterns:<br>– 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<br>• Describe and justify the general rules for observed relationships between numbers in own words or in algebraic language | | **ALGEBRAIC EXPRESSIONS**<br>**Algebraic language**<br>• Revise the following:<br>– Recognize and identify conventions for writing algebraic expressions<br>– Identify and classify like and unlike terms in algebraic expressions<br>– Recognize and identify coefficients and exponents in algebraic expressions<br>– Recognize and differentiate between monomials, binomials and trinomials<br>**Expand and simplify algebraic expressions.**<br>• Revise the following: using the commutative, **associative and distributive laws for rational** numbers and laws of exponents to:<br>– add and subtract like terms in algebraic expressions.<br>– multiply integers and monomials by: monomials, binomials, trinomials<br>– divide the following by integers or monomials: monomials, binomials, trinomials<br>– simplify algebraic expressions involving the above operations<br>– determine the squares, cubes, square roots and cube roots of single algebraic terms or like algebraic terms<br>**N.B. ENSURE THAT COMMON FRACTIONS AND DECIMAL FRACTIONS ARE PART OF CALCULATIONS WITH EXPRESSIONS (Page 122 and 123 of CAPS)**<br>• Extend the above algebraic manipulations to include:<br>– multiply integers and monomials by polynomials,<br>– divide polynomials by integers or monomials,<br>– the product of two binomials,<br>– the square of a binomial<br>**Factorize algebraic expressions**<br>• Factorize algebraic expressions that involve:<br>– common factors<br>– -difference of two squares<br>– trinomials of the form:<br>✓ $x^2 + bx + c$<br>✓ $ax^2 + bx + c$, where $a$ is a common factor.<br>• Simplify algebraic expressions that involve the above factorisation processes. | FORMAL ASSESSMENT TASK<br>**INVESTIGATION**<br>• Numeric and geometric patterns<br>• Algebraic expressions | **ALGEBRAIC EQUATIONS**<br>• **Revise the following:**<br>– set up equations to describe problem situations<br>– analyse and interpret equations that describe a given situation<br>– Solve equations by inspection<br>– using additive and multiplicative inverses<br>– using laws of exponents<br>– Solve equations by substitution<br>– Use substitution in equations to generate tables of ordered pairs<br>• Extend solving equations to include:<br>– using factorisation<br>– equations of the form: a product of factors = 0 | | REVISION | FORMAL ASSESSMENT TASK<br>**TEST**<br>All Term 1 & 2 topics |
| | | | • Simplify algebraic fractions using factorisation | | | | | | | | |

| 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.<br>2. Consolidation of Concepts – 10 minutes – twice a week apply 5-item SM assessments.<br>3. Teacher – can use SM as individual, pair, small group, or whole class activity.<br>4. Aim – to consolidate, remediate and work towards mastery.<br>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 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.

**5 – 8 April 2022 (four-day week)**

| Week 1 | | | | | |
|---|---|---|---|---|---|
| **Lesson** | **ATP Content** | **concepts, skills** | **DBE Workbook 1** | **Resources** | **Date** |
| 1 | HOLIDAYS | | | | |
| 2 | Revision: Diagnostic | Baseline: (Revision, consolidation of Term 1 and Grade 8 skills) | | | |
| 3 | Revision: Remediation | Baseline: Remediation – error analysis | | | |
| 4 | GEOMETRIC PATTERNS<br>**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 | Describe the set of integers. Identify the last term in a pattern. Give the rule for the pattern. Write in ascending order. Find constant difference & constant ratio. Describe the pattern and the rule. Complete the table and state the rule. Give the nth term. Complete the hexagonal pattern. | No. R4 (pp. xii, xiii)<br>No. R7 (pp. xx, xxi) | | |
| 5 | GEOMETRIC PATTERNS<br>**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 the last term in a pattern. Give the rule for the pattern. Write in ascending order. Find constant difference & constant ratio. Describe the pattern and the rule. Complete the table and state the rule. Give the nth term. Complete the hexagonal pattern. | No. 27 (pp. 68, 69) | | |

**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:<br>• Describe the set of integers.<br>• Identify the last term in a pattern.<br>• Give the rule for the pattern.<br>• Write in ascending order. | What will you change next time? Why?<br>**Struggling Learners Names:** |

| | |
|---|---|
| • Find constant difference & constant ratio.<br>• Describe the pattern and the rule.<br>• Complete the table and state the rule.<br>• Give the nth term. Complete the hexagonal pattern. | **HOD:**<br><br>**Date:** |

**11 – 14 April 2022 (four-day week)**

| Week 2 | | | | | |
|---|---|---|---|---|---|
| **Lesson** | **ATP Content** | **concepts, skills** | **DBE workbook** | **Resources** | **Date** |
| 6 | GEOMETRIC PATTERNS<br>**Investigate and extend patterns-**<br>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 the geometric pattern.<br>Give the rule for the pattern.<br>Complete the table and state the rule. Give the nth term. | No. 28 (pp. 70, 71)<br>No. 68 (pp. 8, 9) | | |
| 7 | GEOMETRIC PATTERNS<br>**Investigate and extend patterns-**<br>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 | Give the rule for the pattern. Extend the pattern.<br>Complete the table and state the rule. Give the nth term. | Bk 2<br>No. 65 (pp. 2, 3)<br>No. 66 (pp. 4, 5) | | |
| 8 | ALGEBRAIC EXPRESSIONS: **Algebraic language**– Recognize and identify conventions for writing algebraic expressions<br>– Identify and classify like and unlike terms in algebraic expressions– Recognize and identify coefficients and exponents in algebraic expressions– Recognize and differentiate between monomials, binomials and trinomials | Describe variable, constants, operators, etc.<br>Give the difference between equation and expression. Add like terms. Solve for x. simplify by substituting. Simplify using distributive property. | No. R8a (pp. xxiv, xxv)<br>No. R8b (pp. xxvi, xxvii)<br>No 70 (pp. 12, 13) | | |
| 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: | What will you change next time? Why?<br><br>**Struggling Learners Names?** |
|---|---|
| • Create and complete the geometric pattern.<br>• Give the rule for the pattern.<br>• Complete the table and state the rule. Give the nth term.<br>• Give the rule for the pattern. Extend the pattern.<br>• Complete the table and state the rule. Give the nth term.<br>• Describe variable, constants, operators, etc.<br>• Give the difference between equation and expression.<br>• Add like terms. Solve for x.<br>• Simplify by substituting. Simplify using distributive property. | **HOD:**<br><br>**Date:** |

**19 – 22 April 2022 (four-day week)**

| Week 3 | | | | | |
|---|---|---|---|---|---|
| **Lesson** | **ATP content** | **concepts, skills** | **DBE Workbook 1** | **Resources** | **Date** |
| 11 | PUBLIC HOLIDAY | | | | |
| 12 | ALGEBRAIC EXPRESSIONS: **Expand and simplify algebraic expressions. -** Revise the following: using the commutative, associative and distributive laws for rational numbers and laws of exponents to:– add and subtract like terms in algebraic expressions.– multiply integers and monomials by monomials, binomials, trinomials– divide the following by integers or monomials: monomials, binomials, trinomials– simplify algebraic expressions involving the above operations<br>– determine the squares, cubes, square roots and cube roots of single algebraic terms or like | Use the commutative property to show equality. Use associative property to show equality. Use the distributive property to show equations equal. Test solutions by substitution. Use identity property to make equations true | No. 10a (pp. 22, 23)<br>No. 10b (pp. 24, 25) | | |
| 13 | ALGEBRAIC EXPRESSIONS: **Expand and simplify algebraic expressions. -** Revise the following: using the commutative, associative and distributive laws for rational numbers and laws of exponents to:– add and subtract like terms in algebraic expressions.– multiply integers and monomials by monomials, binomials, trinomials– divide the following by integers or monomials: monomials, binomials, trinomials– simplify algebraic expressions involving the above operations<br>– determine the squares, cubes, square roots and cube roots of single algebraic terms or like | Define polynomial expressions. Define like terms. Classify expressions into monomial, binomial and trinomial. Add like terms and simplify. | No. 29 (pp. 72, 73)<br>No. 71 (pp. 14, 15) | | |
| 14 | ALGEBRAIC EXPRESSIONS: **Expand and simplify algebraic expressions. -** Revise the following: using the commutative, associative and distributive laws for rational numbers and laws of exponents to:– add and subtract like terms in algebraic expressions.– multiply integers and monomials by monomials, binomials, trinomials– divide the following by integers or monomials: monomials, binomials, trinomials– simplify algebraic expressions involving the above operations<br>– determine the squares, cubes, square roots and cube roots of single algebraic terms or like | Calculate the product of a monomial and binomial or trinomial. Use the grid method<br>Use the distributive property and simplify. | No. 30a (pp. 74, 75) | | |
| 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? |
|---|---|
| • Use the commutative property to show equality.<br>• Use associative property to show equality.<br>• Use the distributive property to show equations equal.<br>• Test solutions by substitution.<br>• Use identity property to make equations true<br>• Define polynomial expressions. Define like terms.<br>• Classify expressions into monomial, binomial and trinomial.<br>• Add like terms and simplify.<br>• Calculate the product of a monomial and binomial or trinomial.<br>• Use the grid method<br>• Use the distributive property and simplify. | **Struggling Learners names:**<br><br>**HOD:**<br><br>**Dat e:** |

**25 – 29 April 2022 (four-day week)**

| Week 4 | | | | | |
|---|---|---|---|---|---|
| **Day** | **ATP Content** | **CAPS content, concepts, skills** | **DBE workbook** | **Res ourc es** | **Date** |
| 16 | ALGEBRAIC EXPRESSIONS: **Expand and simplify algebraic expressions. -** Revise the following: using the commutative, associative and distributive laws for rational numbers and laws of exponents to:– add and subtract like terms in algebraic expressions.– multiply integers and monomials by monomials, binomials, trinomials– divide the following by integers or monomials: monomials, binomials, trinomials– simplify algebraic expressions involving the above operations<br>– determine the squares, cubes, square roots and cube roots of single algebraic terms or like | Calculate the product of a monomial and binomial or trinomial.<br>Use the grid method<br>Use the distributive property and simplify. | No. 30b (pp. 76, 77) | | |
| 17 | ALGEBRAIC EXPRESSIONS: **Expand and simplify algebraic expressions. -** Revise the following: using the commutative, associative and distributive laws for rational numbers and laws of exponents to:– add and subtract like terms in algebraic expressions.– multiply integers and monomials by monomials, binomials, trinomials– divide the following by integers or monomials: monomials, binomials, trinomials– simplify algebraic expressions involving the above operations<br>– determine the squares, cubes, square roots and cube roots of single algebraic terms or like | Calculate the product of two binomials.<br>Use the grid method<br>Use the distributive property and simplify. | No. 31a (pp. 78, 79) | | |
| 18 | PUBLIC HOLIDAY | | | | |
| 19 | ALGEBRAIC EXPRESSIONS: **Expand and simplify algebraic expressions. -** Revise the following: using the commutative, associative and distributive laws for rational numbers and laws of exponents to:– add and subtract like terms in algebraic expressions.– multiply integers and monomials by monomials, binomials, trinomials– divide the following by integers or monomials: monomials, binomials, trinomials– simplify algebraic expressions involving the above operations<br>– determine the squares, cubes, square roots and cube roots of single algebraic terms or like | Calculate the product of two binomials.<br>Use the grid method<br>Use the distributive property and simplify. | No. 31b (pp. 80, 81) | | |

| | | | | | |
|---|---|---|---|---|---|
| 20 | ALGEBRAIC EXPRESSIONS: **Factorize algebraic expressions-**Factorize algebraic expressions that involve:– common factors<br>– -difference of two squares– trinomials of the form: -$x2 + bx + c$ - $ax2 + bx + c$, where a is a common factor.- Simplify algebraic expressions that involve the above factorisation processes. Simplify algebraic fractions using factorisation | Factorise the trinomial. Use the grid method. | No. 32 (pp. 80, 81) | | |

**Reflection**

| | |
|---|---|
| DID ALL THE LEARNERS LEARN THE WEEKLY SKILLS? ARE THEY ABLE TO:<br>• Calculate the product of a monomial and binomial or trinomial.<br>• Use the grid method<br>• Use the distributive property and simplify.<br>• Calculate the product of two binomials.<br>• Factorise the trinomial. | What will you change next time? Why?<br><br>**Struggling Learners Names**:<br><br>**HOD:** **Date:** |

**3 – 6 May 2022 (four-day week)**

**Week 5**

| Day | ATP Content | concepts, skills | DBE workbook 1 | Resources | Date |
|---|---|---|---|---|---|
| 21 | PUBLIC HOLIDAY | | | | |
| 22 | ALGEBRAIC EXPRESSIONS: **Expand and simplify algebraic expressions. -** Revise the following: using the commutative, associative and distributive laws for rational numbers and laws of exponents to:– add and subtract like terms in algebraic expressions.– multiply integers and monomials by monomials, binomials, trinomials– divide the following by integers or monomials: monomials, binomials, trinomials– simplify algebraic expressions involving the above operations– determine the squares, cubes, square roots and cube roots of single algebraic terms or like | Divide monomials and binomials. Simplify using exponents. Substitute and simplify. | No. 33 (pp. 84, 85)<br>No. 34 (pp. 86, 87) | | |
| 23 | ALGEBRAIC EXPRESSIONS: **Factorize algebraic expressions-**Factorize algebraic expressions that involve:– common factors-difference of two squares– trinomials of the form: -$x2 + bx + c$ - $ax2 + bx + c$, where a is a common factor.- Simplify algebraic expressions that involve the above factorisation processes. Simplify algebraic fractions using factorisation | Factorise by finding common factor. Factorise using grouping. Factorise the difference between squares. Simplify using factorization. | No. 35a (pp. 88, 89)<br>No. 35b (pp. 90, 91) | | |
| 24 | ALGEBRAIC EXPRESSIONS: **Expand and simplify**: Extend the above algebraic manipulations to include:– multiply integers and monomials by polynomials,– divide polynomials by integers or monomials,– the product of two binomials, the square of a binomial | Divide trinomial and binomial by monomial. Simplify using factorization. | No. 36 (pp. 92, 93) | | |
| 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:<br>• Divide monomials and binomials. Simplify using exponents. Substitute and simplify.<br>• Factorise by finding common factor.<br>• Factorise using grouping.<br>• Factorise the difference between squares.<br>• Simplify using factorization.<br>• Divide trinomial and binomial by monomial. | What will you change next time? Why?<br><br>**Struggling Learner names:**<br><br>**HOD:**<br><br>**Date:** |
|---|---|

**9 – 13 May 2022**

| Week 6 | | | | | |
|---|---|---|---|---|---|
| **Less** | **ATP Content** | **concepts, skills** | **DBE workbook** | **Resources** | **Date** |
| 26 | **FORMAL ASSESSMENT**<br>**Investigation: Numeric and geometric patterns & Algebraic expressions** | | | | |
| 27 | **FORMAL ASSESSMENT**<br>**Investigation: Numeric and geometric patterns & Algebraic expressions** | | | | |
| 28 | **FORMAL ASSESSMENT**<br>**Investigation: Numeric and geometric patterns & Algebraic expressions** | | | | |
| 29 | **FORMAL ASSESSMENT**<br>**Investigation: Numeric and geometric patterns & Algebraic expressions** | | | | |
| 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:<br>• | What will you change next time? Why?<br><br>**Struggling Learners Names:**<br><br>**HOD:**<br><br>**Date:** |

**16 – 20 May 2022**

| Week 7 | | | | | |
|---|---|---|---|---|---|
| **Day** | **ATP Content** | **concepts, skills** | **DBE workbook 1** | **Resources** | **Date** |
| 31 | ALGEBRAIC EQUATIONS<br>– set up equations to describe problem situations – analyse and interpret equations that describe a given situation– Solve equations by inspection– using additive and multiplicative inverses– using laws of exponents– Solve equations by substitution– Use substitution in equations to generate tables of ordered pairs. Extend solving equations to include:– using factorisation– equations of the form: a product of factors = 0 | Solve equations containing fractions. Solve for x. | No. 37a (pp. 94, 95) | | |

| | | | | | |
|---|---|---|---|---|---|
| 32 | ALGEBRAIC EQUATIONS<br>– set up equations to describe problem situations – analyse and interpret equations that describe a given situation– Solve equations by inspection– using additive and multiplicative inverses– using laws of exponents– Solve equations by substitution– Use substitution in equations to generate tables of ordered pairs. Extend solving equations to include:– using factorisation– equations of the form: a product of factors = 0 | Solve equations containing fractions. Solve for x. | No. 37b (pp. 96, 97) | | |
| 33 | ALGEBRAIC EQUATIONS<br>– set up equations to describe problem situations – analyse and interpret equations that describe a given situation– Solve equations by inspection– using additive and multiplicative inverses– using laws of exponents– Solve equations by substitution– Use substitution in equations to generate tables of ordered pairs. Extend solving equations to include:– using factorisation– equations of the form: a product of factors = 0 | Solve equations where product of factors = 0. Solve for x by factorizing | No. 38 (pp. 98) | | |
| 34 | ALGEBRAIC EQUATIONS<br>– set up equations to describe problem situations – analyse and interpret equations that describe a given situation– Solve equations by inspection– using additive and multiplicative inverses– using laws of exponents– Solve equations by substitution– Use substitution in equations to generate tables of ordered pairs. Extend solving equations to include:– using factorisation– equations of the form: a product of factors = 0 | Solve equations where product of factors = 0. Solve for x by factorizing | No. 38 (pp. 99) | | |
| 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:<br>• Solve equations containing fractions. Solve for x.<br>• Solve equations where product of factors = 0.<br>• Solve for x by factorizing | What will you change next time? Why?<br><br>**Struggling Learners Names:** |
| | **HOD:**<br><br>**Date:** |

## 23 – 27 May 2022

| Week 8 | | | | | |
|---|---|---|---|---|---|
| **Day** | **ATP content** | **concepts, skills** | **DBE workbook 1** | **Resources** | **Date** |
| 36 | ALGEBRAIC EQUATIONS<br>– set up equations to describe problem situations – analyse and interpret equations that describe a given situation– Solve equations by inspection– using additive and multiplicative inverses– using laws of exponents– Solve equations by substitution– Use substitution in equations to generate tables of ordered pairs. Extend solving equations to include:– using factorisation– equations of the form: a product of factors = 0 | Give value of nth term in a table. Complete tables by using equations | Bk 2<br>No. 69 (pp. 10, 11) | | |
| 37 | ALGEBRAIC EQUATIONS<br>– set up equations to describe problem situations – analyse and interpret equations that describe a given | Solve for x in linear equations. | Bk 2<br>No. 81 (pp. 44, 45) | | |

| | | | | | |
|---|---|---|---|---|---|
| | situation– Solve equations by inspection– using additive and multiplicative inverses– using laws of exponents– Solve equations by substitution– Use substitution in equations to generate tables of ordered pairs. Extend solving equations to include:– using factorisation– equations of the form: a product of factors = 0 | | | | |
| 38 | ALGEBRAIC EQUATIONS<br>– set up equations to describe problem situations – analyse and interpret equations that describe a given situation– Solve equations by inspection– using additive and multiplicative inverses– using laws of exponents– Solve equations by substitution– Use substitution in equations to generate tables of ordered pairs. Extend solving equations to include:– using factorisation– equations of the form: a product of factors = 0 | Solve for x using the common factor. Solve for x where the product = 0 | Bk 2<br>No. 82 (pp. 46, 47) | | |
| 39 | ALGEBRAIC EQUATIONS<br>– set up equations to describe problem situations – analyse and interpret equations that describe a given situation– Solve equations by inspection– using additive and multiplicative inverses– using laws of exponents– Solve equations by substitution– Use substitution in equations to generate tables of ordered pairs. Extend solving equations to include:– using factorisation– equations of the form: a product of factors = 0 | Solve for x using the difference between two squares. Solve for x where the product = 0 | Bk 2<br>No. 83 (pp. 48, 49) | | |
| 40 | Complete and consolidate the week's assessment and work | | | | |

| **Reflection** | |
|---|---|
| DID ALL THE LEARNERS LEARN THE WEEKLY SKILLS? ARE THEY ABLE TO:<br>• Give value of nth term in a table.<br>• Complete tables by using equations<br>• Solve for x in linear equations.<br>• Solve for x using the common factor.<br>• Solve for x where the product = 0<br>• Solve for x using the difference between two squares. | What will you change next time? Why?<br><br>Struggling Learners Names:<br><br>**HOD:** **Date:** |

## 30 May – 3 June 2022

| Week 9 | | | | | |
|---|---|---|---|---|---|
| **Day** | **ATP content** | **concepts, skills** | **DBE workbook** | **Resources** | **Date** |
| 41 | ALGEBRAIC EQUATIONS<br>– set up equations to describe problem situations – analyse and interpret equations that describe a given situation– Solve equations by inspection– using additive and multiplicative inverses– using laws of exponents– Solve equations by substitution– Use substitution in equations to generate tables of ordered pairs. Extend solving equations to include:– using factorisation– equations of the form: a product of factors = 0 | Solve volume problems using equations. Find the volume of a rectangular prism. | Bk 2<br>No. 84 (pp. 50, 51) | | |
| 42 | ALGEBRAIC EQUATIONS | Solve the equation by substituting values. | Bk 2 | | |

| | | | | | |
|---|---|---|---|---|---|
| | – set up equations to describe problem situations – analyse and interpret equations that describe a given situation– Solve equations by inspection– using additive and multiplicative inverses– using laws of exponents– Solve equations by substitution– Use substitution in equations to generate tables of ordered pairs. Extend solving equations to include:– using factorisation– equations of the form: a product of factors = 0 | | No. 85 (pp. 52, 53) | | |
| 43 | ALGEBRAIC EQUATIONS<br>– set up equations to describe problem situations – analyse and interpret equations that describe a given situation– Solve equations by inspection– using additive and multiplicative inverses– using laws of exponents– Solve equations by substitution– Use substitution in equations to generate tables of ordered pairs. Extend solving equations to include:– using factorisation– equations of the form: a product of factors = 0 | Use equations to solve practical problems. Write an equation for a contextual word problem and solve it. | Bk 2<br>No. 86a (pp. 54, 55) | | |
| 44 | ALGEBRAIC EQUATIONS<br>– set up equations to describe problem situations – analyse and interpret equations that describe a given situation– Solve equations by inspection– using additive and multiplicative inverses– using laws of exponents– Solve equations by substitution– Use substitution in equations to generate tables of ordered pairs. Extend solving equations to include:– using factorisation– equations of the form: a product of factors = 0 | Use equations to solve practical problems. Write an equation for a contextual word problem and solve it. | Bk 2<br>No. 86b (pp. 56, 57) | | |
| 45 | Complete and consolidate the week's assessment and work | | | | |

| **Reflection** | |
|---|---|
| DID ALL THE LEARNERS LEARN THE WEEKLY SKILLS? ARE THEY ABLE TO:<br>• Solve volume problems using equations.<br>• Find the volume of a rectangular prism.<br>• Solve the equation by substituting values.<br>• Use equations to solve practical problems.<br>• Write an equation for a contextual word problem and solve it. | What will you change next time? Why?<br><br>**HOD:**<br><br>**Date:** |

## 6 – 10 June 2022

| Week 10 | | | | | |
|---|---|---|---|---|---|
| **Day** | **ATP content** | **concepts, skills** | **DBE workbook 1** | **Resources** | **Date** |
| 46 | ALGEBRAIC EQUATIONS<br>– set up equations to describe problem situations – analyse and interpret equations that describe a given situation– Solve equations by inspection– using additive and multiplicative inverses– using laws of exponents– Solve equations by substitution– Use substitution in equations to generate tables of ordered pairs. Extend solving equations to include:– using factorisation– equations of the form: a product of factors = 0 | Use equations to complete tables. | Bk 2<br>No. 87 (pp. 58, 59) | | |
| 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:<br>• Use equations to complete tables. | | What will you change next time? Why?<br><br>**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 | FORMAL ASSESSMENT TASK: Test All topics | | | | |
| 53 | FORMAL ASSESSMENT TASK: Test All topics | | | | |
| 54 | PUBLIC HOLIDAY | | | | |
| 55 | PUBLIC HOLIDAY | | | | |
| **Reflection** | | | | | |
| Identify some skills that need revising during the next term: | | What will you change next time? Why?<br><br>**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?<br><br>**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**<br>Skills mastery Assessment 1<br>**Thursday**<br>Skills mastery Assessment 2 | |
| 3 | **Tuesday**<br>Skills mastery Assessment 3<br>**Thursday**<br>Skills mastery Assessment 4 | |
| 4 | **Tuesday**<br>Skills mastery Assessment 5<br>**Thursday**<br>Skills mastery Assessment 6 | |
| 5 | **Tuesday**<br>Skills mastery Assessment 7<br>**Thursday**<br>Skills mastery Assessment 8 | |
| 6 | **Tuesday**<br>Skills mastery Assessment 9<br>**Thursday**<br>Skills mastery Assessment 10 | **Formal Assessment 1 - Assignment** |
| 7 | **Tuesday**<br>Skills mastery Assessment 11<br>**Thursday**<br>Skills mastery Assessment 12 | |

| | | |
|---|---|---|
| 8 | **Tuesday**<br>Skills mastery Assessment 13<br>**Thursday**<br>Skills mastery Assessment 14 | |
| 9 | **Tuesday**<br>Skills mastery Assessment 15<br>**Thursday**<br>Skills mastery Assessment 16 | |
| 10 | **Tuesday**<br>Skills mastery Assessment 17<br>**Thursday**<br>Skills mastery Assessment 18 | |
| 11 | **Tuesday**<br>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. Show all your working.
3. No calculators allowed.

**QUESTION 1:**

1.1 Given three numbers: $\sqrt{81}$; $\sqrt{25+9}$; $-\sqrt{-7}$

1.1.1 which of these numbers is natural? (1)

1.1.2 which are rational? (1)

1.1.3 which, if any, are non-real? (1)

1.2 Write 1 215 as a product of its prime factors. (2)

1.3 The temperature on a cold winter's day in Toronto, Canada, is −17 °C. On that same day, the temperature in Durban, KwaZulu-Natal, is 27 °C. What is the difference between the temperatures? (2)

1.4 Convert $\frac{6}{11}$ to a decimal fraction. (No calculator) (2)

**[9]**

**QUESTION 2:** (Answers to two decimal places)

2.1 A dress is marked down 40% at a sale. Phumeza pays R360 for the dress at the sale. What was the original price of the dress? (3)

2.2 Shane invests R16 480 at a rate of 6,2% compound interest per annum. How much interest will he receive if the money is invested for 8 years? (4)

2.3 R1 450 is invested at a rate of $r$% per annum simple interest for 6 years. The investment grows to R2 005. Calculate the value of $r$. (4)

**[11]**

**QUESTION 3:**

3.1 Given the expression: $3x^5y^5 + 7x^6y^3 - 2xy + 3x^8$

3.1.1 What is the degree of this polynomial in $x$ and $y$? (1)

3.1.2 What is the coefficient of $xy$? (1)

3.2 Simplify the following expressions fully:

3.2.1 $3(x+2)x - x(x-4)$ (2)

3.2.2 $\frac{6x^4 - 8x^3 - 2x^2 + 4}{2x^2}$ (3)

3.2.3 $-3(7x-1)^0 - (-2x^4)^{-2}$ (3)

3.2.4 $\frac{144x^{-5}y^6z^3}{84x^{-5}y^{10}z^3}$ (3)

3.2.5 $\frac{6}{x^7} - 7x^{-7}$ (2)

3.3 The distance between Cape Town and Johannesburg is 1 399,5 km.

3.3.1 Convert this distance to mm. Write your answer in scientific notation. (2)

3.3.2 If it takes Samantha 13 hours at a constant speed to travel by car from Cape Town to Johannesburg, how fast (in km/h) does she go? (Round off answer to one decimal place.) (2)

**[19]**

**QUESTION 4:**

Solve the following equations:

4.1 $x - 3(x-1)^2 = -3(x-4)(x+3)$ (4)

4.2 $\frac{1-x}{4x} = \frac{x}{4} - \frac{x-2}{3x}$ (4)

4.3 $3(6^x) = 108$ (2)

**[10]**

**QUESTION 5:**

***Problem:*** 14 theatre tickets cost R1 800 in total. Some cost R120 each while others cost R150 each. How many tickets were purchased at R120 each?

***Solution:*** Let $x$ be the number of R120 tickets which were bought.

*Fill in the missing values:*

Then there would be _____ tickets costing R150. (in terms of $x$)

Now write down an equation in terms of $x$:

_____ = R1 800.

Solve the equation.

**[5]**

**QUESTION 6:**

The following pattern is given: −100; −97; −94; −91; …

6.1 What is the fifth term of the pattern? (1)

6.2 Determine the general rule for the pattern (the $n$-th term). (3)

6.3 Using the rule, find which term is equal to 209. (3)

**[7]**

## SOLUTIONS AND MEMORANDUM

| SOLUTIONS | MARKS | COGNITIVE LEVELS |
|---|---|---|
| **QUESTION 1:** | | |
| 1.1.1 $\sqrt{81} = 9$ is a natural number. ✓ *description* | (1) | K |
| 1.1.2 $\sqrt{81}$ is a rational number. ✓ *description* | (1) | K |
| 1.1.3 $-\sqrt{-7}$ is a non-real number. ✓ *description* | (1) | K |
| 1.2 3) 1 215<br>3) 405<br>3) 135<br>3) 45<br>3) 15<br>5) 5<br>1 ✓ *working*<br>$1\,215 = 3 \times 3 \times 3 \times 3 \times 3 \times 5 = 3^5 \times 5$ ✓ *answer* | (2) | RP |
| 1.3 $27° - (-17°) = 27° + 17° = 44°$ ✓✓ *simplification and answer* | (2) | K |
| 1.4 $\frac{6}{11}$ $6 \div 11 = 0{,}545454\ldots = 0{,}\dot{5}\dot{4}$ ✓✓ *working out and answer (long or short division must be shown)* | (2) | RP |

| SOLUTIONS | MARKS | COGNITIVE LEVELS |
|---|---|---|
| **QUESTION 2:** | | |
| 2.1 The sale is a 40% markdown.<br>So Phumeza pays 60% of the original price. ✓ *equation*<br>$\frac{x}{360} = \frac{100}{60}$ ✓ *equation*<br>$x = \frac{100}{60} \times 360$<br>$x = 600$ ✓ *answer*<br>The original price of the dress is R600. | (3) | RP |
| 2.2 $A = P(1 + i)^n$<br>$= 16\,480(1 + 0{,}062)^8$ ✓✓ *equation*<br>$= 116\,480(1{,}062)^8$<br>$= R26\,665{,}72$ ✓ *answer*<br>Shane will receive<br>R26 665,72 − 16 480 = R10 185,72 interest. ✓ | (4) | RP |
| 2.3 $A = P(1 + I \times n)$<br>$2\,005 = 1\,450(1 + I \times 6)$ ✓ *equation*<br>$\frac{2\,005}{1\,450} = 1 + I \times 6$ ✓ *simplification*<br>$\frac{2\,005}{1\,450} - 1 = I \times 6$<br>$\frac{111}{290} \div 6 = I$ ✓ *simplification*<br>$I = 0{,}063793$<br>$r = 6{,}38\%$ ✓ *answer* | (4) | CP |

| **QUESTION 3:** | | |
|---|---|---|
| 3.1 $3x^5y^5 + 7x^6y^3 - 2xy + 3x^8$ | | |
| 3.1.1 degree of this polynomial in $x$ and $y$: 11 ✓ *answer* | (1) | K |
| 3.1.2 coefficient of $xy$: $-2$ ✓ *answer* | (1) | K |
| 3.2.1 $3(x + 2)x - x(x - 4)$<br>$= 3x2 + 6x - x^2 + 4x$ ✓ *simplification*<br>$= 2x^2 + 10x$ ✓ *answer* | (2) | RP |
| 3.2.2 $\frac{6x^4 - 8x^3 - 2x^2 + 4}{2x^2}$<br>$\frac{6x^4}{2x^2} - \frac{8x^3}{2x^2} - \frac{2x^2}{2x^2} + \frac{4}{2x^2}$ ✓✓ *separate denominators*<br>$= 3x^2 - 4x - 1 + \frac{2}{2x^2}$ ✓ *answer* | (3) | CP |
| 3.2.3 $-3(7x - 1)^0 - (-2x^4)$<br>$= -3(1) - (\frac{1}{-2x^4})^2$ ✓✓ *simplification*<br>$= -3(1) - (\frac{1}{4x^8})$ ✓ *answer* | (3) | RP |
| 3.2.4 $\frac{144x^{-5}y^6z^{-3}}{84x^{-6}y^{10}z^{-3}}$<br>$= \frac{12x^{-5+6}}{7y^{10-6}}$ ✓✓ *simplification*<br>$= \frac{12x}{7y^4}$ ✓ *answer* | (3) | RP |
| 3.2.5 $\frac{6}{x^7} - 7x^{-7}$<br>$= \frac{6}{x^7} - \frac{7}{x^7}$ ✓ *simplification*<br>$= -\frac{1}{x^7}$ ✓ *answer* | (2) | RP |
| 3.3.1 1 399,5 km = 1 399,5 × 10 00 000<br>= 1 399 500 000 ✓ *multiplication*<br>= 1,3995 × $10^9$ ✓ *answer* | (2) | K |
| 3.3.2 Speed: $\frac{1\,399{,}5}{13}$ = 107,7 km/h ✓ *answer*<br>✓ *relationship/expression* | (2) | RP |

| **QUESTION 4:** | | |
|---|---|---|
| 4.1 $x - 3(x - 1)^2 = -3(x - 4)(x + 3)$<br>$x - 3(x - 1)(x - 1) = -3(x^2 - 4x + 3x - 12)$<br>$x - 3(x^2 - 2x + 1) = -3(x^2 - x - 12)$ ✓ *simplification*<br>$x - 3x^2 + 6x - 3) = -3x^2 + 3x + 36$<br>$-3x^2 + 3x^2 + 7x - 3x = 36 + 3$ ✓ *simplification*<br>$4x = 39$ ✓ *simplification*<br>$x = \frac{39}{4} = 9\frac{9}{4}$ ✓ *answer* | (4) | RP |
| 4.2 $\frac{1-x}{4x} = \frac{x}{4} - \frac{x-2}{3x}$<br>$\frac{3(1-x)}{12x} = \frac{3x}{12x} - \frac{4(x-2)}{12x}$ $x \neq 0$ ✓✓ *LCD and numerators*<br>$\frac{3-3x}{12x} = \frac{3x-4x+8}{12x}$<br>$\therefore\ 3 - 3x = -x + 8$ ✓ *simplification*<br>$-3x + x = 8 - 3$<br>$-2x = 5$<br>$x = \frac{5}{2} = -2\frac{1}{2}$ ✓ *answer* | (4) | RP |
| 4.3 $3(6^x) = 108$<br>$6^x = \frac{108}{3}$ ✓ *division by 3*<br>$6^x = 36$<br>$6^x = 6^2$<br>$\therefore\ x = 2$ ✓ *answer* | (2) | CP |

| SOLUTIONS | MARKS | COGNITIVE LEVELS |
|---|---|---|
| **QUESTION 5:** | | |
| ***Solution:*** | | |
| Let $x$ be the number of R120 tickets bought. | | |
| Then there would be $\mathbf{14 - x}$ tickets costing R150. ✓ *expression* | | |
| $\therefore 120x + 150(14 - x) = 1\,800$ ✓✓ *equation* | | |
| $120x + 2\,100 - 150x = 1\,800$ | | |
| $-30x = 1\,800 - 2\,100$ ✓ *simplification* | | |
| $-30x = -300$ | | |
| $x = 10$ ✓ *answer* | | |
| Ten tickets were bought at R120 each. | (5) | PS |
| **QUESTION 6:** | | |
| 6.1 $T_5 = -88$ ✓ *answer* | (1) | K |
| 6.2 $T_n = 3n - 103$ ✓✓✓ *expression* | (3) | CP |
| 6.3 $T_n = 209$ | | |
| $3n - 103 = 209$ ✓ *equation* | | |
| $3n = 209 + 103$ | | |
| $3n = 312$ ✓ *simplification* | | |
| $n = 104$ ✓ *answer* | | |
| $\therefore \quad T_{104} = 209$ | (3) | 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. The value of $\sqrt{33}$ lies between two integers. Find these integers without finding the exact value of $\sqrt{33}$.

2. Write 12 000 in scientific notation.

---

3. Solve for $x$:

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

4. $3x-7;\quad 2x;\quad 3x+1;\ldots$ are the first three terms of a linear pattern.

If the pattern continues in this manner, determine the value of $x$.

5.

| | | Whole number | Natural number | Integer | Rational number | Irrational number | Real number |
|---|---|---|---|---|---|---|---|
| a | 200 | ✔ | ✔ | ✔ | ✔ | | ✔ |
| b | −29 | | | | | | |
| c | 0 | | | | | | |
| d | 1 | | | | | | |
| e | $\frac{12}{50}$ | | | | | | |

## SM Assessment 2

Number Assessment

1.

**Study these methods of factorisation:**

**Method 1:**
Ladder method.

| | |
|---|---|
| 12 | 2 |
| 6 | 2 |
| 3 | 3 |
| 1 | |

In this example every factor is a prime number.

We can write it as:
$2 \times 2 \times 3 = 12$
or $2^2 \times 3 = 12$

**Method 2:**

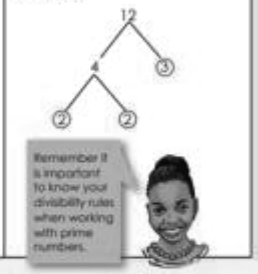
What are the prime factors of 12?
Break 12 into $4 \times 3$.

The prime factors of 4 are 2 and 2.
The prime factor of 3 is 3.

So the prime factors of 12 are 2, 2, 3.

We can write it as $2 \times 2 \times 3 = 12$
or
$2^2 \times 3 = 12$

**Method 3:**







**1. a. Factorise 15.**

| Method 1: | Method 2: | Method 3: |
|---|---|---|
| | | |

2.

**1. Complete the table.**

| | Speed (Rate) | Time | Distance | Formula |
|---|---|---|---|---|
| a. | 90 km/h | ? | 11 700 km | |
| b. | 50 km/h | 0 hours | ? | |
| c. | 120 km/h | ? | 61 200 km | |

3.

**3. A train travelling at an average speed of 100 km/h covers a certain distance in 3 hours 36 minutes. At what average speed must the train travel to cover the same distance in 2 hours 30 minutes?**

4.

Which of the following numbers is rational?

A $\sqrt{3}$

B $\sqrt{16}$

C $\sqrt{-9}$

D $\sqrt{13}$

5.

**1. Use the commutative property to show that the equations are equal.**

**Examples:**

- $a + b = b + a$
- $a^2 + b^2 = b^2 + a^2$
- $a \times b^2 = b^2 \times a$
- $2a + b = b + 2a$
- $2a \times 2b = 2b \times 2a$

But:

- $a \div b \neq b \div a$

and

- $a - b \neq b - a$

a. $y^2 + x =$ $x + y^2$ b. $3x + y^2 =$ _____ c. $3x^2 + 5y^2 =$ _____

**SM Assessment 3**

Number Assessment

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

   A 75
   B 55
   C 15
   D 8

2. If $(x-1)(x+2)=0$ then $x=\ldots$

   A $-1$ or $0$
   B $1$ or $-2$
   C $1$
   D $-2$

3. The next number in the sequence $1\ ;\ 9\ ;\ 25\ ;\ \ldots$ is:

   A 33
   B 36
   C 49
   D 50

4. Simplify the following:

$$\frac{4p^2q}{pq^3} \div \frac{10pq}{p^2q^3}$$

5. Find the product of the following:

$$(x-5)^2-(x+5)(x-5)+10x$$

**SM Assessment 4**

Number Assessment

1.

**2. Use the associative property to show that the equations are equal.**

**Examples:**

- $(a + b) + c = a + (b + c)$
- $(a^2 + b^2) + c^2 = a^2 + (b^2 + c^2)$
- $(a \times b) \times c = a \times (b \times c)$
- $(a^2 \times b) \times c = a^2 \times (b \times c)$

But:

- $(a - b) - c \neq a - (b - c)$

and

- $(a \div b) \div c \neq a \div (b \div c)$

a. $(3m + n) + p^2 =$ b. $(n^2 + p^3) + 4m^2 =$ c. $(m \times p) \times n^3 =$

2.

**3. Use the distributive property to show that the equations are equal.**

**Examples:** $a(b + c) = a \times b + a \times c$

$a(b^2 + c^2) = a \times b^2 + a \times c^2$

$a(b - c) = a \times b - a \times c$

$a(b^2 - c^2) = a \times b^2 - a \times c^2$

3.

**1. Show why these fractions are equivalent.**

**Example:** $\frac{3}{9} = \frac{1}{3}$

Factors of 3 = {1; 3}
Factors of 9 = {1; 3; 9}
HCF = 3
$\therefore \frac{3}{9} \div \frac{3}{3} = \frac{1}{3}$


a. $\frac{4}{28} = \frac{1}{7}$ b. $\frac{24}{60} = \frac{2}{5}$ c. $\frac{25}{125} = \frac{1}{5}$

4.

**Use the identity property of addition or multiplication to make the equations true.**

a. $b$ ☐ $= b$ or $b$ ☐ $= b$

b. $c^2$ ☐ $= c^2$ or $c^2$ ☐ $= c^2$

c. $p^3$ ☐ $= p^3$ or $p^3$ ☐ $= p^3$

5.

Complete the simplification steps below:

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

$=$ _____ $-$ _____

$=$ _____

## SM Assessment 5

Number Assessment

1.

**2. Calculate.**

**Example:** $\frac{\sqrt{9}}{\sqrt{16}} + \frac{\sqrt[3]{8}}{\sqrt[3]{27}}$

$= \frac{3}{4} + \frac{2}{3}$

$= \frac{9}{12} + \frac{8}{12}$ or $\frac{9+8}{12}$

$= \frac{17}{12}$

$= 1\frac{5}{12}$

a. $\frac{\sqrt{25}}{\sqrt{100}} + \frac{\sqrt[3]{1\,331}}{\sqrt{144}} =$

2.

**Calculate and simplify.**

**Example:**

$6 \times \frac{1}{2}$

$= \frac{6}{1} \times \frac{1}{2}$

$= \frac{6}{2}$

$= 3$

a. $8 \times \frac{1}{2} =$ b. $9 \times \frac{1}{3} =$

3.

**What is the reciprocal of a number?**

| | | | |
|---|---|---|---|
| To get the reciprocal of a number divide 1 by the number. | If you multiply a number by its reciprocal you get 1. | Did you know that every number has a reciprocal except 0? | A reciprocal is also called the multiplicative inverse. |
| The reciprocal of 2 is $\frac{1}{2}$ | ... as it is as $3 \times \frac{1}{3} = 1$ | ... because $\frac{1}{0}$ is undefined. | |

**1. Calculate and simplify.**

**Example:**

$6 \times \frac{1}{2}$

$= \frac{6}{1} \times \frac{1}{2}$

$= \frac{6}{2}$

$= 3$

a. $8 \times \frac{1}{2} =$ b. $9 \times \frac{1}{3} =$ c. $7 \times \frac{1}{14} =$

4. 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. $8xyz$

**SM Assessment 6**

Number Assessment

1. a. $\frac{2}{10} \times \frac{6}{8} =$ b. $\frac{2}{6} \times -\frac{3}{7} =$ c. $\frac{4}{8} \times \frac{2}{2} =$

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

| Fraction | Decimal | Percentage |
|---|---|---|
| $\frac{2}{3}$ | | |
| | 0.65 | |
| | | 82% |

3. a. $\frac{8}{10} \div 3 =$ b. $\frac{2}{6} + \left(-\frac{8}{12}\right) =$ c. $\frac{1}{4} \div 1\frac{1}{12} =$

4. **Round off to the nearest unit, tenth and hundredth.**

a. 0,75

Unit:

Tenth:

Hundredth:

5. Simplify $2 \times 2a^2 \times 2a^2$

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

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

**SM Assessment 7**

Number Assessment

1. a. 2,354 + 7,265 =

| Expanded notation | Column method | Testing | Rounded off to the nearest:<br>Unit:<br>Tenth:<br>Hundredth: |
|---|---|---|---|
| | | | |

2. Put ticks in the relevant boxes to show what types of numbers each is.

| | Natural | Integer | Real | Rational | Irrational | Undefined |
|---|---|---|---|---|---|---|
| $\frac{4\pi}{\pi}$ | | | | | | |
| $\sqrt[3]{-8}$ | | | | | | |
| $\frac{7}{3}$ | | | | | | |

3. Write down the ratio $50\ cm : 3\frac{1}{4}\ m$ in its simplest form.

4. Write down the HCF of 72 and 120.

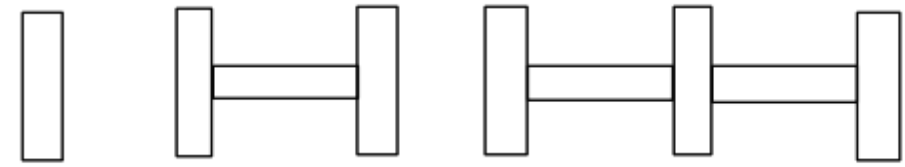
5. Subtract $4x^5 - 3x^2 + x$ from $7x^2 + 5x - 4x^5$.

**SM Assessment 8**

| Number | Assessment |
|---|---|
| 1. | Write 1 485 as a product of its prime factors. **Show working**. |
| 2. | If $x = -2$ and $y = 3$ find the value of $\frac{1}{y^{x+1}}(x^2 + y^0)$. |
| 3. | Simplify and give answers with positive exponents:<br>$5x^2y^4 \times -6x^4y^{-1}$ |
| 4. | There are 812 learners who attend RBHS. Of these, 482 learners are seniors (Gr 10 – 12). The ratio of Gr 8 : 9 learners is 2 : 3. How many Gr 8 learners attend RBHS? |
| 5. | Factorise:<br>$(2x - 1)^2 - 3(1 - 2x) + 2$ |

**SM Assessment 9**

| Number | Assessment |
|---|---|
| 1. | Study linear pattern below and answer the questions that follow. |



Stage 1 Stage 2 Stage 3 Stage 4

Draw the diagram for stage 4.

Write the general rule for the number of rectangles in the form of $T_n$=

2. Which one of the decimal numbers is equal to $\frac{3}{5}$?

A 0,8

B 0,6

C 0,53

D 0,35

3. Between which 2 consecutive integers is the value of $\sqrt{61}$?

A 6 and 7

B 7 and 8

C 8 and 9

D 9 and 10

4. a. $(3,5 + 4,3) \times (1,2 - 0,9) =$ b. $1,2 \times (1,3 + 8,6) =$ c. $(8,2 - 6,4) \times (5,8 - 6,2) =$

**SM Assessment 10**

| Number | Assessment |
|---|---|
| 1. | a. If $\sqrt{9} = 3$ what is $\sqrt{12}$? |
| 2. | 1. Revision: Compare the two numbers.<br>Example: $(-2)^2 = (-2)(-2) = 4$, $-(2)^2 = -(2)(2) = -4$<br>a. $-(4)^2$; $(-4)^2$ b. $-(6)^3$; $(-6)^3$ c. $(-3)^3$; $-(3)^3$ |

3.

**2. Revision: Fill in <, > or =.**

Example: $(-2)^4 > -(2)^4$
$(-2)^3 > -(3)^3$
$(-2)^4 = -(2)^4$

a. $-(10)^2$ ____ $(-10)^2$ b. $-(6)$ ____ $(-6)^4$

c. $(-9)^3$ ____ $-(9)^3$ d. $(-8)^3$ ____ $(8)^3$

4.

**1. Use the laws of exponents to simplify the following:**

Example: $m^5 \div m^3 = m^{5-3}$ or $\frac{m^5}{m^3} = m^{5-3}$

a. $a^4 \div a^3 =$ b. $\frac{f^9}{f^8} =$

5.

**Determine the 10th and nth position of the term using a table and number sentences.**

a.

| Position in sequence | 1 | 3 | 5 | 7 | 10 | $n$ |
|---|---|---|---|---|---|---|
| Term | 1 | 9 | 25 | 49 | | |

b.

| Position in sequence | 1 | 2 | 4 | 8 | 10 | $n$ |
|---|---|---|---|---|---|---|
| Term | 1 | 4 | 16 | 64 | | |

**SM Assessment 11**

Number Assessment

1. 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 | $-3^6$ |

2.

| $n$ (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: ____ = _____

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. What does $xy + 1$ mean?

A Add 1 to $y$, then multiply by $x$.

B Multiply $x$ and $y$ by 1.

C Add $x$ to $y$, then add 1.

D Multiply $x$ by $y$, then add 1.

5. Write down the HCF of 12 and 18.

**SM Assessment 12**

Number Assessment

1. Factorise fully:

$x^2 + 7x + 6$

2.

1. **Create and complete the following geometric patterns.**
   - Draw the first four terms in each of the following geometric patterns.
   - Write them in a table determining the 1st, 2nd, 3rd, 4th and $n^{th}$ terms, where applicable.

**Example: Square**

| Position | 1st | 2nd | 3rd | 4th | $n^{th}$ |
|---|---|---|---|---|---|
| Value | 1 | 4 | 9 | 16 | $n^2$ |

a. Triangle

| Position | 1st | 2nd | 3rd | 4th | $n^{th}$ |
|---|---|---|---|---|---|
| Value | | | | 10 | $\frac{n(n+1)}{2}$ |

3.

1. **Revision: simplify.**

**Example:** $3a^2 + 4a^2 = 7a^2$

a. $8w^3 + 7w^3 =$

**Example:** $3a^2 - 2a + 4a^2 + 6a = 3a^2 + 4a^2 - 2a + 6a = 7a^2 + 4a$

b. $5b^2 - 6b + 7b + 2b^2 =$

**Example:** $3a^2 + 2a - 5 + 4a^2 - 6a + 6 = 3a^2 + 4a^2 + 2a - 6a - 5 + 6 = 7a^2 - 4a + 1$

c. $4x^2 + 5x + 8 + 3x^2 + 6x + 4 =$

Simplify:

4. $\frac{5x^3 \times (2x)^2}{20x^4}$ if $x \neq 0$

5. $\frac{3x+2}{2} + \frac{3+x}{3} - \frac{7}{6}$

SM ASSESSMENT 13

1. $x + x + x =$

A $x^3$

B $3x$

C $3x^3$

D $4x$

2. Write 12 000 in scientific notation.

_____

3. What does $\frac{3}{10} + \frac{5}{8}$ equal to?

A $\frac{8}{18}$

B $\frac{37}{40}$

C $\frac{8}{40}$

D $\frac{15}{80}$

4. Write the value of $\sqrt[3]{0{,}008}$.

A 0,024

B 0,002

C 0,24

D 0,2

5. Decrease R126,00 in the ratio $3 : 7$.

A R37,80

B R12,60

C R294

D R54

SM ASSESSMENT 14

1. Calculate $\frac{3}{5} - \frac{1}{2} \times \frac{1}{3}$.

A $\frac{13}{30}$

B $\frac{2}{30}$

C $\frac{1}{10}$

D $\frac{2}{9}$

2. Calculate: $\sqrt{\frac{9}{16}} \div \sqrt{\frac{1}{4}}$.

A $\frac{9}{4}$

B $\frac{3}{2}$

C $\frac{2}{3}$

D $\frac{3}{8}$

3. What is the product of $3^3$ *and* $3^{-1}$

A $3^{-3}$

B $9^{-3}$

C $3^2$

D $9^2$

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 15

1. Write down all the factors of 28.

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

$-1;-4;-7;\ \_\_\_\_;-13;-16$

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

4. What kind of number is $-0,\dot{2}$ ?

A A natural number
B A whole number
C A rational number
D An integer

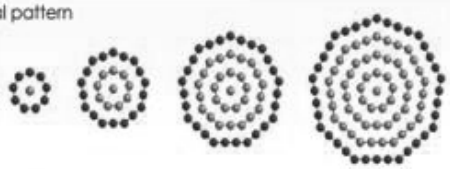
5. Write $\frac{2}{5}$ as a percentage.

A 20 %
B 40 %
C 50 %
D 70 %

SM ASSESSMENT 16

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. 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. 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?

SM ASSESSMENT 17

1. Complete: $\sqrt{\sqrt{400} + \sqrt{100} + 6} = \ldots$

A 506

B 416

C 126

D 6

2. Write 0, 00578 in scientific notation.

A $57{,}8 \times 10^{-3}$

B $5{,}78 \times 10^{-3}$

C $5{,}78 \times 10^{-4}$

D $5{,}78 \times 10^{3}$

3. A cell phone which cost R1 200 is sold at a loss of 20%.

Calculate the selling price of the cell phone.

A R60

B R240

C R960

D R1 440

4. $3x - 4 = 32.$

What is the value of $x$?

A. 12 B. 36

C. 84 D. 108

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 18

1. Mary bought a dress for R395,00 and sold it for R250,00.

Calculate the percentage loss correct to one decimal place.

A 169,3 %

B 145,0 %

C 36,7 %

D 58 %

2. Calculate the value of $x$ if $2(3 - x) = 8$.

A $-7$

B $-3$

C $-2$

D $-1$

3. Complete the simplification steps below:

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

$=$ _____ $-$ _____

$=$ _____

4. 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. $8xyz$

5. Complete: In the expression $2x - 4$ the variable and constant are … respectively:

A 2 and $-4$

B $x$ and $-4$

C $x$ and 4

D 2 and 4

(1)

SM ASSESSMENT 19

1. Complete: The rule for the sequence 4 ; 7 ; 10 ; 13 is …

A $3n - 1$ , where n is the position of the term.

B $n + 3$ , where n is the position of the term.

C add three to the previous term.

D $3n + 3$, where n is the position of the term.

2. What is the relationship between $p$ and $t$ in the table below?

| $x$ | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| $y$ | 1 | 5 | 9 | 13 |

A $y = 4x - 3$

B $y = 3x - 2$

C $y = 2x - 1$

D $y = x + 4$

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

A. 65 B. 45

C. 15 D. 5

4. 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. $\frac{4}{7}$

5. 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. $y = 2x + 3$

SM ASSESSMENT 20

1. Write the algebraic expression which matches the statement:
The sum of half a number and another number.

A $\frac{1}{2}(x+y)$

B $\frac{1}{2}x+y$

C $\frac{1}{2}+x$

D $\frac{1}{2}xy$

2. Complete: The values of $x$ in the equation $(x+1)(2x-1)=0$ are …

A $-1\ or\ -\frac{1}{2}$

B $-1\ or\ \frac{1}{2}$

C $-1\ or\ 2$

D $1\ or\ \frac{1}{2}$

3. What is the value of $x$ if $3^x=\frac{1}{9}$?

A $-3$

B $-2$

C $2$

D $3$

4. Complete: $\frac{x}{y}-1=$

A $x-y$

B $\frac{y-x}{y}$

C $\frac{x-y}{y}$

D $\frac{x-1}{y}$

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

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