# TEACHING PLAN: MATHEMATICS GRADE 9 TERM 1 2021

| LESSON NO | DATE | TOPIC | MENTAL MATHS | LESSON NAME | DBE WORKBOOK | TEXT BOOK |
|---|---|---|---|---|---|---|
| 1 | | Revision | | Grade 8 Work Revision: Diagnostic tests | | |
| 2 | | Revision | | Grade 8 work Revision: Diagnostic tests | | |
| 3 | | Revision | | Grade 8 work Revision: Diagnostic tests | | |
| 4 | | Whole Numbers<br>1.1<br>Pp 119 | | • **Properties of whole Numbers**<br>Describe the real number system by recognising, defining and distinguishing properties of:<br>• natural numbers, whole numbers, integers, rational numbers, irrational numbers | | |
| 5 | | Whole Numbers<br>1.1<br>Pp 119 | | **Calculations with whole numbers**<br>Calculations using all four operations on whole numbers, estimating and using calculators where appropriate<br>– -Addition and subtraction | | |
| 6 | | Whole Numbers<br>1.1<br>Pp 119 | | **Calculations with whole numbers**<br>Calculations using all four operations on whole numbers, estimating and using calculators where appropriate<br>• Multiplication and division | | |
| 7 | | Whole Numbers<br>1.1<br>Pp 119 | | **Multiples and factors**<br>– Use prime factorisation of numbers to find LCM and HCF | | |
| 8 | | Whole Numbers<br>1.1<br>Pp 120 | | **Solving problems**<br>• Solve problems in contexts involving:<br>– Ratio and rate | | |
| 9 | | Whole Numbers<br>1.1<br>Pp 120 | | **Solving problems**<br>• Solve problems in contexts involving<br>-Direct and indirect proportion | | |
| 10 | | Whole Numbers<br>1.1<br>Pp 119 | | • The commutative; associative; distributive properties of whole numbers<br>• 0 in terms of its additive property (identity element for addition)<br>• 1 in terms of its multiplicative property (identify element for multiplication) | | |

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| | | | | – Recognise the division property of 0, whereby any number divided by 0 is undefined | | |
| 11 | | INTEGERS<br>1.3<br>Pp121 | | **Calculations with integers**<br>• Revise:<br>– addition and subtraction with integers | | |
| 12 | | INTEGERS<br>1.3<br>Pp121 | | **Calculations with integers**<br>– Multiplication and division with integers<br>– perform calculations involving all four<br>– operations with integers | | |
| 13 | | INTEGERS<br>1.3<br>Pp121 | | **Calculations with integers**<br>– perform calculations involving all four operations with numbers that involve the squares, cubes, square roots and cube roots of integers | | |
| 14 | | INTEGERS<br>1.3<br>Pp121 | | • **Properties of Integers**<br>– Commutative, associative and distributive properties of addition and multiplication for integers | | |
| 15 | | INTEGERS<br>1.3<br>Pp121 | | **Properties of integers**<br>– Additive and multiplicative inverses for integers | | |
| 16 | | INTEGERS<br>1.3<br>Pp121 | | **Properties of integers**<br>– Perform calculations involving all four operations with numbers that involve squares, cubes, square roots and cube roots of integers | | |
| 17 | | INTEGERS<br>1.3<br>Pp121 | | **Properties of integers**<br>– Calculate the squares, cubes, square roots and cube roots of rational numbers | | |
| 18 | | | | – Whole numbers and Integers Revision | | |
| 19 | | | | – FORMAL TASK: ASSIGNMENT: WHOLE NUMBERS & INTEGERS | | |
| 20 | | | | – Formal task revision and consolidation | | |
| 21 | | **EXPONENTS**<br>**1.2**<br><br>**Pp 124** | | **Calculations using numbers in exponential form**<br>• **Revise** the following general laws of exponents.<br>• **Multiplication**<br>$a^m \times a^n = a^{m+n}$ | | |

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| 22 | | **EXPONENTS 1.2 Pp 124** | | • **Division**<br>– $a^m \div a^n = a^{m-n}$, if $m>n$ | | |
| 23 | | **EXPONENTS 1.2 Pp 124** | | • **Powers**<br>– $(a^m)^n = a^{m \times n}$ | | |
| 24 | | **EXPONENTS 1.2 Pp 124** | | • **Brackets**<br>– $(a \times t)^n = a^n \times t^n$ | | |
| 25 | | **EXPONENTS 1.2 Pp 125** | | • **Any number to power zero**<br>• $a^0 = 1$ | | |
| 26 | | **EXPONENTS 1.2 Pp 125** | | • **Extend** the general laws of exponents to include:<br>• integer exponents | | |
| 27 | | **EXPONENTS 1.2 Pp 125** | | • **Extend** the general laws of exponents to include:<br>$a^{-m} = \frac{1}{a^m}$ | | |
| 28 | | **EXPONENTS 1.2 Pp 125** | | • Perform calculations involving all four operations using numbers in exponential form | | |
| 29 | | **EXPONENTS 1.2 Pp 125** | | – Recognize and use the appropriate laws of numbers involving exponents and square and cube roots | | |
| 30 | | | | • Exponents revision and consolidation | | |
| 31 | | **NUMERIC AND GEOMETRIC PATTERNS:** 2.1 Pp126 | | **NUMERIC PATTERNS**<br>**Investigate and extend patterns**<br>• Investigate and extend numeric and geometric patterns looking for relationships between numbers including patterns: | | |
| 32 | | **NUMERIC AND GEOMETRIC PATTERNS:** 2.1 Pp126 | | **NUMERIC 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 | | |
| 33 | | **NUMERIC AND GEOMETRIC PATTERNS:** 2.1 Pp126 | | **NUMERIC PATTERNS**<br>Describe and justify the general rules for observed relationships between numbers in own words or in algebraic language | | |
| 34 | | **NUMERIC AND GEOMETRIC PATTERNS:** 2.1Pp126-7 | | **NUMERIC PATTERNS**<br>Determine input values, output values and rules for patterns given in input-output diagrams | | |

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| 35 | | **NUMERIC AND GEOMETRIC PATTERNS:** 2.1 Pp126-7 | | **NUMERIC PATTERNS** Determine equivalence of different descriptions of the same relationship or rule presented verbally, in a flow diagram, by a number sentence. | | |
| 36 | | | | Revision & consolidation on Numeric Patterns | | |
| 37 | | | | Whole Numbers Revision | | |
| 38 | | | | Integers Revision | | |
| 39 | | | | Exponents revision | | |
| 40 | | | | FORMAL TASK: TEST | | |
| 41 | | | | Revision of Test | | |
| 42 | | | | Revision of test | | |
| 43 | | | | Revision and consolidation of covered topics | | |
| 44 | | | | Revision and consolidation of covered topics | | |
| 45 | | | | Revision and consolidation of covered topics | | |
| 46 | | | | Revision and consolidation of covered topics | | |
| 47 | | | | School closure | | |

## Programme of assessment 2021

| Term | Assessment Type | Weighting |
|---|---|---|
| 1 | Assignment | 80% |
| | Test | |
| 2 | Investigation | |
| | Test | |
| 3 | Project | |
| | Test | |
| 4 | Test | 20% |

# GRADE 9 2021 LESSON PLANS EXEMPLAR TERM 1

<table>
<tr><td colspan="2">DA Y 4<br>TOPIC: WHOLE NUMBERS</td><td colspan="2">LESSON PLAN 4<br>DATE:</td><td>GRADE 9</td></tr>
<tr><td>COMPONENTS</td><td>TIME</td><td colspan="2">TASKS/ACTIVITIES</td><td>CAPS CONTENT AREA</td></tr>
<tr><td>WHOLE CLASS ACTIVITY</td><td>3 Min</td><td colspan="2">PSS: Looking after myself during Covid</td><td>Numbers, operations, and relations</td></tr>
<tr><td>MENTAL MATHS</td><td>7 Min</td><td colspan="2">
<table>
<tr><td>N0</td><td>qsn</td><td>Ans</td><td>No</td><td>qsn</td><td>Ans</td></tr>
<tr><td>1</td><td>20+0</td><td>20</td><td>5</td><td>12÷1</td><td>12</td></tr>
<tr><td>2</td><td>12×1</td><td>12</td><td>6</td><td>6-0</td><td>6</td></tr>
<tr><td>3</td><td>0×15</td><td>0</td><td>7</td><td>−4+(-3)</td><td>-7</td></tr>
<tr><td>4</td><td>-8+1</td><td>-7</td><td>8</td><td>−4x-2</td><td>8</td></tr>
</table>
</td><td>CONCEPT AND SKILLS: Properties of whole Numbers<br>Describe the real number system by recognising, defining and distinguishing properties of:<br>natural numbers, whole numbers, integers, rational numbers, irrational numbers</td></tr>
<tr><td>HOMEWORK</td><td>10 Min</td><td colspan="2">Revision of homework problems given during last lesson</td><td>KEY WORDS:<br>Natural numbers, whole numbers, Rational numbers, Irrational numbers</td></tr>
<tr><td>PRIOR KNOWLEDGE</td><td colspan="4">Learners know definitions and can give examples whole numbers, prime numbers, even numbers and integers</td></tr>
<tr><td>LESSON CONTENT/CONCEPT DEVELOPMENT</td><td>20 Min</td><td colspan="3">– Teacher and learners define the properties of numbers, giving examples of each of the following:<br>– natural numbers, whole numbers, integers, rational numbers, irrational numbers, prime numbers, composite numbers, real and non-real numbers<br>– Learners identify the name of number from a given description in groups.<br>Teacher and learners do corrections of work given in groups on the board as a whole class activity.</td></tr>
<tr><td>CLASSWORK ACTIVITY</td><td>20 Min</td><td colspan="3">Learners to draw giving own examples of the real number system venn diagram</td></tr>
<tr><td>HOMEWORK</td><td></td><td colspan="3">Match the numbers to the number type below
<table>
<tr><td></td><td>Number</td><td>Example</td></tr>
<tr><td>1</td><td>1;2;3;4…</td><td>Irrational number(Q’’)</td></tr>
<tr><td>2</td><td>√3;π</td><td>Natural Numbers(N)</td></tr>
<tr><td>3</td><td>0;1;2;3;4….</td><td>Rational numbers(Q)</td></tr>
<tr><td>4</td><td>½;0.25</td><td>Integers (Z)</td></tr>
<tr><td>5</td><td>-4;-3;-2;-1;0;1;2;3</td><td>Whole numbers (No)</td></tr>
</table>
</td></tr>
<tr><td>LESSON REFLECTION</td><td></td><td colspan="3">• Successes: What went well in the lesson?<br>• Challenges: What did not go well?<br>• Recommendations: What changes are necessary to improve the lesson?</td></tr>
</table>

# GRADE 9 2021 LESSON PLANS EXEMPLAR TERM 1

| **DA Y 5** | **LESSON PLAN 5** | **GRADE 9** |
|---|---|---|
| **TOPIC: WHOLE NUMBERS :ADDITION AND SUBTRACTION** | | **Date:** |
| **COMPONENTS** | **TIME** | **TASKS/ACTIVITIES** | **CAPS CONTENT AREA** |
| **WHOLE CLASS ACTIVITY** | **3 Min** | PSS: Caring for the sick: What should I do? | Numbers, operations, and relations |
| **MENTAL MATHS** | **7 Min** | Estimate the following answers<br>1.10x30<br>2.50x½<br>3,2456÷1000<br>4.200÷0.5<br>5.102+29<br>6.2169-200 | **CONCEPT AND SKILLS: Calculations with whole numbers**<br>Calculations using all four operations on whole numbers, estimating and using calculators where appropriate |
| **HOMEWORK** | **10 Min** | Teacher and learners revise homework given.<br>Solutions:<br>1.Natural numbers;2. Irrational numbers; 3. Whole numbers;4. Rational numbers;5. integers | **KEY WORDS:**<br>Estimation, Rounding off, compensation, calculator |
| **PRIOR KNOWLEDGE** | Learners are able to round off numbers, add and subtract as well as using calculator from Grade 8 | | |
| **LESSON CONTENT/CONCEPT DEVELOPMENT** | **20 Min** | – Teacher and learners discuss the meaning of estimating and rounding off and how it can be used to simplify calculations<br>– Revise rounding off rules<br>– Examples on rounding off numbers to the nearest 10; 100 and 1000<br>e.g. round off 6782 to nearest 10 (**=6780)**; nearest 100(**=6800)**;to nearest 1000(**=7000)**<br>Solve **45678+12654** by rounding off and compensating:<br>46 000+13 000=59 000<br>46 000-45678=322 and 13 000-12 654=346<br>322+346=668<br>Therefore **59 000-668=58 332** | |
| **CLASSWORK ACTIVITY** | **20 Min** | Solve the following using rounding off and compensating<br>1. 245 898 +241 134<br>2. 998 432-654 004 | |
| **HOMEWORK** | | 1.Estimate the value of 815-341 by rounding off to the nearest 10 | |
| **LESSON REFLECTION** | | • **Successes:** What went well in the lesson?<br>• **Challenges:** What did not go well?<br>• **Recommendations:** What changes are necessary to improve the lesson? | |

# GRADE 9 2021 LESSON PLANS EXEMPLAR TERM 1

<table>
<tr><td colspan="4">DA Y 6 LESSON PLAN 6 GRADE 9<br>TOPIC: WHOLE NUMBERS: MULTIPLICATION AND DIVISION Date:</td></tr>
<tr><td>COMPONENTS</td><td>TIME</td><td>TASKS/ACTIVITIES</td><td>CAPS CONTENT AREA</td></tr>
<tr><td>WHOLE CLASS ACTIVITY</td><td>3 Min</td><td>PSS: Caring for others</td><td>Numbers, operations, and relations</td></tr>
<tr><td>MENTAL MATHS</td><td>7 Min</td><td>Write each of the following as a single number<br>1.3000+400+50+6<br>2.40 000+3000+200+10+8<br>3.500 000+50 000+4000+600+60+1<br>4.60000+9000+400+0+3</td><td>CONCEPT AND SKILLS<br>Calculations with whole numbers<br>Calculations using all four operations on whole numbers, estimating and using calculators where appropriate</td></tr>
<tr><td>HOMEWORK</td><td>10 Min</td><td>Revise work given previous day</td><td>KEY WORDS:<br>Addition.Multiplication, Division, Halving. Doubling</td></tr>
<tr><td>PRIOR KNOWLEDGE</td><td colspan="3">Learners know multiplication and long division from Grade 8</td></tr>
<tr><td>LESSON CONTENT/CONCEPT DEVELOPMENT</td><td>20 Min</td><td colspan="2">Teacher demonstrate multiplication method using<br>1.doubling and halving and<br>2.column methods<br><br>Teacher revises long division with learners<br>e.g 13 455 ÷9<br>
<table>
<tr><td></td><td>0</td><td>1</td><td>4</td><td>9</td><td>5</td><td></td></tr>
<tr><td>9</td><td>1</td><td>3</td><td>4</td><td>5</td><td>5</td><td></td></tr>
<tr><td></td><td>-</td><td>9</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td>4</td><td>4</td><td></td><td></td><td></td></tr>
<tr><td></td><td>-</td><td>3</td><td>6</td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td>8</td><td>5</td><td></td><td></td></tr>
<tr><td></td><td></td><td>-</td><td>8</td><td>1</td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td>4</td><td>5</td><td></td></tr>
<tr><td></td><td></td><td></td><td>-</td><td>4</td><td>5</td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td>0</td><td>0</td><td></td></tr>
</table>
Thus 13 455÷9=1 495</td></tr>
<tr><td>CLASSWORK ACTIVITY</td><td>20 Min</td><td colspan="2">Learners to do the following in groups where possible<br>Simplify the following<br>1.44 252 x32<br>2.54 762÷22</td></tr>
<tr><td>HOMEWORK</td><td></td><td colspan="2">Simplify :1. 15 623x12 2.64 246÷31</td></tr>
<tr><td>LESSON REFLECTION</td><td></td><td colspan="2">• Successes: What went well in the lesson?<br>• Challenges: What did not go well?<br>Recommendations: What changes are necessary to improve the lesson?</td></tr>
</table>

# GRADE 9 2021 LESSON PLANS EXEMPLAR TERM 1

<table>
<tr><td colspan="4">DA Y 7 LESSON PLAN 7 GRADE 9<br>TOPIC: WHOLE NUMBERS: MULTIPLES AND FACTORS Date:</td></tr>
<tr><td>COMPONENTS</td><td>TIME</td><td>TASKS/ACTIVITIES</td><td>CAPS CONTENT AREA</td></tr>
<tr><td>WHOLE CLASS ACTIVITY</td><td>3 Min</td><td>PSS: Healthy eating during Covid</td><td>Numbers, operations, and relations</td></tr>
<tr><td>MENTAL MATHS</td><td>7 Min</td><td>Match column A and column B<table><tr><td>Column A</td><td>Column B</td></tr><tr><td>LCM</td><td>A number that gets into a bigger number without remainder</td></tr><tr><td>Factor</td><td>Product of one number and another number</td></tr><tr><td>Multiples</td><td>Highest common Factor</td></tr><tr><td>HCF</td><td>Lowest common Multiple</td></tr><tr><td></td><td></td></tr></table></td><td>CONCEPT AND SKILLS<br>Use prime factorisation of numbers to find LCM and HCF</td></tr>
<tr><td>HOMEWORK</td><td>10 Min</td><td>Revise work given previous day solutions<br>1.15623x12=187476<br>2.64 246÷31=2072 rem 14</td><td>KEY WORDS:<br>Factors; prime factor, HFC, LCM,Factorisation</td></tr>
<tr><td>PRIOR KNOWLEDGE</td><td colspan="3">Learners know how to find HCF and LCM from Grade 8</td></tr>
<tr><td>LESSON CONTENT/CONCEPT DEVELOPMENT</td><td>20 Min</td><td colspan="2">Teacher defines the key words with the learners<br>Learners express numbers as products of their prime factors using the method of dividing the number by the prime factors.<br>Example 1. Express the following numbers as products of their prime numbers<br>(a)28 (b)124 (c)135<table><tr><td>2</td><td>28</td><td></td><td>2</td><td>124</td><td></td><td>3</td><td>135</td><td></td></tr><tr><td>2</td><td>14</td><td></td><td>2</td><td>62</td><td></td><td>3</td><td>45</td><td></td></tr><tr><td>7</td><td>7</td><td></td><td>31</td><td>31</td><td></td><td>3</td><td>15</td><td></td></tr><tr><td></td><td>1</td><td></td><td></td><td>1</td><td></td><td>5</td><td>5</td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1</td><td></td></tr></table>28=2x2x7<br>124=2x2x31<br>135=3x3x3x5<br>Example 2. Find the HCF and LCM of 28 and 124<br>Solution:<br>For Highest common factors we take each common factor and multiply<br>28=2x2x7<br>124=2x2x31<br>HCF=2x2=4<br>For LCM we take the greatest number of each factor and multiply<br>28=2x2x7<br>124=2x2x31<br>LCM=2x2x7x31=868</td></tr>
</table>

| | | |
|---|---|---|
| **CLASSWORK ACTIVITY** | **20 Min** | Find the HCF and LCM of the following:<br>1. 50 and 80<br>2. 36 and 60<br>3. 56 and 52 |
| **HOMEWORK** | | Find the HCF and LCM of 15 and 40 ;18 and 24 |
| **LESSON REFLECTION** | | • **Successes:** What went well in the lesson?<br>• **Challenges:** What did not go well?<br>**Recommendations:** What changes are necessary to improve the lesson? |

# GRADE 9 2021 LESSON PLANS EXEMPLAR TERM 1

| **DA Y 8** | **LESSON PLAN 8** | **GRADE 9** |
|---|---|---|
| **TOPIC: WHOLE NUMBERS: RATIO, RATE AND PROPORTION** | **Date:** | |

| **COMPONENTS** | **TIME** | **TASKS/ACTIVITIES** | **CAPS CONTENT AREA** |
|---|---|---|---|
| **WHOLE CLASS ACTIVITY** | **3 Min** | PSS: Need for aerobics | Numbers, operations, and relations |
| **MENTAL MATHS** | **7 Min** | Simplify the following:<br>1.4:2<br>2.20%:50%<br>3.30/60 | **CONCEPT AND SKILLS**<br>**Solving problems**<br>Solve problems in contexts involving:<br>-Ratio and rate<br>Direct and indirect proportion |
| **HOMEWORK** | **10 Min** | Revise work given previous day | **KEY WORDS:**<br>Ratio, Rate, proportion |
| **PRIOR KNOWLEDGE** | Learners have idea of rates and ratio from Grade 8 | | |
| **LESSON CONTENT/CONCEPT DEVELOPMENT** | **20 Min** | Teacher asks learners to explain their meaning of Ratio, giving own examples.<br>Demonstrates to learners the ratio of blue chalk stick/ blocks to red chalk sticks/blocks<br>Define ratio as a way of comparing 2 or more quantities of same kind, written as **a: b** where a and b are quantities.<br>Ratio have no units and order is important.<br>Teacher asks learners to state the ratio of boys to girls in the class.<br>Ratios are always expressed in simpler form e.g12:4 =3:1<br>Ratios can be expressed as % e.g. 3:6 =3/6x!00%=50%<br>Rate is a special ratio in which the two terms are in different units eg km/hr<br>Where we are comparing distance covered in a certain time period.<br>Rate normally uses the word per eg, US$ per Rand or Price per litre<br>Example :10 litres of petrol cost R150, what is the price of petrol per litre?<br>Answer: price per litre = 150/10 =R15/ltre | |
| **CLASSWORK ACTIVITY** | **20 Min** | 1. Simplify the following ratios (a) 6:12, (b) 9:12:15<br>2. Express 3:2 as a percentage<br>3. A boy can run 100m in 6mins, how far can he run in an Hour/ | |
| **HOMEWORK** | | 1.Simplify (a) 12:48 (b) 6:15:90<br>2, Express 4:5 as a percentage | |
| **LESSON REFLECTION** | | • **Successes:** What went well in the lesson?<br>• **Challenges:** What did not go well?<br>• **Recommendations:** What changes are necessary to improve the lesson? | |