**SCHEME OF WORK**

**SUBJECT: *MATHEMATICS* CLASS: *P.7* TERM: *ONE* YEAR: *2020***

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| **WK** | **PD** | **THEME** | **TOPIC** | **SUB-TOPIC** | **COMPETENCES** | **CONTENT** | **ACTIVITY** | **METHOD(S)** | **INDICATORS OF LIFE SKILLS & VALUES** | **INST.MAT** | **REF** | **REM** |
| **1** | **1** |  | **SET CONCEPTS** | **TYPES OF SETS** |  | * Equal and unequal sets * Equivalent and non equivalent * Joint and disjoint sets * Intersection and union * Set symbols include; * Draw venn diagrams and describe the regions | Learners will be;  -listing types of sets  -describing given sets  Drawing venn diagrams  Rev ex1 pg 1 | Group discussion  Discovery  Brain storming |  | Illustrations of a chart  Straws /sticks pencils, pens | MK MTC (new)PB7 Pg1  Functional MTC PB7 pg1-2 |  |
| **2** |  | **FINDING NUMBER OF**  **SUBSETS** |  | **Subsets**   * Definition of subsets * Symbol ⊂ * Developing small sets from major ones by listing * Use the formulas 2n , & 2n – 1 for calculating No of ⊂s | Learners will be;  -defining  -listing  -mentioning and telling  -calculating  Ex: 1:1 pg2 | Observation  Discussion  Exposition  Demonstration |  | Illustrations on a chart  Bottle tops  Counters | MK MTC PB7 Pg2-3  Functional MTC pg1-2 |  |
| **3** |  | **PROPER SUBSETS** |  | **Proper subsets**  -Definition of proper ⊂s  -The formula to use (2n - 1)  How many proper subsets has set A?  A = {1,2,3} 2n-1 8-1  23-1 7  n = 3 (2x2x2)-1 | -listing proper subsets  -doing written ex 1:2 pg 3 | Discovery  Discussion  Illustration  Exposition |  | Illustrations on a chart | MK MTC PB7 Pg3  Functional MTC PB7 pg 5-6 |  |
| **4** |  | **SETS** | **FINDING NUMBER OF MEMBERS WHEN SUBSETS ARE GIVEN** |  | **Elements in a set**  Formula 2n for ⊂s  Find the number of elements in set A if there are 16 subsets formed from A  How many proper subsets has set A?  2n = 16 2n = 24  2n = 24 n = 4  There are 4 elements | -listing  -discussing  -doing ex 1:3 pg 4 MK  -functional bk7 pg 6-7 | Discovery  Illustration  Observation  Question and answer |  | A chart showing worked out numbers | MK MTC PB7 Pg4  Functional MTC PB7 pg 6 |  |
| **5** |  | **DESCRIBING PARTS**  **OF A VENN DIAGRAM** |  | Venn diagrams e.g   |  |  | | --- | --- | |  |  | |  |  | | -Discussing  Illustrations  Discovering  Qn and ans orally  Ex 1:4 pg 5 | Discovery  Discussion  Observation  Exposition |  | Illustrations on a chart  Cutouts | MK MTC PB7 Pg5 |  |
| **2** | **1** |  | **NUMBER OF ELEMENTS IN A SET** |  | 1. List elements of set X   X = {a,b,c}   1. What n(x)?   n(x) = 3   1. Find n(Y-X) | -drawing venn diagrams  -listing elements  -counting elements  Ex 1:5 pg6 | Discussion  Brain storming  Problem solving |  | A chart showing calculates numbers | MK MTC PB7 Pg6 |  |
| **2&3** |  | **APPLICATION OF SETS**  **ON VENN**  **DIAGRAMS (2 SETS)** |  | Lesson I will be about;    Related Qns set here  Lesson II will be about;    Related questions will be set. | -drawing  -Representing information on a venn diagram  -discussing the examples under the teachers guidance  Ex 1:6 pg9  Ex 1:7 pg 11 | Discussion  Observation  Demonstration  Exposition |  | Illustrations on a chart | MK MTC PB7  Pg 9-11  Functional MTC PB7 pg 7- 14 |  |
| **4&5** |  | **SETS ON A VENN DIAGRAM**  **OF (3 SETS)** |  | Describing the regions    Regions  Region 1  “ 2  “ 3  “ 4  “ 5  “ 6  “ 7 | -drawing venn diagrams  -representing and interpreting information  -discussing related qns  Ex 1:9 pg 14 | Questions and answer  Demonstration  Observation |  | Illustrations on a chart  Card boards | MK MTC PB7 Pg12 - 15 |  |
| **3** | **1** |  | **APPLICATION OF SETS (3 IN 2 DIAGRAMS)** |  | Example  In a class of 60 pupils, all like English (E), 40 like Maths (M) and 25 like Science (S). if 10 like all the three and 5 like only English, represent the information on a venn diagram.  set related questions | -interpreting venn diagrams  -drawing venn diagrams  -discussing in groups  -doing written ex  Qn 5 pg20 MK bk7  -Tr sets more | Brain storming  Discovery  Demonstration  Illustration |  | Illustrations on a chart and chalk board | MK MTC PB7 Pg20  Trs own collection |  |
| **2** |  | **FINITE AND INFINITE SETS** |  | Finite sets have an end  Elements are clearly determined e.g A set of letters of the alphabet  Infinite sets are endless  -Elements can not be clearly determined eg A set of all birds in the world | -defining the terms  -listing elements  -Ex 1:10 pg 17 | Brain storming  Qn and answer  Illustration |  | Illustrations on a chalk board | MK MTC PB7  Pg 16 -17  Functional MTC bk7 pg 15-16 |  |
| **3** |  |  | **TOPICAL TEST** | | | | | | |  |
| **4** |  | **NUMERATION SYSTEMS AND PLACES VALUES** | **FORMING NUMBERS**  **FROM DIGITS** |  | -Digits used in Hindu Arabic system are;  {0,1,2,3……………9}  -Forming big and small numbers from a set of digits  -Working out sums, products, differences and quotients | -listing digits  -forming numbers  -doing written exercise  (similar to qn 10 pg 21) | Brain storming  Discovery  Guided discussion |  | Number cards  Illustrations on a chart  Place value abacus | MK MTC new edition PB7 Pg21 |  |
| **5** |  | **READING AND WRITING IN FIGURES** |  | Writing in figures   1. Fifty seven million, four hundred twenty one thousand, nine hundred five. 2. A quarter of a million | -writing numbers from words to figures  -doing ex 2:1 pg21 | Guided discussion  Exposition |  | Number cards  (card boards)  Manila paper abacus | MK MTC PB7 Pg21 |  |
| **4** | **1** |  | **WRITING NUMBERS**  **IN WORDS** |  | Writing in words   1. 650,007 in words  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Thousands | | | | units | | | HTH | TTH | TH | H | T | O | |  |  |  |  |  |  |   Six hundred fifty thousand, seven   1. Write; 82,057,607 in words | -identifying place values  -writing large numbers in words | Guided discovery  Exposition  Problem solving |  | Illustrations on a chart  Place value abacus | MK MTC PB7 Pg22 |  |
| **2** |  | **ROMAN**  **NUMERALS** |  | Cardinal Roman Numerals are;  I,V,X,L,C,D,M  Repetition eg  XX = 20, CCC = 300,MM=2000  Subtraction e.g  IX, XC, IV and CM  -Write i) 124 and 1962 in Romans | -writing cardinal Roman Numerals  -forming Roman numerals  -converting Hindu Arabic to Roman numerals  -Do ex 2:4 pg23 | Brain storming  Exposition  Guided discussion  Problem solving |  | -Card boards  Illustrations on a chart  -Wall clocks (numbered in Romans)  -Place value abacus | MK MTC PB7 Pg23 |  |
| **3** |  | **ROMANS TO**  **HINDU ARABIC** |  | Express as Hindu Arabic   1. CXCV = C + XC + V   = 100 + 90 + 5  = 195   1. Bwire was born in yr MCMXCVI. Express his date of birth in Hindu Arabic | -identifying place values  -writing Roman numerals to Hindu Arabic  Ex 2:5 pg24 | Exposition  Guided discovery  Problem solving |  | Card boards  Place values abacus  Wall clocks | MK MTC (et al) PB7 Pg24 |  |
| **4** |  | **WRITING FRACTIONS**  **AS DECIMALS** |  | -Meaning of a decimal  -Write these as decimals  a) 2 b) 4 c) 3 4 d) 6  10 100 10 10000  e) 206  100000 | -defining a decimal  -expressing fractions as decimals  -doing written ex 2:7 pg26 and 2:6 pg 25 | Brain storming  Guided discussion  Problem solving |  | -Card boards  -Place value abacus  illustration on a chat  Metre ruler  Sugars |  |  |
| **5** |  | **WRITING DECIMALS**  **AS FRACTIONS** |  | Express as fractions   1. 0.4 = 4   10   1. 3.05 = 3 5   100  = 305  100 | -identifying place values  -discussing the examples  -doing exercise 2:8 pg27 | Brain storming  Guided discussion  Exposition |  | Metre ruler  Foot rulers  Illustrations on a chart | MK MTC (new)PB7 Pg27 |  |
| **5** | **1** |  | **WRITING DECIMALS**  **IN WORDS AND**  **IN FIGURES** |  | Examples   1. Write 0.345 in words 2. Write sixteen and fourteen hundredths in figures | -discovering the examples  -doing exercise 2:9 pg27 | Guided discussion  Discovery  Exposition |  | Illustrations on a chart and chalk board | MK MTC (new)PB7 Pg27 |  |
| **2** |  | **PLACE VALUES**  **OF DECIMALS** |  | Identifying place values  Identify the place values of each digit in 37.812  T O Tths Hths Tths  3 7 . 8 1 2  Thousandths  Hundredths  Tenths  Ones  Tens | -separating digits from decimal numbers  -discussing the place values of and values of each | Problems solving  Discussion  Exposition |  | Illustrations on a chart | MK MTC (new)PB7 Pg28 |  |
| **3** |  | **WRITING DECIMALS IN EXPANDED FORM** |  | Write 0.4927 in expanded form 0 -1 -2 -3 -4   1. 4 9 2 7   (4x1) + (9X1)+(2X 1)+(7X 1)  10 100 1000 10000  (4X0.1)+(9X0.01)+(2X0.001)(7X0.001)  0.4 + 0.09 + 0.002+ 0.007  When expanded in value form |  |  |  |  |  |  |
| **4** |  | **ROUNDING OFF**  **WHOLE NUMBERS** |  | Rounding off / correct to….  I I I I I I I I I I  0 1 2 3 4 5 6 7 8 9  Add ‘0’ Add ‘1’  Round off as instructed,   1. 16 to the nearest tens 2. 43,256 to the nearest ten thousands. | -drawing the round off scale  -discuss the procedure for rounding off  -doing exercise 2:12 pg31 | Brain storming  Guided discussion  Observation  Demonstration |  | -metre ruler  Illustrations on a chart | MK MTC (new)PB7 Pg30-31 |  |
| **5** |  | **ROUNDING OFF DECIMALS** |  | Rounding off decimals   1. 2.36 to the nearest tenths 2. 2.98 to one decimal place 3. 47.3028 to 3 places of decimals 4. 4.43262 to the nearest thousandths 5. 6.48376 to the nearest ten thousandths | -discussing the examples in groups  -doing written exercises 2:14 pg34 and 2:13 pg33 | Group work  Discussion  Discovery  Exposition |  | Illustrations on a chart | MK MTC (new)PB7 Pg30-31 |  |
| **6** | **1&**  **2** |  | **NUMBER**  **SYSTEMS**  **(2 lessons)** |  | Natural numbers;  {1,2,3,4………..}  Whole numbers;  {0,1,2,3,4,5,6,………}  Even numbers  {0,2,4,6,8…………..}  Odd numbers  {1,3,5,7,9………….}  Prime numbers  {2,3,5,7,9…………}  Composite numbers  {4,6,8,910,…………….}  Square numbers  {1,4,9,16…………….}  Triangular numbers  {1,3,6,10,…………}  Cube numbers  {1,8,27,64,125…………….}  13, 23, 33, 43, 53  Integers  I I I I I I I I I  -3 -2 -1 0 1 2 3 4 5  Rational numbers  a/b, 1/9, 2/7, ¼ | -defining numbers  -describing numbers  -listing down elements for each set of numbers  - developing the desired patterns for each set of numbers in order to determine the next number in a given sequence. | Brain storming  Guided discussion  Observation  Discovery  Exposition  Problem solving  Illustrations |  | Flash cards  (card boards)  Illustrations on a chart  Simple counters (stones/ sticks) | MK MTC (new)PB7 Pg35-36 |  |
|  |  |  |
| **3** |  | **NON DECIMALS**  **(BASES)** |  | -Place values in base two  -Writing base two digits in words  -Numbers expanded in base two  -Workout;  (1x22)+(0x21)+(1x20) | -discussing base two numbers as per place values, expanded from, and evaluate them  Ex 2:16 – 2:17 pg38 | Brain storming  Discussion  Discovery  Exposition |  | Place value abacus  Illustrations on a chart | MK MTC (new)PB7 Pg37-38 |  |
| **4** |  | **CHANGING BINARY TO DENARY AND VICE VERSA** |  | Change 1101two to base ten  1 1 0 1  20  21  22  23  (1x23)+(1x22)+(0x21)+(1x20)  (1x2x2x2)+(1x2x2)+(0x2)+(1x1)  8 + 4 + 0 + 1  13ten  1101two = 13ten  Convert 21ten to base two  B N R  2 21 1  2 10 0  2 5 1  2 2 0  2 1 1  0 1  = 10101two  21ten = 10101two | -expanding base two numerals to base ten  -converting numbers from base ten to base two  Ex 2:18 and 2:19 pg39 | Guided discussion  Exposition  Illustration  Problem solving |  | Illustrational on a chart | MK MTC (new)PB7 Pg39 |  |
| **5** |  | **ADDITION AND**  **SUBTRACTION**  **IN BASE TWO** |  | Addition in Binary   1. 11two + 1two = 2. 101two + 101two =   Subtraction in base two   1. 1101two – 101two = 2. 1110two – 101two = | -discussing the examples  -doing ex 2:20 pg40 and 2:21 pg41 | Brain storming  Discussion  Discovery  Exposition |  | Place value abacus  Illustrations on a chart | Kigundu Mukasa  (et al)  MK MTC (new)PB7 Pg40-41 |  |
| **7** | **1** |  | **MULTIPLICATION IN BINARY** |  | Multiplication in base two   1. 10two x 11two 2. 111two x 101two 3. 1011two   101two  Workout 111two x 11two and give your answer in denary base | -discussing the given examples  -doing exercise 2:22 pg42 | Guided discussion  Problem solving |  | Illustrations on a chart | MK MTC (new)PB7 Pg42 |  |
| **2** |  |  | **TOPICAL TEST** | | | | | | | |
| **3** |  | **OPERATION ON NUMBERS** | **DISTRIBUTIVE PROPERTY** |  | Distributive property  -Common factors / terms  -Common sign  -Factorising numbers  a) (379x27)+(27x21)  b) (137x42)+(37x42)  c)(156÷13)+(26013)  d) (630÷21)+(357÷21) | -discussing the examples  -identifying the common factors and signs  -do written ex 3:3 pg47 | Guided discussion  Qn and ans  Discovery  Brain storming |  | Illustrations on a chart | MK MTC (new)PB7 Pg48 |  |
| **4** |  | **EXPANDED FORM USING INDICES** |  | Examples  Expand the following in form of powers   1. 7,962 2. 4,026 3. 12,404 | -answering oral questions  -Qn and answer  -Guided discovery  -Brain storming | Exposition  Group discussions  Brain storming |  | Illustrations on a chart | MK MTC (new edn)PB7 Pg48 |  |
| **5** |  | **DECIMALS IN EXPANDED FORM USING INDICES** |  | Expand these   1. 0.629 2. 24.6462 3. 0.702 | --discussing and writing Ex 3:5 pg48 | Guided discussion  Exposition  Problem solving |  | Chalkboard  Illustrations  Place value abacus | MK MTC (new edn)PB7 Pg48 |  |
| **8** | **1** |  | **FINDING EXPANDED NUMBERS** |  | Examples  What number has been expanded   1. (2x104)+(7x103)+(5x101) 2. (6x103)+(5x10-1) | -studying and discussing the examples  -answering oral questions  -doing ex 3:6 pg49 | Guided discovery  Brain storming  Exposition |  | Place value chart  Illustrations on a chart | MK MTC (new)PB7 Pg49 |  |
| **2** |  | **EXPRESSING NUMBERS IN STANDARD FORM** |  | Tr. Guides learners thru’  -Standard form; A x 10n  -Limits 0 <A < 10  -Express 1489 in s/form  a) 1489 = 1.489 x 10  = 1.489 x 103  b) 43800 = 4.38 x104  c) 0.00468 in s/form | -discussing examples  -expressing numbers in standard form  -doing exercise  3:7 pg50 | Panel group discussions  Discovery  Brain storming  Qn and answer |  | A chart showing calculated numbers | MK MTC PB7 Pg50 |  |
| **3** |  | **LAWS OF INDICES IN MULTIPLICATION** |  | Tr. Guides learners thru’   1. 42 x 44 = 4x4X4x4x4x4   46(expanded form)  In index form  42 x 44 = 42+4  = 46   1. ya x yb = y(a+b) | -discussing numbers in groups  -doing exercise 3:8 pg51 | Question and answer  Discovery  Illustrations |  | Chalkboard illustrations | MK MTC (new)PB7 Pg51 |  |
| **4** |  | **LAWS OF INDICES IN DIVISION** |  | Tr. Guides learners thru’  a) 43 ÷ 42 = 43 (exp/form)  42  = 4x4x4 = 41  4x4  Index rule; 43÷42= 43-2  b) ya yb = y(a-b) | -working out examples  -exercise 3:9 pg 52 | Discussion  Guided discovery  Exposition |  | Illustrations on a chart | MK MTC (new)PB7  Pg52 |  |
| **5** |  | **APPLICATION OF**  **INDICES** |  | Tr. Guides learners thru’   1. Solve ; 2. 2x =32 3. 3x x 3 = 81 4. 2xx33 = 108 5. Solve; 6. 2x ÷ 21 = 7. 43x ÷ 4x = 256 8. 3x÷ 32 = 27 | -discussing the examples under tr’s guidance  Ex 3:10 pg53 and3:11 pg54 | Guided discussion  Discovery  Exposition |  | A chart showing calculated numbers | MK MTC (new)PB7 Pg53-54 |  |
| **9** | **1** |  | **SQUARES** |  | -Definition of a square number  -Findng squares eg  a) square of 4  b) square of p  c) Square of ⅔  d) Square of 2y | -discussing in groups  -doing assignment questions pg 55 | Discussion  Exposition |  | A chart showing calculated numbers  -stair caes  -boxes  -tables | MK MTC (new)PB7 Pg55-56 |  |
| **2** |  | **SQUARE ROOTS OF WHOLES** |  | Tr. Guides learners thru’  Find the square root of the following;   1. 9 2. 144 3. 2500 4. Y2 5. 16p | -discussing the examples  -doing the given exercise on pg 56 | Guided discovery  Illustrations  Panel group discussions |  | Charts showing calculated numbers  -stair cases-boxes  -illustrations | MK MTC (new)PB7 Pg55-56 |  |
| **3** |  | **SQUARE ROOTS**  **OF FRACTIONS** |  | Examples  Workout the square roots of   1. 19/16 2. 0.25 3. 1.44 | -discussing the examples  -doing the written exercise on pg 57 | Discussion  Brain storming  Discovery |  | Illustrations on a chart | MK MTC (new)PB7 Pg57 |  |
| **4** |  |  | **TOPICAL TEST** | | | | | | | |
| **5** |  | **NUMBER PATTERNS AND SEQUENCES** | **DIVISIBILITY TESTS** |  | Divisibility tests  Tests for  -2  -3  -4  -5  -6  -7  -8  -9  -10  -11 and 12 | -discussing in groups  -reciting tables | Exposition  Discovery  Demonstration |  | Charts showing tables | MK MTC (new)PB7 Pg63 |  |
| **10** | **1** |  | **OBTAINING SQUARES**  **AND CUBES** |  | -Obtaining square numbers  -Building square patterns  -Obtaining cube Nos  -determining cube patterns  1,8,27,81, \_\_\_  13, 23, 33, 43 | -discussing square and cube Nos  Ex 4:3 pg 65  Drawing patterns | Group work  Illustrations  Demonstrations |  | Illustrations on a chart  Squared and cubic materials | MK MTC (new)PB7 Pg64-65 |  |
| **2** |  | **SQUARES AND TRIANGULAR NUMBERS** |  | Tr. Guides learners thru’  Sequences / series   1. 1,4,9,16,\_\_\_ 2. 100,81,64,49, \_\_\_ 3. 1,3,6,10,15,\_\_\_\_ 4. What is the sum of the 20th triangular number? | -determining the sequences properly  Ex 4:4 pg67 | -discussion  Qn and answer  Exposition  Brain storming |  | Wooden blocks  Illustrations on a chart | MK MTC (new)PB7 Pg66-67 |  |
| **3** |  |  |  | **TOPICAL TEST** | | | | | | | |