P.7 MATH TOPICAL BREAKDOWN

UNIT	ITEM	BREAKDOWN
1	**SET CONCEPTS**	▪ Review of universal, union, intersection, compliment, subset, difference of sets, empty set, equal, equivalent, joint and disjoint sets etc ▪ Use of venn diagrams to solve problems (two and three venn diagrams) ▪ Integrating probability with venn diagrams ▪ Finite and infinite sets
2	**NUMERATION SYSTEM AND PLACE VALUE**	▪ Review of P.6 work on place values ▪ Reading and writing numerals in words up to hundred millions ▪ Reading and writing numerals from words to figures up to hundred millions ▪ Expanding numerals – values; multiples to powers ▪ Writing expanded numbers in short form ▪ Standard form/scientific notation ▪ Rounding off whole numbers up to the nearest millions **Decimals** ▪ Place values and values of decimals up to millionths ▪ Reading and writing decimals in words up to millionths ▪ Reading and writing decimals from words to figures ▪ Expanding decimals using values and powers ▪ Writing expanded decimals in short form ▪ Writing decimals in standard /scientific notation ▪ Rounding off decimals up to the nearest hundred thousandths ▪ Review of number systems i.e. prime, natural, odd, even, composite, triangular, cube, integers, and rational numbers **Roman numerals** ▪ Reading and writing roman numerals up to MM ▪ Conversion from Hindu to Roman and vice versa ▪ Addition and subtraction of roman numerals ▪ Application of roman numerals **Bases** ▪ Addition, subtraction and multiplication up to 5 digits in non-decimal bases ▪ Conversion of non-decimal bases to decimal bases ▪ Conversion of non-decimal to non-decimal bases ▪ Finding the base used in addition and subtraction **Finite/ modulus system** ▪ Addition, subtraction, multiplication and division ▪ Algebra in finite system ▪ Application of finite system
3	**OPERATION ON NUMBERS**	▪ Addition up to 100,000,000 ▪ Subtraction up to 100,000,000 ▪ Word problems on addition and subtraction of large numbers ▪ Multiplication and division of large numbers ▪ Word problems involving multiplication and division of large numbers **Indices**

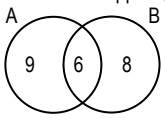
		▪ Laws of indices in multiplication and division ▪ Application of indices
4	**NUMBER PATTERNS AND SEQUENCES**	▪ Review of divisibility tests by 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 ▪ Number patterns - Composite numbers - Square numbers - Triangular numbers - Prime numbers - Odd, even numbers - Rectangular numbers - Multiples - Factors , LCM, HCF ▪ Application of number patterns – natural, odd, even numbers ▪ Square numbers and square roots of *whole numbers, fractions, mixed numbers, decimals* ▪ Application of square and cubic numbers
5	**FRACTIONS**	▪ Changing improper to mixed fractions and vice versa ▪ Changing fractions to decimal and vice versa ▪ Changing recurring decimals to rational numbers and vice versa ▪ Operations of fractions. Addition, subtraction, multiplication and division ▪ Use of BODMAS to simplify mixed fractions ▪ Word problems on fractions in addition, subtraction, multiplication and division ▪ Application of fractions in real life situation **Decimals** ▪ Addition of decimals up to ten thousandths ▪ Subtraction of decimals ▪ Word problems involving addition and subtraction of decimals ▪ Multiplication of decimals up to ten thousandths ▪ Division of decimals up to ten thousandths ▪ Combined operations (multiplication and division) ▪ Use of BODMAS in decimals ▪ Word problems involving multiplication and division of decimals **Ratios** ▪ Forming ratios ▪ Expressing ratios as fractions and vice versa ▪ Increasing and decreasing quantities in given ratios ▪ Finding the ratio of increase and decrease ▪ Sharing quantities in ratios ▪ Finding the ratio in which quantities are shared ▪ Finding the number shared in a given ratio ▪ Solving problems involving ratios **Proportion** ▪ Direct proportion ▪ Indirect proportion ▪ Compound proportion ▪ Constant proportion **Percentages**

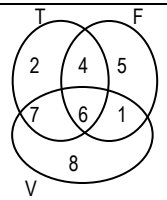
		▪ Changing percentages to decimals and vice versa ▪ Changing percentages to fractions and vice versa ▪ Changing percentages to ratios and vice versa ▪ Find the remaining percentage (parts of percentage) ▪ Expressing quantities as percentages ▪ Finding percentage parts of quantities ▪ Application of percentage parts (sharing quantities using percentages) ▪ Increasing quantities by percentage ▪ Percentage increase ▪ Decreasing quantities by percentage ▪ Percentage decrease ▪ Finding the original number after the %age increase ▪ Finding the original number after the %age decrease ▪ Profit ▪ Percentage profit ▪ Loss ▪ Percentage loss ▪ Percentage discount ▪ Finding cost price (original price) and profit ▪ Finding selling price from original price and profit ▪ Finding cost price/original price from selling price and loss ▪ Finding selling price from original price and loss ▪ Simple interest, principal, rate, time, and amount ▪ Commission and hire purchase ▪
6	**GRAPHS AND INTERPRETATION OF INFORMATION**	▪ Review of pictographs, bar graphs, line graphs ▪ Travel graphs - Interpreting travel graphs - Drawing travel graphs ▪ Co-ordinate graphs - Reading co-ordinates - Plotting co-ordinates - Joining points - Naming figures formed - Area of figures formed ▪ Lines formed by ordered pairs ▪ Drawing lines for given ordered pairs ▪ Forming ordered pairs from given equations of the line and plotting to get the line and vice versa ▪ Pie charts ▪ Construction/drawing pie charts **Probability** ▪ Meaning of probability ▪ Telling probability of several situations ▪ Coin tossing ▪ Dice rolling ▪ Cartesian product of two coins or dice, coin and dice

		▪ Consolidation of averages and range
7	**MEASURES**	**Metric system** ▪ Comparing metric units ▪ Conversion of metric units ▪ Addition and subtraction of metric units ▪ Multiplication and division of metric units ▪ Perimeter of triangles and quadrilaterals, combined figures and other polygons ▪ Circumference of a circle and parts of a circle ▪ Application of length, perimeter and circumference ▪ Area of triangles, quadrilaterals and circles and its parts ▪ Area of combined figures (shapes) ▪ Area of shaded and unshaded parts ▪ Comparing different areas ▪ Area of shaded and un shaded parts of triangles, quadrilaterals and circles ▪ Comparing areas ▪ Application of area ▪ Total surface area (cube, cuboid, triangular prism, trapezoidal prism, cylinders) ▪ Volume of cubes, cuboid, triangular prism, trapezoidal prism, cylinders ▪ Volume and capacity of cubes, cuboids and cylinders **Packing in a box** ▪ Cubes ▪ Cuboids ▪ Cylinders **Time** ▪ Changing seconds to minutes and hours and vice versa ▪ Recording time and time differences ▪ Conversion of 12 hour clock to 24 hour clock and vice versa ▪ Duration in 12 hour clock and 24 hour clock **Time table** - School time table - Taxi and bus time table - Train time table - Marine time table - Air time table - Television and radio programmes - Application of time tables ▪ Average speed, distance and time ▪ Conversion of speed in *km/hr* and *m/sec* **Money** ▪ Bills ▪ Currencies (exchange rates) ▪ Postal rates ▪ Telegrams
8	**GEOMETRY**	▪ Measuring lines ▪ Construction of lines ▪ Bisecting lines

		▪ Parallel lines ▪ Properties of angles on parallel line ▪ Drawing and measuring of angles with the help of a protractor ▪ Construction of special angles 15^0, 22 ½^0, 30^0, 45^0, 60^0, 75^0, 90^0, 120^0, 135^0, 150^0, etc ▪ Compliments/supplements ▪ Dropping a perpendicular and drawing perpendicular bisectors ▪ Construction of triangles – SSS, SAS, ASA ▪ Properties of triangles ▪ Circumscribing and inscribing triangles ▪ Construction and quadrilaterals – square, rectangle, rhombus, and parallelogram ▪ Construction of regular polygons using center angle – pentagon, hexagon ▪ Sum on interior angles ▪ Direction, bearing and scale drawing - Rotation /revolution - Angles between compass direction - Ordinary bearing (direction) - Opposite direction - True bearing - Opposite bearing - Scale drawing ▪ Calculations - Properties of quadrilaterals - Angles of quadrilaterals - Properties of regular polygons - Exterior, interior angles, centre angles of polygons - Number of sides of polygons - Interior angle sum of polygons - Word problems involving the above ▪ Circle properties – angles around a point
9	**INTEGERS**	▪ Use of number lines to add , subtract and multiply integers ▪ Calculation without number line in addition, subtraction, division and multiplication ▪ Application of integers in daily life situations ▪ Inequalities and solution sets
10	**ALGEBRA**	▪ Forming algebraic expressions ▪ Collecting and simplifying the like terms ▪ Removing brackets ▪ Substitution ▪ Formation of equations ▪ Solving equations involving all operations ▪ Solving fractional equations ▪ Solving decimal equations ▪ Application of equations in real life situations ▪ Powers/ indices ▪ Operation on numbers with powers i.e. addition, subtraction, multiplication and division ▪ Index rule (use of multiplication and division) ▪ Application of powers/indices

MATHEMATICS SCHEME OF WORK - PRIMARY SEVEN TERM ONE

WK	PD	TOPIC	SUB TOPIC	CONTENT	OBJECTIVES	METHODS	T/L AIDS	T/L ACTS	REF	REM.
1	1	**SETS**	Revision: - Types of sets	- Describing sets - Listing elements - Disjoint, empty, intersection and Union of sets. - Equivalent sets. - Matching sets. - Difference of sets i.e. A – B. - Probability.	- Learners should be able to: - Describe the given sets - List the elements of given sets - Draw venn diagrams to represent given regions	- Question and answer - Discussion - Explanation - Practice and review.	- Wall chart showing venn diagrams. - Coins of different sizes, beans. - Bottle tops. - Dice	- Answering questions - Pupils will work our some numbers of exercise 1 on page 1.	- New MK Maths Bk 7 Pg 1 – 2.	-
	1		Subsets	Finding number of subsets: - By listing - Using formula 2^n **Example I:** A = {p, q} - Subsets are {p}, {q} {p,q}, { } - There are 4 subsets.	- Learners should be able to: - Find the number of subsets in a given set using listing and formula methods.	-	-	Worked examples on a wall chart	- Exercise 1 – 2 on Pg 3.	-
	1			**Example II:** P = {a, b, c} No of subsets = 2^n = 2^3 = 2 x 2 x 2 = 8 subsets (iii) Given that set a has 16 subsets. How many elements are in set Q? No of proper subsets: = 2^n – 1 = 2^3 – 1 = 2 x 2 x 2) – 1 = 8 – 1 = 7 proper subsets. 2^n = 16 16 2 8 2^n = 2 x 2 x 2 x 2 2 4 2^n = 2^4 2 2 ∴ n = 4 elements.	- Find the number of proper subsets in a given set.	-	-		-	-
	1	**SETS**	Use of venn diagrams	- Interpreting two – venn diagrams - The venn diagram shows the number of pupils who eat both apples (A) and beans (B)  - (a) How many pupils eat beans? - How many pupils eat apples - How many pupils eat only one type of food?	- Pupils should be able to: - Interpret information given in venn diagrams. - Answer given questions about the venn diagram	- Question and answer - Discussion - Explanation	- Wall chart showing venn diagrams of two intersecting sets	Answering oral questions Written exercise 1:6 on Pg 9.	- New MK Maths BK 7 Pg 9 to 15	-
	1		Solving problems using two venn diagrams	- Given that n(A) = 30, n(B) = 25, n(AUB) = 45 - Draw a venn diagram to show the information. - Find the number of elements in (i) AnB, (ii) A only , (iii) B only.	- Read given information about two venn diagrams - Draw venn diagrams to show given information - Solve for the unknown in the venn diagrams.	-	- Wall chart showing venn diagrams of two intersecting sets	Answering oral questions Exercise 1:7 on pg 11	-	-

2	1		Use of venn diagrams	 The venn diagram shows number of pupils who play Football (F) volleyball (V) and Tennis (T)	- Read and interprete given information on the venn diagrams. - Answer given questions about the venns diagrams.	-	- Wall chart showing venn diagrams of three intersecting sets.	Answering oral questions written exercise 1:9 pg 14 to 15.	-	-
2		SETS		- How many pupils play: (i) Volleyball only? (ii) Football and Tennis (iii) Only one game	- Pupils should be able to: - Define finite and infinite sets - Give examples of finite and infinite sets.	- Question and answer - Discussion - Explanation - Illustration	- Wall charts showing sets of - Counting nos. - Odd nos - Even nos - No of pupils in P.7 class	Answering oral questions about finite and infinite sets exercise 1:10 on pg 17	- New MK MTC Bk 7 pg 16 to 17 - Understanding MTC BK 7 page 11 to 13.	-
	1	Numeration system and place values	Place values and values	- Review of previous work (P.6) on place values and values. - Examples 2 4 3 5 0 8 7 Place value of and value of the underlined digits. Digit place value value 5 Thousands 5000 8 - - - Roman Numerals up to 1000(m) - Rounding off decimals to hundredths.	- Find the place value of digits in a given number. - Find the value of digits in a given number.	-	- Abacus - Stones - Baskets - trays - Sticks in bundles - Number line	Answering questions Written exercise 2:3 pg 6 a to l pg 18	- Understanding MTC pg 18	-
	1	Numeration systems and place values	Reading and writing numerals in words	- Reading given figures in words - Writing given figures in words <u>Example</u> Write the following in words 4,096 = four thousand ninety six	Learners should be able to: - Read given figures in words - Write given figures in words	-	- Abacus	Answering oral questions Reading and writing Exercise 2:2 on pg 22	-	-
			Reading and writing words in figures	- Write in figures: 1. Six thousand twenty three 2. Twenty million three	- Write given words in figures	-	- Wall charts showing some worked examples	Exercise 2:1 on pg 21	- Pg 21	-
			Expanded notation	- Expanding numbers using (i) Values e.g 245 = 200 + 40 + 5 (ii) Multiples of 10 e.g 521 = (5 x 100) + (2 x 10) + (1 x 1) (iii) Using powers of ten 210 e.g 641 = (6 x 10^2) + (4 x 10^1) + (1 x 10^0)	- Expand numbers using values, multiples of 10 and powers of ten	- Discussion - Explanation - Questions and answer	- Wall chart showing worked examples in expanded notation	Exercise 2:3 on pg 22	-	-
3	1	Numeration system and place values	- Writing expanded numbers in short form	- Which number has been expanded to give: 1) 4000 + 300 + 60 + 3 2) (5 x 1000) + (4 x 100) + (6 x 1) 3) 3 x 10^3) + (4 x 10^2) + (8 x 10^1) + (x 10^0)	- Pupils should be able to: - Write given expanded forms in short forms	- Questions and answer - Discussion - Explanation - Illustration	- Worked out examples. - Wall chart	Answering oral questions Written exercise 2:5 on pg 35	-	-
	1		Standard form/ scientific notation	- Writing single number in Scientific notation e.g (a) 4000 = 4 x 1000 = 4 x 10^3 Finding the single numbers for the given scientific notation.	- Write given numbers in scientific notation - Find the single numbers for given scientific	-	-	Exercise 4 on pg 14	- Primary school mathematics - BK 7 - Pg 13 to 15	-

				e.g (a) $8 \times 10^5 = 8 \times 100000$ $= 800000$ (b) $4.35 \times 10^3 = 4.35 \times 1000$ $= 4350$	notation					
			Rounding off whole numbers	- Round off to the nearest millions. 8759318 8 7 5 9 3 1 8 + 1 0 0 0 0 0 0 9 0 0 0 0 0 0	- Round off whole numbers to nearest hundreds, thousands and millions	-	- Guided Examples on rounding off whole nos	- Exercise 2G on pg 31 (functional) - Exercise 2:6 (understanding) - Exercise 2 12 (MK) -	- New Mk pg 30 - Functional primary MTC BK 7 pg 31 - Understanding MTC BK 7 pg 26 to 27	-
3	1	Numeration system and place value	- Decimals - Place values and values	(a) 14.673 Place value of the digits in the number given (b) 0.06225. find the value of the underlined digit in the number	Pupils should be able to: - Find the place value of the digits in the given number - Find the value of the underlined digit in the number.	- Question and answer - Discussion - Illustration - Explanation	- Guided examples on decimals	Answering questions Written exercise 2:10 on pg 28 Ex 2:8 on pg 24	- (understanding) MTC BK 7 pg 24	-
	1		Reading and writing decimals in words	- Read and write given decimals in words e.g 0.4127 = zero and four thousand one hundred twenty – seven ten thousandths. - Read and write figures from words to figures.	- Read and write given decimals in words - Read and write decimals from words to figures.	-	-	Exercise 2:10 no 2a to h No 3a to i	- New MK MTC BK 7 pg 28 to 29	-
	1		Reading and writing decimals from words to figures	- Read and write given decimals from words to figures - Zero point three six three - Two hundred three thousandths.	- Read and write decimals from words to figures without difficulty	-	-	Do written exercise 2:9 pg 27	- New Mk MTC BK 7 pg 27	-
	1		Expanding decimals	- Write decimals in expanded form using – values - powers (a) 0.2947 (b) 20.6218	Pupils should be able to: - Write decimals in expanded form using values and powers	- Questions - Explanation - Discussion - Discovery	- Wall charts showing guided/examples on decimals	Exercise 2:11 pg 29	- New Mk MTC Bk 7 pg 29	-
4	1	Numeration system	Writing expanded decimals in short Scientific form (standard form)	- Write in short form (a) $(2 \times 01) + (6 \times 0.01) + (3 \times 0.001)$ (b) $(2 \times 10^3) + (6 \times 10^1) + (4\ 10^{-1})$ - Write the following in standard form (a) $24.567 = 2.4567 \times 10^1$ (b) $0.00684 = 6.84 \times 10^{-3}$	- Write expanded decimals in short form - Write given decimals in scientific / standard form	-	-	Exercise 2:11 No 2a to d pg 29 Ex 3:5 pg 39	- Understanding MTC BK 7 pg 38 to 39	-
			Rounding off decimals	- Round off to the nearest (a) tenths (b) hundredths (c) thousandths 1. 2.36 2. 10.007 3. 37.4895	- Round off given decimals to the nearest place values	-	-		-	-
5	1	Numeration system	Number systems	- Whole numbers - Natural number (counting numbers) - Even numbers - Odd numbers - Prime numbers - Composite numbers - Square numbers - Triangular numbers - Cube numbers - Integers - Rational numbers	- Pupils should be able to: - Mention different number systems - Give examples of the given number systems	- Explanation - Discussion - Question and answer	- Wall chart showing equivalent values of Roman numeral in Hindu Arabic numbers	Written notes on pg 35 to 36	- New Mk MTC Bk 7 pg 35	-

	1		Roman numerals (readings and writing)	- Reading different Roman numerals - Group A = subtract from V, L, D or from X, C, M - Group B = Repeat 1, x, or C - Group C and D = Add to V or to L or to D.	- Read given Roman Numerals - Write given Roman Numerals	-	- Guiding wall chart for Romans - Subtracted from others, repeated and those added to others	Exercise 2:4 pg 23 A new Mk Bk 7 pupils' bk	- New Mk pupils' Bk 7 pg 23	-
	1		Converting Hindu to Roman numerals	- Read and write Hindu to Roman numerals (a) 124 (b) 1000 (c) 2500	- Convert given numbers from Hindu to Arabic	-	- Guided examples on a wall chart.	Exercise 2:4 on pg 23	- MK MTC BK 7 pg 23	-
5	1	Numeration system	Converting Roman to Hindu Arabic	- Express Roman numerals to Hindu Arabic E;g (i) CXCV (ii) XCII (iii) MCMXCVI	- Pupils should be able to: - Convert Roman Numerals to Hindu Arabic	- Explanation - Discussion - Questions and answer	- Guided tables to conversation from Roman to Hindu	Exercises 2:5 on pg 24	- New MK MTC BK 7 pg 24 - Functional Primary MTC BK 7 pg 22.	-
	1		Addition and subtraction of Roman Numerals	- Add: XC + XX - Subtract M – XCIX	- Add given Roman Numerals - Subtract Roman numerals given		- Wall chart guiding Addition and subtraction Roman Nos.	Written exercise		-
6	1		Application of Roman numerals	- Telling time - Age - Numbering items	- Read given Mathematical statements in Roman Numerals - Work out given Mathematical statements using Roman numerals		- Wall charts showing different areas using Roman numbers	Activity 2:1 on pg 22 Ex 2:8 on pg 51	- New MK MTC BK 6 pg 51	-
	1		Bases Addition and subtraction	- Adding and subtracting bases (a) $124_{five} + 343_{five}$ (b) $671_{nine} – 285_{nine}$	- Add and subtract given bases correctly		- Guided examples and place value chart for bases of different values	Ex 3:2 pg 38 Ex: 3:3 pg 39	- Old MK BK 7 pg 38 to 39	-
	1	Numeration system	Multiplication of bases	- Multiply the following bases (a) 121_{three} x 2_{three} (b) 345_{six} x 14_{six}	- Pupils should be able to: - Multiply given bases	- Explanation - Discussion - Question and answer	- Wall chart showing examples in multiplication and division of bases	ex: 3 : 4 pg 40	- Old MK MTC BK 7 pg 40	-
	1		Division of bases	- Divide the following (a) $204_{five} ÷ 14_{five}$ (b) $448_{nine} ÷ 17_{nine}$	- Divide given bases			Ex: 3:6 Pg 42	- Old Mk MTC BK 7 pg 41 to 42	-
	1		Conversion of non decimal bases Conversion of decimal bases to non decimal	- Convert the following to decimal base (a) 23_{five} (b) 123_{eight} - Convert the following decimals to given bases (a) 12_{ten} to base five (b) 62_{ten} to base eleven	- Change given non decimal bases to decimal bases - Convert given decimal bass to non decimal		- c/board illustration showing conversions from one base to another	Ex 1 No 2a to t Pg 37 Ex: 1 No 3a to h Pg 37	- Old Mk MTC BK 7 pg 37	-
7	1	Numeration system	- conversion of non-decimal to Non-decimal bases	- Change the following bases (a) 16_{seven} to base two (b) $2t_{eleven}$ to base nine	- Change the given non-decimal bases to non-decimal bases	- Explanation - Discussion - Question and answer	- Wall charts showing worked out examples on various operations on bases	Ex: 3:1 Nos 1 to 10 Pg 38	- Old MK MTC Bk 7 pg 38	-
			Finding the missing base	- Find the missing base (a) $102_{four} = 24p$ (b) $44n = 35_{nine}$ (c)	- Find the unknown bases in given expressions	-		Ex 3:7 pg 43		-
			Finding the base used	- Find the base used in the following (a) 3 1 + 1 3 = 1 1 0 (b) 3 2 - 1 5 = 1 4	- Find the base used in the given numbers	-		Ex 5 : 13 pg 43	- Old Mk BK7 pg 43	-
			Finite system addition and subtraction	- Add and subtract the following (a) 1 + 3 (finite 5) (b) 2 – 4 (finite 5)	- Add the given numbers in finite system - Subtract given numbers in finite system	-		- Ex: 1 - No 3a to l - Ex 17 : 1 - No 1a to j	- New MK MTC BK 7 pg 329 to 330	-

		Numeration system	Multiplication in finite system	- Work out the following (a) 4 x 5 (finite 7) (b) 3 x 2^2 (finite 5) (c) 3^3 (finite)	Pupils should be able to - Multiply given numbers in finite system	- Guiding questions and answer - Explanation - Discussion	- - - Chalkboard illustration	- Ex: 17 : 2 Nos 1 to 18 pg 331	- New MK MTC Bk 7 pg 331	-
			Division in finite system	- Work out : 1. 4 ÷ 3 (finite 5) 2. 6 ÷ 5 (finite 12)	- Divide given numbers in finite system			- Ex: 17 : 5 pg 334	- New MK MTC BK 7 pg 334	-
8	1		Algebra in finite system	- Solve the following (a) 2x – 3 = 3 (finite 5) (b) 3 (x – 2) = 1 (finite 5) (c) 2 (2x – 1) = 4 (finite 7) (d) 3x = 4 (finite 7)	- Work out given equations in finite system			- Ex: 17 : 3 pg 332 - Ex: 17 : 4 pg 333	- New MK MTC Bk 7 pg 332 to 333	-
	1		Application of finite system	1. If today is Thursday what day of the week will it be 90 days from today? 2. If today is Tuesday, what day of the week 79 days ago?	- Work out given numbers of finite system using day today experiences.			- Ex: 17: 6 pg 336	- New Mk MTC BK 7 pg 334 to 347	-
	1	Operation on whole numbers	Addition and subtraction of large numbers	- Adding and subtracting large numbers up to 100,000,000 Examples Add: 4 3 6 7 0 8 8 5 9 + 8 9 7 0 0 2 1 Subtract 9 3 5 6 4 8 5 4 From 1 3 2 6 2 8 0 0 4	Pupils should be able to: - Add given large numbers according to their right place values. - Subtract given large numbers in their order of place values	- Discussion - Explanation	**A abacus** **C/B illustration** **Place value chart**	- Ex 3:1 pg 45	- New MK MTC BK 7 pg 45	-
9	1		Multiplication of large numbers	(a) Multiply 2941 x 320 (b) Work out 48149 x 251	Multiply given large numbers in their order of place values			- Ex: 3 : 2 pg 46	- New MK MTC BK 7 pg 46	-
	1		Division of large numbers	- Divide 3,816,648 by 132 - Divide 479676 by 142	Divide given large numbers using long division			- Ex: 3 : 2 pg 46	-	-
	1		Word problems in subtraction and addition	- Mathematical statements involving addition and subtraction of large numbers	- Read given mathematical statements about large numbers - Add and subtract numbers from given mathematical statements	- Questions and answer		- Ex: 3 : 1 Nos 3 to 11	-	-
	2		Word problems involving multiplication and division of large numbers	1)A store can hold 1973 boxes each containing 34 pairs of shoes. How many pairs of shoes are in the store? 2)A prime minister donated 625 wheel barrows to 25 villages in a district. How many wheel barrows did each village get?	Pupils should be able to: - Read given mathematical statements involving multiplication and division of large numbers - Multiply and divide given numbers in word problems	- Discussion	-	- Ex: 3:8 pg 51	- New Mk MTC BK 7 pg 51	-
		Operation on whole numbers,	Properties of numbers.	- Commutative property. - Distributive - Associative	- To tell that when two numbers are added or multiplied together, the order does not affect the result. - Factorise numbers involving common figures. - Group numbers in twos. - Identify numbers that give same results.	- Practice and Renew - Question and answer - Regrouping	- Bottle tops of different colours. **- C/B illustration** - Counters	-	- MK pupils' BK Page 47 - MK teachers guide BK 6 - Page 47-51	-
10	1		Indices: - Laws of indices in multiplication	"When multiplying powers of the same base, keep the common base constant and add the indices (powers) (i) 4^2 x 4^6 (ii) 3 x 3^7 (iii) a^3 x a^6	- state the law of indices in multiplication - Use the law of indices in multiplication to work out given numbers	- Explanation - Beds / counteres	-	- Ex. 3 : 8 pg 51	- New MK MTC BK 7 pg 51	-
	1		Laws of indices in division	" When dividing powers of the same base, kept the base constant and subtract the indices. (i) 5^7 ÷ 5^3 (ii) P^x ÷ P^y	- state the law of indices in division - use the law of indices in division to work out given numbers	- Questions and answer	-	- Ex: 3 : 9 pg 52	- New MK MTC BK 7 pg 52	-

				(iii) $a^a \div a^7$						
	2		Application of indices with multiplication	- Solving multiplication equations 1. Solve $2^x = 32$ 2. solve $3^x \times 3 = 81$ 3. solve $2^x \times 3^3 = 108$	pupils should be able to: - factorize given numbers using powers of the bases- shown - solve the given equations using prime factorization	Practice and review	- Text books	- Ex: 3 : 10 pg 53	- New Mk MTC BK 7 pg 53	-
			Application of indices with division	1. Solve $2^x \div 2^1 = 8$ 2. solve: $4^{3x} \div 4^x = 256$ 3. solve: $3^x \div 3^2 = 27$ 4. Solve: $\frac{2^x \times 2^4 = 2^2}{2^3}$ 5. solve: $2^4 \div 2^4 = 2^y$	- pupils should be able to: solve the given equations using prime factorization with division	Regrouping		- Ex: 3 : 1 pg 54	- New MK MTC Bk 7 pg 54	-

MATHEMATICS SCHEME OF WORK-PRIMARY SEVEN TERM II AND III

WK	PD	TOPIC	SUB TOPIC	CONTENT	OBJECTIVES	METHODS	T/L AIDS	T/L ACTS	REF	REM.
1		**FRACTIONS**	Changing improper to mixed fractions and vice versa	Express improper to mixed fractions Examples: $\frac{1}{9}$ (i) $\frac{14}{9} = 9\overline{)14}$ $-\frac{9}{5}$ $= 1^5/_9$ (ii) Express mixed to proper fractions e.g. $4^1/_3 = \frac{(3x4)+1}{3} = \frac{12+1}{3} = \frac{13}{3}$	Learners should be able to: - Change improper fractions to mixed function - Change mixed fractions to improper fractions	- Discussion - Explanation - Discovery - Question and answer	- Fruits/berries - Counters - Pupils	- Revision exercise 3 pg78 - Exercise 5:1 pg73	- New MK MTC 2000 bk7 pg 78 - New MK primary MTC bk7 pg73	-
		Review	Types of fractions. Addition and subtraction. Multiplication and Division of fractions.			-	-	-	-	-
			Changing fractions as decimals and vice versa	(i) Write fractions as decimals e.g. ½ = $\frac{0.5}{2\overline{)10}}$ $\underline{-10}$ = 0.5 (ii) Change 0.4 to a common fraction $= \frac{0.4 \times 10}{1 \times 10} = \frac{4}{10} = \frac{2}{5}$	- Change fractions to decimals - Change decimals to fractions	- Do	- Do - Wall chart showing calculations/operations	Exercise 2:6 pag25	- New MK MTC bk7 pg 73 - Teachers collections	-
			Changing recurring decimals to rational numbers and vice versa	Change recurring decimals to fractions e.g. 0.33… as rational number Let the rational number be a a = 0.33… (i) 10a = 10 x 0.33… 10a = 3.333… (ii) Subtract (i) from (ii) = 10a = 3.333… $\underline{-\ a = -0.333\ldots}$ 9a = 3 $\frac{9a}{9} = \frac{3}{9}$ $a = \frac{1}{3}$ $\therefore 0.333\ldots = \frac{1}{3}$	Learners should be able to: - Change recurring decimals to rational numbers - Change rational numbers to recurring decimals	- Discovery - Explanation - Question and answer	- Wall chart showing all working well laid out - Chalkboard illustration	Exercise 5:22 pg91 Exercise 1 Exercise 2 pg81 and 82	- New MK MTC bk7 pg 90-91 - Macmillan Uganda primary mathematics bk7 pg80-82 -	-
			Ordering fractions	Ascending and descending order of fractions Use of LCM and percentages e.g. Arrange the following in ascending order $\frac{1}{2}, \frac{1}{3}, \frac{1}{5}, \frac{1}{4}$ LCM of 2, 3, 5 and 4 = 60 $\frac{1}{2} \times 60 = 30$ $\frac{1}{3} \times 60 = 20$ $\frac{1}{5} \times 60 = 12$ $\frac{1}{4} \times 60 = 12$ = 12, 15, 20, 30 $= \frac{1}{5}, \frac{1}{4}, \frac{1}{3}, \frac{1}{2}$	- Arrange fractions in ascending or descending order	- Discovery - Illustration	- Cut pieces (in different fractions) of fruits like apples, oranges, bananas, pears etc	Learners arrange fractions in ascending order 1) $\frac{1}{2}, \frac{1}{4}, \frac{1}{6}$ 2) $\frac{3}{4}, \frac{1}{8}, \frac{2}{3}$ 3) $\frac{2}{3}, \frac{5}{6}, \frac{3}{4}$ 4) $\frac{7}{12}, \frac{2}{5}, \frac{1}{10}$ Then in descending order 1) $\frac{4}{}, \frac{1}{}, \frac{3}{}$,	- Teachers collection	-

								5 8 10 2) $\frac{3}{8}, \frac{3}{4}, \frac{1}{2}$ 3) $\frac{2}{9}, \frac{5}{6}, \frac{1}{3}$		
			Operations on fractions	Addition of fractions (proper and mixed fractions) (i) Proper fractions $\frac{1}{2} + \frac{1}{3} = \frac{(3x1)+(2x1)}{6}$ LCM of 2 and 3 = 6 $= \frac{3+2}{6} = \frac{5}{6}$ (ii) $\frac{2}{9} + \frac{3}{10} + \frac{1}{2} = \frac{(10x2)+(9x3) + (45x1)}{90}$ $= \frac{20+27+45}{90} = \frac{92}{90}$ $= 1^{2}/_{90} (1 + {}^{2}/_{90}) = 1^{1}/_{45}$ ans (iii) Mixed fractions $1^{1}/_{2} + 2^{1}/_{3} = 1 + 2 + ½ + {}^{1}/_{3}$ $3 + \frac{2+3}{6} = 3 + \frac{5}{6} = 3^{5}/_{6}$ **Or** $\frac{3}{2} + \frac{7}{3} = \frac{9+14}{6} = \frac{23}{6} = 3^{5}/_{6}$	Learners should be able to: - Add proper fractions correctly - Add mixed fractions correctly	- Discussion - Discovery - Explanation - Question and answer	- Chalkboard illustrations	Exercise 5:2 pg73 Exercise 8 No. 2a to g pg90 Macmillan primary MTC bk 7	- New MK edition Primary Mtc bk7 pg73 - Macmillan primary Mtc bk7 pg90	-
				Subtraction of fractions (i) Proper fractions $\frac{1}{2} - \frac{1}{3} = \frac{(3x1)-(2x1)}{2}$ $= \frac{3-2}{6} = \frac{1}{6}$ (ii) Mixed numbers/fractions $2^{1}/_{2} - 1^{1}/_{3} = (2 – 1) + (½ - {}^{1}/_{3})$ $= 1 – (2 – 1) + (½ - {}^{1}/_{3})$ $= 1 + \frac{(3x1) – (2x1)}{6}$ $= 1 + \frac{3-2}{6} = 1+{}^{1}/_{6} = 1^{1}/_{6}$	- Subtract proper fractions correctly - Subtract mixed fractions correctly	- Do	- Do	Exercise 7:1 pg79 to 80 Exercise 8 No. 2e to l pg90 Macmillan primary Mtc	- New MK new edition Primary Mtc bk7 pupils copy pg79 to 80	-
			Operation on fractions	Multiplication of fractions (i) Fractions and whole numbers ${}^{1}/_{3} \times 12 = \frac{1}{3} \times \frac{12}{1} = \frac{1x4}{1x1} = \frac{4}{1} = 4$ (ii) Fraction by fraction $\frac{1x2}{4\ 5} = \frac{1x2}{4\ 5} = \frac{1x1}{2x5} = \frac{1}{10}$	- Multiply fractions by whole numbers - Multiply fractions by fractions - Multiply mixed fractions by mixed fractions	- Explanation - Discovery - Discussion - Question and answer - Illustrations	- Wall chart showing necessary steps in calculation	Exercise 5:4 pg75 Exercise 5:5 pg76 Exercise 7:2 Mk 2000 pg81 Exercise 7:5 Mk2000 pg86	- New Mk Mtc bk7 pg75 to 76 new edition	-
				Mixed fractions/ mixed by mixed a) $1½ \times {}^{1}/_{3} = {}^{3}/_{2} \times {}^{1}/_{3} = \frac{1x1}{2x1} = ½$ b) $(2¼)^{2}$ $= 2¼ \times 2¼ = \frac{9}{4} \times \frac{9}{4} = \frac{81}{16} = 5^{1}/_{16}$ c) $1^{3}/_{5} \times 3^{2}/_{3} = {}^{8}/_{5} \times {}^{11}/_{3} = \frac{88}{15} = 5^{13}/_{15}$					Exercise 7:5 Mk2000 pg86 New MK primary Mtc 2000 pupils bk7 Teachers collection	-

	2pds		Operation on fractions	<u>Division of fractions</u> Use the LCM and reciprocal (i) Division of fraction by fraction <u>Method I</u> $\frac{1}{3} \div \frac{1}{5} = \frac{1}{3} \times \frac{5}{1} = \frac{5}{3} = 1^2/_3$ <u>Method II</u> $\frac{1}{3} \div \frac{1}{5}$ LCM = 15 $\frac{1}{3} \times 15 \div \frac{1}{5} \times 15$ $= 1^2/_3$	- Divide fractions by fractions - Divide mixed fraction by common fraction - Divide mixed fraction by mixed fraction - Divide a whole number by a fraction - Divide a fraction by a whole number	- Explanation - Discussion - Discovery - Question and answer	- Wall chart showing necessary steps in calculations	Exercise 5:9 pg80 Exercise 7:6 Mk2000 pg87	- New MK MTC 2000 Bk7 pg87 - New MK primary MTC2000 pg87 to 88 - Teachers' collection	-
	4pds			<u>Division of mixed numbers by fraction -</u>Method I $1^1/_3 \div \frac{4}{5} = \frac{4}{3} \div \frac{4}{5} = \frac{4}{3} \times \frac{5}{4} = \frac{5}{3} = 1^2/_3$ <u>Method II</u> $1^1/_3 \div \frac{4}{5} = \frac{4}{3} \div \frac{4}{5}$ = LCM of 3 and 5 = 15 $\frac{4}{3} \times 15 \div \frac{4}{5} \times 15$ $= 20 \div 12$ $1^8/_{12} = 1^2/_3$ (iii) $2 \div ¼$ (iv) $10 \div 1¼$ (v) $^3/_5 \div 6$				Exercise 7:7 pg87 Exercise 7:7 Mk 2000 pg87 Exercise 7:8 Mk2000 pg88		-
	6pds		Operation on fractions	Use of BODMAS Brackets Of Division Multiplication Addition Subtraction Examples: (i) $½ - ^2/_3 + ¼ = (½ + ¼) - ^2/_3$ $= \frac{(2x1) + (4x1)}{\text{LCM } 4} - \frac{2}{3} = \frac{2+1}{4} - \frac{2}{3}$ $= \frac{3}{4} - \frac{2}{3} = \frac{(3x3) - (4x2)}{\text{LCM } 12} = \frac{9-8}{12} = \frac{1}{12}$ (ii) $\frac{3}{5}$ of $(2^3/_{10} \div 1^1/_3)$ BODMAS $\frac{3}{5}$ of $(\frac{23}{10} \div \frac{4}{3}) = \frac{3}{5}$ of $(\frac{23}{10} \times \frac{3}{4})$ $\frac{3}{5}$ of $(^{69}/_{40}) = ^3/_5 \times ^{69}/_{40} = ^{207}/_{200} = 1^7/_{200}$ NB: Do other examples of the units (ii), (iii), (iv), (v) and (vi) as broken down in the objectives column	Use BODMAS to work out given numbers of fractions correctly in; - Mixed addition and subtraction - Mixed multiplication and division - Three operations of addition, subtraction and division - Four operations of addition, subtraction, division and multiplication - All operation including "brackets" and "of"	- Discussion - Explanation - Question and answer	- Wall chart showing necessary calculations - Chalkboard illustrations	Exercise 5:5 pg74 Exercise 14:3 pg91 New edition Exercise 14:5 pg93 new edition Exercise 7:1 Mk 2000 pg79	- New MK Mtc bk7 pg74 - Understanding mathematics Bk7 pg90 to 94 - New Mk Primary Mtc 2000 pupils Bk7 pg79	-
	2pds		Word problems in fractions	- Word problems in addition and subtraction <u>Examples</u> 1. A boy had a jerrycan full of water he used $^{13}/_{20}$. What fraction remained? 2. James are ½ of the apple and Peter ate ¼ of that apple. (i) What fraction of the same apple did they eat altogether?	Learners should be able to work out problems in fractions for addition and subtraction Work out word problems in fractions for multiplication and division	- Discussion - Explanation - Question and answer - Discovery	- Wall chart with illustration of the operations to solve word problems - Chalkboard illustrations	Exercise 5:3 New Mk edition Exercise 7:3 pg81 Mk 2000	- New MK Mtc bk7 pg74 - New Mk Primary Mtc 2000 pg81 to 88	-

				(ii) What fraction of the apple remained?						
	2pds			Word problems in multiplication and division Examples 1. A man had 60 cows, $^1/_3$ of them were sold. How many cows remained? $^1/_3$ of 60 cows = $^1/_3$ x 60 = $\frac{1x20}{1}$ = 1x20 = 20 cows were sold So, 60-20= 40 cows remained 2. The product of two numbers is $^2/_3$, one number is $^5/_4$. Find the other number. Let the number be represented by *x* $\frac{5}{4} \times x = \frac{2}{3}$ $\frac{5x}{4} = \frac{2}{3}$ $4 \times \frac{5x}{4} = \frac{2}{3} \times 4$ $\frac{5x}{5} = \frac{8}{3} \div 5$ $X = \frac{8}{3} \times \frac{1}{5} = \frac{8}{15}$ ans		- Discussion - Explanation - Questions and answer - Discovery		Exercise 7:4 pg84 to 85 Exercise 7:9 gp 88	- New MK Mtc 2000 Bk7 pg81 to 88 - Teachers collection	-
			Application of fractions	- Application of fractions (1) Example Amina, Ben and Cate contributed money for Christmas. Amina paid $^3/_{10}$ of the money, and Ben paid $^5/_{10}$ of the money. (i) What fraction did Cate pay? (ii) If Cate paid 30,000/= what was their total amount for Christmas?	Learners should be able to: - Work out application questions in fractions correctly - Divide correctly, add correctly and subtract accurately and multiply accurately where necessary	- Discussion - Explanation - Discovery - Question and answer	- Money (minimum amount) which is easily divisible - Container with tap or inlet to fill it with water in a given time - Container to be filled with water when there is an inlet and outlet - Water (lean) - Basin	Exercise 5:6 pg77 Exercise 7:4 Mk 2000 pg84/85 Nos. 1, 2 and 3	- New Mk Mtc Bk7 pg77 to 79 - New Mk Mtc 2000 pg81-82, pg83-5	-
				- More application of fractions (2) Example John spent $^1/_3$ of his money on books, and $^1/_6$ of the remainder on transport. (i) What fraction of his money was left? (ii) If he was left with 15,000/= how much did he have at first?				Exercise 5:7 pg78 Exercise 7:4 Mk2000 Nos. 11, 15, 16, 17, 18 Pg 84-85	-	-
				- More application of fractions (3) Example Tap A can fill the tank in 6 minutes and tap B can fill the same tank in 3 minutes. How long with both taps take to fill the tank if they are opened at the same time?				Exercise 5:8 pg79 Exercise 7:4 Mk 2000 pg84-85 Nos. 6, 7, 8, 9 and 10		-
			Operation on decimals up to 10000	(a) Addition and subtraction of decimals Example Add: 2.62, 14 and 6.4 = 2.62 14.00 + 6.40 23.02 Subtract 2.73 from 10 = 10.00 - 2.73 7.27	Learners should be able to:- - Add decimal fractions - Subtract decimal fractions following correct order of place values	- Explanation - Discussion - Discovery - Question and answer	- Chalkboard illustrations - Wall chart showing place values of decimal number digits and arrangement during addition and subtraction	Exercise 7:13 pg94 Exercise 5:10 pg81 (new edition) Exercise 3:5 pg9 understanding Mtc std 7	- New Mk Mtc 2000 Bk 7 pg 94 - New Mk Mtc Bk7 (new Edition) Pg 82 - Understanding Mtc Std 7 Pg 9/40	-
				(b) Word problems in subtraction and addition of decimals Example - A rope is 14.34m and another measures 24.341m. What is the length of the two ropes? 1st rope is 14.34m long				Exercise 5:12 pg82 Exercise 28 pg40 Understanding		-

				2nd rope is+ 24.341m long 38.681m				Mtc Std 7 Nos 2 to 8		
			Operations of decimal fractions	Multiplication of decimals (i) Multiplying a decimal by a whole number 0.34 x 6 = method 2 0.34 0.34 x 6 = 34/100 x 6/1 = 204/100 X 6 = 2.04 2.04 (ii) Multiplication of a decimal by a decimal Method 1 Method 2 = 11.2 x 0.3 11.2 x 0.3 = 112/10 x 3/10 11.2 x 0.3 = 336/100 = 3.36 3.36	Learners should be able to:- - Multiply a decimal by a whole number - Multiply a decimal by a decimal	- Discussion - Explanation - Discovery - Question and answer	- Chalkboard illustrations - Wall chart showing various methods of approach to operations on decimal fractions	Exercise 5:13 pg83 New Mk new edition Mk 2000 exercise 7:15 Nos. 1 to 10 pg96, and Nos. 11 to 20 Exercise 5:14 pg84	- New Mk Pri Mtc New edition Pg 83 to 86 - New Mk Pri Mtc 2000 pg 96 - New Mk 2000 pg97	-
				Division of decimals (i) Division of a decimal by a whole number/ decimal by decimal - Divide : 0.72 ÷ 9 Divide: 1.6 ÷ 0.2 = 72/100 ÷ 9/1 = 16/10 ÷ 2/10 = 72/100 x 1/9 = 16/10 x 10/2 = 8/100 = 0.08 = 8 (ii) Division of a whole number by a decimal e.g. 9 ÷ 0.72	Learners should be able to: - Divide a decimal by a whole number - Divide a decimal by a decimal - Divide a whole number by a decimal			Exercise 5:16 pg86 New Mk New edition Exercise 7:16 New Mk 2000 pg97		-
			Combined operation on decimal fractions	Multiplication and division of decimals 0.28 x 0.81 0.27 x 4.2 Use of BODMAS in decimals Example (i) 2.34 – 7.8 + 6.9 (ii) 8.36 + 10.07 – 4.66	Learners should be able to:- - Multiply and divide decimals accurately - Use BODMAS to work out decimals operations accurately	- Explanation - Discussion - Question and answer - Discovery	- Wall chart showing the flow of operations and methods	Exercise 5:17 pg86 Exercise 7:13 pg94 Mk old edition	New Mk Bk7 pg 86 to 87 - Mk, Mtc Bk7 2000 old edition pg94	-
				- Word problems in decimals A cylinder carries 4.350ml of water. If there are 4 similar cylinders, how much water do they carry altogether?	Work out word problems involved in decimals, correctly			Exercise 5:18 pg 87 new edition of New Mk Bk7	-	-
			Ratios	- Forming ratios A class has 20 boys and 30 girls. What is the ratio of boys to girls? = No. of boys / No. of girls = 20/30 = 2:3 The ratio of boys to girls is 3:2				Exercise 7:1 pg96 new edition of new Mk Bk7	- Mk Mtc Bk7 og 95 to 96	-
			Expressing fractions as ratios and vice versa	- Express as ratios 3/5 = 3:5 - Express 7:2 as a fraction 7:2 = 7/2 = 3½	Learners should be able to - Express ratios as fractions - Express fractions as ratios	-	-	Exercise 7:1 pg96 (Nos. 6, 7 and 8)	- New Mk Mtc Bk 7 pg 96-97	-
			Increasing and decreasing quantities in given ratios	- Increase 80kg in the ratio of 5:4 5/4 x 80kg = 5 x 20kg = 100kg - Decrease 2000/= in the ratio of 3:5	- Increase quantities in given ratios - Decrease quantities in given ratios	-	-	Exercise 7:2 pg97	-	-

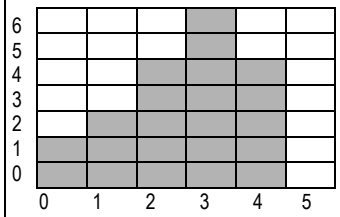
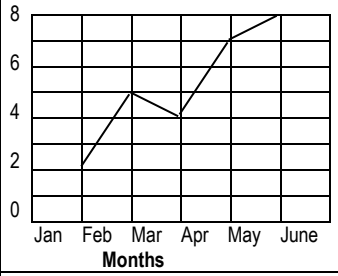
				$\frac{3}{5}$ x 2000/= = 3 x 400/= = 1200/=						
			Finding ratio of increase or decrease	- In what ratio must 30 be decreased to 24 = New : Old 24 : 30 = 4 : 5 ans	Find the ratio of increase or decrease	-	-	Exercise 9:2 pg111	- Mk Mtc Bk7 old edition page 111	-
			Sharing quantities in ratios	- Share 18 in the ratio 4:5 Total ratio = 4 + 5 = 9 1st share = $\frac{4}{9}$ x 18 = 8 2nd share = $\frac{5}{9}$ x 18 = 10	Share given numbers in ratios	-	-	Exercise 7:3 pg99	- New Mk Mtc Bk7 pg98 to 99	-
			Finding ratio in which quantities are shared	- In what ratio must 24 be decreased to become 20? = 20: 24 = 5 : 6	Learners should be able to:- - Find the ratio in which quantities are shared - Find the number shared in a given ratio	- Question and answer - Discussion - Explanation	- Chart showing worked out examples - Chalkboard illustrations	Exercise 9:2 pg111 (old edition) Exercise 7:3 (new edition) pg 99	- Mk Mtc Bk7 old edition pg111	-
			Finding the number shared in a given ratio	- Mary, Jane and Peter shared money in the ratio 2:3:1 respectively. If Mary got 12,000/= how much money did they share? Total ratio = 2 + 3 + 1 = 6 If Mary had 2 parts = 12000/= 1 part = $\frac{12000/=}{2}$ 6 parts = $\frac{12000/=}{2}$ x 6 = 6000 x 6 = 36000/= They shared 36000/=	Learners should be able to:- - Find the ratio in which quantities are shared - Find the number shared in a given ratio					-
			Proportion	- Direct proportion Example Two books cost 200/=. Find the cost of 6 similar books 2bks cost 200/= 1 book costs $\frac{200/=}{2}$ 6 books cost $\frac{200}{2}$ x 6 = 600/=	Work out given numbers using direct proportion	- Question and answer - Discussion - Explanation	- Real objects - Our shop - Our canteen	Exercise 9:4 pg115 (Mk old edition) Exercise 7:4 pg101 (new edition)	- Mk Mtc Bk7 old edition pg115	-
			Indirect proportion	- 4 men take 9 days to complete a job. How long will 12 men take to finish the job at the same rate? 4 men take 9 days 1 man takes 9 x 4 days 12 men take $\frac{9 \times 4}{12}$ days = 3days	Pupils should be able to:- - Work out given numbers about indirect proportion	- Question and answer - Discussion - Explanation	- Workout examples	Exercise 9:6 Mk old edition pg117 Exercise 7:6 (Mk new edition pg 104)	- Mk Mtc Bk7 pg 117 old edition - Mk Mtc Bk7 (new edition) pg104	-
			Percentages	- Meaning of percentage (i) Changing percentages to decimals 6% = $\frac{6}{100}$ = 0.06 100√600 - 600 = 0.06 (ii) Changing decimals to percentages 0.4 = 0.4 x 100% = 40% (iii) Changing percentages to fractions 12½ % as a fraction = $\frac{25}{2}$ % = $\frac{25}{2}$ ÷ 100 = $\frac{25}{2}$ x $\frac{100}{1}$ = $\frac{25}{2}$ x $\frac{1}{100}$ = $\frac{1}{8}$				Exercise 8:1 pg105 (new Mk) Exercise 10:1 (old edition) pg 119 Exercise 10:4 old edition pg121 Exercise 8:2 (new Mk) pg 106 Exercise 10:2	- New Mk Bk7 pg119 to 121 (old edition) - New edition pg105 to 106	-

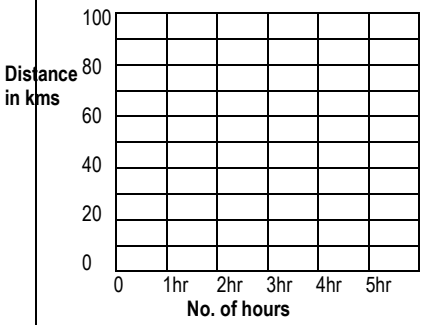
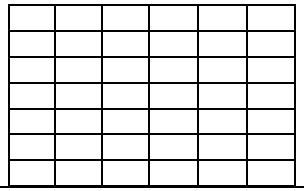
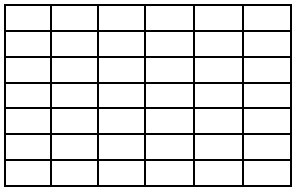
								(Old Mk) pg120		
			Percentages	- Changing fractions to percentages Express ½ as a percentage ½ x 100 = 50% - Changing percentages to ratios Express 2% as a ratio $\frac{2}{100} = \frac{1}{50}$ = 1:50 - Expressing ratios as percentages Express 3:10 as a percentage $\frac{3}{10}$ x 100% = 30% - Finding remaining percentages If 40% of the class are absent, what percentage is present? Absent = 40% Present = 100%-40% = 60%	Pupils should be able to: - Express fractions as percentages - Change percentages to ratios - Express ratios as percentages - Find the remaining percentages of given numbers	- Question and answer - Discussion - Explanation	- Worked out examples - Chart	- Exercise 8:5 pg107 (new edition) - Exercise 10:5 (old edition) pg121 - Exercise 8:6 (new edition) pg 108 - Exercise 10:6 (old edition) pg 121 - Exercise 8:7 (new edition) pg109	- New Mk Mtc Bk7 pg107 to 109 - New edition pg 120 to 121 old edition	-
			Percentages	- Expressing quantities as percentages Example: Express 20 as a percentage of 80 $\frac{20}{80}$ x 100% = 5 x 5% = 25% - Finding percentage parts of quantities Example Find 40% of 50 - Application of percentage parts Example Nanyonjo earns shs. 12,000. She spends 75% and saves the rest (i) How much does she spend? (ii) How much does she save? - Increasing quantities by percentages Example Increase shs. 800 by 20% 100% + 20% = 120% = $\frac{120}{100}$ x 800shs = 960shs	Learners should be able to:- - Express given quantities as percentages - Find the remaining parts of percentages - Work out given applications of percentage parts - - Increase quantities by given percentages	- Question and answer - Discussion - Explanation	- Chalkboard illustrations	Exercise 8:8 pg110 Exercise 8:9 pg111 Exercise 8:11 Exercise 8:13 (new edition) Exercise 10:13 (old edition)	- New Mk Mtc Bk7 pg110 to 116	-
			Percentages	- Finding percentage increase Example What number when increased by 10% becomes 770? 100% + 10% = 110% 110% of a number = 770 1% of the number = $\frac{770}{110}$ 100% of the number = $\frac{770}{110}$ x 100 = 7 x 100 = 700 The number is 700 - Decreasing quantities by percentages Decrease 1500?= by 10% 100% - 10% = 90% $\frac{90}{100}$ x 1500/= = 90 x 15/= = 1350/= - Finding percentage decrease Example If a man's salary is decreased by 35%, it	Learners should be able to: - Find the number increases - Decrease given quantities by percentages - Find the number decreased by percentage	- Question and answer - Discussion - Explanation	- Worked out examples	Exercise 10:15 pg133 Exercise 18:14 pg117 Exercise 8:16 pg117	- New Mk Mtc Bk7 pg 117 to 119 (new edition) and pg 133 to 135 old edition	-

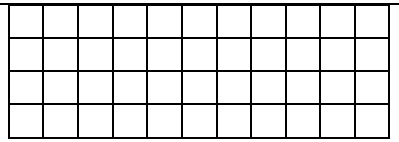
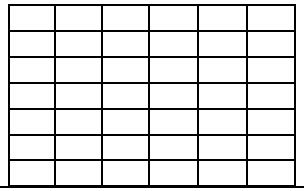
				becomes shs 156,000. What is his salary?						
			Percentages	- Profit Profit = S.P – C.P Example An article was bought at 100,000/= and sold at shs. 120,000. Calculate the profit Given: C.P = 100,000/= S.P = 120,000/= Profit = S.P – C.P = 120,000 – 100,000 = 20,000/= - Percentage profit Example A book was bought at shs. 8000 and was sold at 9,000/=. Calculate the percentage profit. Given:- C.P = 8000/= S.P= 9000/= Profit – S.P – C.P = 9000 – 8000 = 1000/= %profit = $\frac{\text{Profit}}{\text{C.P}}$ x 100 = $\frac{1000}{8000}$ x 100% = $\frac{25}{2}$ = 12½ %	Learners should be able to:- - Calculate the profit of an item - Find the percentage of an item	- Question and answer - Discussion - Explanation	-	Exercise 8:20 Exercise 11:1 pg137 (old edition)	- New Mk Mtc Bk7 pg123 (new edition) - Pg 138 to 139 old edition	-
				- Loss If I bought a house for $120,000 but I was forced to sell it at $100,000. calculate the loss I made Given C.P = $120,000 S.P = 100,000 Loss = C.P – S.P = 120,000 – 100, 000 = $20,000	Learners should be able to Calculate the loss of a given item	- Discussion - Questioning techniques	- Chart showing worked out examples	Exercise 8:21 pg124 (new edition)	- Mk primary Mathematics Bk7 pg124	-
				- Percentage loss A man bought a bicycle at shs. 120,000 and later sold it at shs. 100,000. Calculate the percentage loss. Given:- C.P = 120,000/= S.P = 100,000/= Loss = C.P – S.P 120000 – 100000 = 20000/= %loss = $\frac{\text{Loss}}{\text{CP}}$ x 100% = $\frac{20000}{120000}$ x 100% = $16\frac{2}{3}$%	Learners should be able to:- - Calculate the loss of a given item - Calculate the percentage loss on a given item	- Discussion - Questioning techniques	- Chart showing some worked out examples	Exercise 8:21 pg124 (new edition)	- Mk Primary Mtc Bk7 pg124	-
				- Percentage discount The market price of a bicycle is shs. 60,000. A customer is offered a discount of 15% for cash. How much does the customer pay? Solution Discount 15% of the market price %discount 100% - 15% = 85% $\frac{85}{100}$ x 60000 = 85 x 600 = 51,000 The customer paid shs. 51,000 - Finding the cost price (original price) and profit Example After selling an article at Shs. 21000 a trader	Learners should be able to:- - Calculate the percentage discount - Find the cost price and profit	- Discussion - Questioning techniques	- Chart showing worked out examples	Exercise 8:25 pg131	- Mk primary Mtc Bk7 pg130-131	-

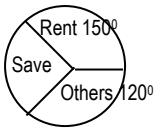
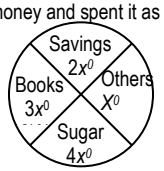
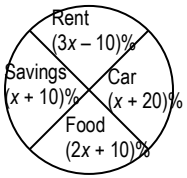
				made a profit of 20%. Calculate the cost price of the article. Le the CP be k % % profit = (100 + 20) = 120% 120% of K = 21,000 $100 \times \frac{120}{100} \times K = 21000 \times 100$ $= 21000 \times 100$ $\frac{120K}{120} = \frac{21000 \times 100}{120}$ K = 17,500 The cost price of the article =17,500/=				Exercise 8:22 pg 126	- Mk Primary Mtc Bk7 pg126	
				- Finding selling price from original price and profit Example The cost price of a 50kg bag of sugar is shs. 45,000. At what price must he sell each Kg in order to make a profit of 20%? Solution Given C.P = 45000 Profit = $\frac{20}{100} \times 45000$ = 9000 S.P = 45,000 + 9000 = 54000/= Price per kg = $\frac{54000}{50}$ = shs. 1080 - Finding cost price/original price from selling price and loss Example By selling an article at shs. 45000 a dealer made a loss of 10%. Calculate the cost price of the article. How much did he lose? Solution Given S.P = 45000 Loss = 10% C.P = t% %loss = (100 – 10) = 90% $\frac{90}{100} \times t = 45000$ $100 \times \frac{90t}{100} = 45000 \times 100$ $\frac{90t}{100} = \frac{45000 \times 100}{90}$ t = 50,000 C.P = 50,000 Loss = CP – SP = 50000 – 45000 = 5000/=	- Learners should be able to:- Find the selling price	- Discussion	- Chart showing some worked out examples	Exercise 8:23 pg128 Exercise 8:22 pg126 Mk (new edition)	- Mk Primary Mtc Bk7 pg127-128	-
			Percentages	- Simple interest Example Calculate the simple interest on shs. 8000 for 2years at 10% per annum. Simple interest *I* = P X R X T *I* = shs 8000 x 2yrs x 10% *I* = shs 8000 x 2 x $\frac{10}{100}$ *I* = Shs 1600 - Amount A man deposited shs. 40,000 for 5 years at a simple interest rate of 2½ % per year. Calculate	- Learners should be able to Calculate the simple interest Calculate the amount	- Discussion - Questioning techniques	- Chart showing worked out examples	Exercise 9:1 pg136 Exercise 9:1 pg 137	- Mk Primary Mtc Bk7 pg134-137	-

				his simple interest and the total amount after 5 years. Solution *I = P x R x T* *I* = 40000 x 2 ½ % x 5 = 40000 x $^{5}/_{2}$ x 5 *I= 5000* Amount = P + I = 40000 + 5000 = 45000						
				- Finding the percentage rate Example Sarah deposited shs. 50,000 on her savings account. At the end of 3 years the simple interest earned was shs. 150,000. Calculate the rate of interest Solution From P x T x R = *I* 50,000 x 3 x R = 15,000 $150{,}000\frac{R}{100} = 15{,}000$ $\frac{1500R}{1500} = \frac{15000}{1500}$ R = 10% - Principal Example What sum of money will yield an interest of shs. 6000 at 5% for 3 years? Solution P x R x T = *I* P x 5% x 3yrs = 6000 $P \times \frac{5}{100} \times 3 = 6000$ $P \times \frac{15}{100} \times 100 = \frac{6000 \times 100}{}$ $\frac{P \times 15}{15} = \frac{6000 \times 100}{15} = 40{,}000$ Principal = 40,000	- Learners should be able to:- Calculate rate from given principal and time and interest Calculate the principal from given interest rate and time with ease	- Discussion - Illustration - Questioning techniques	- Chart showing some worked out examples	Exercise 9:2 pg138-139 Exercise 9:3 Mk mathematics primary pg140-141	- Mk Mtc primary school Bk7 pg138-139 - Mk Mtc primary school Bk7 pg140-141	-
		GRAPHS AND INTEPRETATION OF INFORMATION	Review of pictographs, bar graphs and line graphs	Revise - The scale usage - Answer the scale to interpret the information e.g. 🧍 represents 10 pupils, what will ½ 🧍 represent?	- Learners should be able to - Use the scale to interpret the information - Answer question and pictographs	- Discussion - Explanation - Discovery - Question and answer	- Concrete objects and charts	Exercise 10:1 pg146	- New Mk Primary Mtc pg 146	-
				Interpreting bar graphs Scale: What does each bar represent on (i) Vertical axis (ii) Horizontal axis Answering questions on the given bar graphs	- Interpret the given information on bar graphs - Answer questions on bar graphs			Exercise 10:2 pg147-8	- New Mk Primary Mtc Bk7 pg 147-8	-
				Using the given data to draw bar graphs Pts scored: 0, 1, 2, 3, 4, 5 Frequency: 2, 3, 5, 6, 9, 5 Frequency table No. / Tally / Frequency 0 / II / 2 1 / III / 3 2 / ~~IIII~~ / 5 3 / ~~IIII~~ I / 6	- Use the given data to draw bar graphs. - Use the given data to represent it on a frequency table			Exercise 10:3 pg149	- New Mk Primary Mtc Bk7 pg 149	-

										
				Interpreting line graphs Scale: What does each bar represent on (i) Vertical axis (ii) Horizontal axis Answering questions on the given line graph	- Interpret the given information on line graphs - Answering questions on line graphs			Exercise 10:4 pg150-151	- New Mk Primary Mtc Bk7 pg 150-151	-
			Line graphs	Using the given data to draw a line graph Month: Jan, Feb, Mar, Apr, May No. of cows: 2, 5, 4, 7, 8 	- Learners should be able to - Use the given data to draw line graphs	- Discussion - Explanation - Discovery - Question and answer -	- Charts	Exercise 10:5 pg 152	- New Mk Primary Mtc Bk7 pg152	-
			Temperature graphs	Interpreting temperature graphs Scale: What does each bar represent on (i) Vertical axis (ii) Horizontal axis Answering questions on the given temperature graph	- Interpret the given information on temperature graphs - Answer questions on temperature graphs	- Do	- Charts	Exercise 10:11 pg164-5	- New Mk Primary Mtc Bk7 pg 164-5	-
			Travel graph	Interpreting travel graphs Scale: What does each bar represent on (i) Vertical axis (ii) Horizontal axis Answering questions on the given travel graph What does one square represent on: (a) Vertical axis (b) Horizontal axis	- Interpret the given information on the travel graphs - Answer questions on travel graphs	- Do	- Do	Exercise 10:12 and 10:13 pg166-172	- New Mk Primary Mtc Bk7 pg 166-172	-

				<u>Using the given data to draw travel graphs</u> A cyclist traveled from town P to R as follows. For 2hrs he cycled from P to town Q a distance of 30kms and then rested for 1hr. from Q he continued for another 1hr to town R at a speed of 40km/hr.  	- Pupils should be able to - Use the given data to draw travel graphs	- Discussion - Explanation - Discovery - Question and answer	- Charts	Exercise 10:14 pg174	- New Mk primary Mtc Bk7 pg173-174	-
			Coordinates	<u>Naming parallel lines on the x and y axis</u> 	- Learners should be able to:- - Name parallel lines on x and y axes - Draw lines of x and y axes	- Do	- Do	Exercise 10:15 pg175-177	- New Mk Primary Mtc Bk7 pg175-177	-
				<u>Naming the coordinates and plotting the points of the given coordinates</u>  (i) Name the given coordinates (ii) Plot the pointes of the coordinates below K – (2,1) , J – (0, -3), H – (0,0)	- Learners should be able to - Name the coordinates for the given points - Plot the points of the given coordinates	- Do	- Do	Exercise 10:16 and 10:17 pgs 178-179	- New Mk Primary Mtc Bk7 pg178-9	-
			Coordinates Forming figures by plotting	<u>Forming figures by plotting</u> Plot these points, join them and name the figure formed. 1) R (-5, 1), P (-2, 4), Q (1,1) 2) E (2,1), F (6,1), G (3,-4), H (-1,-4) 3) A (-5,0), B (-2,0), C (-2, -3), D (-5, -3) 	- Learners should be able to - Form figures by plotting points of the given coordinates - Name the figures formed - Find the area of the formed figures - Write the points of the given coordinates of the drawn figures	- Discussion - Explanation - Discovery - Question and answer	- Charts	Exercise 10:18, 10:19, 10:20 pg180-3	- New Mk Primary Mtc Bk7 pg180-3	-

				 Name the figures formed. Area of parallelogram = b x h Triangle = ½ x b x h Square = L x L Trapezium = ½ x h (a + b)						
			Lines formed by ordered pairs	<u>Forming lines using ordered pairs</u> y = x X: -3, -2, -1, 0, +1, +2 Y: -3, -2, -1, 0, +1, +2 Ordered pairs: (-3, -3), (-2, -2), (-1, -1), (0, 0), (+1, +1), (+2, +2) y = x + 1 -1 = -2 + 1 0 = 0 + 1 2 = 1 + 1 3 = 2 + 1 X: -2, -1, 0, 1, 2 Y: -1, 0, 1, 2, 3 (-2, 1), (-1, 0), (0, 1), (1, 2), (2, 3) 	- Learners should be able to - Find the value of the unknowns - Form ordered pairs from the table - Plot and form lines using ordered pairs	- Do	- Do	Exercise 10:22 pg184-7	- New Mk Primary Mtc Bk7 pg184-7	-
		PIE CHARTS	Circle graphs	<u>Example</u> The pie chart shows the monthly expenditure and savings of Mr. Mugisha who earns 72,000/= (i) How much doe he spend on each item (ii) Change the given degrees to percentages (other related questions as deemed right be the teacher) <u>Example II</u> (one angle missing) The pie chart shows a man's expenditure and savings if he earns 10,8000/=	- Learners should be able to - Interpret the graphs - Solve the unknown angles and simplify them	- Discussion - Illustration	- Chart showing collected information by the pupils and graphs drawn	Exercise 12:11 pupils' bk pg192	- Mk Primary Mtc 2000 pg 191-3	-

				 (i) How much does he spend on rent? (ii) Express the savings as a percentage of the total (iii) How much more does he spend on others than he saves (any other questions as related examples as deemed fit by the teacher)						
				(1) Mukasa was given 12,000/= for his pocket money and spent it as shown on the pie chart  (i) Find the value of x (ii) How much does he spend on each item (2) (With unknown percentage) A circle graph shows the expenditure and saving of a family which earns 96,000/=. How much is spent on a car and rent? 	- Learners should be able to; - Solve for the unknown letter with ease - Simplify the items in questions successfully	- Discussion	- Chart showing some worked out examples	Exercise 12:12 pg195-6	- Mk Primary Mtc Bk7 pg193-6	-
			Pie charts	a) Mukiibi spent 70% of his salary on rent, 50% of the remainder on others. He was left with 3000/=. (i) What did he have a t first? (ii) Draw a pie chart to represent the above information. b) A man spends $^1/_5$ of his income on rent and $^1/_3$ of the remainder on food. If 4800/= is left; (i) What is his income (ii) Use the information above to draw a pie chart	- Learners should be able to:- - Express items given into degrees - Use the degrees to construct the circle graph	- Explanation - Group discussion	- Graph showing worked out examples	Exercise 12:12 pg195-6	- Mk Primary Mtc Bk7 pg 195-7	-
			Probability	<u>Meaning of probability</u> - Probability scale - Tell probability that the sun will rise tomorrow - what is the probability that a baby boy will be delivered by a pregnant mother? - Given a basket has 4 ovacados and 6 oranges, what is the probability of picking an orange?	- Learners should be able to; - Tell the probability of some situations - Calculate probability of any situation	- Discussion - Explanation	- Graph showing worked out examples	Exercise 1 pg 57	- Primary Mtc for Uganda pg 56-8 - Oxford Primary Mtc Bk7 pg78-9	-

<table>
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<td>Probability</td>
<td><u>Coin tosing</u>
Faces named i.e. Head (H) and Tail (T) where tossed outcomes are recorded.
Probability that head shows up
Probability space = 2
n(event) (head) = 1

P(H) = <u>n(event)</u>
Probabilty space
P(H) = ½</td>
<td>- Learners should be able to
- Toss a coin
- Determine probability of an event happing without difficulty</td>
<td>- Discussion</td>
<td>- Recorded results from the practical work
- Coins
- Bottle tops</td>
<td>Exercise 1 pg 80-81</td>
<td>- Oxford primary Mtc Bk7 pg 80-81</td>
<td>-</td>
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<td><u>Dice rolling</u>

Possibility space {1, 2, 3, 4, 5 6,} = 6
a) What is the probability that an even number will show up?
P (even) = {2, 4, 6}
n(E) = 3
probability space = 6
P (even) = <u>n (E)</u>
Probability space
= $\frac{3}{6}$ = ½
And any other related questions as may be deemed by the teacher.</td>
<td>- Learners should be able to;
- Roll a dice and record the outcomes correctly
- Calculate for the probability related to the practical work done with ease.</td>
<td>- Practical work
- Discussion
- Illustration</td>
<td>- Chart showing worked out examples
- Model
- Real dice</td>
<td>Exercise pg 82</td>
<td>-</td>
<td>-</td>
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<td><u>Cartesian product</u>
(i) Two coins
Tossing two coins
<table><tr><td></td><td>B</td><td></td></tr><tr><td>A</td><td>H</td><td>T</td></tr><tr><td>H</td><td>HH</td><td>HT</td></tr><tr><td>T</td><td>TH</td><td>TT</td></tr></table><u>Related questions</u>
What is the probability that HH will show up?
P (HH) = <u>n(E)</u>
Sample space
P (HH) = ¼</td>
<td>- Learners should be able to
- Form/work out probability space for two coins tossed with ease</td>
<td>- Practical approach
- Discussion</td>
<td>- Die
- A model of a die
- Coin
- Bottle top
- Model of a coin</td>
<td>Exercise 81-2</td>
<td>- Oxford Primary Mtc Bk7 pg81-2</td>
<td>-</td>
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<td>(ii) Dice and coin
Probability space
<table><tr><td></td><td>Coin</td><td></td></tr><tr><td>Dice</td><td>H</td><td>T</td></tr><tr><td>1</td><td>1,H</td><td>1,T</td></tr><tr><td>2</td><td>2,H</td><td>2,T</td></tr><tr><td>3</td><td>3,H</td><td>3,T</td></tr><tr><td>4</td><td>4,H</td><td>4,T</td></tr><tr><td>5</td><td>5,H</td><td>5,T</td></tr><tr><td>6</td><td>6,H</td><td>6,T</td></tr></table>Qn 1. What is the probability that an even number and a tail will show up?
n(E) = {2,T, 4,T, 6,T}
n(E) = 3
probability space = 12
P(even and tail) = $^{3}/_{12}$ = ¼</td>
<td>- Determine the probability space for a die and coin tossed at once with easy
- Physically perform practically to come up with a probability space</td>
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<td>(iii) Die and die (two dice)
Probability space
<table>
<tr><td></td><td colspan="6">Die A</td></tr>
<tr><td>Die B</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr>
<tr><td>1</td><td>1,1</td><td>1,2</td><td>1,3</td><td>1,4</td><td>1,5</td><td>1,6</td></tr>
<tr><td>2</td><td>2,1</td><td>2,2</td><td>2,3</td><td>2,4</td><td>2,5</td><td>2,6</td></tr>
<tr><td>3</td><td>3,1</td><td>3,2</td><td>3,3</td><td>3,4</td><td>3,5</td><td>3,6</td></tr>
<tr><td>4</td><td>4,1</td><td>4,2</td><td>4,3</td><td>4,4</td><td>4,5</td><td>4,6</td></tr>
<tr><td>5</td><td>5,1</td><td>5,2</td><td>5,3</td><td>5,4</td><td>5,5</td><td>5,6</td></tr>
<tr><td>6</td><td>6,1</td><td>6,2</td><td>6,3</td><td>6,4</td><td>6,5</td><td>6,6</td></tr>
</table>
(a) What is the probability that the sum is 8?
Possible outcome = {2,6, 3,5, 4,4, 5,3, 6,2}
n(E) = 5 pairs giving sums
probability space = 36
probabilitu (sum8) = $\frac{n(E)}{\text{probability space}} = \frac{5}{36}$
(b) What is the probability that the product of 20 shows up?
Possible outcome = {4,5, 5,4}
n(E) = 2
probability space = 36
probability (product 20) = $\frac{n(E)}{\text{sample space}} = \frac{2}{36} = \frac{1}{18}$</td>
<td>- Learners should be able to:
- Determine the probability
- Calculate numbers involving probability in their daily life situations</td>
<td>- Practical approach
- Discussion</td>
<td>- Chart showing some worked out examples
- Dice models of die</td>
<td>Exercise 2 pg82</td>
<td>- Oxford Primary Mtc Bk7 pg81-82</td>
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<td>Statistics</td>
<td>Mode: (most frequent item)
(most common item)
Example
Given:- 6, 4, 0, 6, 7, 6, 4, find the mode
<table>
<tr><th>Score</th><th>Tally</th><th>Frequency (F)</th></tr>
<tr><td>0</td><td>/</td><td>1</td></tr>
<tr><td>4</td><td>//</td><td>2</td></tr>
<tr><td>6</td><td>///</td><td>3</td></tr>
<tr><td>7</td><td>/</td><td>1</td></tr>
</table>
A score (x) with the highest frequency (F)
Mode = 4</td>
<td>- Learners should be able to:-
- Find the mode for the data given with ease</td>
<td>- Discussion
- Explanation</td>
<td>- Worked out examples on the chart</td>
<td>Exercise 1 pg134</td>
<td>- Primary school mathematics Bk7 pg132-4</td>
<td>-</td>
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<td>Median: (middle item)
Determined after arranging items in ascending or descending order. Then match to get the middle item.
Example
(i) Marhy scored the following marks in a series of tests; 3, 5, 4, 2, 7, 8, 9, 5, 2. Find the median
Solution
Arrangement in ascending order
2, 2, 3, 4, 5, 6, 7, 8, 9
Median = 5
(ii) Find the median of 6, 4, 0, 6, 7, 6, 4, 4,
Solution
Arrangement in ascending order
0, 4, 4, 4, 6, 6, 6, 7
Median = $\frac{4 + 6}{2} = \frac{10}{2} = 5$</td>
<td>- By the end of the lessons, learners should be able to;
- Find the median for the data given with ease</td>
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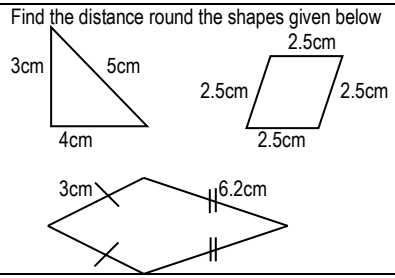
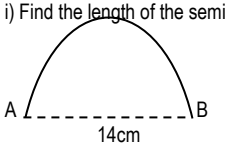
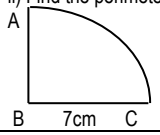
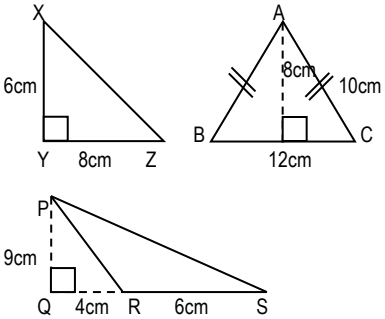
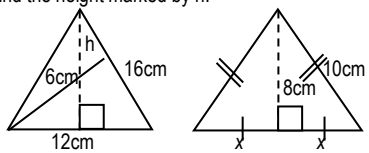
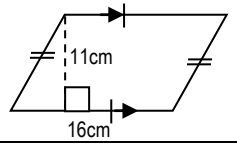
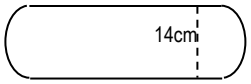
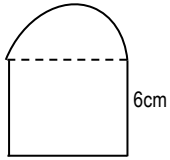
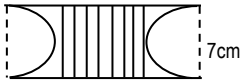
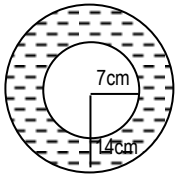
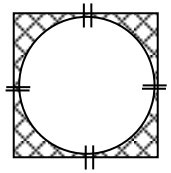
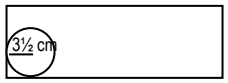
</table>

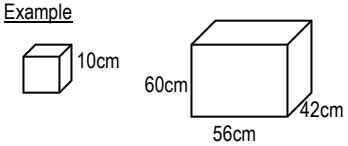
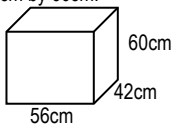
				Modal frequency Record the highest frequency Example Given 4, 2, 4, 3, 5, 6, 4. Find the modal frequency **Score** / **Tally** / **Frequency (F)** 2 / I / 1 3 / I / 1 4 / III / 3 5 / I / 1 6 / I / 1 Highest frequency = 3 ∴ modal frequency = 3	- Learners should be able to:- - Find the modal frequency with ease -	- Discussion	- Chart showing some worked out examples	Exercise 1 pg134	- Primary school mathematics Bk7 pg133-4	-
				Range Difference between highest score (*x*) and lowest score (*x*) Range = $x_{highest} - x_{lowest}$ Example Given 4, 2, 4, 3, 6, 5, 4 Find the range Solution Range = $X_H - X_L = 6 - 2 = 4$	-	- Discussion	- Chart showing some worked out examples	Exercise 1 pg134	- Primary school mathematics Bk7 pg133-4	-
				Mean (average) Mean = $\frac{\text{sum of items}}{\text{No. of items}}$ OR: Mean = $\frac{\text{Total of items}}{\text{No. of items}}$ Examples What is the mean of 10, 16, 23, 33, 4 Solution Mean = $\frac{\text{sum of items}}{\text{No. of items}}$ $= \frac{10 + 16 + 23 + 33 + 4}{5} = \frac{86}{5}$ Mean = $17\frac{1}{5}$ Example II What number is between $\frac{1}{3}$ and $\frac{1}{4}$? Solution Mean = $\frac{\text{sum of items}}{\text{No. of items}}$ $= \frac{\frac{1}{3} + \frac{1}{4}}{2} = (\frac{1}{3} + \frac{1}{4}) \div \frac{2}{1}$ $= \frac{4 + 3}{12} \times \frac{1}{2} = \frac{7}{12} \times \frac{1}{2}$ Mean = $\frac{7}{24}$	- Learners should be able to: - Determine the mean of the given data	- Discussion	- Worked out example on the manilla chart	Exercise 1 pg 45	- Primary Maths for Uganda, revision and practice pg44-45	-
				Mean (average) Application: Example The mean age of 7D candidates is 13yrs. Nkinzi is 11 yrs, Kato is 12 years. How old is Angazi if Wasswa and kato are twins: Solution Names of candidates Nkinzi , Kato, Angazi, Wasswa 11yrs 12yrs ? 12years	- Learners should be able to; - Determine the data missing - Solve problems involving mean in daily life situations	- Discussion	- Worked out examples of the chart	Exercise 1 pg45	- Primary Mtc for Uganda pg44-45	-

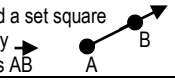
				Sum of age for 4 candidates = 13 x 4 = 52 years Sum of given age of candidates = 11 + 12 + 12 = 35years Age of Angazi = 52years – 35years = 17years						
		MEASURES	Metric system	<u>Comparing metric units</u> Km Hm Dm M Dm Cm Mm Kg Hg Dg G Dg Cg Mg Kl Hl Dl L Dl Cl Ml	- Learners should be able to; - Change from one unit to another unit - Compare different units	-	-	Exercise 18:1 pg344	- Mk Bk7 pg343 to 344 (new edition)	-
	2-3		Review money	- Shopping - Currency notes. - Exchange rates	Learners should be able to; - Use notes to buy different items. - Change the value of one country's currency to another country's currency. - Calculate balance /change after buying items.	- Demonstration - Practice and review.	- Currency notes. - Packets of items found in shops.		- Oxford Primary MTC BK 4 page 91-93 MK Teachers guide BK 6 211-217	-
			Conversion of metric units	1) Change 7m to millimeters 1m = 1000mm 7m = (7 x 1000)mm = 7000mm 2) Change 18km to meters 3) Change 800m to kilometers 4) Change 0.06 meters to kilometers	- Compare the different units	-	-	Exercise 18:2 pg344		-
			Addition and subtraction of metric units	a) Add: 5cm, 8mm + 8cm, 3mm (answer in cm) cm mm 5 8 + 8 3 14 . 1 = 141mm or 14.1cm or 14cm 01mm b) Subtract: 8m – 7cm m cm 8 00 - 7 7 93 = 7m 93cm c) Add: 5m, 6cm, 3mm 4 4m, 9mm (answer in cm) d) Subtract 7km, 3dm- 6hm, 8dm	- Learners should be able to - Add numbers in different units - Subtract numbers in different units	-	-	Exercise 18:3 pg345	- Mk Bk7 pg345 (new edition)	-
		MEASURES	Multiplication and division of metric units	1) Multiply 7cm 9mm by 4 cm mm 7 9 X 4 31 6 = 316mm or 31cm 6mm or 31.6cm 2) Divide 2.4km wire into pieces of 60 meters each	- Learners should be able to; - Multiply numbers with different metric units - Divide numbers with different metric units	-	-	Exercise 18:4 pg346	- Mk Bk7 pg346 new edition	-
			Perimeter of triangles and quadrilaterals, combined figures and other polygons	Find the distance round the shapes given below  	- Pupils should be able to; - Find the perimeter of different shapes given	-	-	Exercise revision 1 and 2 pg 347 to 348	- Mk Bk7 pg346	-

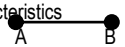
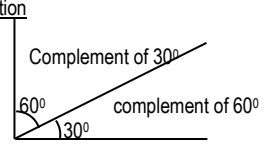
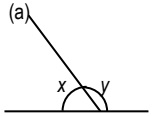
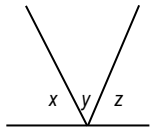
			Circumference of a circle	i) Find the circumference of a circle whose radius is 7cm ii) Find the circumference of a circle whose diameter is 28cm iii) The diameter if a circle is 21cm. find its circumference	- Learners should be able to; - Find the circumference of a circle given the radius - Find the circumference of a circle given the diameter	-	-		- Mk Bk7 pg346	-
			Circumference of parts of a circle	i) Find the length of the semi circle  ii) Find the perimeter of the quadrant given below  	- Learners should be able to; - Find the length of an arc - Find the perimeter of parts of a circle	- Discussion - Question and answer -	-	Exercise 19:18 pg373	- Mk Bk7 pg372	-
			Finding the radius of a circle when circumference is given	Find the radius of a circle whose circumference is 44cm $2\pi r = C$ $2 \times {}^{22}/_{7} \times r = 44$ $7 \times {}^{44r}/_{7} = 44 \times 7$ $\frac{44r}{44} = \frac{44 \times 7}{44}$ r = 7cm	- Learners should be able to; - Find the radius of a circle when given circumference	- Discussion - Explanation	-	Exercise 19:19 pg375	- Mk Bk7 pg375 new edition	-
			More about circumference (application of circumference)	a) How many revolutions can a wheel of a car 35cm in diameter make in a distance of 4.4ck b) A wire of length 352cm is wound round a tin 400 turns. Find the diameter of the tin.	- Learners should be able to use the circumference in our daily life	- Do	-	Exercise 19:20 pg376 to 377	- Mk Bk7 pg376 – 377 new edition	-
			Area of triangles	Area = ½ x b x h  Find the area of the triangles above.	- Learners should be able to find the area of triangles	- Discussion	- Textbooks	Exercise 19:1 pg351	- Mk Bk7 pg351 new edition	-
		MEASURES	More about area of a triangle	Find the height marked by h.  Find the value of *x* and the area of the above figure	- Learners should be able to find area of triangles given	- Explanation	-	Exercise 19:2 and 19:3 pg352 to 353	- Mk Bk7 pg352-353 new edition	-

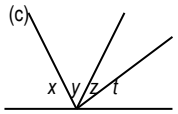
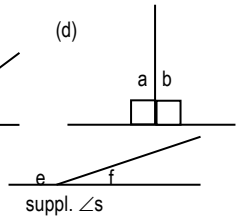
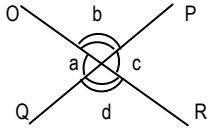
			Area of quadrilaterals	Find the area of the parallelogram given below  	- Learners should be able to find the area of the parallelogram	- Discussion	-	Exercise 19:5 pg355	- Mk Bk7 pg355	-
			Area of a circle	i) Find the area of a circle whose radius is 14cm Area = πr^2 Area = $^{22}/_{7}$ x 14 x 14 = 22 x 2 x 14 = 616cm^2 ii) A circular table cloth has a radius of 20cm. calculate its area	- Learners should be able to find the area of a circle	- Discussion	- Textbooks	Exercise 19:21 and exercise 19:22 pgs 380-381	- Mk Bk7 pg380-1	-
			More about area of a circle	i) Find the area of a circle whose radius is 9cm (leave π asπ) ii) Find the area of a circle whose circumferecne is 44cm	- Learners should be able to find the area of a circle - Find the area of a circle when given the circumference	- Explanation	- Do	Exercise 19:23 and 19:24 pgs381-2	- Mk Bk7 pg381-2	-
			Area of parts of a circle	Formula used: Semi circle = ½ πr^2 ¼ of a circle = ¼ π^2 Sector = $\frac{\theta}{360}\pi r^2$ (Where θ is the angle subtended at the centre) a) Calculate the area of a semicircle whose radius is 10cm (π = 3.14) b) Find the area of a quadrant of a circle with a radius 14cm c) Calculate the area of a sector of a circle of radius 28cm whose centre angle is 60^0	- Learners should be able to; - Find the area of a semi circle - Find the area of a quadrant - Find the area of a sector	- Discussion	- Do	Exercise 19:25 pg384	- Mk Bk7 pg384	-
			Finding area of more shapes	 Find the area of the figure above  Find the area of the shape given	- Learners should be able to find the area of shapes that contain parts of a circle	- Discussion	- Do	Exercise 19:26 pg385	- Mk Bk7 pg385	-
		MEASURES	Area of the shaded part	i) Find the area of the shaded parts in the figures below  	- Learners should be able to find the areas of the shaded parts	- Explanation	- Do	Exercise 19:27 pg386	- Mk Bk7 pg386	-

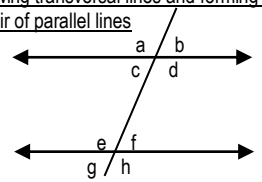
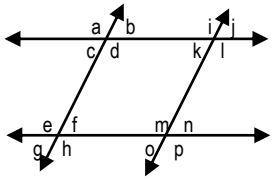
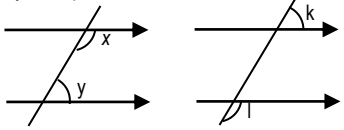
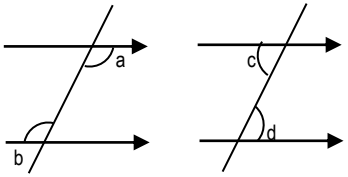
				 						
			Application of area	1. A rectangualr manila card is 49cm by 35cm. circular cards of radius 3½ cm are cut out of the manila card. 	- Learners should be able to calculate questions involving application of area	- Discussion	- Do	Exercise 19:29 pg389	- Mk Bk7 pg389	-
			Finding the radius of a circle when area is given	1) Find the radius of a circle whose are is 616cm^2 πr^2 = Area $^{22}/_7 \times r^2 = 616$ $7 \times {}^{22}/_7 \times r^2 = 616 \times 7$ $\frac{22r^2}{22} = \frac{616 \times 7}{22}$ $r^2 = 28 \times 7$ $\sqrt{r^2} = \sqrt{196}$ r = 14cm	- Learners should be able to find the radius of a circle when given area	- Do	- Do	Exercise 19:31 pg392	- Mk Bk7 pg391 (new edition)	-
			Calculating circumference when area is given	Find the circumference of a circle whose are is 154m^2 $\pi r^2 = 154$ $7 \times {}^{22}/_7 \times r^2 = 154 \times 7$ $\frac{22r^2}{22} = \frac{154 \times 7}{22}$ $r^2 = 28 \times 7$ $\sqrt{r^2} = \sqrt{7 \times 7}$ r = 7cm $C = 2\pi r$ $C = 2 \times {}^{22}/_7 \times 7$ $= 2 \times 22$ C = 44cm	- Learners should be able to find the circumference when given the area of a circle	- Do	- Do	Exercise 19:31 pg392	- Mk Bk7 pg392 (new edition)	-
			Finding the total surface area of cuboids and cubes	i) Find the total surface area of a cuboid whose measurements are 10cm by 5cm by 4cm ii) Find the total surface area of a cube whose side is 8cm	- Learners should be able to find the total surface area of cubes and cuboids	- Explanation	- Chalkboard	Exercise 19:32 and 19:33 pgs 393-4	- Mk Bk7 pg393-4 (new edition)	-
			Total surface area of triangular prism, cylinder, trapezium prism and spheres	Formulas used: Triangular prism = (½ x b x h) + (½ x b x h) + (l x w) + (l x w) + (l x w) Cylinder (closed) = $2\pi r^2 + 2\pi rh$ $= 2\pi r(r + h)$ Cylinder (open) = $\pi r^2 + 2\pi rh$ $= \pi r(r + 2h)$ Trapezium prism = ½ h(a + b) + ½ h a + b) + (l x w) + (l x w) + (l x w) Sphere = $4\pi r^2$	- Learners should be able to calculate the total surface area of a triangular prism - Find the total surface area of cylinders - Total surface area of a trapezium prism - Total surface area of a sphere	- Do	- Do	Exercise 21:1 pg378 Exercise 21:5 pg385 Exercise 21:4 pg384 Exercise 21:7 pg387	- Mk Bk7 pg377 to 388	-
		MEASURES	Volume of cuboids, cubes, triangular prism,	Cuboid = L x W x H Cube = L^3 Triangular prism = ½ bhl Trapezoidal prism = ½ h(a + b) x l Cylinder = $\pi r^2 h$	- Learners should be able to find the volume of cubes, cuboids, all prisms and spheres	- Do	- Do	Exercises on pages 399, 400, 401 (new edition) and pgs 385, 387, 393 and 395	- Mk Bk7 pg389, 393, 395 (old edition) pgs 399, 400, 401, 402, 403 (new	-

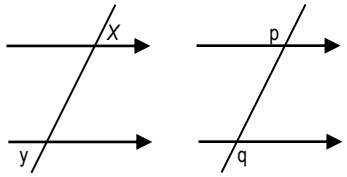
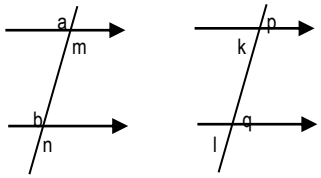
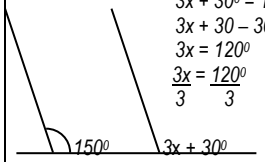
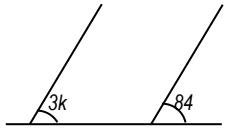
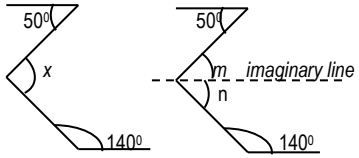
			trapezoidal prism, cylinder and sphere	Sphere = $\frac{4\pi r^3}{3}$				(old edition)	edition)	
			Volume and capacity of cubes, cuboids and cylinders	1 litre = 1000cm³ Capacity of cubes = $\frac{L^3}{1000}$ Cuboid = $\frac{l \times w \times h}{1000}$ Cylinder = $\frac{\pi r^2 h}{1000}$	- Learners should be able to find the capacity of cubes, cuboids and cylinders	- Discussion	- Textbooks	Exercise 20:4 pg402 Exercise 20:7 pg405	- Mk Bk7 pg402 to 405 (new edition)	-
		MEASURES	Volume and capacity	Packing cunes or cuboids in boxes Example  a) How many cubes of 10cm side can be packed in the box. Cubes along the sides Length = $\frac{56}{10}$ = 5 cubes Width = $\frac{42}{10}$ = 4cubes Height = $\frac{60}{10}$ = 6cubes Total = (5 x 4 x 6) cubes = 120 cubes	- Learners should be able to; - Calculate the number of cubes or cuboids which can be packed in a given box - Calculate the space left after packing cubes or cuboids in a given box	- Question and answer - Discussion - Explanation	- Chalkboard illustration	Exercise 20:8 New Mk Mtc Bk7 pg406	-	-
				Packing cylinders in boxes Example How many cylindrical tins of diameter 7cm and height 10cm can be packed into a box measuiring 56cm by 42cm by 60cm. Length = $\frac{56}{7}$ = 8tins Width = $\frac{42}{7}$ = 6tins Height = $\frac{60}{10}$ = 6 layers  	-	-	-	Exercise 20:9 pg407 Mk Mtc Bk7 new edition	-	-
			Time	- Changing seconds to minutes and hours and vice versa Examples Change 3830 seconds to hours 60seconds = 1 min 1 sec = $\frac{1}{60}$ min 3830 sec = $\frac{1}{60}$ x 3830sec = 0063 r 50 60√3830 360 230 180 50 sec = 63min 50seconds	- Learners should be able to; - Change seconds to minutes - Change seconds to hours - Change minutes to hours - Change minutes to seconds - Change hours to minutes - Change hours to seconds	- Question and answer - Discussion - Explanation	- Chalkboard illustrations	Exercise 21:1 pg408	- New Mk Mtc Bk7 pg408	-

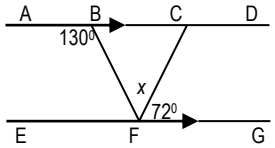
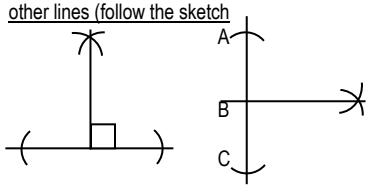
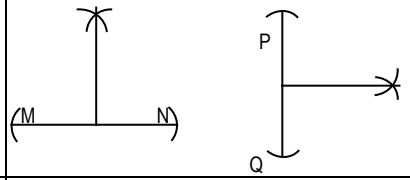
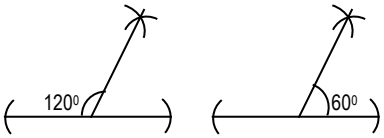
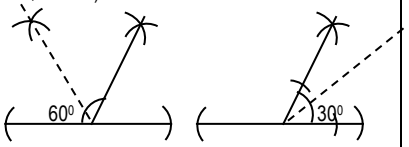
			Time	- Expressing 12 hour time to 24 hour clock time. Example Change 1:00am to 24 hour clock time - Expressing 24 hour clock to 12 hour clock time Example Change 12:00 noon to 12 hour clock	- Express 12 hour clock time to 12 hour clock time and vice versa	-	-	Exercise 21:3 pg412 Exercise 21:4 pg 413	-	-
				Finding duration Example A plan left Entebbe at 13:00hrs and arrived in Cairo at 17:30hrs. how long did the flight take?	- Find the duration of time between given hours	- Question and answer - Discussion - Explanation	- Chalkboard illustrations	Exercise 21:5 pg414	- New Mk Bk7 pg414 to 420 (new edition)	-
				School time tables (sample time tables displayed)	- Calculate the time spend to conduct a lesson on the sample time table	- Do	- School time tables	Exercise 21:6 pg415	- Do	-
				Taxi and bus time tables	- Calculate how long a taxi will take to move from one place to another	- Do	- Chart showing taxi-bus time tables	Exercise 21:7 pg416	- Do	-
				Train time tables	- Study the given train time tables and answer questions about it	- Do	- Chart showing train time table	Exercise 21:8 pg419 (new edition)	- Do	-
				Marine time tables	- Study the marine time tables given and answer questions that follow	- Do	- Chart showing marine time tables	Exercise 21:9 pg420	- Do	-
				Air time tables	- Study the given air time tables and answer questions about it in full	- Do	- Chalk board illustrations	Exercise 12:10 pg421 (New Mk Mtc new edition)	- New Mk Mtc Bk7 pg 421 to 423	-
				Radio programmes	- Study given of radio programmes and answer questions that follow	- Do	- Do	Exercise 21:11 pg422	- Do	-
				Television programme line up	- Study given tables of television	- Do	- Do	Exercise 21:12 pg423	- Do	-
				Changing km/hr to m/sec and vice versa	- Change km/hr to m/sec - Change m/sec to km/hr	- Do	- Do	Unit test 13 pg331 (old edition)	- Mk Mtc B7 pg331 (old edition)	-
		GEOMETRY	Naming geometrical shapes	Identify solids - Cubes, shapes, cylinders, triangular Prisms - Name shapes, their faces, edges and corners. - Properties of shapes. - Simple lines of symmetry	Learners should be able to; - Name geometrical shapes. - Draw geometrical shapes. - Identify number faces, edges and corners of shapes. - Find simple lines of symmetry of letters / shapes.	- Spherical balls - Straws and threads. - Manilla paper	-		- A new MK 2000 primary MTC BK four and Five	-
			Drawing circles and Regular polygon (hexagon)	- Rotation and revolutions. - Angles (Acute, obtuse, Reflex , Right angle)	Learners should be able to:- - Draw circles of different radii. - Draw and name different types of angles. -	- Match sticks - Bicycle wheel - Mathematical instrument sets.	-		-	-
			Measuring lines and constructing lines	1) Use rulers and pairs of dividers to measure lengths of straight lines 2) Use threads and rulers to measure lengths of curves and zig zagged lines. 3) Constucting lines - Perpendicular lines, rays, segments - Bisecting lines - Parallel lines Use a ruler and a set square Use a ruler only 4) Naming rays AB 	- Learners should be able to; - Measure lines accurately using rulers and dividers - Measure lines using threads and rulers correctly - Construct parallel and perpendicular lines accurately - Bisect lines correctly/ accurately - Construct parallel lines accurately	- Explanation - Discussion - Question and answer - Discovery	- Wall chart showing lines e.g. rays, line segments, curves, parallel lines and ways of constructing them	Measuring lines Constructing perpendicular Bisecting and parallel lines	- New Mk Primary Mtc new edition pupils bk7 pg 196-8	-

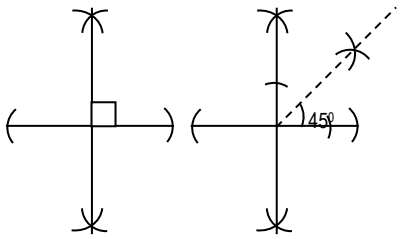
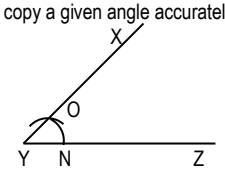
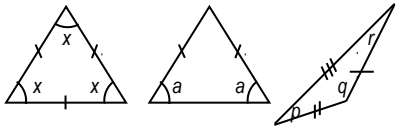
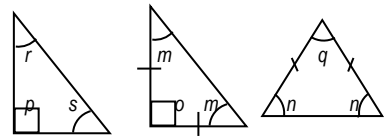
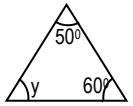
				and its description or characteristics 5) Naming line segments $\overline{AB}$  and their description or characteristics						
			Angles	Types of angles i) Meaning and formation of an angle ii) Types of angles and angles e.g. ∠AOB - Acute angle (betweeb 0^0 and 90^0) or an angle greater than zero degrees but less than 90^0 i.e. 0^0 ∠ Acute ∠90^0. - Right angle (90^0 angle) - Obtuse angle (90^0 ∠ Obtuse ∠ 180^0) - Reflex angle (180^0 ∠ Reflex ∠ 360^0) - Straight line angle Examples Acute Obtuse Reflex Straight 20^0 98^0 210^0 180^0 80^0 120^0 320^0 75^0 150^0 350^0	- Learners should be able to write a brief description of each type of angle (characteristics) - Draw acute, obtuse and reflex angles (sketch them)	- Do	- Wall chart showing acute, obtuse and reflex angles with their characteristics	Exercise 11:3 and 11:4 pg 200-1 Describing acute, obtuse and reflex angles Drawing angles or sketch of acute, obtuse and reflex angles	- New Mk primary Mtc New edition Bk7 pupils' copy pg199 to 201	-
			Angles	Complementary angles Angles that add up to 90^0 Examples 1) What is the complement of 30^0 Let the complement be x $x + 30^0 = 90^0$ $x + 30^0 – 30^0 = 90^0 – 30^0$ $x = 60^0$ 2) What is the complement of $(x + 40)^0$ $90^0 - (x + 40)^0$ is the complement of $x + 40^0$ So $90^0 - (x + 40)^0 = 90^0 – x – 40^0$ $90 – 40 – x = (50 - x)^0$ 3) What angle is ½ of its complement. Let the angle be represented by y y is ½ of (90 – y) y = ½ (90 – y) $2 \times y = \frac{90 – y}{2} \times 2$ 2y = 90 – y = 2y + y = 90 – y + y 3y = 90 $\frac{3y}{3} = \frac{90}{3}$ y = 30^0 The angle is 30^0 Illustration  	- Learners should be able to: - Describe what complementary angles are - Calculate the compliments of given angles - Draw and show diagrams of complimentary angles of given angles	- Explanation - Discussion - Question and answer - Discovery	- Wall chart showing diagrams of complimentary angles	Exercise 11:5 pg202 to 203 new Mk primary Mtc pupils Bk7	- New Mk pupils Bk7 new edition pg 202 to 203	-
		GEOMETRY	Angles	Supplimentary angles Angles that add up to 180^0 Examples (a)  suppl. ∠s (b)  suppl. ∠s	- Learners should be able to; - Identify supplementary angles on given on given diagrams - Find the values of the unknown supplementary angles through calculations	- Explanation - Discussion - Question and answer - Discovery	- Chalkboard illustrations - Wall chart showing diagrams of supplementary angles	Exercise 11:6 pg204 new edition	- A new Mk new edition Primary Mtc pupils Bk 7 pg204/5	-

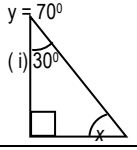
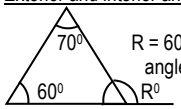
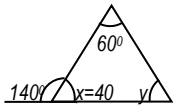
				(c)  suppl. ∠s (d)  suppl. ∠s Calculations Example 1 In (a) above, if $x = 60^0$ what is the value of y? $X + y = 180^0$ (supplimentary angles) $60^0 + y = 180^0$ $y + 60^0 - 60^0 = 180^0 - 60^0$ $y = 120^0$ Example 2 What angle of ¼ of its suppliment? $x = \frac{1}{4}(90 - x)$ $x = \frac{1}{4} \times 90 - \frac{1}{4}x$ $4 \times x = \frac{90 - x}{4} \times 4$ $4x = 90 - x$ $x + 4x = 90$ $\frac{5x}{5} = \frac{90}{5}$ $x = 18^0$ Example 3 What angle is 5 times its supplement? Let the ∠ be y $y = 5(90 - y)$ $y = (90 - y)$ $y = \frac{90 - y}{5}$ $5 \times y = \frac{90 - y}{5} \times 5$ $5y = 90 - y$ $y + 5y = 90$ $\frac{6y}{6} = \frac{90}{6}$ $y = 15^0$						
			Vertically opposite angles	Verticallu opposite angles Illustration  ∠a = ∠c (reason- vertically opposite ∠s) ∠b = ∠d (vertically opposite ∠s) *Calculations*: If $b = 120^0$ find the value of d $d = b = 120^0$ (vertically opposite angles) $\therefore d = 120^0$	- Learners should be able to; - Identify vertically opposite angles on given diagrams/ figures - Find the values of various vertically opposite angles	- Explanation - Discussion - Discovery - Question and answer	- Wall chart showing diagrams of vertically opposite angles	Exercise 11:7 pg206 new Mk Primary Mtc new edition	- A new Mk Primary Mtc new edition pupils Bk7 pg206-211	-

			Properties of angles on parallel lines	<u>Drawing transversal lines and forming angles on a pair of parallel lines</u>  <u>Intersecting pairs of parallel lines</u>  a and b (suppl ∠s) a and d (vertically opp ∠s) a and e (corresp ∠s) d and h (corresp ∠s) d and l (corresp ∠s) c and k (corresp ∠s) c and f (alter ∠s) d and e (alter ∠s) b and k (alter ∠s) d and l (alter ∠s) b and f (co-interior ∠s) l and o, e and n, a and j (co-exterior ∠s)	- Learners should be able to; - Draw transversal lines on pairs of parallel lines - Draw two intersecting pairs of parallel lines - Name angles formed by transversal lines - Identify the relationships of the angles formed	- Do	- Wall chart showing angles on parallel lines	Learners draw and write the transversals and intersecting parallel lines with the angle relationships correctly in their activity books	- Do	-
			Properties of angles on parallel lines	<u>Co-interior and co-exterior angles</u> They add up to 180^0  Co-interior angles co-exterior angles If x is 110^0, y = ? If k = 780^0, l = ? $x + y = 180^0$ (co-int ∠s) $k + l = 180^0$ (co-ext∠s) $110^0 + y = 180^0$ $l + 78^0 = 180^0$ $y^0 + 110^0 - 110^0 = 180^0 - 110^0$ $l + 78^0 - 780^0 = 180^0 - 78^0$ $y^0 = 70^0$ $l = 102^0$	- Learners should be able to - Identify co-interior and co-exterior angles on given diagrams or figures - Calculate for the unknown co-interior/exterior angles	- Explanation - Discussion - Question and answer - Discovery	- Wall chart showing co-interior and co-exterior angles in diagram form	Exercise 11:8 pg208 new Mk new edition primary Mtc Bk7	- New Mk Primary Mtc new edition Bk7 pg207 to 208 and 209/10	-
				<u>Alternate interior angles and alternate exterior angles</u> The alternate angles are always equal to each other <u>Alternate interiro angles</u>  if a = 120^0 b is also 120^0 If c = 60^0, d is also 60^0	- Identify alternate exterior angles and interior angles correctly - Find values of unknown exterior or interior alternate angles accurately	- Do	- Wall chart showing exterior and interior alternate angles	Exercise 11:9 pg210	- Do	-

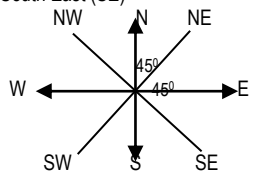
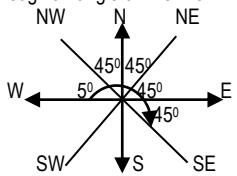
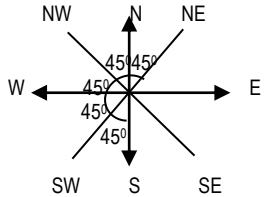
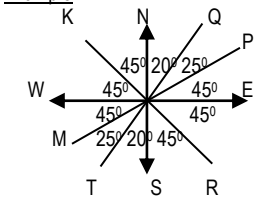
				Alternate exeterior angles  						
			Corresponding angles	Corresponding angles on parallel lines  a = b (corresp. ∠s) k = l (corresp. ∠s) m = n (corresp. ∠s) p = q (corresp. ∠s) if a = 120^0 b = 120^0 if k = 60^0 l = 60^0 if m = 120^0 n = 120^0 if p = 60^0 q = 60^0 calculations find *x*  $3x + 30^0 = 150^0$ (corresp ∠s) $3x + 30 – 30 = 150^0 - 30^0$ $3x = 120^0$ $\frac{3x}{3} = \frac{120^0}{3}$ $x = 40$  *Find k* $3k = 84^0$ (corresp. ∠s) $\frac{3k}{3} = \frac{84}{3}$ $k = 28^0$	- Learners should be able to; - Identify corresponding angles on diagrams given - Find the values of unknown angles using knowledge of corresponding angles	- Discussion - Explanation - Question and answer - Discovery	- Chalk board illustrations - Wall chart showing corresponding angles in diagram from and some calculations for the unknown values	Exercise 11:10 pg212 New Mk Primary Mtc new edition pupils Bk7	- A new Mk Primary Mtc Pupils Bk7 new edition pg 211-212	-
			Angles on parallel lines	More about angles and parallel lines Examples a) Find the value of *x*  	- Learners should be able to - Use the knowledge from angle properties to solve for unknown values accurately	- Do	- Chalk board illustrations - Wall charts showing various calculations for unknown values	New Mk primary Mtc exercise 11:11 pg213 new edition pupils Bk7 New Mk primary Mtc exercise 11:12 pg216	- New Mk primary Mtc new edition pg213 to 217/8	-

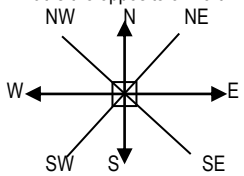
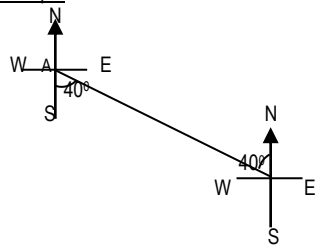
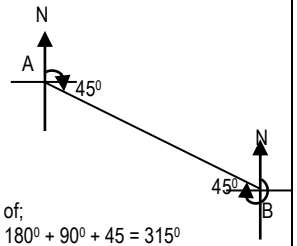
				draw imaginary lines and remane the angles m = 50^0 (alternate angles) n + 140^0 = 180^0 (co-interior angles) n + 140^0 – 140^0 = 180^0 – 140^0 n = 40^0  ∠BFG = ∠ABF (alternate inter. ∠s) $X + 72^0 = 130^0$ $X + 72^0 – 72^0 = 130^0 – 72^0$ $X = 58^0$ Do examples on pg215 together with pupils						
			Constructing of perpendiculars and bisectors of lines	<u>Dropping and constructing perpendicular lines to other lines (follow the sketch</u>  Constructing/bisecting a line  	- Learners should be able to use mathematical instruments correctly to construct perpendicular lines and bisectors of lines accurately	- Do	- Wall charts showing well constructed perpendicular lines and bisectors	Exercise 11:13 pg218 Exercise 11:15 pg 222	- do	-
			Construction of angles using mathematical instruments	1) Construction of angles of 60^0, 120^0  2) Construction of 30^0, 45^0 etc (bisect angles of 60^0, 45^0 etc)  	- Learners should be able to use mathematical instruments accurately to construct angles of 60^0, 120^0, 90^0, 30^0, 15^0, 45^0, $22½^0$ - Learners should be able to bisect given angles accurately - Draw angles using a protractor	- Explanation - Discussion - Question and answer - Discovery - Illustration	- Wall charts showing accurately constructed angles and mode of copying an angle i.e. steps	Exercise 11:16 New Mk primary Mtc New edition pupils Bk7 pg223	- New Mk Primary Mtc new edition pupils Bk7 pg223 to 225/6	-

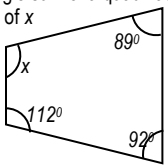
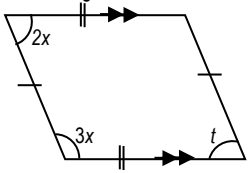
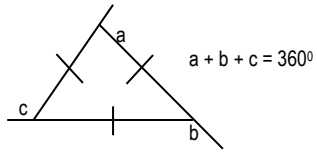
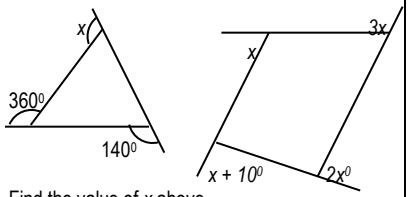
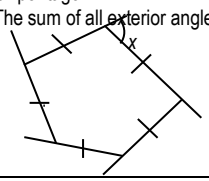
				Bisecting ∠ 120^0 Bisecting ∠ 60^0  Constructing 90^0 Bisecting angle 90^0 3) Drawing angles using a protractor 4) Bisecting angles drawn (by using a protractor) 5) Measuring angles using a protractor						
			Copying a given angle	Use pairs of compasses, rulers and pencils to copy a given angle accurately  i) Draw a line YZ ii) Place compass pointer at Y and make arc at N iii) Change compasses and make arc at O iv) Join intersection at O from Y to X	-	- Do	- Do	Exercise 11:17 pg225 Exercise 11:18 pg226	-	-
			Angles of a triangle	<u>Types of triangles and their angle properties</u> <u>Equilateral</u> <u>Isosceles</u> <u>Scalene</u>  All angles equal Base ∠s equal P ≠q ≠ r <u>Right angled (scalene)</u> <u>Isosceles right ∠s</u>  s ≠ r and p = 90^0 O = 90^0 q = 90^0 m = m = 45^0 n = n = 45^0 angle sum of a triangle is 180^0 <u>Examples</u>  y + 50^0 + 60^0 = 180^0 (angle sum of triangle) y + 110^0 – 180^0	- Learners should be able to - Identify the different sizes of angles of a triangle (interior) - Draw and show the interior angles of triangles - Calculate accurately to find the unknown values of angles	- Explanation - Discussion - Question and answer - Discovery	- Wall charts showing types of triangles and their angle properties	Exercise 12:1 and 12:2 pg230 New Mk primary Mtc 12:5 pg235	- New Mk primary Mtc pupils Bk 7 new edition pg230 to 234/5/6	-

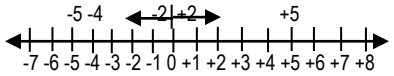
				$y + 110^0 - 110^0 = 180^0 - 110^0$ $y = 70^0$ (i)  $x + 30^0 + 90^0 = 180^0$ $x + 120^0 - 120^0 = 180^0 - 120^0$ $x = 60^0$						
				Exterior and interior angles of a triangle  $R = 60^0 + 70^0$ (2 interior opposite angles = 1 exterior opposite angle)  $x + 140^0 = 180^0$ (suppl) $x + 140^0 - 140^0 = 180^0 - 140^0$ $x = 40^0$ $y + 60^0 = 140^0$ (2 interior angles = 1 opposite exterior angle) $y + 60^0 - 60^0 = 140^0 - 60^0$ $y = 80^0$	- Outline the comparisons between exterior and interior angles of triangles	- Do	- Do	Exercise 12:3 and 12:4 pg 234 Exercise 12:6 pg 236	- do	-
			Construction	**Triangles** (i) Construction of triangles of given sided (SSS) Example Construct an equilateral triangle PQR of side 3cm Step 1 Sketch an equilateral triangle (SSS) PQ = 3cm, PR = 3cm, QR = cm All sides are equal Step 2 Draw a base line of any length and mark point P Adjust your compass to 3cm and mark point Q Step 3 Place the compass needle alternatively at point P and Q to strike point R Step 4 Join point PQR to form a triangle (ii) Construction of traiangles given side, angle, side (SAS) Example Draw a triangle XYZ where XY = 7cm, X = 60^0, XZ = 5.5cm. Measure angle Z Step I: Sketch in the order (SAS)	- Learners should be able to - Construct triangles of given sides (SSS) - Construct triangles of given sides, angle, side (SAS)	- Question and answer - Discussion - Explanation	- Chalkboard illustrations - Chalkboard instruments	Exercise 11:38 (new edition)pg 262 Exercise 13:2 pg 263	- New Mk Mtc Bk7 pg261 to 263	-
				(iii) Construcing a triangle given side, angle, angle (SAA) Examples Construct a triangle ABC where AB = 8cm, angle A = 90^0, and angle C = 60^0 Step 1: Sketch the ∆ABC Step 2: Construct AB from 8cm Step 3: Construct 90^0 at A Step 4: Construct 30^0 at B	- Learners should be able to construct a triangle given side, angle, angle (SAA)	- Question and answer - Discussion - Explanation	- Chalkboard illustrations	Exercise 13:3 (new edition) pg 264	- New Mk Mtc Bk7 pg264	-

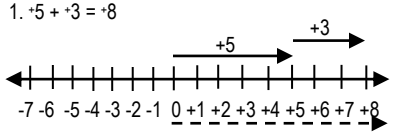
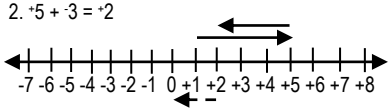
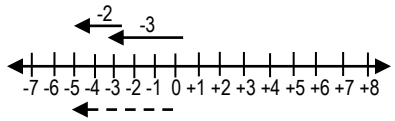
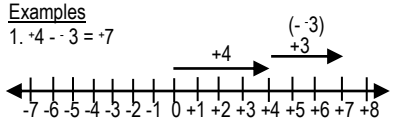
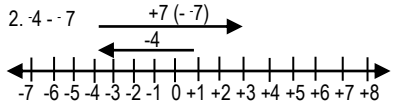
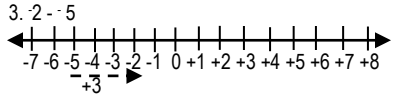
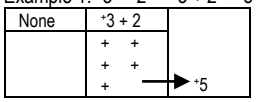
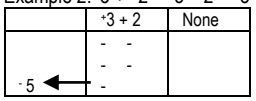
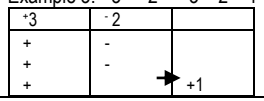
				Step 5: Join B to C to form angle C Measure BC						
				Inscribing a triangle Bisect angles The bisectors meet at O Using O, draw a circle touching all the three sides of the triangle	- Inscribe a given triangle	- Do	- Do	Exercise 13:11 (new Mk) pg279	- Mk Mtc Bk7 page 279	-
			Construction	Circumscribing a triangle (bisect two of the sides)	- Learners should be able to construct triangles and circumscribe them	- Question and answer - Discussion - Explanation	- Chalkboard illustrations	Exercise 13:9 (old edition) pg215	- New Mk Mtc Bk7	-
				Construction of squares Example Constuct a square ABCD with side = 3cm Step 1: Draw a sketch Step 2: Draw line AB = 3m Step 3: Construct an angle of 90^0 at both points A and B Step 4: Measure 3cm and mark off AD = 3cm, and BC = 3cm, then join C to D	- Learners should be able to construct squares using a pair of compasses and a ruler			Exercise 13:5 new edition pg267		-
				Construction of a rhombus Example Construct a rhombus ABCD of sides 5cm with diagonal AC = 8cm and BD = 6cm Step 1: Sketch the rhombus Step 2: Draw line AB = 5cm Step 3: Adjust the compasses to 4cm and later to 3cm respectively, mark the centre Q Step 4: Adjust the compasses to mark AC = 8cm and BD = 6cm the diagonals Step 5: Finally join the sides to form a rhombus	- Construct rhombuses of given sides and diagonals					-
				Construction of a parallelogram Example Construct a parallelogram PQRS whose longer side QR = 7cm, ange Q = 60^0, and the shorter side PQ = 4cm. Measure the diagonals	- Learners should be able to construct parallelograms of given length and diagonals	- Do	- Do	Exercise 13:6 on pg 270 (new edition)	- New Mk Mtc Bk7 pg268-70	-
				Construction of a regular pentagon Example Construct a regular pentagon of sides = 3cm Step 1: Sketch the pentagon showing sides and interior angles Step 2: Calculate the interior and exterior angles Step 3: Draw the bottom side and construct the two angles on it Step 4: Use a pair of compasses and a ruler to complete the five sides and angles	- Learners should be able to construct a regular pentagon of a given side e.g. 3cm	- Do	- Do	Exercise 13:7 on pg273	- Do	-
			Construction	Constructing a regular hexagon Example Construct a regular hexagon of side or radius 3cm Step 1: Use the same length of the radius to mark 6 arcs around the circle Step 2: Use a ruler to draw the sides	- Learners should be able to construct a regular hexagon	- Question and answer - Discussion - Explanation	- Chalkboard illustrations - Chalkboard instruments - Mathematical sets	Exercise 13:7 pg273 (new edition)	- New Mk Bk7 pg273 to 286	-
				Constructing a regular octagon of radius 2.5cm Step 1: Sketch the octagon Step 2: Draw a line OA of 4cm Step 3: Use the radius OA and construct a circle Step 4: Then mark off the same equal distance	- Construct a regular octagon of a given radius	- Do	- Do	Exercise 13:8 Mk Mtc new edition pg274	- Do	-

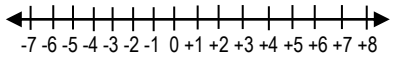
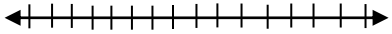
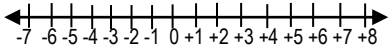
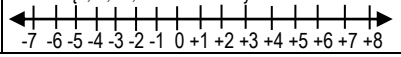
				along the circle Step 5: Join the arcs with straight lines to form the sides of the octagon						
			Bearing and scale drawing	<u>Rotation/revolution</u> <u>Example</u> How many degrees are in $^2/_3$ of a revolution? 1 revolution = 360^0 $^2/_3$ revolutions = $^2/_3$ x 360 = 240^0	- Define a revolution - Calculate the angle covered in a given revolution	- Do	- Do	Exercise 15:1 pg 286 (new edition)	- Do	-
				<u>Angles between the compass direction</u> <u>Example</u> What is the smaller angle between North (N) and South East (SE)  Each sector = 45^0 Smaller angle = $45^0 + 45^0 + 45^0 = 135^0$:. Angle btn N and SE = 135^0	- Learners should be able to; - Find the angle between given directions	- Do	- Do	Exercise 15:2 pg287 (new edition)	- New Mk Mtc new edition Bk7 pg 287 to 88	-
				<u>Clockwise and anticlockwise directions</u> <u>Example</u> In which direction will I face if I turned clockwise through an angle of 225^0 from West?  You will face South East (SE)	- Find the angle turned in clockwise or anti clockwise from a given direction	- Do	- Do	Exercise 15:3 pg 288 (new edition)	- Do	-
				<u>Compass diretion</u> <u>Example</u> What angle will I make if I turned clockwise from South to North East?  Angle turned = 45 + 45 + 45 + 45 + 45 = 225^0	- Learners should be able to; - Calculate the angle made after turning from a given direction	- Do	- Do	Exercise 15:4 pg 289 (new edition)	- New Mk Mtc Bk7 pg 289 to 290	-
				<u>Ordinary bearing</u> <u>Example</u>  	- Find the direction of one point from another	- Question and answer - Discussion - Explanation - Demonstration	- Chalkboard instruments - Mathematical sets	Exercise 15:5 pg 290 new edition Exercise 15:6 pg 292	- New Mk Mtc Bk7 pg 289 to 290	-

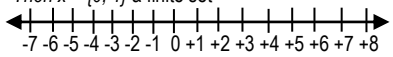
				(i) direction of Q from O = 25^0 (ii) P from O = $20^0 + 25^0 = 45^0$:. Direction is 45^0E of N						
				<u>Opposite directions</u> (the North-South rotation) <u>Example</u> What is the opposite of North  <u>Example</u>  The direction of A from B is N40^0W and the direction of B from A is S40^0E	- Learners should be able to find the opposite of a given direction	- Do	- Do	Exercise 15:7 pg 294 new edition	- New Mk Mtc Bk7 pg 293 -	-
				<u>True bearing</u> (measured from North in a clockwise direction only) <u>Example</u>  The bearing of; a) A from B = $180^0 + 90^0 + 45 = 315^0$ b) The bearing of B from A = $90^0 + 45^0 = 135^0$	- Calculate the bearing of a point from another	- Do	- Do	Exercise 15:8 pg 295 new edition	- Do	-
				<u>Opposite bearing</u> <u>Example:</u> The bearing of T from R is 050^0. What is the bearing of R from T? <u>Solution:</u> Given bearing = 050^0 Opposite bearing = $(05^0 + 180^0) = 230^0$ <u>Note:</u> When the given bearing is less than 180^0, its oppostie bearing is 180^0 plus the given bearing.	- Learners should be able to work out the opposite bearing of a given point from another	- Question and answer - Discussion - Mathematical instruments	- Chalkboard illustrations - Chalkboard instruments - Mathematical instruments	Exercise 15:11 pg 299 (new edition)	- New Mk Mtc Bk7 pg 298	-
				<u>Scale drawing</u> <u>Example</u> If 1cm = 10km. Find the actual distance represented by 8cm. = (8 x 10)km = 80km	- Use given scales to represent different distances on the map, diagrams and vice versa - Use given scales to construct accurate diagrams	- Question and answer - Discussion - Mathematical instruments	- Chalkboard illustrations - Chalkboard instruments - Mathematical instruments	Exercise 15:13 pg300 new edition Exercise 15:15 pg 304	- New Mk Mtc Bk7 pg 298	-
			Properties of quadrilaterals	<u>Properties of quadrilaterals</u> e.g Square, parallelogram, rhombus, kite, trapezium,	- Learners should be able to give properties of	- Discussion	-		- Mk book old edition pg 232	-

				Rectangle	quadrilaterals					
			Angles of quadrilaterals	The interior angle sum of a quadrilateral is 360^0 Find the value of *x*  	- Children should be able to find the missing angles of quadrilaterals	- Do	- Do	Exercise 13:14 pg 233	- Mk Bk7 pg 233 old edition	-
			Square and rectangle, rhombus and parallelogram	In a square the diagonals bisect each other and bisect the angles  (i) calculate the value of *x* (ii) What is the value of angle t?	- Learners should be able to find the missing angles of rectangles, rhombus and parallelogram	-	-	Exercise 13:15 pg 234	- Mk Bk7 pg 234	-
			Properties of regular polygons	Polygons are simple closed figures joined by line segments at their vertices - Number of centre or interior or exterior angle is equal to number of sides - Size of centre angle is equal to size of exterior angle in regular polygons - Interior angle plus exterior angle add up to 180^0 (interior angle and exterior angle form a straight line angle) Names of polygons from 3 sides to 12 sides	- Learners should be able to give/write properties of regular polygons - Write the names of different polygons up to 12 sides	- Question and answer - Discussion	-	Writing properties of polygons	- Mk Mtc Bk7 pg 242 (new edition) - Pg 235 old edition	-
			Exterior angles of regular polygons	All exterior angles of a regular polygon add up to 360^0  $a + b + c = 360^0$  Find the value of *x* above	- Learners should be able to find the value of the unknown in any given polygon	-	-	Exercise 12:19 pg 244	- Mtc Mk Bk7 pg 243 to 244 (new edition)	-
			Finding the centre angles or exterior angles	In regular polygons, centre angles are equal to exterior angles - Calculate the size of each exterior angle of a regular pentagon **NB**: The sum of all exterior angles = 360^0  	- Learners should be able to find the centre angle and exterior angles	-	-	Exercise 12:10 pg 245	- Mk Mtc Bk7 pg 245 (new edition)	-

				Number of sides = 5 Each exterior angle = $\frac{360}{5} = 72^0$						
			Calculating the number of sides of a polygon	i. Calculate the number of sides of a regular polygon whose exterior angle is 20^0 ii. The exterior angle of a regular polygon is 60^0. Find the number of sides.	- Learners should be able to find the number of sides of a polygon	-	-	Exercise 12:11 pg 246	- MK Mtc Bk7 pg 246 new edition	-
			Interior angle sum of polygons	1. Calculate the interior angle sum of a regular polygon whose number of sides is 7. Method I: $(n - 2)180^0$; $(7 - 2)180$; 5×180; 900^0 Method II: $(2n - 4)\ 90^0$; $(2 \times 7 - 4)\ 90$; $(14 - 4)\ 90$; $10 \times 90 = 900^0$	- Learners should be able to calculate the interior angle sum of a polygon	-	-	Exercise 12:15 pg 252	- Mk Mtc Bk7 pg 252 to 255 new edition	-
			Word problems involving angle sum of polygon	The sum of interior angles of a regular polygon is 1440^0 a) How many sides has the polygon? $180 (n - 2)$ = Interior angle sum $180 (n - 2) = 1440^0$ $180n - 360^0 = 1440^0$ $180n - 360^0 + 360^0 = 1440^0 + 360^0$ $\frac{180n}{180} = \frac{1800}{180}$ n = 10 sides b) What is the size of each exterior angle of the polygon? Each exterior angle = $\frac{360^0}{\text{No. of sides}}$ $= \frac{360}{10} = 36^0$	- Learners should be able to; - Find the number of sides of a polygon given the interior angle sum - Find the size of each exterior angle of a polygon given the interior angle sum	-	-	Exercise 12:18 pg 257	- Mk Mtc Bk7 pg 256 to 257 new edition	-
		INTEGERS	Order of integes	Opposites/inverses/additive inverses Rule: An integer plus ints inverse equals to zero. Example 1 $^{-}2 + 2 = 0$:. The opposite of $^{-}2$ is +2 and vice versa Example 2 What is the additive inverse of +8? Solution: Let the inverse be *x* $+ 8 + x = 0$ $x + 8 - 8 = 0 - 8$ $x = {}^{-}8$ Ans Order of integers The number line  (i) All integers to the left of zero are -ve (ii) All integers to the right of zero are +ve (iii) Any integer is less than that on its right (iv) Any integer is more than that or greater than that on its left Example +2 = +2, +2 > -2, or -2 < +2 Any positive integer is greater than a –ve integer *Ascending order* e.g. -3, +2, -1, 0, +6	- Learners should be able to - Tell the additive inverses of different integers - Compare integers in terms of greater than and less than or equal to, accurately - Arrange integers correctly in ascending and descending order - Show integers on a number line using arrows accurately - List or write integers shown on a number line accurately	- Discussion - Explanation - Question and answer - Discovery	- Chalkboard illustrations	Exercise 1 pg 307 new Mk Primary Mtc new edition	- A new Mk new edition pg 307 - Mk 2000 Primary Mtc pg 348	-

				Descending order is +6, +2, 0, -1, -3						
			Addition of integers on number lines and without number lines	<u>Addition of integers using a number line</u> <u>Examples</u> 1. $^{+}5 + {}^{+}3 = {}^{+}8$  2. $^{+}5 + {}^{-}3 = {}^{+}2$  3. $^{-}3 + {}^{-}2 = {}^{-}5$  4. $^{+}5 + {}^{-}2 = {}^{+}3$ 5. $^{-}2 + {}^{-}4 = {}^{-}6$	- Learners should be able to use the number line accurately to add; - Positive to positive integers - Positive to negative integers and vice versa - Negative to negative integers Add integers without using number lines correctly	- Discussion - Explanation - Question and answer - Discovery - Illustration	- Chalkboard illustrations	Exercise 16:1 pg 311 new Mk new edition	- A new Mk new edition pupils bk7 pg 309 to 315	-
			Subtraction of integers using number lines and letters and without number lines	<u>Subtraction of integers using a number line</u> <u>Examples</u> 1. $^{+}4 - {}^{-}3 = {}^{+}7$  2. $^{-}4 - {}^{-}7$  3. $^{-}2 - {}^{-}5$  	- use the number line accurately to subtract integers - use letters to name integers and subtract them - subtract integers without number lines	- do	- do	Exercise 16:2 pg 315 Exercise 16:3 pg 317	- new Mk new edition primary Mtc Bk7 pg 317	-
			Subtraction of integers using mind maps	<u>Using mind maps and without them</u> Example 1: $^{+}3 - {}^{-}2 = {}^{+}3 + 2 = {}^{+}5$  Example 2: $^{-}3 + {}^{-}2 = {}^{-}3 – 2 = {}^{-}5$  Example 3: $^{+}3 - {}^{+}2 = {}^{+}3 – 2 = 1$  	- Learners should be able to use minde maps or mind tables to subtract integers correctly - Subtract integers without number lines and without mind tables correectly i.e (use paired signs)	- Discussion - Explanation - Discovery - Question and answer	- Chalkboard illustrations	Exercise 16:4 pg 317 Exercise 16:5 pg 318 Exercise 16:6 pg 318	- A new Mk primary Mtc pupils Bk7 page 317 to 321	-
			Division and multiplication	Rules used in multiplication of integers/ division of integers	- Multiply integers and divide integers accurately in	- Question and answer	- Wall chart showing rules	Exercise 16:7 pg 319	- A new Mk primary Mtc	-

			of integers	Multiplication +ve x –ve = -ve -ve x –ve = +ve +ve x +ve = +ve -ve x +ve = -ve Examples +4 x -3 = -12 -4 x -3 = +12 +4 x +3 = +12 +4 x +3 = -12 Division +ve ÷ -ve = -ve -ve ÷ -ve = +ve +ve ÷ +ve = +ve +ve ÷ +ve = -ve Examples +6 ÷ -3 = -2 -6 ÷ -3 = +2 +6 ÷ +3 = +12 -6 ÷ +3 = -12	Positives by negatives Negatives by positives Positives by positives Negatives by positives	- Discovery	followed in multiplication and division on integers	Exercises 16:8 pg320 16:9 pg321 16:10pg321	pupils Bk7 page 317 to 321	
			Application of integers	Word problems involving integers Example 1 Mukasa arrived at school 10 minutes before time. Lessons started 15 minutes late. Did Mukasa wait before the lesson started? Solution 10 minutes before is -10 15 minutes late is +15 Hence duration is late – before which is +15 - - 10 = 15 + 10 = 25 Example 2 Kamya had a dept of 500/= from each of his 3 friends. He received 1000/= from his mother. Find his financial position. Total debt = 3 x 500/= = 1500/= which is -1500/= After paymnet he remained with; 1000 + -1500/= = -1500 + 1000/= = 1000 – 1500/= = 500/= (debt)	- Learners should be able to work out word problems using the knowledge of integers correctly	- Discussion - Discovery - Explanation - Question and answer	- Chalkboard illustrations	Exercise 16:11 pg 232 new Mk primary Mtc new edition Bk7	- A new Mk primary Mtc pupils Bk7 pg322 to 325	-
			Solution sets	Making collections of all possible values in different inequalities e.g. (i) $x > -6$ $x = \{-5, -4, -3……\}$ *(an infinite set)* (ii) $-2 < y < 6$ $y = \{-1, 0, 1, 2, 3, 4, 5\}$ *(a finite set)* *representation on a number line*   	- Learners should write solution sets for different inequalities correctly - Pupils represent finite and infinite sets	- Do	- Do	Exercise 16:12 and 16:13 pg 326 new Mk primary Mtc Bk7	- Do pg 326	-
				Solving inequalities and writing their solution sets Examples 1) $3x > 9$ $\frac{3x}{3} > \frac{9}{3}$ $x > 3$ *an infinite set* *So* $x > 3$: $x = \{4, 5, 6……\}$  2) $2x + 4 < 8 = 2x + 4 – 4 < 8 – 4 = 2x < 4$ $\frac{2x}{2} < \frac{4}{2} = x < 2$ *So* $x = \{1, 0, -1, -2……\}$  	- Learners should be able to solve inequalities to their lowers terms correctly - Write solution sets for inequalities correctly - Write or represent solution sets on number lines - Write solution sets shown by number lines	- Discussion - Explanation - Discovery - Question and answer	- Chalkboard illustrations - Wall chart showing solution sets represented on a number line	Exercise 22:26 New Mk primary Mtc new edition pg 445 Exercise 22:27 pg 446 Exercise 22:28 Exercise 22:29 Exercise 22:30 Exercise 22:31	- New edition new Mk primary Mtc Bk7 pg 445 to 449	-

				3) $4 > 2x > -2$ $= \frac{4}{2} > \frac{2x}{2} > \frac{-2}{2}$ $= 2 > x > -1$ *Then x = {0, 1}* a finite set  -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 4) $\frac{2x}{2} \leq \frac{8}{2}$ $x \leq 4$ $x = \{4, 3, 2 \ldots\ldots\ldots\}$ 5) $\frac{2x}{3} + 3 \geq 5$ $= 3 \times \frac{2x}{3} + 3 \times 3 \geq 5 \times 3$ $= 2x + 9 \geq 15$ $= 2x + 9 - 9 \geq 15 - 9$ $= \frac{2x}{2} \geq \frac{6}{2}$ $x \geq 3 : x \{3, 4, 5\ldots\ldots\}$				pg 446-447 Exercise 22:35 Exercise 22:32 pg 448 Exercise 22:33 pg 449		
			Word problems on inequalities	<u>Forming inequalities from word problems</u> <u>Example 1</u> The headteacher's car can mamimumly carry people. Form an inequality Let the No. of people be represented by *x* $x \leq 5$ $\therefore x \leq 5 : x = \{1, 2, 3, 4, 5\}$ <u>Example 2</u> The doctor can work on more than six people but less than thirteen people a day. Let No. of people be represented by y $6 < y < 13$ So y = {7, 8, 9, 10, 11, 12} So the possible no. of people to work on are 7 or 8 or 9 or 10 or 11 or 12 in a day <u>Example 3</u> What number can be added to four to give a number greater than seven? Let the no. be represented by p $p + 4 > 7 = p + 4 - 4 > 7 - 4$ $p > 3 \therefore p > 3 : p = \{4, 5, 6 \ldots\ldots\ldots\}$ <u>So possible numbers are 4, 5 or 6 and so on</u>	- Learners should be able to read the word form accurately - Form inequalities from words accurately - Solve the inequalities formed accurately - Find solution sets for formed inequalities	- Discussion - Explanation - Discovery - Question and answer	-	Exercise 22:36 pg 451	- New Primary Maths Bk7 pg 451	-
		ALGEBRA	Forming algebraic expressions	<u>Write algebraic expressions for the following</u> <u>Examples:</u> - Sum of 8 and x = 8 + x - Average of x, b, c = $\frac{x + b + c}{3}$ - 2n + 3 = double a number and add 2 to the result - $x^2 + 7$ – square a number and add 7 to the resutls	- Leaners should be able to form algebraic expressions - Express the phrases for the expressions	- Discussion - Explanation - Discovery - Question and answer	- Concrete objects	Exercise 22:1 and 22:2 pg 427 Exercise 22:3 pg 428 Exercise 22:8	- New Primary Mtc Bk7 pg 427 - 428	-
				<u>Collecting like terms</u> <u>Examples</u> a + a + a = 3a 2p + 3p + p = 6p 2ab + ab + 5ab = 8ab x + y + x + y + x 3p – 6f – p + 2f x + x + x + y + y 3p – p – 6f + 2f 3x + 2y 2p – 4f	- Collect and simplify like terms	- Do	- Do	Exercise 22:7 pg 431 Exercise 22:5, 22:6, 22, 13, 14 Pg430	- New Primary Mtc Bk7 pg 430-1	-

			Removing brackets	Remove the brackets and simplify Examples 3 (x + y) -2 (a – b) 3 x x + 3 x y -2 x a – b x -2 3x + 3y -2a + 2b 3 (x + 1) – 2(x – 1) 3 x x + 1 x 3 – 2 x x – 1 x -2 3x + 3 – 2x + 2 3x – 2x + 3 + 2 x + 5	- Remove brackets and simplify	- Do	- Do	Exercise 22:9, 22:10, 22:11	- New Primary Mtc Bk7 pg 432, 433, 436, 438	-
				Remove the brackets involving fractions Example $\frac{1}{3}$ (3a + 9b) $\frac{3}{4}$ (8m – 12p) ($^1/_3$ x 3a) + ($^1/_3$ x 9b) ($^3/_4$ x 8m) – ($^3/_4$ x 12p) a + 3b 6m – ap	- Learners should be able to remove brackets involving fractions	- Discussion - Explanation - Discovery - Questions and answer	- Concrete objects	Exercise 22:15, 22:16, 22:17, 22:18 pg 436-438	- New Primary Mtc Bk7 pg 436-8	-
			Substitution	Substitute to find the value of: Example if a = 5, b = 4 and c = 3 a + b + c 4a + 3b 5 + 4 + 3 4 x a + 3 x b = 12 4 x 5 + 3 x 4 = 32	- Subsitute to find the value	- Do	- Do	Exercise 22:4, 22:12, 22:20, 22:25 pg 434, 429, 440	- New Primary Mtc Bk7 pg 429, 434, 440	-
			Addition and subtraction with powers	Add and subtrat numbers with powers - $P^2 + P^2 = 2P^2$ - $3M^3 + 4M^3 = 7M^3$ - $3P^3 – P^3 = 2P^3$	- Add and subtract numbers with powers	- Do	- Do	Exercise 22:21, 22:22 pg 441	- New Primary Mtc Bk7 pg 441	-
			Multiplication of powers	Multiply numbers with powers - $4^3 \times 4^2 = 4 \times 4 \times 4 \times 4 \times 4 = 4^5$ - $x^3 \times x^2 = x \times x \times x \times x \times x = x^5$ - $x^3 \times x^2 = x^{3+2} = x^5$	- multiply numbers with powers	- do	- do	Exercise 22:23	- New Primary Mtc Bk7 pg 442	-
			Division with powers	Divide numbers with powers $3^4 \div 3^2$ $3^4 \div 3^2$ $y^5 \div y^2$ $= \frac{3 \times 3 \times 3 \times 3}{3 \times 3}$ $= 3^{4-2}$ $= y^{5-2}$ = 3 x 3 $= 3^2$ $= y^3$ = 9 = 3 x 3 = 9	- Divide numbers with powers	- Do	- Do	Exercise 22:4	- New Primary Mtc Bk7 pg 442	-
			Revision on simple equations	Solve simple equations Example 1) x + 5 = 13 x + 5 – 5 = 13 – 5 x= 8 2) y – 3 = 5 y – 3 + 3 = 5 + 3 y = 8 3) – p = 10 $\frac{-p}{-1} = \frac{10}{-1}$ p = 10 4) 2x + 6 = 18 7) 4 (x – 3) = 16 5) 3a – 8 = 7 8) 2m + 4 = m + 6 6) x^2 + 1 = 10 10) 3 (2x + 1) – 2(x + 4) = 35	- Pupils should be able to solve simple equations - Solve equations with unknowns on both sides - Solve equations involving simplifications	- Do	- Do	Exercise 22:23, 22:38, 22:39, 22:40, 22:41, 22:42, 22:43 pg 452-456	- New Primary Mtc Bk7 pg 452-6	-
			Equations involving fractions	Solve equations involving fractions Example (1) ½ p = 6 2 x ½ p = 6 x 2 p = 12 (2) $4^1/_3$ p + 2 = 15 $\frac{13}{3}$ p + $\frac{2}{1}$ = $\frac{15}{1}$ LCM = 3	- Solve equatiosn involving fractions	- Do	- Do	Exercise 22:44, 22:45, 22:46 pg 457-459	- New Primary Mtc Bk7 pg 457-459	-

				$3 \times \frac{13}{3} p + \frac{2}{1} \times 3 = \frac{15}{1} \times 3$ $= 13p + 6 = 45$ $13p + 6 - 6 = 45 - 6$ $13p = 39$ $\frac{13p}{13} = \frac{39}{13}$ $p = 13$ (3) $0.4p + 0.5 = 2.1$						
				(4) $\frac{m+1}{3} + \frac{m}{4} = 2$ $= \frac{m+1}{3} \times 12 + \frac{m}{4} \times 12 = 2 \times 12$ $= 4(m + 1) + 3m = 24$ $= 4m + 4 + 3m = 24$ $= 7m + 4 = 24$ $= 7m + 4 - 4 = 24 - 4$ $= 7m = 20$ $\frac{7m}{7} = \frac{20}{7}$ $m = 2^6/_7$ (5) $\frac{3x+1}{4} = \frac{x+2}{2}$	- Do	- Discussion - Explanation - Discovery - Questions and answer	-	Exercise 22:49, 22:50 pg 461-2	- New Primary Mtc Bk7 pg 461-2	-
			Solving equations involving squares	Solve equations involving fractions Example $\frac{1}{2} p^2 = 8$ $^2/_6\, q^2 = 12$ $2 \times \frac{p^2}{2} = 8 \times 2$ $\frac{6}{2} \times \frac{2}{6} q^2 = 12 \times \frac{6}{2}$ $p^2 = 16$ $q^2 = 36$ $\sqrt{p^2} = \sqrt{16}$ $\sqrt{q^2} = \sqrt{36}$ $p = 4$ $q = 6$	- Learners should be able to solve equations involving fractions	- Do	-		- New Primary Mtc Bk7 pg 427 – 428	-
			Word problems on equations	Form equatiosn and solve them Example Think of a number and add 7 to it and double the result is 40. What is the number? Let the no. be *x* $2(x + 7) = 40$ $2x + 14 = 40$ $2x + 14 - 14 = 40 - 14$ $2x = 26$ $\frac{2x}{2} = \frac{26}{2}$ $x = 13$	- Form equations and solve them	- Do	-	Exercise 22:51 pg 464-465	- New Primary Mtc Bk7 pg 464-465	-
			Inequalities and solution sets	The work is covered in the topic of integers	-	-	-		-	-