Espalier Heritage School Annual Planner 2022-23 Grade Subject: Maths Reff.book Activity Sr No esson Name Points To Cover esson Flow Methodology Pedagogical process Teaching Teaching Is the No.of Art Integration earning objectives Learning outcomes 1. The learner may be provided Rational 1. Introduction 1. Set induction to check 1. Students will understand Inductive and 1. The learner generalises Chart Classroom yes Text 10 Numbers the knowledge about that rational numbers are deductive opportunities properties of addition. Book in pairs/groups/ individually and rational number closed under the operation subtraction, multiplication and of addition, subtraction and encouraged to explore examples of division of multiplication rational numbers with rational numbers through all the operations and explore patterns patterns. in these operations. 2. Explain the concept of 2. The learner finds out as 2.Properties of 2. Students will understand how to use the property of Rational Numbers various properties of many rational numbers rational numbers rational numbers to solve as possible between two given various types of sums rational numbers. 3. Representation of 3. Solving exercise 3. Students will understand rational numbers on based on the properties how to represent rational the number line of rational numbers numbers on number line 4. Rational numbers Explain how to between two rational representing rational numbers number on number line 5. Explain the concept of finding infinite rational numbers between any two rational numbers 6. Solving exercise based on above concept 2 Linear Equations . Introduction 1. Students will understand Scientific Attitude 1. The learner may be provided 1. Set induction to check 1. The learner solves puzzles Classroom ves text book 15 that the highest power of in One Variable the knowledge about opportunities and daily life problems using the variable appearing in in pairs/groups/ individually and equation variables. the equation is 1 is known encouraged to observe situations that as linear equation lead to simple equations and solve them using uitable 2. Students will understand 2. Solving equations 2. Explain concept of which have linear how to solve linear linear equation in one expressions on one equation and how it variable side and number on applicable in day to day life the other side 3. Some Applications 3. Solving equation and 3. Students will understand application based that expression farming auestion equations have to be simplified before we can solve them by using usual method. 4. Solving equations 4. Explain concept how to having the variable reduce equation to on both sides simpler form 5. Some more 5. Solving sums based Applications on above concept

		6. Reducing equations to simpler form	6. Explain concept how equations reducible to Linear form										
		7. Equations reducible to the linear form	7. Solving sums based on above concept										
3	Understanding Quadrilaterals	1. Introduction of polygons, classification of polygons, convex and concave polygons and requiar irregular	 Set induction to check the previous knowledge of student about shapes and its types. 	 Students will understand that polygon classified into concave and convex polygon. 	Inductive and deductive	 The learner may be provided opportunities in pairs/groups/ individually and encouraged to verify the properties of parallelograms and apply reasoning by doing activities such as 	1. The learner Solves problems related to angles of a quadrilateral using angle sum property	Shapes of special quadrilateral s	Math lab	yes	Textbook	12	
		2. Sum of the measures of the exterior angles of a polygon.	2. Introduction and classification of polygons.	2. Students will understand that all angle of convex polygon is less than 180 degree and in concave polygon one angle is more than 180 degree.			2. The learner verifies properties of parallelograms and establishes the relationship between them through reasoning.						
		3. Kinds of quadrilaterals.	 To conduct activity to explain the angle sum property of quadrilateral 	 Students will understand angle sum property of quadrilateral by doing an activity. 									
		4. Some special parallelogram.	 Solving exercise 3.1 based on above properties and concepts. 	 Students will understand the property of exterior angle of any polygon. 									
			 To explain the property of some of the measure of the exterior angle of polygon is 360 degree. 	5. Students will understand various types of quadrilateral and its properties									
			 Solving exercise 3.2 based on the exterior angle property of polygon. 										
			7. To explain the various types of special quadrilateral and its properties based on side angle and diagonal.										
			 Solving exercise 3.3 and exercise 3.4 based on the properties of various types of quadrilateral. 										

4	Practical Geometry	1. Introduction	 To explain the concept that five measurements can determine a quadrilateral uniquely. 	 Students will understand that a quadrilateral can be constructed uniquely if the lengths of its four size and a diagonal is given. 	Scientific Attitude	 The learner may be provided opportunities in pairs/groups/ individually and encouraged to demonstrate the construction of various quadrilaterals using geometric kit. 	 The learner constructs different quadrilaterals using compasses and straight edge. 	Geometry Kit	Classroom & Math lab.	Yes	Textbook	10	
		2. Constructing a quadrilateral when the length of four side and diagonal are given.	 To explain the steps of constructing quadrilateral when the length of four sides and a diagonal are given. 	 Students will understand that a quadrilateral can be constructed uniquely if it two diagonals and three sides are given. 									
		3. Constructing quadrilateral when two diagonals and three sides are given.	 Constructing quadrilateral in exercise 1 on above concept. 	 Students understand that a quadrilateral can be constructed uniquely if its two adjacent sides and three angles are known. 									
		 Constructing a quadrilateral when two adjacent sides and three angles are known. 	 To explain the step of constructing quadrilateral when two diagonals and three sides are given. 	 Students will understand that a quadrilateral can be constructed uniquely if its three sides and two included angles are given. 									
		5. Constructing a quadrilateral when three sides and two included angles are given.	5. Constructing quadrilateral in exercise 4.2 on above concept.										
		6. Constructing a quadrilateral in some special cases.	 To explain the step of constructing quadrilateral when two adjacent sides and three angles are known. 										
			7. Constructing quadrilateral in exercise 4.3 on above concept.										
			 To explain the step of constructing quadrilateral when three sides and two included angles are given. 										
			9. Constructing quadrilateral in exercise 4.4 on above concept.										

5	Data Handling	Introduction Section Section	 Set induction to check the previous knowledge about data handling concept. To explain that what is the need of data handling 	1. Students will understand that data mostly available to us in an unorganised form and we are representing them systematically to analyse the data for specific 2. Students will understand that data can also	Inductive and Deductive.	 The learner may be provided opportunities in pairs/groups/ individually and encouraged to collect data, organise it into groups and represent it into bar graphs/ pie chart. The learner may be provided opportunities 	 The learner draws and interprets bar charts and pie charts. The learner makes hypotheses on chances of 		Classroom	No	Textbook	10	
			in our day to day life.	represented using circle graph or pie chart a circle graph showing the relationship between a whole and its part		in pairs/groups/ individually and encouraged to	ruture events on the basis of its earlier occurrences						
		3. Circle graph or pie chart	 To explain the concept of representing data in tabular form of ungroup and group data. 	 Students will understand that chances and probability are related to real life. 		conduct activities related to throwing a large number of identical dice/coins together and	or available data like , after repeated throws of dice and coins.						
		4. Chance and Probability.	 Solving exercise 5.1 on above concept. 			aggregating the result of the throws to get a large number of individual events and make							
			 To explain the concept of representing data in circle. 			assumptions for future events on the basis of the above data.							
			6. Solving exercise 5.2 based on pie chart concept.										
			 To explain the concept of probability and solving exercise based on this concept. 										
6	Squares and Square Roots	1. Introduction	1. To explain the properties of square number and solving exercise 6.1 based on this property	 Students will understand and able to write square numbers. 	Inductive and deductive	 The learner may be provided opportunities in pairs/groups/ individually and encouraged to 	 The learner finds squares and square roots of numbers using different methods. 	Chart of square and square root	Classroom	No	Text book	10	
		2. Properties of Square Numbers	2. To explain the concept of Pythagorean triples.	2. Students will understand that square numbers end with 0,1,4,5,6 or 9 at unit place.		explore patterns in square numbers, square roots of numbers and form rules for exponents as integer							
		3. Some More Interesting Patterns	3. To explain some new patterns in square.	3. Students will understand that square root is the Inverse Operation of square.									

		4. Finding the Square of a Number	 Solving exercise 6.2 based on above concept. 	4. Students will understand that there are two integral square root of a perfect square number.									
		5. Square Roots	4. To explain how to find the square root of any perfect square number.										
		6. Square Roots of Decimals	5. To explain how to find square root by using prime factorization method and division method.										
		7. Estimating Square Root	 To explain exercises based on above concept. 										
			7. To to explain the method to find estimate square root and also square root of decimal numbers.										
			 To explain how to solve sum of exercise based on above concept. 										
7	Cubes & Cube Roots	1. Introduction	1. Set induction to check the previous knowledge about basic concept of cube.	 Students will understand that number obtained when a number is multiplied by itself three times are known as cube. 	Inductive and deductive method	1. The learner may be provided opportunities in pairs/groups/ individually and encouraged to	 The learner finds squares, cubes and square roots and cube roots of numbers using different methods. 	chart of cube and cube roots	classroom	No	Text book	6	
		2. Cubes	2. To explain the concept of finding cube of any integers.	 Students will understand that if in the prime factorization of any number each factor appears three times then the number is a perfect cube. 		explore patterns in square numbers, square roots, cubes and cube roots of numbers and form rules for exponents as integer							
		3. Cubes Roots	3. To explain exercise 7.1 based on above concept	 Students will understand that how to find the cube root of any integers. 									
			4. To explain the concept of finding cube root of perfect cube numbers by using prime factorization method and and also to find the cube root through estimation										

			5. To explain exercise 7.2 based on about concept.										
8	Comparing Quantities	1. Recalling Ratios and Percentages	 To explain the concept of ratios and percentage an application of ratio and percentage. 	 Students fill understand that how ratio proportion, profit and loss, discount concept used in our day to day life. 	Problem Solving	 The learner may be provided opportunities in pairs/groups/ individually and encouraged to observe contexts that involve the use of percentages like discount, profit & loss, VAT 	 The learner applies the concept of per cent in profit and loss situation in finding discount, VAT and compound interest. e.g., calculates discount ner cent when marked price 	-	Classroom	No	Textbook	12	
		2. Finding the Increase and Decrease Percent	2. To explain how to solve exercise 8.1 based on above concept.	 Students will understand the calculation of finding profit and loss, discount, ratio and proportion. 		2. generalise the formula of compound interests through repeated use of simple interest							
		3. Finding Discounts	 To explain application of increase or decrease percentage concept in our day to day life 	 Students will understand that how to calculate compound quarterly, half yearly and annually. 		3. observe situations where one quantity depends on the other. the quantities increase together, or in which while one increases the other decreases. For example, as the							
		8.4 Prices Related to Buying and Selling (Profit and Loss)	4. To explain how to find discount of any goods an articles										
		5. Sales Tax/Value Added Tax/Goods and Services Tax	 To the concept of profit and loss observed in our day to day life 										
		6. Compound Interest	6. To explain exercise 8.2 based on above concept										
		7. Deducing a Formula for Compound Interest	7. To explain the concept of sale tax or value added tax which we are paying to our government.										
		8. Rate Compounded Annually or Half Yearly (Semi Annually)	8. To explain exercise 8.2 sums based on above concept.										
		9. Applications of Compound Interest Formula	 To explain the concept of simple interest and compound interest. Also to explain computation of simple interest and compound interest in different cases 										

			10. To explain how to solve exercise I'm based on above concept.										
9	Algebraic Expressions and Identities	1. What are Expressions?	 Set induction to check the previous knowledge about variable and constant. 	 Students will understand that expressions are formed from variables and constants. 	Inductive and deductive method	 The learner may be provided opportunities in pairs/groups/ individually and encouraged to 	 The learner solves puzzles and daily life problems using variables. 	Chart	Classroom	No	Textbook	18	
		2. Terms, Factors and Coefficients	2. To explain the concept of terms, factors and coefficient in algebraic expression. Also how to to determine like and unlike term of algebraic expression	 Students will able to classify expression in the the monomial, binomial and trinomial respectively. 		multiply two algebraic expressions and different polynomials based on previous knowledge of distributive property of numbers and generalise various algebric identities using concrete examples	2. The learner uses various algebric identities in solving problems of daily life						
		9.3 Monomials, Binomials and Polynomials	 To explain the concept of of monomial, binomial and polynomial 	 Students I will understand that like terms are formed from the same variable and the power of these variables are the the same too. 		 factorise algebraic expressions using relevant activities based on previous knowledge of factorising two numbers 	 The learner multiplies algebraic expressions. e.g expands (2x-5)(3x2+7). 						
		4. Like and Unlike Terms	4. To explain exercise 9.1 based on above concept.	 Students will understand that there are number of situation in which we need to multiply algebraic expressions. 									
		5. Addition and Subtraction of Algebraic Expressions	 To explain the concept of multiplication of algebraic expressions i.e. monomial by a monomial. 	5. Students will understand that an identity is an equality which is true for all values of the variables in the equality.									
		6. Multiplication of Algebraic Expressions: Introduction	6. To explain exercise 9.2 based on above concept.	 Students will understand that some identities are useful in carrying out squares and product of algebraic expressions. 									
		7. Multiplying a Monomial by a Monomial	 To explain the concept of multiplying monomial by polynomial and polynomial by another polynomial. 	They also allow easy alternative method to calculate product of number and so on.									
		8. Multiplying a Monomial by a Polynomial	8. To explain exercise 9.4 based on above concept.										
		9. Multiplying a Polynomial by a Polynomial	 To explain the concept of Identity. Also how identity is used to do to many calculation in algebraic expression. 										

		10. What is an Identity?											
10	Visualising Solid Shapes	1. Introduction	 Set induction to check the previous knowledge about 3D shape. 	 Students will able to recognise 2D and 3D object and also so different shapes in nested object. 	Scientific attitude	"1. The learner may be provided opportunities in pairs/groups/ individually and encouraged to"	 The learner represents 3D shapes on a plane surface such as sheet of paper, black board etc. verifies Euler's relation through pattern 	2D and 3D shapes	Math lab	No	Text book	6	
		2. View of 3D- Shapes	 To explain the concept of 3D shapes and how how the shapes are connected to our day to day life. 	2. Students will understand that 3D objects have different Views From different positions.		identify that surfaces of various 3-D objects like cubes, cuboids and cylinder							
		3. Mapping Space Around Us	 To explain how to mapping space around us. 	 Students will understand that a map depicts the location of a particular object/ place in relation to other objects/ places 		2. make nets of various shapes like cuboids, cubes, pyramids, prisms, etc. and from nets make the shapes and establish relationship empergreations addres and surfaces							
		4. Faces, Edges and Vertices	 To explain how to identify faces edges and vertices of 3D shapes. 	 Students will understand that maps involve a scale which is fixed for particular map and symbols are used to depict the different objects/ places 									
			 To explain how to solve exercise based on above concepts. 										
11	Mensuration	1. Introduction	 Set induction to check the previous knowledge of student about area. 	 Students will able to find area of trapezium and general quadrilateral. 	Scientific attitude	 The learner may be provided opportunities in pairs/groups/ individually and encouraged to 	 The learner estimates the area of shapes like trapezium and other polygons by using square grid/ graph sheet and verifies using formulas. 	Shapes of cube cuboid and cylinder	Classroom	no	Text book	15	
		3. Area of Trapezium	2. To to explain exercise 11.1 based on Basic concept of Mensuration.	 Students able to find surface area and volume of cube cuboid and cylinder 		derive formulae for surface area of cubes and cuboids using the formulae for areas of rectangles, squares and circles	2. The learner finds the area of a polygon.						
		4. Area of General Quadrilateral	 To to explain how trapezium formula derived and how to find the the area of trapezium 			 demonstrate to find volume of a given cube and cubiod using unit cubes 	 The learner finds surface area and volume of cuboidal and cylindrical object. 						

		5. Area of Polygons	 To explain the concept of how to find the area of a General quadrilateral. 										
		6. Solid Shapes	5. To explain exercise 11.2 based on above concept.										
		7. Surface Area of Cube, Cuboid and Cylinder	 To explain the concept of surface area of cube cuboid and cylinder 										
		8. Volume of Cube, Cuboid and Cylinder	7. To explain exercise 11.3 based on above concept.										
		9. Volume and Capacity	 To explain the concept of finding volume of cube cuboid and cylinder. 										
			9. To exercise 11.4 based on above concept.										
12	Exponents and Powers	1. Introduction	1. To explain the concept of base and index	1. Students will understand that how to use law of exponents to solve the sums.	Inductive and deductive	1. The learner may be provided opportunities in pairs/groups/ individually and encouraged to generalised the law of exponents.	 The learner solves problems with integral exponents. 	Chart of law of exponents.	classroom	No	Textbook	6	
		2. Powers with Negative Exponents	2. To explain various laws of exponents.	 Students will understand that very small numbers can be expressed in standard form by using negative exponents. 									
		3. Laws of Exponents	3. To explain how to solve exercise 12.1 based on above concept.										
		4. Use of Exponents to Express Small Numbers in Standard Form	 To explain the concept of of using of exponents to express small number in standard form. 										

			4. To explain how to solve exercise 12.2 based on above concept.										
13	Direct and Inverse Proportions	1. Introduction	1. To explain the concept of direct proportion and solving exercise 13.1 based on this concept.	 Students will understand that two counties are said to be in direct proportion if they increase or decrease together in such a manner that the ratio of their corresponding values 	Inductive and deductive	1. The learner may be provided opportunities in pairs/groups/ individually and encouraged to observe situations where one quantity depends on the other. the quantities increase	1. The learner Solves problems based on direct and inverse proportions.	-	Classroom	no	Textbook	6	
		2. Direct Proportion	2. To explain concept of inverse proportion and solving of exercise 13.2 based on this concept	 Students will understand that two quantity is said to be inverse proportion if one quantity increase and another quantity decrease proportionally in such a manner that the product of 		other decreases. For example, as the speed of a vehicle increases the time taken by it to cover the distance decreases.							
		3. Inverse Proportion											
14	Factorisation	1. Introduction	 To explain the concept of factorization 	 Students will understand that when we factorise an expression we write it as a product of factor and these factors may be number algebraic variables or algebraic expressions 	Inductive and deductive	 The learner may be provided opportunities in pairs/groups/ individually and encouraged to factorise algebraic expressions using relevant activities based on previous knowledge of 	 The learner multiplies algebraic expressions. e.g expands (2x-5)(3x2+7). uses various algebric identities in solving problems of daily life 	-	Classroom	No	Textbook	15	
		2. What is Factorisation?	 To explain the concept of writing factor of polynomials and also to find the common factor of polynomial. 	 Students will understand division of polynomial by a monomial, binomial and polynomial 		 multiply two algebraic expressions and different polynomials based on previous knowledge of distributive property of numbers and generalise various algebric identifies using concrete examples 							
		3. Division of Algebraic Expressions	3. To explain exercise 14.1 based on above concept.										
		4. Division of Algebraic Expressions Continued (Polynomial / Polynomial)	 To explain the concept of factorisation by using identities and solving exercise 14.2 based on this concept. 										
			5. To explain the concept of division of algebraic expression by monomial, binomial and polynomial by monomial and binomial.										

			6. To explain exercise 14.3 based on above concept.										
15	Introduction to Graphs	1. Introduction	1. Set induction to check the previous knowledge of presenting data in graph	1. Students will able to represent data in bar graph, pie graph and histogram	inductive and deductive	1. The learner may be provided opportunities in pairs/groups/ individually and encouraged to	1. The learner	Graph book	classroom	no	textbook	10	
		2. Linear Graphs	2. To explain the concept of representing data in graph and circle.	2. Students will understand that a line graph display data that change continuously over period of time.		collect data, organise it into groups and represent it into bar graphs/ pie chart							
		3. Some Applications	 To explain the concept of graph used in IR daily life and solving exercise based on it. 										
16	Playing with Numbers	1. Introduction	1. To explain divisibility test of 1 to 11.	 Students will understand number can be written in general form. 	Inductive and deductive	1. use generalised form of numbers upto 3 digits and uses her understanding of algebra to derive the divisibility rules for 2, 3, 4 	 The learner proves divisibility rules of 2, 3,4, 5, 6, 9 and 	-	Classroom	no	textbook	6	
		2. Numbers in General Form	2. Solving exercise based on above concept	2. Students able to explain the general form of number are helpful in solving puzzle or number games									
		3. Game with Numbers	3. To han number used in puzzles and games										
		4. Letters for Digits											