Mathematics 2019-2020
Scheme of work/Term wise syllabus breakup
Class 9

Term 1				
Strand	**Unit**	**Topic**	**Objective**	**Time**
Algebra and functions	Variation	Direct Variation Inverse Variation	• Express direct and inverse variation in algebraic terms and use this form of expression to find unknown quantities. • Includes linear, square, square root and cubic variation (direct and inverse). E.g. y is inversely proportional to the square of x. Given that y = 2 when x = 6, find the value of y when x = 2 **D-2 7th ed. CH 1 Ex 1A,1B,1C,1D**	1
	Algebraic Manipulation	• Addition and Subtraction of Algebraic fractions • Manipulation of Algebraic Formulae	• Manipulate algebraic fractions. • Factorise and simplify rational expressions • Transform more complicated formulae. **D-2 7th ed.CH6 Ex6B,Ex6C**	2
	Indices and Standard Form	• Indices • Laws of indices • Zero and Negative indices • Rational Indices • Standard Form	• Use and interpret positive, negative and zero indices. • Use and interpret fractional indices. • Use the standard form A × 10n where n is a positive or negative integer and $1 \leqslant A < 10$. **D-3 7th ed.CH 4 Ex 4B,4C**	2
Geometry and Measurement	Pythagoras Theorem	• Pythagoras Theorem • Application of Pythagoras	• Apply Pythagoras' theorem to the calculation of a side of a right-angled triangle. **D-2 7th ed. CH 10 Ex 10A,10B**	1

		Theorem in real world.		
	Trigonometric Ratios	• Trigonometric Ratios • Application of Trigonometric Ratios to find unknown sides and angles of right angled triangles. • Application of Trigonometric Ratios in real world.	• Apply the sine, cosine and tangent ratios for acute angles to the calculation of a side or an angle of a right-angled triangle (angles will be quoted in, and answers required in, degrees and decimals of a degree to one decimal place). • Solve trigonometrical problems in two dimensions including those involving angles of elevation and depression and bearings. **D-2 7th ed.CH 11 Ex 11A,11B,11C,11D** **D-3 7th ed.CH 9 Ex 9A,**	4
Geometry and Measurements	Mensuration	• Arc length • Area of sector	• Solve problems involving arc length and sector area as fractions of the circumference and area of a circle. **D-3 7th ed. CH 10 Ex 10B**	2
Geometry and Measurements	Volume and Surface Area	• Volume and Surface Area of Pyramids, Cones and Sphere • Volume and Surface Area of composite figures.	• Recognise symmetry properties of the pyramid (including cone). Use and interpret vocabulary of simple solid figures: pyramid, cone, sphere. • Solve problems involving the surface area and volume of a sphere, pyramid and cone (formulae will be given for the surface area and volume of the sphere, pyramid and cone). **D-2 7thed.CH12 Ex 12A,12B,12C,12D**	2
		Total number of weeks		14

Term 2				
Strand	**Unit**	**Topic**	**Objective**	**Time**
Number Theory and Arithmetic	Application of Mathematics in Practical situations	• Profit and Loss • Discount, Taxation and commission. • Simple interest and compound Interest • Hire Purchase • Money Exchange	• use given data to solve problems on personal and small business finance involving earnings, simple interest and compound interest • Includes discount, and profit and loss (as an amount or a percentage). Knowledge of compound interest formula given below is required: • Value of investment =P$\left[1+\frac{r}{100}\right]^{n}$ where P is the amount invested, r is the percentage rate of interest and n is the number of years of compound interest. • extract data from tables and charts **D-3 7th ed.CH 5 5C,5D,5E**	2
Algebra and Function	Linear Inequalities	Inequalities Problem solving involving inequalities Solving simultaneous linear inequalities	• Solve simple linear inequalities. • Solve linear inequalities in one variable and represent the solution on a number line. • Apply linear inequalities to solve word problems. **D-3 7th ed. CH 3 Ex 3B**	1
Algebra and Function		Limits of Accuracy	• Give appropriate upper and lower bounds for data given to a specified accuracy (e.g. measured lengths). • Obtain appropriate upper and lower bounds to solutions of simple problems (e.g. the calculation of the perimeter or area of a triangle) given data to a specified accuracy. **D-3 7th ed. CH 3 Ex 3C**	1

Algebra and Function	Quadratic Equations	• Solution of Quadratic equation by Completing the square or by using the quadratic formula • Solving fractional equations that can be reduced to quadratic equation. • Application of quadratic equation in real world.	• Solve quadratic equations either by use of the formula or by completing the square. • Solve quadratic equations by completing the square method. • Solve quadratic equations by using the quadratic formula. • Solve problems that can be reduced to quadratic equations. **D-3 7th ed. CH 1Ex1A,1B,1D**	2
Geometry and Measurements	Coordinate Geometry	Gradient of a straight line. Length of a line segment. Equation of a straight line. Parallel and perpendicular lines.	• Demonstrate familiarity with Cartesian coordinates in two dimensions. • Find the gradient of a straight line. • Calculate the gradient of a straight line from the coordinates of two points on it. • Interpret and obtain the equation of a straight line graph in the form y = mx + c. • Calculate the length and the coordinates of the midpoint of a line segment from the coordinates of its end points. • Determine the equation of a straight line parallel to a given line, e.g. find the equation of a line parallel to y = 4x − 1 that passes through (0, -3). • Find the gradient of parallel and perpendicular lines, e.g. find the gradient of a line perpendicular	2

			to y = 3x + 1; find the equation of a line perpendicular to one passing through the coordinates (1, 3) and (–2, –9). **D-3 7th ed.CH 6 Ex 6A, 6B, 6C,6D**	
Geometry and Measurements	Symmetry	• Plane and rotational • symmetry • planes of symmetry • axes of rotational symmetry • order of rotational symmetry	• Draw/state the number of planes of symmetry • Draw/state the number of axes of rotational symmetry • Recognize rotational and line symmetry (including order of • rotational symmetry) in two dimensions. • Includes properties of triangles, quadrilaterals and circles directly related to their symmetries. **D-2 7thed. Ex 13c Q 2-5**	1
Geometry and Measurements	Congruency & Similarity	• Congruency tests. • Similarity tests • Application of congruent and similar triangles. • Area of similar figures • Volume of similar figures.	• Solve problems and give simple explanations involving similarity and congruence. Calculate lengths of similar figures. • Includes showing that two triangles are similar or showing that two triangles are congruent (using correct congruence condition SSS, SAS, ASA, RHS). Includes use of scale factor. • Use the relationship between areas of similar triangles, with corresponding results for similar figures, and extension to volumes and surface area of similar solids **D-3 7th ed.CH 11,Ex11A,11B** **D-3 7th ed.CH 12,Ex 12A,12B**	3
Probability and Statistics	Statistics	• Statistical diagrams • Scatter diagram	• construct and interpret bar charts, pie charts, pictograms, simple frequency distributions, frequency polygons, histograms with equal and unequal intervals and scatter diagrams	4

		• Histograms for grouped data • Frequency polygon • Averages of statistical data • Cumulative frequency table and curve. • Medians, quartiles, percentiles, range and inter quartile range.	• construct and use cumulative frequency diagrams • estimate and interpret the median, percentiles, quartiles and interquartile range for cumulative frequency diagrams • calculate with frequency density • Understand what is meant by positive, negative and zero correlation with reference to a scatter diagram. • Draw a straight line of best fi t by eye. Construct and use cumulative frequency diagrams. • Estimate and interpret the median, percentiles, quartiles and interquartile range for cumulative frequency diagrams. **D2 7th ed. Ex 16 A Q1-5,16B** **D2 7th ed.CH 17 Ex 17 B Q 8,10,11,12,17** **D-4 7th ed. CH4 Ex 4A,4B**	
		Total weeks		16