MARINA INTERNATIONAL SCHOOL

MATHEMATICS SCHEME OF WORK

FORM 3 - TERM 1

WEEK	TOPIC	TOPIC DETAILS
1.1	Integers	Add directed numbers Subtract directed numbers Multiply directed numbers Divide directed numbers.
1.2	Place value, ordering and rounding	Recognise the equivalence of 0.1 1/10 and 10-1 Multiply whole numbers and decimals by 10 to the power of any positive or negative integer.
1.3	Place value, ordering and rounding	Divide whole numbers and decimals by 10 to the power of any positive or negative integer. Round numbers to a given number of decimal places
1.4	Place value, ordering and rounding	Round numbers to a given number of significant figures Use to give solutions to problems with an appropriate degree of accuracy.
2.1	Fractions	Consolidate writing a fraction in its simplest form by cancelling common factors. Add fractions Subtract fractions Multiply fractions
2.2	Fractions	Divide fractions Interpreting division as a multiplicative inverse, Cancelling common factor before multiplying or dividing
2.3	Decimals and percentages	Extend mental methods of calculation, Working with decimals Working with fractions, Working with percentages
2.4	Decimals and percentages	Working with factors, Using jottings where appropriate Solve word problems mentally
3.1	Power	Use index notation for positive integer power

WEEK	TOPIC	TOPIC DETAILS
3.2	Power	Apply the index laws for multiplication to simple algebraic expressions
3.3	Power	Apply the index laws for division to simple algebraic expressions
3.4	Algebraic expression	Construct algebraic expressions
4.1	Algebraic expression	Simplify algebraic expressions by taking out single-term common factors.
4.2	Algebraic expression	Transform algebraic expressions by taking out single-term common factors.
4.3	Sequences	Generate terms of a sequence using term-to-term and position-to term rules.
4.4	Sequences	Derive an expression to describe the nth term of an arithmetic sequence.
5.1	Shapes	Draw 3D shapes on isometric paper.
5.2	Shapes	Analyse 3D shapes through plans and elevations.
5.3	Reflection	Identify reflection symmetry in 3D shapes.
6.1	Tessellations	Tessellate triangles Tessellate quadrilaterals
6.2	Tessellations	Relate tessellation to angle sums and half-turn rotations;
6.3	Tessellations	know which regular polygons tessellate,
6.4	Tessellations	Explain why other polygon will not tessellate.
7.1	Transformation	Use the coordinate grid to solve problems involving translations
7.2	Transformation	Use the coordinate grid to solve problems involving rotations,
7.3	Transformation	Use the coordinate grid to solve problems involving reflections
7.4	Transformation	Use the coordinate grid to solve problems involving enlargements.
8.1	Metric unit	Solve problems involving measurements in a variety of contexts.
8.2	Metric unit	Convert between metric units of area, e.g. mm^2 and cm^2, cm^2 and m^2
8.3	Metric unit	Convert between metric units of volume, e.g. mm^3 and cm^3 , cm^3 and m^3
8.4	Metric unit	Know and use the relationship 1 cm^3 = 1 ml.

WEEK	TOPIC	TOPIC DETAILS
9.1	Planning and collecting data	Suggest a question to explore using statistical methods; Identify the sets of data needed,
9.2	Planning and collecting data	How to collect data Sample sizes and degree of accuracy.
9.3	Types of data	Identify primary sources of suitable data
9.4	Types of data	Identify secondary sources of suitable data
10.1	Tabulating data	Design, trial and refine data collection sheets. Collect discrete and continuous data, choosing suitable, equal class intervals where appropriate. Tabulate discrete and continuous data, choosing suitable, equal class intervals where appropriate.
10.2	Calculating statistics	Calculate statistics and select those most appropriate to the problem.
11.1	Powers and roots	Estimate square roots and cube roots.
11.2	Indices	Use positive, negative and zero indices and the index laws for multiplication of positive integer power Use positive, negative and zero indices and the index laws for division of positive integer powers.
11.3	Bodmas	Use the order of operations, including brackets and power
12.1	Percentages	Solve problems involving percentage changes, choosing the correct numbers to take as 100% or as a whole, including simple problems involving personal or household finance, e.g. simple interest, discount, profit, loss and tax. Recognise when fractions or percentages are needed to compare different quantities. Consolidate use of the rules of arithmetic and inverse operations to simplify calculations.
12.2	DECIMALS	Multiply by decimals, understanding where to position the decimal point by considering equivalent calculations; divide by decimals by transforming to division by an integer. Recognise the effects of multiplying and dividing by numbers between 0 and 1.
13.1	Algebraic fractions	Add and subtract simple algebraic fractions.

WEEK	TOPIC	TOPIC DETAILS
13.2	Change the subject of a formula	Derive formulae and, in simple cases, Change the subject of the formula Use formulae from mathematics and other subjects.
13.3	Substitution	Substitute positive into expressions and formulae Substitute negative numbers into expressions and formulae.
14.1	Inequalities	Understand and use inequality signs (<, >, ≤, ≥,)
14.2	Inequalities	Construct and solve linear inequalities in one variable;
14.3	Inequalities	Represent the solution set on a number line.
14.4	Inverse of a function	Find the inverse of a linear function
15.1	Polygon	Calculate the interior or exterior angle of any regular polygon; Prove and use the formula for the sum of the interior angles of any polygon; Prove that the sum of the exterior angles of any polygon is 360°.
15.2	Properties of angles	Solve problems using properties of angles of parallel lines Solve problems using properties of angles of intersecting lines Solve problems using properties of angles of triangle Solve problems using properties of angles of polygons Solve problems using properties of parallel lines Justifying inferences and explaining reasoning with diagrams and text.
15.3	Polygon	Calculate the interior angle of any regular polygon Calculate the exterior angle of any regular polygon; Prove and use the formula for the sum of the interior angles of any polygon; Prove that the sum of the exterior angles of any polygon is 360°.
15.4	Angles	Solve problems using properties of angles, of parallel and intersecting lines, and of triangles, other polygons and circles, Justifying inferences and explaining reasoning with diagrams and text.

MATHEMATICS SCHEME OF WORK
FORM 3 - TERM 2

WEEK	TOPIC	TOPIC DETAILS
1.1	Transformation	Transform 2D shapes by combinations of rotations, reflections and translations;
1.2	Transformation	Describe the transformation that maps an object onto its image.
1.3	Interpreting Data	Select, draw, and interpret diagrams and graphs, including: ☐ frequency diagrams for discrete and continuous data ☐ line graphs for time series ☐ scatter graphs to develop understanding of correlation ☐ back to back stem-and-leaf diagrams.
2.1	Correlation	Interpret tables, graphs and diagrams and make inferences to support or cast doubt on initial conjectures; have a basic understanding of correlation. Compare two or more distributions; make inferences, using the shape of the distributions and appropriate statistics. Relate results and conclusions to the original question.
2.2	Enlargement	Enlarge 2D shapes, given a centre and positive integer scale factor;
2.3	Enlargement	Identify the scale factor of an enlargement as the ratio of the lengths of any two corresponding line segments
3.1	Mapping object	Recognise that translations, rotations and reflections preserve length and angle,
3.2	Mapping object	Map objects on to congruent images, and that enlargements preserve angle but not length. Know what is needed to give a precise description of a reflection, rotation, translation or enlargement.
3.3	Speed	Solve problems involving average speed.
3.4	Hectares	Know that land area is measured in hectares (ha), and that 1 hectare = 10 000 m2; Convert between hectares and square metres.

WEEK	TOPIC	TOPIC DETAILS
4.1	Approximate solution to an equation	Use systematic trial and improvement methods to find approximate solutions of equations such as $x^2 + 2x = 20$ (1, 2 and 7).
4.2	Ratios and Proportion	Compare two ratios Interpret and use ratio in a range of contexts.
4.3	Ratios and Proportion	Recognise when two quantities are directly proportional;
4.4	Ratios and Proportion	Solve problems involving proportionality, e.g. converting between different currencies.
5.1	Compound measures and motion	Use compound measures to make comparisons in real-life contexts, e.g. travel graphs and value for money.
5.2	Area and circumference	Solve problems involving the circumference of circles, including by using the π key of a calculator. Solve problems involving the area of circles, including by using the π key of a calculator.
5.3	Prisms and cylinders	Calculate lengths, surface areas and volumes in right-angled prisms
5.4	Prisms and cylinders	Calculate lengths, surface areas and volumes of a cylinders
6.1	Equations (Linear)	Construct and solve linear equations with integer coefficients (with and without brackets, negative signs anywhere in the equation, positive or negative solution); Solve a number problem by constructing and solving a linear equation.
6.2	Simultaneous equation	Solve a simple pair of simultaneous linear equations by eliminating one variable
6.3	Expansion	Expand the product of two linear expressions of the form $x \pm n$ Simplify the corresponding quadratic expression.
7.1	Functions	Construct functions arising from real-life problems; Draw and interpret their graphs.
7.2	Graph of function	Use algebraic methods to solve problems involving direct proportion, Relating solutions to graphs of the equations.

WEEK	TOPIC	TOPIC DETAILS
7.3	Construction	Use a straight edge and compasses to: ☐ construct the perpendicular from a point to a line and the perpendicular from a point on a line ☐ inscribe squares, equilateral triangles, and regular hexagons and octagons by constructing equal divisions of a circle
8.1	Pythagoras' Theorem	Know and use Pythagoras' theorem to solve two-dimensional problems involving right-angled triangles
8.2	Bearings	Use bearings (angles measured clockwise from the north) to solve problems involving distance and direction. Make and use scale drawings and interpret maps.
8.3	Locus	Find by reasoning the locus of a point that moves at a given distance from a fixed point, Find by reasoning the locus of a point that moves at a given distance from a fixed straight line.
9.1	Probability	Know that the sum of probabilities of all mutually exclusive outcomes is 1
9.2	Probability	Use this when solving probability problems.
9.3	Probability	Find and record all outcomes for two successive events in a sample space diagram.
9.4	Probability	Understand relative frequency as an estimate of probability and use this to compare outcomes of experiments in a range of contexts.
10.1	Revision	Mock Exams

MATHEMATICS SCHEME OF WORK
FORM 3 - TERM 3

WEEK	TOPIC	TOPIC DETAILS
1.1	NUMBER	Identify and use natural numbers, integers (positive, negative and zero), prime numbers, square numbers, common factors and common multiples, rational and irrational numbers (e.g. ,), real numbers, reciprocals π Includes expressing numbers as a product of prime factors.
1.2	NUMBER	Finding the Lowest Common Multiple (LCM) and Highest Common Factor (HCF) of two numbers. Calculate with squares, square roots, cubes and cube roots and other powers and roots of numbers
2.1	NUMBER	Use directed numbers in practical situations, e.g. temperature changes, flood levels Use the four rules for calculations with whole numbers, decimals and fractions (including mixed numbers and improper fractions), including correct ordering of operations and use of brackets. (BIDMAS RULE Applies to positive and negative numbers. Order quantities by magnitude and demonstrate familiarity with the symbols $=, \neq, >, <, \geq, \leq$
3.1	APPROXIMATION	Make estimates of numbers, quantities and lengths, give approximations to specified numbers of significant figures and decimal places and round off answers to reasonable accuracy in the context of a given problem.
3.2	APPROXIMATION	Use a calculator efficiently.
3.3	APPROXIMATION	Apply appropriate checks of accuracy
4.1	ACCURACY	Give appropriate upper and lower bounds for data given to a specified accuracy, e.g. measured lengths.

WEEK	TOPIC	TOPIC DETAILS
4.2	ACCURACY	Obtain appropriate upper and lower bounds to solutions of simple problems given data to a specified accuracy, e.g. the calculation of the perimeter or the area of a rectangle.
5.1	STANDARD FORM	Convert numbers into and out of standard form.
5.2	STANDARD FORM	Calculate with values in standard form
6.1	FRACTIONS AND DECIMALS	Conversion of recurring decimals to fractions, e.g. change to a fraction 0.7□□
6.2	FRACTIONS AND DECIMALS	Use the language and notation of simple vulgar and decimal fractions and percentages in appropriate contexts.
6.3	FRACTIONS AND DECIMALS	Recognise equivalence and convert between these forms.
7.1	INDICES	Understand the meaning of indices (fractional, negative and zero) and use the rule of indices
7.2	INDICES	Use and interpret positive, negative and zero indices.
7.3	INDICES	Use the rules of indices, to simplify exponential equations
8.1	SETS	Understand notation of Venn diagrams. Definition of sets e.g. A = {x: x is a natural number} B = {a,b,c,.......} Notation Number of elements in set A; n(A) Universal set Union of A and B; ∪AB Intersection of A and B; ∩AB

WEEK	TOPIC	TOPIC DETAILS
8.2	SETS	Use language, notation and Venn diagrams to describe sets and represent relationships between sets. Definition of sets e.g. A = {x: x is a natural number} B = {(x,y): y = mx + c} C = {x: a Y x Y b} D = {a, b, c, ...} Notation Number of elements in set A; n(A) "...is an element of..." A; ∈ "...is not an element of..."; ∉ Complement of set A; 'A The empty set; ∅ Universal set; A is a subset of B; A ⊆ B A is a proper subset of B; A ⊂ B A is not a subset of B; A ⊄ B A is not a proper subset of B; A ⊄ B Union of A and B; ∪AB Intersection of A and B; ∩A