# MARINA INTERNATIONAL SCHOOL

## CORE MATHEMATICS SCHEME OF WORK

### FORM 4 - TERM 1

| WEEK | TOPIC | TOPIC DETAILS |
|---|---|---|
| 1.1 | NUMBER | Identify and use natural numbers, integers(positive, negative and zero), prime numbers, square and cube numbers, common factors and common multiples, rational and irrational numbers (e.g. π, 2 ), real numbers, reciprocals. |
| 1.2 | NUMBER | Expressing numbers as a product of prime factors. |
| 1.3 | NUMBER | Finding the lowest common multiple (LCM) and highest common factor (HCF) of two numbers. |
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| 2.1 | NUMBER | Calculate with squares, square roots, cubes and cube roots and other powers and roots of numbers. |
| 2.2 | NUMBER | Use directed numbers in practical situations, e.g. temperature changes, flood levels |
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| 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 |
| 3.4 | APPROXIMATION | Give appropriate upper and lower bounds for data given to a specified accuracy, e.g. measured lengths. |
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| 4.1 | INDICES | Understand the meaning of indices (fractional, negative and zero) and use the rules of indices. |
| 4.2 | INDICES | Use and interpret positive, negative and zero indices. |
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| 5.1 | STANDARD FORM | Convert numbers into and out of standard form. |
| 5.2 | STANDARD FORM | Calculate with values in standard form |
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| WEEK | TOPIC | TOPIC DETAILS |
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| 6.1 | FRACTIONS AND DECIMALS | Use the language and notation of simple vulgar and decimal fractions and percentages in appropriate contexts. |
| 6.2 | FRACTIONS AND DECIMALS | Recognise equivalence and convert between these forms. |
| 6.3 | FRACTIONS AND DECIMALS | 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<br>Applies to positive and negative numbers. |
| 6.4 | FRACTIONS AND DECIMALS | Order quantities by magnitude and demonstrate familiarity with the symbols =, ≠, >, <, ≥ , ≤ |
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| 7.1 | SET | Understand notation of Venn diagrams. |
| 7.2 | SET | Definition of sets |
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| 8.1 | SET | Notation<br>o Number of elements in set A n(A)<br>o Universal set<br>o Union of A and B A ∪ B<br>o Intersection of A and B A ∩ B |
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| 9.1 | RATIO AND PROPORTION | Demonstrate an understanding of ratio and proportion. |
| 9.2 | RATIO AND PROPORTION | Calculate average speed. |
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| 10.1 | RATIO AND PROPORTION | Use common measures of rate.<br><br>Note:<br>To include numerical problems involving direct and inverse proportion. Use ratio and scales in practical situations. Formulae for other rates will be given in the question e.g. pressure and density. |
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| 11.1 | ALGEBRIAC EXPRESSIONS | Use letters to express generalised numbers and express basic arithmetic processes algebraically. |
| 11.2 | ALGEBRIAC EXPRESSIONS | Substitute numbers for words and letters in formulae. |
| 11.3 | ALGEBRIAC EXPRESSIONS | Rearrange simple formulae. |

| WEEK | TOPIC | TOPIC DETAILS |
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| 11.4 | ALGEBRIAC EXPRESSIONS | Construct simple expressions and set up simple equations. |
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| 12.1 | EXPANSION AND FACTORIZATION OF ALGEBRAIC EXPRESSIONS | Manipulate directed numbers. |
| 12.2 | EXPANSION AND FACTORIZATION OF ALGEBRAIC EXPRESSIONS | Use brackets and extract common factors. |
| 12.3 | EXPANSION AND FACTORIZATION OF ALGEBRAIC EXPRESSIONS | Expand products of algebraic expressions.<br>e.g. expand 3x(2x – 4y)<br>e.g. factorise 9x2 + 15xy<br>Two brackets only, e.g. expand (x + 4)(x – 7) |
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| 13.1 | EQUATIONS | Derive and solve simple linear equations in one unknown. |
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| 14.1 | EQUATIONS | Derive and solve simultaneous linear equations in two unknowns. |

# CORE MATHEMATICS SCHEME OF WORK

## FORM 4 - TERM 2

| WEEK | TOPIC | TOPIC DETAILS |
|---|---|---|
| 1.1 | COORDINATE GEOMETRY | Demonstrate familiarity with Cartesian coordinates in two dimensions. |
| 1.2 | COORDINATE GEOMETRY | Find the gradient of a straight line. |
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| 2.1 | COORDINATE GEOMETRY | Interpret and obtain the equation of a straight line graph in the form y = mx + c. Problems will involve finding the equation where the graph is given. |
| 2.2 | COORDINATE GEOMETRY | 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). |
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| 3.1 | FUNCTIONS | Interpret and use graphs in practical situations including travel graphs and conversion graphs. |
| 3.2 | FUNCTIONS | Draw graphs from given data.<br>e.g. interpret the gradient of a straight line graph as a rate of change. |
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| 4.1 | TIME | Calculate times in terms of the 24-hour and 12-hour clock. |
| 4.2 | TIME | Read clocks, dials and timetables. |
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| 5.1 | MENSURATION | Use current units of mass, length, area, volume and capacity in practical situations and express quantities in terms of larger or smaller units. |
| 5.2 | MENSURATION | Convert between units including units of area and volume. |
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| 6.1 | MENSURATION | Carry out calculations involving the perimeter and area of a rectangle, triangle, parallelogram and trapezium and compound shapes derived from these. |
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| 7.1 | MENSURATION | Carry out calculations involving the circumference and area of a circle. |
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| WEEK | TOPIC | TOPIC DETAILS |
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| 8.1 | MENSURATION | Solve simple problems involving the arc length and sector area as fractions of the circumference and area of a circle.<br>Note: Answers may be asked for in multiples of π.<br>Where the sector angle is a factor of 360. |
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| 9.1 | MID- YEAR EXAMS | MID- YEAR EXAMS |
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| 10.1 | MID- YEAR EXAMS | MID- YEAR EXAMS |
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| 11.1 | MENSURATION | Carry out calculations involving the surface area and volume of a cuboid, prism and cylinder.<br><br>Notes:<br>Answers may be asked for in multiples of π.<br>Formulae will be given for the surface area and<br>Volume of the sphere, pyramid and cone in the question. |
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| 12.1 | MENSURATION | Carry out calculations involving the surface area and volume of a sphere, pyramid and cone.<br><br>Notes:<br>Answers may be asked for in multiples of π.<br>Formulae will be given for the surface area and<br>Volume of the sphere, pyramid and cone in the question. |
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| 13.1 | MENSURATION | Carry out calculations involving the areas and volumes of compound shapes.<br><br>Notes:<br>Answers may be asked for in multiples of π.<br>Formulae will be given for the surface area and<br>Volume of the sphere, pyramid and cone in the question. |

# CORE MATHEMATICS SCHEME OF WORK

## FORM 4 - TERM 3

| WEEK | TOPIC | TOPIC DETAILS |
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| 1.1 | TRIGONOMETRY | Interpret and use three-figure bearings. Measured clockwise from the North, i.e. 000°–360°. |
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| 2.1 | TRIGONOMETRY | Apply Pythagoras' theorem and the sine, cosine and tangent ratios for acute angles to the calculation of a side or of an angle of a right-angled triangle. Angles will be quoted in degrees. Answers should be written in degrees and decimals to one decimal place. |
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| 3.1 | MONEY | Calculate using money and convert from one currency to another . Includes discount, profit and loss. |
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| 4.1 | PERCENTAGES | Calculate a given percentage of a quantity. |
| 4.2 | PERCENTAGES | Express one quantity as a percentage of another. |
| 4.3 | PERCENTAGES | Calculate percentage increase or decrease. |
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| 5.1 | SIMPLE AND COMPOUND INTEREST | Use given data to solve problems on personal and household finance involving earnings, simple interest and compound interest. |
| 5.2 | SIMPLE AND COMPOUND INTEREST | Extract data from tables and charts.<br><br>Note:<br>Knowledge of compound interest formula is required. |
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| 6.1 | GEOMETRY | Use and interpret the geometrical terms: point, line, parallel, bearing, right angle, acute, obtuse and reflex angles, perpendicular, similarity and congruence. |
| 6.2 | GEOMETRY | Use and interpret vocabulary of triangles, quadrilaterals, circles, polygons and simple solid figures including nets. |
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| 7.1 | GEOMETRY | Measure and draw lines and angles. |

| WEEK | TOPIC | TOPIC DETAILS |
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| 7.2 | GEOMETRY | Construct a triangle given the three sides using a ruler and a pair of compasses only |
| 7.3 | GEOMETRY | Read and make scale drawings |
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| 8.1 | SIMILARITY | Calculate lengths of similar figures. |
| 8.2 | SIMILARITY | Recognise congruent shapes. |