# Excelsior High School

## Mathematics Department



Grade 7

Grade 7

## Scope & Sequence

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# Excelsior High School
## Mathematics Department

**Scope and Sequence**

**Term 1:** Christmas (September to December)

**Topic:** Number Theory/Measurement /Geometry and Trigonometry

**Duration:** 14 weeks (max: 72 contact periods)

| Date | Objectives | | |
|---|---|---|---|
| **Term 1 Week 1**<br><br>Number Theory | a) **Number:**<br> - *ideas, word, symbols*<br> - *the many uses of numbers in everyday life*<br> - *counting, measuring, labeling, ordering*<br>(b) **The evolution and use of several number systems**<br> - *Roman System*<br> - *Hindu-Arabic System*<br> - *a Place Value System (PVS) and symbols*<br>(c) **Properties of denary (base ten) PVS**<br><br>(d) **Use of base ten PSV for**<br> - *sequential counting, ordering and comparison of numbers*<br> - *identification, completion and creation of number patterns and sequences* | | |
| **Term 1 Week 2**<br><br>Measurement | (a) **The S. I (metric) system of units for measuring length, area, mass, volume, capacity and link to:**<br>*(i) base ten place value system for reading and recording decimal numbers*<br>*(ii) the use of prefix to indicate relative sizes of measures*<br>(b) **Expression of one unit of measurement in terms of a larger or smaller unit**<br><br>(c) **Appropriate choice and use of measuring instrument and unit of measure**<br><br>(d) **Basic unit of length (m) and its relation to commonly used smaller or larger units**<br><br>(e) **Choice of appropriate unit for the measurement of length, height and distances** | | |

| Date | Objectives | | |
|---|---|---|---|
| **Term 1 Week 3**<br><br>Number Theory | **(a)  Roman Number System**:<br>  -  *the use of the symbols I, V, X, L, C, D, M for representing counting numbers*<br>  -  *the subtractive principle e.g. V for five and IV for four*<br><br>**(b)  The use of the symbols in the environment**<br><br>**(c)  Types and classification of numbers** (*even, odd, prime, composite*)<br><br>**(d)  The basic operations Addition, Subtraction, Multiplication and Division**<br>  *(i) singly*<br>  *(ii) in combinations noting the order of operation* | | |
| **Term 1 Week 4**<br><br>Measurement | **(a) Basic unit (hour) and the relation to**:<br>  *(i)  parts of the hour*<br>  *(ii) other measure of time: day, week, month, year, leap year, decade, century*<br>  *(iii)use of BC and AD*<br><br>**(b) Time as represented on the:**<br>  *(i)  12- hour clock*<br>  *(ii) 24  hour clock*<br>  *(iii)digital form*<br><br>**(c)  Conversion from one form of representation to another**<br>  **(Use of a.m. and p.m.)** | | Construction of a 12-hour clock |

| Date | Objectives | | |
|---|---|---|---|
| **Term 1 Week 5**<br><br>Number Theory | **(a) The commutative, distributive, and associative properties of numbers**<br><br>**(b) Approximations**<br>    *(i) to the nearest whole number*<br>    *(ii) to the nearest 10, 100, 1000*<br><br>**(c) Estimates of results by**<br>    *(i) rounding off to the nearest whole number*<br>    *(ii) 10, 100, 1000*<br><br>**(d) Problem-solving involving**<br>    *(i) establish of a five step basic plan*<br>    *(ii) translation from words to numerals and the use of symbols =, >, <, ≠,≤≥*<br>    *(iii) logical reasoning*<br>    *(iv) use of simple clear statements and reasons*<br>    *(v) use of appropriate labels and units of measurements* | | |
| **Term 1 Week 6**<br><br>Measurement | **((a) The basic operation A, S, M, D with linear measures**<br><br>**(b) Approximate measures**:<br>    *(i) to nearest whole*<br>    *(ii) to 1 or 2 decimal places*<br><br>**(c) Problem – solving** | | |
| **Week 7** | **Monthly Test 1** | | |
| **Term 1 Week 8**<br><br>Number Theory | (a) **Understanding and the use of**<br>    *(i) even and odd numbers, consecutive numbers*<br>    *(ii) directed numbers/integer*<br>        - *representation on number line*<br>        - *comparison and ordering*<br><br>(b) **Understanding and the use of the concepts**:<br>    *(i) factor, prime factor*<br>    *(ii) prime and composite*<br>    *(iii) numbers as product of their factors* | | |

| Date | Objectives | | |
|------|-----------|---|---|
| **Term 1 Week 9**<br><br>Basic Geometric Concepts/ Plane Shapes/ Measurement | **(a) Geometry: investigation and measurement of the space in which we live:**<br>*Shapes and structures that occupy the environment:*<br>  *- their patterns, forms, similarities and differences, normal/regular usage;*<br>  *- familiar names given to objects/ three-dimensional shapes and solids that are most often seen and/or used;*<br>  *- informal methods of measuring their size, volume, mass, capacity*<br><br>**(b) Definition of:**<br>  *(i) a polygon,*<br>  *(ii) related concepts and vocabulary*<br>  *(iii) closed figure,*<br>  *(iv) plane,·*<br>  *(v) 2D shape*<br><br>**(c) polygons: their sides and angles:**<br>  *(i) special names for polygons with 3 - 5 sides;*<br>  *(ii) identification and informal sketches of polygons with 3 - 5 sides*<br><br>**(d) The perimeter of plane shapes regular or irregular, bounded by straight lines:**<br>  *(i) triangles*<br>  *(ii) quadrilaterals*<br>  *(iii) pentagons*<br><br>**(e) Computation of:**<br>  *(i) the length of a missing side of a 3-5 side shape when given the perimeter*<br><br>**(f)   Solution of  word problems** | | Scrapbook on polygons *triangles (isosceles, scalene, equilateral) *quadrilaterals (square, rectangle, trapezium, parallelogram) *etc |
| **Term 1 Week 10**<br><br>Number Theory | **(a) Understanding and the use of the concepts**:<br>  *(i) common factors, highest common factor (HCF)*<br>  *(ii) multiple, common multiple, least common multiple (LCM)*<br><br>**(b)  Problem – solving using HCF and /or LCM** | | |

| Date | Objectives | | |
|---|---|---|---|
| **Term 1 Week 11**<br><br>Basic Geometric Concepts | **(a) Definition, representation and use of spatial terms with special attention to**:<br>*(i) point;(a location in space);*<br>*(ii) line (set of points), line segment, end point, ray(s), common end point, angle, vertex of angle;*<br>*(iii) plane / flat surface;*<br><br>**(b) Lines in a plane**:<br>*Types of lines:*<br>• *curved, straight, vertical, horizontal;*<br>• *parallel, intersecting, perpendicular*<br><br>**(c) Line segments**:<br>*(i) representing and naming;*<br>*(ii) measurement of a given line segment; identification of congruent line segments*<br>*(iii)drawing a line segment of specified length* | | |
| **Term 1 Week 12**<br><br>Number Theory | **(a)   Numbers expressed as factors in index form**<br><br>**(b) Evaluation of numbers with positive indices**<br><br>**(c) The concept: common fraction and working with common fractions**:<br>-   *formation and use of equivalent fractions*<br>-   *comparison and ordering of fractions*<br>-   *operations (A, S, M, D) with common fractions and mixed numbers* | | |
| **Term 1 Week 13**<br><br>Number Theory | **(a) The concept: common fraction and working with common fractions**:<br>*(i) expression of one quantity as  a fraction of another*<br>*(ii) combined operation and order of operations*<br>*(iii)computation of required fraction of a given number*<br>*(iv)computation of whole or the total when given the fraction*<br><br>**(b)   Solution of word problems involving common fractions** | | |
| **Week 14** | **Monthly Test 2** | | |

**Term 2:** Easter (January to March)

**Topic:** Number Theory/Geometry and Trigonometry/Algebra/Coordinates

**Duration:** 12 weeks (max: 54 contact periods)

| Date | Objectives | Resources | Possible Assessment |
|---|---|---|---|
| **Term 2 Week 1**<br><br>Basic Geometric Concepts | **(a) Angles (types and sizes):**<br>*(i) use of protractor to measure the size of a given angle in degrees; identification of congruent angles;*<br>*(ii) use of protractor to draw an angle when its measurement is given;*<br>*(iii) use of protractor and ruler to draw angles and arms of specific measurement;*<br>*(iv) estimated size of an angle;*<br>*(v) classification of angles by size: right, straight, acute, obtuse, reflex;* | | |
| **Term 2 Week 2**<br><br>Number Theory | **(a) Percent: the concept, symbol and use**:<br>*(i) forming and comparing percentages*<br>*(ii) computation of percentage of a number*<br>*(iii) expressing one number as a percentage of another*<br>*(iv) computation of the total when given a percentage of that total*<br><br>**(b) Decimal fraction: concept, notation and use**:<br>*(i) relation between location and value of a digit in a number in base ten*<br>*(ii) reading, writing, comparing and ordering of numbers which are in decimal form*<br>*(iii) the basic operation A, S, M, D with decimal numbers and mixed numbers* | | |
| **Term 2 Week 3**<br><br>Basic Geometric Concepts | **(a) Angles (types and sizes)**:<br>*(i) classification of angles by location and relationships: adjacent, adjacent on a straight line, at a point, complementary, supplementary, vertically opposite*<br><br>**(b) Calculation of the sizes of**<br>- *unknown angles*<br>- *using concepts / relationships already introduced*<br><br>**(c) Construction of a triangle:**<br>*(i) with help of protractor, when given the length of one side and the sizes of any two angles (AAS);*<br>- *two sides and the angle formed by them (SAS)* | | |

| Date | Objectives | | |
|------|-----------|---|---|
| **Term 2 Week 4**<br><br>Algebra<br><br>\*\*Thursday and Friday - Consultation Days | **(a) Use of symbols to represent numbers, operations, relationships**:<br>   *(i) the concepts: variable, term, factors of a term, expression, coefficient, constant, base with index/ exponent, like terms;*<br>   *(ii) translation of verbal expressions / phrases to algebraic symbols, terms, and/or expressions and vice versa; expressions in their simplest forms;*<br>   *(iii) types of expressions vis-a-vis number of terms*<br><br>**(b) Evaluation of algebraic terms and expressions (numbers for symbols), with special attention to:**<br>   *(i) the use of the four basic operations (A,S,M,D) with whole & rational numbers;*<br>   *(ii) the grouping ¡symbols such as brackets and fraction bars'*<br>   *(iii) the commutative, associative, and distributive properties of numbers including the properties of o and 1;*<br>   *(iv) the order of operations*<br>   *(v) the meaning and use of directed numbers/integers and the basic operations with integers* | | |
| **Term 2 Week 5**<br><br>Number Theory | **(a) Finding approx. values by** :<br>   *(i) round off decimal numbers to nearest whole number*<br>   *(ii) decimal fraction to one or two decimal places*<br><br>**(b) Rational numbers and their relation with the conversion of** :<br>   *(i) common fractions to percentage and vice versa*<br>   *(ii) common fractions to decimal fractions and vice versa*<br>   *(iii) decimal fractions to percentage and vice versa*<br>   *(iv) selection of most appropriate type of rational number to use in a given situation* | | |
| **Term 2 Week 6** | Revision<br>\*\*Ash Wednesday/ Thursday, Friday Midterm | | |
| **Week 7** | **Mid Year Examination** | | |
| **Week 8** | **Mid Year Examination** | | |
| **Term 2 Week 9**<br><br>Algebra | **(a) Simplification of algebraic expressions involving**<br>   *(i) the addition and/or subtraction of like terms;*<br>   *(ii) the multiplication and division operations;* | | |

| Date | Objectives | | |
|---|---|---|---|
| **Term 2 Week 10** <br><br> Coordinates | (a) **Definition of keywords such as axis, coordinate** <br><br> (b) **State coordinates of given points** <br><br> (c) **Draw Cartesian plane (positive)** <br><br> (d) **Plot points using positive coordinates** | STP1 Ch.18 MFCS2 Ch. 9 | <br><br><br> Workbook, p.96 |
| **Term 2 Week 11** <br> Algebra | (a) **Problem-solving** involving the *formation, evaluation and simplification of algebraic expressions using concepts, skills, procedures already introduced* <br><br> (b) **Identification, continuation, creation of sequences and patterns (numeric, algebraic, geometric):** <br>  *(i) from 'pattern to general rule to algebraic exp.;* <br>  *(ii) the nth. term of a sequence* <br><br> (c) **Use of sequences and patterns to solve a variety of problems across strands** | | |
| **Term 2 Week 12** <br><br> Coordinates <br><br> **Holy Thursday/ Good Friday | (a) **Draw Cartesian plane (positive and negative)** <br><br> (b) **Plot points using negative coordinates** | STP1 Ch.18 MFCS2 Ch. 9 | Workbook, p.96 |

**Term 3:** Summer (April to July)

**Topic:** Algebra/Statistics/Consumer Arithmetic/Sets

**Duration:** 13 weeks (max: 60 contact periods)

| Date | Objectives | Resources | Possible Assessment |
|---|---|---|---|
| **Term 3 Week 1** <br><br> Algebra | **(a) The idea of an equation**: <br> *(i) the difference between an expression and an open sentence/equation;* <br> *(ii) translation of verbal sentences to algebraic equations with one variable or unknown and vice versa* <br><br><br> **(b) solution of algebraic equations with one variable, of the forms:** <br> (i) *m* -17=20, -7*t*=35, *x/3* = 9 <br> (ii) 2*x* - 7 = 25 | | |
| **Term 3 Week 2** <br><br> Statistics | **(a) Statistics: a definition; general examination of the widespread use of data or numerical / quantitative information:** <br> • *by whom, from what sources, for what purpose(s);* <br> • *facts vs opinions* <br><br> **(b) Identification of important or interesting phenomena** <br> *(i) in the immediate environment that could/should be investigated; selection of at least two questions to be answered by facts rather than opinions;* <br><br> **(c) Collection of relevant data in the immediate environment:** <br> *(i) sources of data for a particular situation:* <br> • *places, persons;* <br> • *concepts: population, sample. representative and/or biased sample;* <br> *(ii) methods of collection including simple interviews;* <br> *(iii) preparation and use of tally sheets and check lists to record raw data;* | | |

| Date | Objectives | | |
|---|---|---|---|
| **Term 3**<br>**Week 3**<br><br>Consumer Arithmetic | **(a) Some sources of income:- full or part-time employment to an employer; - self-employment ( trade, profession, informal vending)**<br><br>**(b) Money earned:**<br>    *(i) distinction between wages and salary;*<br>    *(ii) relation of wages to initial time worked (fixed time and rate); computation of*<br>        *regular wage;*<br>    *(iii) salary: - agreed pay intervals & rate - commission; salary plus commission;*<br><br>**(c) Use of money for items such as: food, clothing, gifts, health care, entertainment**:<br>    *(i)  pricing systems: formats for quoting prices such as $100 per doz., 5 for $89,3*<br>        *tickets for the cost of two;*<br>    *(ii)  application of number properties and operations to*<br>        -    *compute total cost and unit cost;*<br>        -    *find estimated or approximate cost;*<br>        -    *compute sales tax & GCT;* | | |
| **Term 3**<br>**Week 4**<br><br>Statistics | **(a) Arrangement/organization of raw data:**<br>    *(i) use of a simple frequency distribution table to show a collection of single facts*<br>        *(data usually arranged in ascending order)*<br>**(b) Storage of data for future use:**<br>    *(i)  in tables or on cards;*<br>    *(ii) in a computerized data base* | | |
| **Week 5** | **Monthly Test 3** | | |
| **Term 3**<br>**Week 6**<br><br>Consumer Arithmetic | **(a) Use of money for items such as: food, clothing, gifts, health care, entertainment**:<br>    *(i) bulk/wholesale vs. single item(s) buying: advantages and disadvantages of each;*<br>    *(ii) preparation and use of bills, invoices, receipts;*<br>    *(iii) payment by cash:*<br>        •    *advantages & disadvantages*<br>        •    *computation of change due*<br><br>**(b) Critical examination of sales, specials, bargains:**<br>    *(i)  influence of brand name;*<br>    *(ii) determination of 'better buys'*<br>    *(iii)actual amount and percent of original price saved;*<br>    *(iv) actual discount and percentage discount;* | | |

| Date | Objectives | | |
|---|---|---|---|
| **Term 3 Week 7**<br><br>Statistics | **(a) The use of a variety of visua1/ graphical forms to aid communication, understanding and use of the available data including:**<br>    *(i) reading and interpretation of the pictogram and bar graph, (vertical and*<br>      *horizontal) with special attention to:*<br>•  *the use of the vertical and horizontal axes; the scale or key used;*<br>•  *the title of the graph*<br><br>**(b) Interpretation of the information shown by the graphs already introduced such as:**<br>    *(i) identification of:*<br>•  *comparisons (likenesses & differences);*<br>•  *percentage increase or decrease;*<br>•  *\*number patterns;* | | |
| **Term 3 Week 8**<br>\*\*Labour Day/ Friday Midterm | <div align="center">Revision</div> | | |
| **Term 3 Week 9**<br><br>Consumer Arithmetic | **(a) buying and selling transactions/trading**:<br>    *(i) relationship between*<br>        •  *cost price, marked and/or selling price of goods*<br>        •  *profit, loss; percentage profit, percentage loss;*<br>    *(ii) computation of:*<br>        •  *profit or loss and profit or loss percent when cost price and selling price are*<br>            *known;*<br><br>**(b) Problems based on the concepts and operations already introduced** | | |

| Date | Objectives | | |
|---|---|---|---|
| **Term 3**<br>**Week 10**<br><br>Sets | **(a) Special concepts, language, symbols and notation associated with sets**:<br>*(i) an element or member*<br>*(ii) use of brackets/ braces*<br>*(iii)use of capital letters to name a set*<br>*(iv) the cardinal number of a set*<br>*(v) the empty or null set*<br>*(vi) is a member of is not a member of*<br>*(vii) subsets*<br>*(viii) intersection and union of sets*<br>*(ix) disjoint sets*<br><br>**(b) Venn diagram**:<br>*(i) their use to show single sets*<br>*(ii) their use to show relationship between two sets*<br>*(iii)interpretation of information given in two or more sets in a Venn diagram* | | |
| **Term 3**<br>**Week 11**<br>*All Topics* | Revision | | |
| **Week 12** | **End of Year Examination** | | |
| **Week 13** | **End of Year Examination** | | |