

ESSENTIAL MATHEMATICS GRADE 10

STRANDS

1. **NUMBERS AND ALGEBRA**
2. **MEASUREMENTS AND GEOMETRY**
3. **STATISTICS AND PROBABILITY**

1. NUMBERS AND ALGEBRA

- REAL NUMBERS

- ✓ Classify real numbers as rational or irrational (weight, height) (odd, even, prime and composite)
- ✓ Combined operation on rational numbers
- ✓ Determine reciprocal of real numbers using calculators
- ✓ Application of integers (temperatures e.t.c)

- INDICES

- ✓ Express numbers in index form
- ✓ 4 laws of indices ($a^m \times a^n = a^{m+n}$, $a^m \div a^n = a^{m-n}$, $(a^m)^n = a^{m \times n}$, $a^0 = 1$ (m and n are whole numbers)
- ✓ Apply laws of indices in numerical computation.

- QUADRATIC EQUATIONS

- ✓ Formation of quadratic expression
- ✓ Factorization and solve quadratic equations by factorization
- ✓ Application of quadratic equation

2. MEASUREMENTS AND GEOMETRY

- SIMILARITY AND ENLARGEMENT

- ❖ Similarity between objects
- ❖ Determine centre of enlargement and LSF (**NEGATIVE S.F SHOULD NOT BE INCLUDED**)
- ❖ Draw image of object given the centre of enlargement and LSF
- ❖ A.S.F
- ❖ V.S.F
- ❖ Relate L.S.F, A.S.F and V.S.F
- ❖ Application of similarity and enlargement.

- REFLECTION

- Identify line of symmetry in plane figures
- Determine properties of reflection using object and image
- Draw image given object and mirror line (plain/cartesian plane)
- Draw mirror line given object and image
- (mirror lines $x = 0$, $y = 0$ or $y = x$)

- TRIGONOMETRY

- ✓ Identify SOHCAHTOA
- ✓ Determine sine, cosine and tangent from right angled triangle
- ✓ Relate sine and cosine of complementary angles
- ✓ Apply trigonometric ratios in elevation and depression

- **AREA OF POLYGONS**

- ❖ Area of triangle by $A = \frac{1}{2}ab \sin\theta$
- ❖ Area of triangle by Hero's formula
- ❖ Area of rhombus and parallelogram
- ❖ Area of regular pentagon and hexagon
- ❖ Apply area in real-life

- **AREA OF PART OF A CIRCLE**

- ✓ Area of a sector of a circle
- ✓ Area of segment of a circle
- ✓ Application (**No intersecting circles**)

- **SURFACE AREA OF SOLIDS**

- Surface area of cones and (square, rectangular based) pyramids from nets
- Calculate surface area of spheres and hemispheres
- Surface area of frustums of cone and pyramids
- Apply surface area of cones, pyramids and frustums in real life

- **VOLUME AND CAPACITY**

- ❖ Determine volume and capacity of cones and pyramids
- ❖ Volume and capacity of frustum of a cone and pyramid
- ❖ application

- **COMMERCIAL ARITHMETIC 1**

- Prepare budget
- Calculate discounts, % discount, commission, % commission, profit, loss, % loss or profit
- Convert currencies using exchange rates

3. STATISTICS AND PROBABILITY

- **STATISTICS 1**

- Draw frequency distribution table for ungrouped data
- Determine mean, mode and median of ungrouped data
- Draw bar graphs, line graphs and pie charts

- **PROBABILITY 1**

- ❖ Equally and likely events
- ❖ Mutually exclusive events
- ❖ Independent events (maximum of two experiments and outcomes)