GRADE 8 NSC MATHEMATICS CURRICULUM

TERM 1

Unit 1 Numbers:

Indices, Bases and Estimations

Objectives

1. State the meaning of a^m, where a and m are whole numbers.

2. Evaluate the expressions: a^m , a^m × b^n and $\frac{a^m}{b^n}$ where a, b, m, n, are whole numbers.

3. Write numbers greater than or equal to 10 in standard form.

4. Write a number to a given number of decimal places and significant figures.

5. Express place values of digits in all bases including base 10.

6. Add, subtract and multiply numbers written in base n, (where 1<n<10).

7. Convert numbers written in base n, (where 1<n<10) to base 10 and vice versa.

8. Identify and use the following Concepts:

      a. Closure

      b. Reflexive property

      c. Symmetry property

      d. Transitive property

      e. Trichotomy law

UNIT 3 Geometry:

Solids, Transformations, Angle properties of Transversals

Objectives

1. Investigate the relationship among angles formed by:

      (a) A transversal and two or more parallel lines;

      (b) Intersecting non-perpendicular lines.

2. Sketch different views (top, side, etc.) of solids making use of dotted lines to represent unseen lines.

3. Perform translations and identify images of objects, where the translation vector is given.

4. Find the translation vector given the object and its image.

5. Perform reflections and identify images of objects, where the mirror lines are the x or y axes.

6. Perform rotations of 90° , 180° , 270°, about the origin.

UNIT 4 Algebra:

Transposition, Equations and Inequalities

Objectives

1. Change the subject of a simple formula. e.g., C = 2πr making r the subject gives r = $\frac{C}{2\pi}$.

2. Write inequalities to illustrate word problems.

3. Illustrate inequalities on a number line.

4. Solve simple linear inequalities and represent the solution on a number line.

TERM 2

Unit 1 Numbers:

Ratio and Proportion

Objectives

15. Solve simple problems involving ratio and proportion.

16. Identify different types of bank accounts with their characteristic features.

17. Complete withdrawal and deposit forms when banking and know how to write a cheque.

18. Use simple proportions of principal, rate and time to develop the Simple Interest.

19. Calculate simple interest on loans and deposits.

20. Calculate compounded interest using a calculator (using a recursive method).

21. Calculate total cost in a hire purchase agreement and compare. Hire Purchase Price and Cost Price.

22. Calculate discounts and taxes from given instructions.

UNIT 2 Measurement:

Areas, Volumes, Capacity

Objectives

1. Derive and use the formulae for the area of (a) parallelograms, (b) triangles, (c) trapezia.

2. Compute the total surface area of cubes, cuboids, cylinders and triangular prisms (using only triangles where the area can be calculated using for the triangular prism).

3. Perform conversion within units up to cubed units.

4. Establish formulas and, estimate and calculate the volume and capacity of cubes, cuboids, prisms, cylinders, and composite objects.

UNIT 3 Geometry:

Sum of interior Angles of Polygons

Objectives

7. Determine the properties of n-sided polygons, where $3 \leq n \leq 10$.

8. Find the angle sum (sum of the interior angles) of polygons with n interior angles ($3 \leq n \leq 10$).

Unit 5 Statistics and Probability:

Statistics and Probability

Objectives

1. Determine the mode, median and mean from a frequency table.

2. Use the mode, median and mean to interpret information.

3. Read, interpret and construct pictographs, bar charts, pie charts and line graphs.

TERM 3

Unit 1 Numbers:

Sets

Objectives

9. Determine the number of subsets of a given set.

10. List all the possible subsets of a given set, where the number of elements in the given set is no more than 4.

11. Solve simple problems involving, at most, two subsets of the universal set.

12.Undestand the concept of proposition and use the language of logic (negation, conjunction, disjunction, if… then, equivalence).

13. Identify and differentiate between simple and compound statements.

14. Express simple and compound propositions algebraically using appropriate terminology and vice versa.

UNIT 3 Geometry:

Constructions

Objectives

9. Construct, using appropriate geometric instruments:

   (a) angle bisectors

   (b) angles of 90°, 45°, 60°, 30°

   (c) triangles

UNIT 4 Algebra:

Relations, Functions and Graphs

Objectives

5. Plot the ordered pairs of a mapping as a graph.

6. Draw straight line graphs of the form y = mx + c by

   (a) plotting points,

   (b) using the gradient and intercept.

7. Determine gradients and intercepts of straight line graphs.

8. Relate gradient of a graph to the rate of change of quantities.

9. Find the equation of straight line graphs.

10. Plot two linear equations on the same pair of axes and interpret the point(s) of intersection (if any).

11. Graph linear inequalities on the coordinate plane and identify regions on the graph.