

THE G C SCHOOL OF CAREERS



SCHOOL YEAR 2022-2023

FORM 1 to 2

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- **BOOK:** *Edexcel International GCSC (9-1) Mathematics A*, Student Book 1 by David Turner , Ian Potts.
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MATERIAL TO BE COVERED

1. Unit 1: Number 1:

- Simplifying expressions involving the four basic operations (addition, subtraction, multiplication and division) and powers using the BIDMAS rule.

2. Unit 3: Number 3:

- Use the terms odd, even and prime numbers, factors and multiples.
- Know the divisibility rules (eg. A number is divisible by 3 , if the sum of its digits is a multiple of 3).
- Express integers as a product of powers of prime factors
(e.g. $720 = 2^4 \times 3^2 \times 5$)
- Find the Lowest Common Multiple (LCM) and the Highest Common Factor (HCF) of two/three given numbers.

3. Unit 1: Number 1:

- Understand and use equivalent fractions; simplifying a fraction by canceling common factors

$$\left(\frac{8}{60} = \frac{2}{15} \text{ lowest terms}\right)$$

- Understand and use mixed numbers and vulgar fractions
- Conversion between improper fractions and mixed numbers
- Identify common denominators
- Applying common denominators to order fractions
- Calculate a given fraction of a given quantity, expressing the answer as a fraction
- Express a given number as a fraction of another number
- Use common denominators to add and subtract fractions (use fractions in problems)
- Convert between fractions, decimals and percentages

$$\text{(e.g. } \frac{3}{5} = 0.6 = 60\% \text{)}$$

- Understand and use unit fraction as multiplicative inverses

$$\text{(e.g. } 3 \div 5 = 3 \times \frac{1}{5} \text{)}$$

- Multiply and divide a given fraction by an integer, by a unit fraction and by a general fraction
- Use decimal notation (understand the position of the figure in decimal numbers)
- Order decimals
- Order numbers in ascending or descending order a combination of decimals percentages fractions

(eg. Put the following numbers in ascending order $\frac{3}{5}, 0.65, 70\%$)

- Apply the BIDMAS rule with decimals and fractions.
- Degree of accuracy (decimal places, significant figures)

4. Directed Numbers (The book does not include any questions on this topic):

- Adding, Subtracting, multiplying and dividing positive and negative numbers
- Powers with negative numbers eg. $(-2)^2$
- Use the BIDMAS rule with directed numbers (manipulating signs)
- Use directed numbers in practical situations (E.g. temperature, sea-level).

5. Unit 1:Algebra 1:

- Evaluate expressions by substituting numerical values for letters
- Collect like terms
- Multiply a single term over a bracket.
- Expanding double brackets (Unit 5: Algebra 5)
- Know the following rules of indices when simplifying algebraic expressions ($a^m \times a^n = a^{m+n}$ $a^m \div a^n = a^{m-n}$ $(a^m)^n = a^{m \times n}$)
- Finding expressions for the perimeter and area of shapes (rectangles, triangles)
- Solve linear equations with integer or fractional coefficients in one unknown in which the unknown appears on either side or both sides of the equation
- Solving verbal problems by constructing an equation including problems with perimeter and area of shapes and sum of angles (rectangles and triangles)
- Understand that a letter may represent an unknown number or a variable
- Use correct notational conventions for algebraic expressions and formulae

(Evaluate $2x - 3y$, when $x = -2$ and $y = 4$)

- Substitute positive and negative integers, decimals and fractions for words and letters in expressions and formulae
- Use formulae from mathematics and other real life contexts expressed initially in words or diagrammatic

6. Unit 1: Shape and Space 1:

- Know what a point, a straight line and a line segment is.
- Know the different types of angles (acute, obtuse and reflex)
- Know how to solve problems involving angle reasoning (vertically opposite angles, angles on a straight line, supplementary angles, complementary angles and angles at a point)
- Finding angles of shapes
 - Triangles (equilateral, isosceles)
 - Quadrilaterals
- Naming a triangle (using vertices) , sides and angles using letter notation (eg. Triangle ABC, $\angle ABC$)
- Finding angles on parallel lines using angle theorems (corresponding angles, alternate angles, Interior angles, vertically opposite angles).
- Polygons
- Constructions (know how to construct angles, construct triangles, angle bisector, Perpendicular Bisector.
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7. Unit 2: Number 2:

- Percentages: calculate x as a percentage of y and y percent of x.
- Know how to use and find multiplying factors.
- Work out percentage change; increase/decrease (using formulae)
- Recognize if increase or decrease using words (depreciation, appreciation)

8. Unit 3: Number 3:

- Ratio:
- Simplify ratios (simple, with different units and ones involving fractions)
- Comparing ratios
- Finding ratios in problems
- Finding missing quantities by writing ratios as fractions and then solve like equations.
- Division in a given ratio (sharing amounts)
- Map Scale (finding real measurements using map scales)

9. Unit 2: Algebra 2:

- Simplifying fractional algebraic expressions involving addition, subtraction, multiplication and division.
- Solving Equations with squares and square roots

10. Unit 3: Algebra 3:

- Solving equations with fractions.

11. Unit 7: Number 7 (Book 2)

- Recurring numbers

12. Unit 2: Algebra 2:

- Using the positive integer rules of indices to simplify expressions
($a^m \times a^n = a^{m+n}$ $a^m \div a^n = a^{m-n}$ $(a^m)^n = a^{m \times n}$)
- Evaluate operations using rules of indices giving answers correct to significant figures and in standard form..

13. Unit 2 : Handling Data 1:

- Collecting Data, Discrete Data, Continuous Data
- Pictograms, pie charts, bar charts, two way tables, multiple bar charts.
- Misleading data representation.
- Averages: Mean, Mode, Median, Range
- Comparing averages.

14. Unit 3 : Handling Data 2:

- Extending to frequency tables into calculation tables
- Frequency polygon.
- Averages from frequency tables including grouped data.

15. Unit 2 : Shape and Space 2:

- Pythagoras Theorem (work out missing sides of simple right angled triangles)
- Work out missing sides in combined right-angled triangles.
- Solving problems using Pythagoras theorem.

16. Unit 4: Algebra 4:

- Area and perimeter of shapes using formulae (triangle, rectangle, parallelogram, trapezium, circle, rhombus)