SDCC Mathematics Year 7

The KS3 Mathematics course has been developed to provide students with a strong grounding in the key knowledge and skills that they will need to be successful not only in their GCSE course but also in later life – in further and higher education and employment.

Course Information

The Year 7 scheme of learning:
- ➢ Builds on the work done by students during primary school
- ➢ Has number at the heart of it, with a strong focus on reasoning and problem-solving
- ➢ Provides students with the opportunity to work together as a whole group as they progress through the curriculum
- ➢ Extends higher attaining students by providing challenges to deepen their understanding rather than having them simply rush onto the next topic.

Term One: Algebraic Thinking, Place Value and Proportion

Sequences
In this unit students will describe and continue sequences in diagram and number forms, both linear and non- linear.

Understanding and Using Algebraic Notation
This is a key unit in which students use letters to represent variables. They will use functions machine with numbers, bar models and letters. They will progress to forming and substituting into expressions including to generate sequences. Students will represent functions graphically.

Equality and Equivalence
This unit focuses on developing understanding about which algebraic expressions are equivalent. Students will collect like terms. They will also form and solve one-step equations, including those involving negatives and fractions

Place Value and Ordering Integers and Decimals
Students will have opportunity to consolidate and extend their understanding of place value for decimals, measures and integers of any size. They will round numbers to the nearest 10, 100, 1000 and to one significant place. Some will progress to learn about standard form numbers.

Fraction, Decimal and Percentage Equivalence
This unit focuses on converting between any fraction, decimal and percentage. Students will use these skills to help interpret pie charts.

Term Two: Applications of Number, Directed Number and Fractional Thinking

Solving Problems with Addition and Subtraction
This unit includes work on addition and subtraction of integers and decimals. Students will solve problems in the context of perimeter, money and frequency trees and tables. Some will progress to adding standard form numbers.

Solving Problems with Multiplication and Division
This is a key unit and includes work on the processes of multiplication and division (including formal written algorithms) and develops students understanding of the order of operations. Students apply their skills in a range of contexts including unit conversion, area, statistics and solving two-step equations.

Fractions and Percentages of Amounts
This unit links together the work on fractions and percentages with the unit on multiplication and division to solve problems and develop reasoning skills.

Operations and Equations with Directed Number
Students build their skills in working with negative numbers and applying the four operations to them. They will also look further at the order of operations and solving equations. Some will explore negative square roots.

Addition and Subtraction of Fractions
Students will learn the different models for interpreting fractions and will revisit equivalent fractions. They will also consolidate the skills of adding and subtracting fractions, including with different denominators. Students will also solve problems which involve adding a decimal to a fraction. Some will add and subtract simple algebraic fractions.

Term Three: Lines and Angles and Reasoning with Number

Constructing, Measuring and Using Geometric Notation
Students will build their skills in drawing/measuring angles and triangles accurately. They will learn about notation for lines and angles. They will use mathematical language to describe properties of shapes.

Developing Geometric Reasoning
Students will learn the angle properties of triangles, quadrilaterals, at a point, on a straight line and in parallel line diagrams. They will apply their knowledge to find missing angles. Students will also explore angles in polygons.

Developing Number Sense
In this topic students will revisit mental arithmetic strategies, including using know facts to derive other facts e.g. given $7n = 150$, what is the value of $21n$?

Sets and Probability
Students will learn about the probability of single events. They will use set notation and Venn diagrams, including to solve probability problems and to find HCF and LCM.

Prime Numbers and Proof
In this unit students will explore the different types of numbers, including using prime factorisation as a tool. They will learn about powers and roots. They will also see how counterexamples can be used to disprove theorems and some will explore proof of angle rules.

Assessment

Informal assessment is ongoing in Mathematics and it informs our lesson planning.

We also assess students' progress more formally, using written assessment. These are scheduled for:

➢ Week beginning 25th November 2019
➢ Week beginning 9th March 2020
➢ Week beginning 22nd June 2020

How will we be learning?

Our aim is that teaching is student led using inquiry and investigation to develop reasoning and problem-solving skills to foster independent learners with a passion for maths. We endeavour to develop the intellectual maturity of our students to enable them to take risks and overcome the challenges that they encounter.

Home learning is set weekly to consolidate and extend the learning in class and this is completely personalised to every student by using Sparx. Students will be introduced to Sparx in their maths lessons and additional support is available at homework club.

Try this at home

In addition to the home learning set on Sparx, you may like to try the following;

- **MyMaths**: Use booster packs to enhance your progress. We recommend times table boosters, three boosters, four boosters and five boosters. Ask your teacher which is most suitable.
- **Practise basic skills** regularly. It's important that you know your times tables from 1 to 12, square numbers and number bonds to 10 and 100. E.g. what do we add to 37 to get to 100
- **Use maths in real life:** Take any opportunity to discuss the maths that is around you. Analyse your shopping bills to check VAT; investigate the effects of correct weighing while cooking.
- **Extend your learning further:** There are lots of problems to solve on nrich website https://nrich.maths.org/8516. Alternatively, why not try a Junior Maths Challenge paper https://www.ukmt.org.uk/individual-competitions/junior-challenge/