# <u>Unit 1 – Number 1</u>

## **Multiples and Factors**

- Use the concepts and vocabulary of divisor, highest common factor, least (lowest) common multiple and prime factor decomposition (M2)
- Find the LCM and HCF of numbers written as the product of their prime factors (M3)

#### Indices, Powers and Roots

• Use index notation and index laws for positive, whole number powers (M2)

## **Accuracy and Bounds**

- Round to a specified or appropriate number of significant figures (M2)
- Calculate the upper and lower bounds in calculations involving addition and multiplication of numbers expressed to a given degree of accuracy (M3)

## **Growth and Decay**

- Use percentage and repeated proportional change (M2)
- Find the original quantity, given the result of a proportional change (M3)

# <u> Unit 2 – Algebra 2</u>

## The Language of Algebra

• Know the difference between an equation and an identity (M3)

### Expressions

- Simplify and manipulate algebraic expressions by multiplying a single term over a bracket (*M2*)
- Manipulate algebraic expressions by taking out common factors that are terms (M2)
- Multiply two linear expressions (M3)
- Factorise quadratic expressions of the form x2+bx+c (M3)
- Factorise using the difference of two squares (M3)

#### Equations

- Set up and solve linear equations in one unknown, including those with the unknown on both sides of the equation and equations of the form x/4 +3 = 7 (M2)
- Set up and solve linear equations of the form 4a+3/10 + 6a-5/5 = 13/2 (M3)
- Set up and solve quadratic equations using factors (M3)

## **Algebracic Fractions**

- Add or subtract algebraic fractions, for example simplify 4a+3/10 + 6a-5/5 (M3)
- Simplify, multiply and divide algebraic fractions with linear or quadratic numerators and denominators (M3)

# Unit 3 - Geometry and Measures 1

#### Perimeter

- Calculate perimeters of kite, parallelogram, rhombus and trapezium (M2)
- Calculate perimeters of composite shapes (M2)

#### Area

- Calculate areas of kite, parallelogram, rhombus and trapezium (M2)
- Calculate areas of composite shapes (M2)

## Volume

• Calculate volumes of right prisms (M2)

## **Pythagoras and Trigonometry**

- Use Pythagoras' theorem in 2D problems (M2)
- Understand and use the trigonometric ratios of sine, cosine and tangent to solve 2D problems, including those involving angles of elevation and depression (M3)

# <u>Unit 4 – Number 2</u>

#### Working With Money

• Calculate with money and solve problems in a financial context for example compound interest, insurance, taxation, mortgages and investments *(M2)* 

### **Working With Fractions**

• Add, subtract, multiply and divide fractions, including mixed number (M2)

# **Working With Decimals**

• Add, subtract, multiply and divide decimals of any size (M2)

#### **Fractions and Decimals**

• Recognise that recurring decimals are exact fractions and that some exact fractions are recurring decimals (M2)

# Unit 5 – Geometry and Measures 2

# Shape Properties

• Identify and apply circle definitions and properties, including tangent, arc, sector and segment. (M3)



# <u>Unit 6 – Handlng Data 1</u>

### Mean, Mode, Median and Range

- Estimate mean from a grouped frequency distribution (M2)
- Identify the modal class and the median class from a grouped frequency distribution (M2)
- Calculate quartiles and inter-quartile range from ungrouped data and understand their uses (M3)
- Estimate the median, quartiles and interquartile range (M3)

# Sampling

• Infer properties of populations or distributions from a sample and know the limitations of doing so (M3)

## Scatter Graphs

- Draw and/or use lines of best fit by eye, understanding what these lines represent (M2)
- Draw conclusion from scatter diagrams (M2)
- Use terms such as positive correlation, negative correlation and little or no correlation (M3)
- Interpolate and extrapolate from data and know the dangers of doing so (M3)
- Identify outliers (M3)
- Appreciate that correlation does not imply causality (M3)

## Using Statistical Diagrams

• Use 3 circle Venn diagrams to sort data (M2)

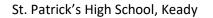
# <u>Unit 7 – Algebra 2</u>

## **Co-Ordinate Geometry**

- Find the midpoint and length of a line in 2D co-ordinates (M2)
- Find the equation of a line through two given points or through one point with a given gradient **(M3)**
- Understand and use the gradients of parallel lines (M3)

## **Graphs and Gradients**

- Find and interpret gradients and intercepts of linear graphs, for example plot and interpret the graph of hiring a car at £40 per day plus a cost of 20p per mile (M2)
- Understand that the form y = mx +c represents a straight line and that m is the gradient of the line and c is the value of the y intercept (M3)



# <u>Unit 8 – Handling Data 2</u>

### **Box Plots**

- Calculate quartiles and inter-quartile range from ungrouped data and understand their uses (M3)
- Display information using box plots (M3)

### **Cumulative Frequency Graphs**

- Construct and interpret cumulative frequency tables and the cumulative frequency curve (M3)
- Estimate the median, quartiles and interquartile range (M3)

### Unit 9 – Geometry and Measures 3

### **Mensuration Problems**

• Solve mensuration problems that involve arc length and area of a sector and surface area and volume of a cylinder, cone or sphere (M3)

### **Compound Mesures and Units**

- Use compound measures and units such as density and kg/m3 (M2)
- Use compound measures and units such as pressure and N/m2 (M3)