

## **Year 10 Revision List - May 2025 Exam - Mathematics Department**

### **Pythagoras' Theorem**

- Identify the hypotenuse of a right-angled triangle
- Calculate the length of the hypotenuse given the other two sides
- Calculate the length of one of the shorter sides when given the hypotenuse and the other side
- Use Pythagoras' theorem to find the length of a line segment from a co-ordinate grid and from practical situations

### **3D Shapes**

- Identify faces, edges and vertices of a 3D shape
- Recognise and name common 3D shapes and their nets
- Draw nets of 3D shapes
- Draw a plan and front and side elevations of shapes made from simple solids

### **Area & Volume**

- Calculate the area of a square, rectangle, triangle, parallelogram and trapezium
- Calculate the area of a compound shape made from squares, rectangles and right-angled triangles with missing but attainable sides
- Calculate the circumference and area of the circle, given either radius or diameter
- Calculate the volume of a cube or cuboid
- Calculate the area and perimeter of a semi-circle or quarter circle
- Calculate the volume of a prism
- Calculate the surface area of a cube or cuboid
- Calculate the perimeter of a sector of a circle
- Calculate the area of a sector of a circle
- Find the cross-sectional area, given the volume and height

### **Transformations**

- Reflect a shape across a horizontal or vertical line.
- Reflect a shape across a diagonal line angled at  $45^\circ$
- Translate a shape when given a left/right and up/down instruction.
- Translate a shape given vector notation.
- Enlarge a shape by a positive integer scale factor.
- Describe using vector notation a translation.
- Enlarge a shape by a positive integer scale factor through a centre of enlargement.

### **Percentages**

- Increase and decrease a number by a given percentage.
- Solve real life percentage problems.
- Calculate a percentage increase or decrease.
- Calculate compound interest.
- Calculate the original quantity given the result of a percentage change.
- Calculate compound interest using the percentage multipliers.

## **Fractions**

- Add and subtract fractions with different denominators.
- Multiply and divide fractions.
- Convert between mixed number and improper fractions.
- Find the reciprocal of a number.
- Converting a fraction to a recurring decimal
- Add, subtract, multiply and divide fractions involving mixed numbers.
- Converting a recurring decimal to a fraction
- Simplify problems involving fractions with algebra.

## **Ratio and Proportion**

- Write a ratio in its simplest form.
- Divide a quantity into a given ratio.
- Solve a ratio problem in context.
- Solve problems involving direct proportion (recipes).

## **Algebra**

- Write an algebraic expression using the rules of algebra.
- Simplify an algebraic expression by collecting like terms.
- Calculate the value of an expression by substituting values.
- Multiply out single brackets using any coefficient.
- Multiply out and simplify two single linear brackets.
- Solve simple linear equations where the unknown appears on only one side.
- Solve linear equations where the unknown appears on both sides, to include brackets.
- Factorise a simple expression easily by taking all common factors outside the bracket.
- Solve algebraic equations involving squares and cubes using trial & improvement.