

# Year 9 GCSE Mathematics (Higher)

GUNNERSBURY  
CATHOLIC SCHOOL



## Basic number

- ✓ Solving real-life problems
- ✓ Multiplication and division with decimals
- ✓ Approximation of calculations
- ✓ Multiples, factors, prime numbers, powers and roots
- ✓ Prime factors, LCM, HCF
- ✓ Negative numbers

## Statistical diagrams and averages

- ✓ Statistical representation
- ✓ Statistical measures
- ✓ Scatter diagrams

## Ratio and proportion

- ✓ Ratio
- ✓ Direct proportion problems
- ✓ Best buys
- ✓ Compound measures
- ✓ Compound interest and repeated percentage change
- ✓ Reverse percentage (working out the original amount)

## Transformations, constructions and loci

- ✓ Congruent triangles
- ✓ Rotational symmetry
- ✓ Transformations
- ✓ Combinations of transformations
- ✓ Bisectors
- ✓ Defining a locus
- ✓ Loci problems
- ✓ Plans and elevations

## Length, area and volume

- ✓ Circumference and area of a circle
- ✓ Area of a parallelogram
- ✓ Area of a trapezium
- ✓ Sectors
- ✓ Volume of a prism
- ✓ Cylinders
- ✓ Volume of a pyramid
- ✓ Cones
- ✓ Spheres

## Linear graphs

- ✓ Drawing linear graphs from points
- ✓ Gradient of a line
- ✓ Drawing graphs by gradient-intercept and cover-up methods
- ✓ Finding the equation of a line from its graph
- ✓ Real-life uses for graphs
- ✓ Solving simultaneous equations using graphs
- ✓ Parallel and perpendicular lines

## Fractions, ratio and proportion

- ✓ One quantity as a fraction of another
- ✓ Adding, subtracting and calculating with fractions
- ✓ Multiplying and dividing fractions
- ✓ Fractions on a calculator
- ✓ Increasing and decreasing quantities by a percentage
- ✓ Expressing one quantity as a percentage of another

## Number and sequences

- ✓ Number sequences
- ✓ Finding the  $n$ th term of a linear sequence
- ✓ Special sequences
- ✓ General rules from given patterns
- ✓ The  $n$ th term of a quadratic sequence
- ✓ Finding the  $n$ th term for quadratic sequences

## Angles

- ✓ Angle facts
- ✓ Triangles
- ✓ Angles in a polygon
- ✓ Regular polygons
- ✓ Angles in parallel lines
- ✓ Special quadrilaterals
- ✓ Scale drawings and bearings

## Algebraic manipulation

- ✓ Basic algebra
- ✓ Factorisation
- ✓ Quadratic expansion
- ✓ Expanding squares
- ✓ More than two binomials
- ✓ Quadratic factorisation
- ✓ Factorising  $ax^2 + bx + c$
- ✓ Changing the subject of a formula

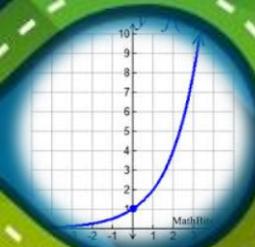
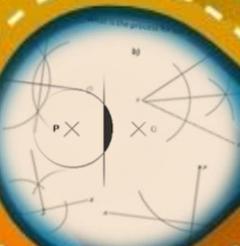
## Right-angled triangles

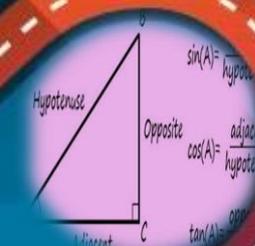
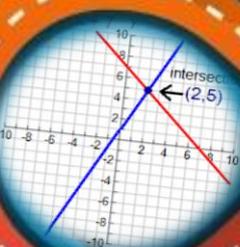
- ✓ Pythagoras' theorem
- ✓ Finding the length of the shorter side
- ✓ Applying Pythagoras' theorem in real-life situations
- ✓ Pythagoras' theorem and isosceles triangles
- ✓ Pythagoras' theorem in three dimensions
- ✓ Trigonometric ratios
- ✓ Calculating angles
- ✓ Using the sine and cosine functions
- ✓ Using the tangent function
- ✓ Which ratio to use
- ✓ Solving problems using trigonometry
- ✓ Trigonometry and bearings
- ✓ Trigonometry and isosceles triangles

$2 \times 10^4 = 20,000$   
 $6.9 \times 10^5 \div 3 \times 10^3 = 23 \times 10^2$   
 $75 \times 10^3 \div 15 \times 10^{-1} = 5 \times 10^4$   
 $28 \times 10^{-6} \div 7 \times 10^{-3} = 4 \times 10^{-4}$

Calculate forty million divided by eight thousand.  
 $40,000,000 \div 8,000 = 4 \times 10^7 \div 8 \times 10^3$

mass of one atom of hydrogen is 167  
 mass of twenty thousand

$$\frac{3}{4} \div \frac{2}{3} = \frac{3}{4} \times \frac{3}{2}$$



$$(x-1)(x-2-5y+2x) = (x-1)(x+2-5y) = \frac{(x-1)(x+2)}{5}$$


To be continued  
in Year 10