Maths Skills Checklist

Number

- Put all types of number in order from smallest to biggest.
- Be able to add/subtract/ multiply and divide all types of number.
- Use BIDMAS.
- Know factors, multiples & primes, including HCF/LCM.
- Write a number as product of prime factors.
- List things systematically.
- Know square and cube numbers, and their roots.
- Calculate powers and roots.
- Use indices laws.
- Be able to calculate with fractions.
- Use Standard Form.
- Change fractions to decimals and vice versa.
- Use fractions with ratio.
- Know and convert units of measurement.
- Estimate answers to calculations
- Round to decimal places and significant figures.
- Know limits of accuracy.

Higher only

- Use product rule for counting.
- Estimate powers and roots of any number.
- Use fractional indices.
- Simplify surds.
- Change recurring decimals to fractions
- Calculate with upper and lower bounds.

Algebra

- Simplify algebraic expressions
- Substitute into algebraic expressions.
- Use the vocabulary of algebra.
- Expand brackets and factorise.
- Expand double brackets.
- Factorise quadratics.
- Rearrange formulae/equations.
- Form algebraic expressions.
- Use functions with inputs and outputs.
- Plot coordinates.
- Plot graphs of equations.
- Use y=mx+c
- Calculate gradient and y-intercept.
- Recognise shape of graphs and sketch them.
- Use quadratic graphs to find roots and turning points.
- Use real life graphs.
- Solve equations.
- Solve quadratic equations graphically and by factorising.
- Solve simultaneous equations.
- Solve inequalities.
- Generate terms of a sequence.
- Know special types of sequence (square, cube, Fibonacci etc.)
- Find the nth term of a sequence.

Higher only

- Manipulate algebraic fractions.
- Expand three (or more) brackets.
- Factorise quadratics with number in front of the x^2
- Use algebraic proof.
- Find perpendicular gradients.
- Use function notation including inverse and combined functions.
- Find turning points of quadratics by completing the square.
- Sketch exponential and trigonometric graphs.
- Know and sketch transformation of functions.
- Find gradient at a point on a curve.
- Calculate areas under graphs.
- Know and use the equation of a circle.
- Solve quadratic equations using formula.
- Find approximate solutions by iteration.
- Find nth term of quadratic sequences.

Ratio

- Use compound units (speed, density etc.)
- Use scale factors.
- Express one quantity as a fraction of another.

- Simplify ratios.
- Share by ratio.
- Solve conversion/ recipe problems.
- Use percentage.
- Change percentage to fractions and decimals.
- Solve proportion problems.
- Find missing sides on similar shapes.
- Compare length/ area using ratio notation.
- Use inverse proportion.
- Interpret the gradient of a graph.
- Calculate with compound interest and other growth problems.

Higher only

- Form equations of proportion.

Shape

- Use language of shape.
- Construct bisector of a line and of an angle.
- Use angle facts, including parallel lines.
- Know properties of special shapes (triangles and quadrilaterals)
- Know congruence.
- Find missing angles and sides on shapes.
- Use transformations (reflection, rotation, translation, enlargement)
- Use language of circles.
- Find midpoints of lines using coordinates.
- Use language of 3D shapes.
- Draw Plans and elevations.
- Measure lines and angles.
- Use bearings.
- Use formulae for area and volume of shapes.
- Calculate perimeters.
- Calculate arc length and sector area.
- Use Pythagoras' theorem.
- Use trigonometry (SOHCAHTOA).
- Know certain exact values for sin, cos and tan.
- Describe translations as vectors.
- Add/subtract and multiply vectors.

Higher only

- Use negative scale factors.
- Use circle theorems.
- Know area/volume scale factors.
- Use Pythagoras and trigonometry in 3D
- Use the sine rule.
- Use the cosine rule.
- Use trigonometric area formula for triangles.
- Construct vector proofs.

Probability

- Use two way tables and frequency trees.
- Know language of probability.
- Use probability scale.
- Know probabilities add to 1.
- Know the link between experimental and theoretical probability.
- List outcomes using sample space, Venn or tree diagrams.
- Use diagrams to calculate probabilities.
- Use AND & OR rules of probability.

Higher Only

- Use conditional probabilities.

Statistics

- Know limits of sampling.
- Construct charts and diagrams for data including bar charts, pie charts and pictograms.
- Compare data using diagrams.
- Calculate Mean, Mode, Median and Range.
- Compare data using averages and range.
- Draw and interpret scatter graphs.

Higher only

- Draw and interpret Histograms
- Draw and interpret Cumulative frequency diagrams.
- Use Box and Whisker diagrams.
- Use quartiles and interquartile range.