

Do I know how to . . . ?

More basic topics:

- Find the highest common factor (HCF), find the lowest common multiple (LCM) and show a number as a product of its prime factors
- Know what a square number, cube number and prime number are
- Find the order of rotational symmetry
- Add, subtract, multiply and divide fractions
- Convert between fractions, decimals and percentages
- Do long multiplication
- Find the percentage of an amount
- Name 2D and 3D shapes (these are easily forgotten!)
- Know what congruent means
- Find parallel lines, acute angles and obtuse angles
- Round numbers (e.g. to the nearest ten or to 2 d.p.)
- Write a number to a given amount of significant figures (e.g. write 24.576 to 3 sig.fig.)
- Write and plot coordinates
- Draw plans, side elevations and front elevations from a 3D shape
- Answer proportion questions, e.g. when given a recipe for 12 cakes and asked to work out the ingredients for 18 cakes
- Convert between different metric units (e.g. how many metres in a kilometre)

Lower Mid-range difficulty:

- Find the perimeter and area of shapes
- Find the volume and surface area of 3D shapes
- Find angles on a straight line, at a point, in a triangle and in a quadrilateral
- Change between mixed numbers and top heavy fractions
- Divide a number into a given ratio, e.g. divide £1200 into the ratio 1 : 2 : 3
- Find and use the nth term of a sequence
- Collect algebraic terms together to simplify them (e.g. $a + a + a + a + a = 5a$)
- Know how to work with negative numbers, i.e. a minus times a minus equals a plus
- Find the mean, median, mode and range
- Work out an estimate of a given sum
- Complete a 2-way table
- Multiply decimals (particularly with money problems)
- Solve algebraic equations, like $3x + 4 = 13$

Higher Mid-range difficulty:

- Work with indices (e.g. $a^3 \times a^4$, $a^5 \div a^2$, $(a^2)^3$, a^{-2})
- Find the area and circumference of a circle, including sectors of circles
- Expand brackets (e.g. $2(x + 4)$) and factorise (e.g. $2x^2 + 4x$)
- Work out speed and use a distance-time graph
- Describe correlation on a scatter diagram and draw a line of best fit
- Use inequalities
- Answer questions involving perimeter or area when the lengths are written as algebraic expressions
- Solve algebraic equations with unknowns on both sides, like $2x + 4 = x + 8$
- Substitute values into an equation
- Construct a stem and leaf diagram
- Draw a line graph when given the equation of the line, e.g. $y = 2x + 4$
- Work out the angles for a pie chart and draw it
- Work out currency conversion questions

Higher level of difficulty:

- Find the mean and median from grouped frequency tables
- Use Standard form
- Use Pythagoras' theorem
- Expand a pair of brackets, e.g. $(x + 4)(x + 2)$
- Factorise simple quadratic expressions, e.g. $x^2 + 5x + 6$
- Solve linear simultaneous equations
- Find probability and use probability tree diagrams
- Use bearings
- Rotate, reflect and translate shapes on a coordinate grid and describe a single transformation
- Enlarge a shape by a scale factor, including fractional scale factors
- Know and use the rules for angles on parallel lines (alternate, corresponding, opposite, co-interior)
- Use compound interest
- Find the exterior and interior angles of a polygon
- Use trigonometry for right-angled triangles (SOH CAH TOA)
- Know the exact values of $\sin \theta$ and $\cos \theta$ for $\theta = 0^\circ, 30^\circ, 45^\circ, 60^\circ$ and 90° ; know the exact value of $\tan \theta$ for $\theta = 0^\circ, 30^\circ, 45^\circ$ and 60°
- Work out direct and indirect proportion
- Construct triangles, perpendicular bisectors and angle bisectors using a pair of compasses
- Work out density and pressure
- Understand $y = mx + c$ and use it to find the equation of a line and the equations of parallel lines