

Grade 9 checklist

8 skills. Tick each one when you can do it. For grade 9 you need the skills for the grades below it too.

Number

- ☐ **Solve multi-step surd problems** E.g. find integers a and b when an area or expression is written as $a + b\sqrt{c}$. (Surd)
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Algebra

- ☐ **Find inverses of fractional functions** When x appears twice after rearranging, collect the x terms and factorise, e.g. for $f(x) = \frac{3x+2}{x-4}$. (Composite and inverse functions)
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- ☐ **Construct harder multi-step proofs** Rearrange into a useful form, e.g. $(2n+1)(2n+3) = 4(n^2 + 2n + 1) - 1$, one less than a multiple of 4. (Algebraic proof)
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- ☐ **Solve problems involving tangents and axes** e.g. find where a tangent meets the axes and the area of the triangle it makes. (Equation of a circle and tangents)
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Geometry and measures

- ☐ **Work backwards and handle obtuse angles** Find an angle or side from a given area, and use 180° minus the $\sin^{-1}$ value when the angle is obtuse. (Sine rule, cosine rule and $\frac{1}{2}ab \sin C$)
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- ☐ **Prove circle theorems and related results** Use isosceles triangles made by radii, and algebra, to prove a result in general. (Circle theorems)
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Probability

- ☐ **Find the first event given the second** Divide $P(\text{first and second})$ by the total $P(\text{second})$, e.g. $P(\text{rain given late}) = P(\text{rain and late}) \div P(\text{late})$. (Conditional probability)
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Statistics

- ☐ **Estimate the median from a histogram** Find the class containing the $\frac{n}{2}$ th value and work out how far through that class it lies. (Histograms)
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