

# mathsquad skill sequence

## Key Skills 1

Question Number and Descriptor	Related Victorian Curriculum Links
1. Number Bonds	<p>Grade 2:</p> <p>Solve simple addition and subtraction problems using a range of efficient mental and written strategies (<a href="#">VCMNA107</a>)</p>
2. Mental Addition	<p>Grade 3:</p> <p>Recall addition facts for single-digit numbers and related subtraction facts to develop increasingly efficient mental strategies for computation(<a href="#">VCMNA133</a>)</p> <p>Grade 4:</p> <p>Apply place value to partition, rearrange and regroup numbers to at least tens of thousands to assist calculations and solve problems (<a href="#">VCMNA153</a>)</p>
3. Place Value	<p>Grade 1:</p> <p>Recognise, model, read, write and order numbers to at least 100. Locate these numbers on a number line(<a href="#">VCMNA087</a>)</p> <p>Grade 3:</p> <p>Recognise, model, represent and order numbers to at least 10 000 (<a href="#">VCMNA130</a>)</p>
4. Addition Algorithm	<p>Grade 4:</p> <p>Apply place value to partition, rearrange and regroup numbers to at least tens of thousands to assist calculations and solve problems (<a href="#">VCMNA153</a>)</p>
5. Mental Subtraction	<p>Grade 3:</p> <p>Recall addition facts for single-digit numbers and related subtraction facts to develop increasingly efficient mental strategies for computation(<a href="#">VCMNA133</a>)</p> <p>Grade 4:</p> <p>Apply place value to partition, rearrange and regroup numbers to at least tens of thousands to assist calculations and solve problems (<a href="#">VCMNA153</a>)</p>
6. Subtraction Algorithm	<p>Grade 4:</p> <p>Apply place value to partition, rearrange and regroup numbers to at least tens of thousands to assist calculations and solve problems (<a href="#">VCMNA153</a>)</p>
7. Times Tables	<p>Grade 4:</p> <p>Recall multiplication facts up to <math>10 \times 10</math> and related division facts (<a href="#">VCMNA155</a>)</p>
8. Multiplication Algorithm	<p>Grade 5:</p> <p>Solve problems involving multiplication of large numbers by one- or two-digit numbers using efficient mental, written strategies and appropriate digital technologies (<a href="#">VCMNA183</a>)</p>

9. Division Facts	<p><b>Grade 4:</b></p> <p>Recall multiplication facts up to <math>10 \times 10</math> and related division facts (<a href="#">VCMNA155</a>)</p> <p><b>Grade 5:</b></p> <p>Solve problems involving division by a one digit number, including those that result in a remainder(<a href="#">VCMNA184</a>)</p>
10. Division Algorithm	<p><b>Grade 5:</b></p> <p>Solve problems involving division by a one digit number, including those that result in a remainder(<a href="#">VCMNA184</a>)</p>
11. Missing Number Questions (Multiplication)	<p><b>Grade 4:</b></p> <p>Develop efficient mental and written strategies and use appropriate digital technologies for multiplication and division where there is no remainder (<a href="#">VCMNA156</a>)</p>
12. Factors and Multiples	<p><b>Grade 5:</b></p> <p>Identify and describe factors and multiples of whole numbers and use them to solve problems (<a href="#">VCMNA181</a>)</p>
13. Fraction representations	<p><b>Grade 3:</b></p> <p>Model and represent unit fractions including <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{3}</math>, <math>\frac{1}{5}</math> and their multiples to complete a whole (<a href="#">VCMNA136</a>)</p>
14. Adding Fractions with the Same Denominator	<p><b>Grade 5:</b></p> <p>Investigate strategies to solve problems involving addition and subtraction of fractions with the same denominator (<a href="#">VCMNA188</a>)</p>
15. Fractions of a Number	<p><b>Grade 6:</b></p> <p>Find a simple fraction of a quantity where the result is a whole number, with and without digital technologies(<a href="#">VCMNA213</a>)</p>
16. Equivalent Fractions	<p><b>Grade 4:</b></p> <p>Investigate equivalent fractions used in contexts (<a href="#">VCMNA157</a>)</p>
17. Simplifying Fractions	<p><b>Grade 4:</b></p> <p>Investigate equivalent fractions used in contexts (<a href="#">VCMNA157</a>)</p>
18. Adding Fractions with Related Denominators	<p><b>Grade 6:</b></p> <p>Solve problems involving addition and subtraction of fractions with the same or related denominators (<a href="#">VCMNA212</a>)</p>
19. Estimating and Classifying Angles	<p><b>Grade 5:</b></p> <p>Estimate, measure and compare angles using degrees. Construct angles using a protractor(<a href="#">VCMMG202</a>)</p>
20. Perimeter and Area of a Rectangle	<p><b>Grade 5:</b></p> <p>Calculate the perimeter and area of rectangles and the volume and capacity of prisms using familiar metric units (<a href="#">VCMMG196</a>)</p>
21. Volume of a Rectangular Prism	<p><b>Grade 5:</b></p> <p>Calculate the perimeter and area of rectangles and the volume and capacity of prisms using familiar metric units (<a href="#">VCMMG196</a>)</p>

## Key Skills 2

Question Number and Descriptor	Related Victorian Curriculum Links
1. Adding and Subtracting Positive Integers	Year 7: Compare, order, add and subtract integers( <a href="#">VCMNA241</a> )
2. Adding and Subtracting Negative Integers	Year 7: Compare, order, add and subtract integers( <a href="#">VCMNA241</a> )
3. Powers and Square Roots	Grade 6: Identify and describe properties of prime, composite, square and triangular numbers ( <a href="#">VCMNA208</a> )  Year 7: Investigate and use square roots of perfect square numbers ( <a href="#">VCMNA239</a> )
4. Order of Operations	Grade 6: Explore the use of brackets and order of operations to write number sentences ( <a href="#">VCMNA220</a> )
5. Properties of Numbers	Grade 4: Investigate and use the properties of odd and even numbers ( <a href="#">VCMNA151</a> )  Grade 6: Identify and describe properties of prime, composite, square and triangular numbers ( <a href="#">VCMNA208</a> )
6. Prime Factorisation	Year 7: Investigate index notation and represent whole numbers as products of powers of prime numbers( <a href="#">VCMNA238</a> )
7. Highest Common Factor and Lowest Common Multiple	Grade 5: Identify and describe factors and multiples of whole numbers and use them to solve problems( <a href="#">VCMNA181</a> )
8. Converting between Whole Numbers, Improper Fractions and Mixed Numbers	Year 7: Compare fractions using equivalence. Locate and represent positive and negative fractions and mixed numbers on a number line ( <a href="#">VCMNA242</a> )
9. Adding and Subtracting Fractions	Year 7: Solve problems involving addition and subtraction of fractions, including those with unrelated denominators( <a href="#">VCMNA243</a> )
10. Multiplying Fractions	Year 7: Multiply and divide fractions and decimals using efficient written strategies and digital technologies ( <a href="#">VCMNA244</a> )
11. Dividing Fractions	Year 7: Multiply and divide fractions and decimals using efficient written strategies and digital technologies ( <a href="#">VCMNA244</a> )

12. Mixed Number Arithmetic	<p><b>Year 7:</b></p> <p>Solve problems involving addition and subtraction of fractions, including those with unrelated denominators <a href="#">(VCMNA243)</a></p> <p>Multiply and divide fractions and decimals using efficient written strategies and digital technologies <a href="#">(VCMNA244)</a></p>
13. Decimal Place Value and Rounding	<p><b>Grade 5:</b></p> <p>Recognise that the place value system can be extended beyond hundredths <a href="#">(VCMNA189)</a></p> <p><b>Year 7:</b></p> <p>Round decimals to a specified number of decimal places <a href="#">(VCMNA246)</a></p>
14. Comparing Decimals	<p><b>Grade 5:</b></p> <p>Compare, order and represent decimals <a href="#">(VCMNA190)</a></p>
15. Multiplying and Dividing by 10 and 100	<p><b>Grade 6:</b></p> <p>Multiply and divide decimals by powers of 10 <a href="#">(VCMNA216)</a></p>
16. Converting between Percentages, Decimals and Fractions	<p><b>Year 7:</b></p> <p>Connect fractions, decimals and percentages and carry out simple conversions <a href="#">(VCMNA247)</a></p>
17. Adding and Subtracting Decimals	<p><b>Grade 6:</b></p> <p>Add and subtract decimals, with and without digital technologies, and use estimation and rounding to check the reasonableness of answers <a href="#">(VCMNA214)</a></p>
18. Multiplying Decimals	<p><b>Year 7:</b></p> <p>Multiply and divide fractions and decimals using efficient written strategies and digital technologies <a href="#">(VCMNA244)</a></p>
19. Dividing Decimals	<p><b>Year 7:</b></p> <p>Multiply and divide fractions and decimals using efficient written strategies and digital technologies <a href="#">(VCMNA244)</a></p>
20. Calculating the Percentage of a Number	<p><b>Year 7:</b></p> <p>Find percentages of quantities and express one quantity as a percentage of another, with and without digital technologies. <a href="#">(VCMNA248)</a></p>
21. Substitution into a One Step Expression	<p><b>Year 7:</b></p> <p>Create algebraic expressions and evaluate them by substituting a given value for each variable <a href="#">(VCMNA252)</a></p>
22. Solving One Step Equations	<p><b>Year 7:</b></p> <p>Solve simple linear equations <a href="#">(VCMNA256)</a></p>
23. Plotting Coordinates	<p><b>Year 7:</b></p> <p>Given coordinates, plot points on the Cartesian plane, and find coordinates for a given point <a href="#">(VCMNA255)</a></p>

24. Perimeter and Area	<p><b>Year 7:</b></p> <p>Establish the formulas for areas of rectangles, triangles and parallelograms and use these in problem solving (<a href="#">VCMMG258</a>)</p>
25. Angles around Parallel Lines	<p><b>Year 7:</b></p> <p>Identify corresponding, alternate and co-interior angles when two straight lines are crossed by a transversal (<a href="#">VCMMG264</a>)</p>
26. Angles in a Triangle	<p><b>Year 7:</b></p> <p>Demonstrate that the angle sum of a triangle is <math>180^\circ</math> and use this to find the angle sum of a quadrilateral(<a href="#">VCMMG263</a>)</p> <p>Classify triangles according to their side and angle properties and describe quadrilaterals (<a href="#">VCMMG262</a>)</p>
27. Probability	<p><b>Year 7:</b></p> <p>Construct sample spaces for single-step experiments with equally likely outcomes (<a href="#">VCMSP266</a>)</p> <p>Assign probabilities to the outcomes of events and determine probabilities for events (<a href="#">VCMSP267</a>)</p>
28. Statistics	<p><b>Year 7:</b></p> <p>Calculate mean, median, mode and range for sets of data. Interpret these statistics in the context of data(<a href="#">VCMSP270</a>)</p>

### Key Skills 3

Question Number and Descriptor	Related Victorian Curriculum Links
1. Adding and Subtracting Integers	Year 7: Compare, order, add and subtract integers ( <a href="#">VCMNA241</a> )
2. Multiplying and Dividing Integers	Year 8: Carry out the four operations with rational numbers and integers, using efficient mental and written strategies and appropriate digital technologies and make estimates for these computations ( <a href="#">VCMNA273</a> )
3. Index Laws	Year 8: Use index notation with numbers to establish the index laws with positive integral indices and the zero index ( <a href="#">VCMNA272</a> )
4. Ratios	Year 8: Solve a range of problems involving rates and ratios, including distance-time problems for travel at a constant speed, with and without digital technologies ( <a href="#">VCMNA277</a> )
5. Integers and Fractions	Year 8: Carry out the four operations with rational numbers and integers, using efficient mental and written strategies and appropriate digital technologies and make estimates for these computations ( <a href="#">VCMNA273</a> )
6. Converting Fractions to Recurring and Terminating Decimals	Year 8: Investigate terminating and recurring decimals ( <a href="#">VCMNA274</a> )
7. Multiplying Decimals 2	Year 7: Multiply and divide fractions and decimals using efficient written strategies and digital technologies ( <a href="#">VCMNA244</a> )
8. Increasing and Decreasing by a Percentage	Year 8: Solve problems involving the use of percentages, including percentage increases and decreases and percentage error, with and without digital technologies ( <a href="#">VCMNA276</a> )
9. Simplifying Expressions	Year 8: Simplify algebraic expressions involving the four operations ( <a href="#">VCMNA281</a> )
10. Index Laws with Pronumerals	Year 8: Simplify algebraic expressions involving the four operations ( <a href="#">VCMNA281</a> )
11. Expanding	Year 8: Extend and apply the distributive law to the expansion of algebraic expressions ( <a href="#">VCMNA279</a> )
12. Factorising	Year 8: Factorise algebraic expressions by identifying numerical factors ( <a href="#">VCMNA280</a> )
13. Substituting into $ax+b$	Year 7: Create algebraic expressions and evaluate them by substituting a given value for each variable ( <a href="#">VCMNA252</a> )

14. Substituting Whole Numbers into Two Step Expressions	<p><b>Year 7:</b></p> <p>Create algebraic expressions and evaluate them by substituting a given value for each variable (<a href="#">VCMNA252</a>)</p>
15. Substituting Integers	<p><b>Year 7:</b></p> <p>Create algebraic expressions and evaluate them by substituting a given value for each variable (<a href="#">VCMNA252</a>)</p> <p><b>Year 8:</b></p> <p>Carry out the four operations with rational numbers and integers, using efficient mental and written strategies and appropriate digital technologies and make estimates for these computations (<a href="#">VCMNA273</a>)</p>
16. Substituting Fractions	<p><b>Year 7:</b></p> <p>Create algebraic expressions and evaluate them by substituting a given value for each variable (<a href="#">VCMNA252</a>)</p> <p><b>Year 8:</b></p> <p>Carry out the four operations with rational numbers and integers, using efficient mental and written strategies and appropriate digital technologies and make estimates for these computations (<a href="#">VCMNA273</a>)</p>
17. Solving Equations $ax+b=c$	<p><b>Year 7:</b></p> <p>Solve simple linear equations (<a href="#">VCMNA256</a>)</p>
18 Solving Two Step Equations	<p><b>Year 7:</b></p> <p>Solve simple linear equations (<a href="#">VCMNA256</a>)</p>
19. Solving Equations with Unknowns on Both Sides	<p><b>Year 8:</b></p> <p>Solve linear equations using algebraic and graphical techniques. Verify solutions by substitution (<a href="#">VCMNA284</a>)</p>
20. Solving More Complex Equations	<p><b>Year 8:</b></p> <p>Solve linear equations using algebraic and graphical techniques. Verify solutions by substitution (<a href="#">VCMNA284</a>)</p>
21. Completing Coordinates	<p><b>Year 7:</b></p> <p>Create algebraic expressions and evaluate them by substituting a given value for each variable(<a href="#">VCMNA252</a>)</p> <p><b>Year 8:</b></p> <p>Solve linear equations using algebraic and graphical techniques. Verify solutions by substitution (<a href="#">VCMNA284</a>)</p>
22. Sketching Linear Graphs	<p><b>Year 8:</b></p> <p>Plot linear relationships on the Cartesian plane with and without the use of digital technologies (<a href="#">VCMNA283</a>)</p>

23. Determining a Linear Rule	<p><b>Grade 3:</b></p> <p>Describe, continue, and create number patterns resulting from performing addition or subtraction (<a href="#">VCMNA138</a>)</p> <p>Use a function machine and the inverse machine as a model to apply mathematical rules to numbers or shapes (<a href="#">VCMNA139</a>)</p> <p><b>Year 7:</b></p> <p>Create algebraic expressions and evaluate them by substituting a given value for each variable (<a href="#">VCMNA252</a>)</p> <p><b>Year 8:</b></p> <p>Carry out the four operations with rational numbers and integers, using efficient mental and written strategies and appropriate digital technologies and make estimates for these computations (<a href="#">VCMNA273</a>)</p> <p><b>*Note that this skill is well beyond what is expected at a grade 3 level, though when combined with substitution is a more challenging Year 8 skill</b></p>
24. Choosing and Using Formulas in Measurement	<p><b>Year 8:</b></p> <p>Find perimeters and areas of parallelograms, trapeziums, rhombuses and kites (<a href="#">VCMMG287</a>)</p> <p><b>Year 8:</b></p> <p>Develop the formulas for volumes of rectangular and triangular prisms and prisms in general. Use formulas to solve problems involving volume (<a href="#">VCMMG289</a>)</p>
25. Features of a Circle	<p><b>Year 8:</b></p> <p>Investigate the relationship between features of circles such as circumference, area, radius and diameter. Use formulas to solve problems involving determining radius, diameter, circumference and area from each other (<a href="#">VCMMG288</a>)</p> <p><b>Year 8:</b></p> <p>Investigate the concept of irrational numbers, including <math>\pi</math> (<a href="#">VCMNA275</a>)</p>
26. Angles Around Parallel Lines	<p><b>Year 7:</b></p> <p>Identify corresponding, alternate and co-interior angles when two straight lines are crossed by a transversal (<a href="#">VCMMG264</a>)</p>
27. Probabilities from Two-Way Tables	<p><b>Year 8:</b></p> <p>Represent events in two-way tables and Venn diagrams and solve related problems (<a href="#">VCMSP296</a>)</p>
28. Probabilities from Venn Diagrams	<p><b>Year 8:</b></p> <p>Represent events in two-way tables and Venn diagrams and solve related problems (<a href="#">VCMSP296</a>)</p>
29. Statistics	<p><b>Year 7:</b></p> <p>Calculate mean, median, mode and range for sets of data. Interpret these statistics in the context of data(<a href="#">VCMSP270</a>)</p>