

mathsqquad 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 (VCMNA107)</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(VCMNA133)</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 (VCMNA153)</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(VCMNA087)</p> <p>Grade 3:</p> <p>Recognise, model, represent and order numbers to at least 10 000 (VCMNA130)</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 (VCMNA153)</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(VCMNA133)</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 (VCMNA153)</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 (VCMNA153)</p>
7. Times Tables	<p>Grade 4:</p> <p>Recall multiplication facts up to 10×10 and related division facts (VCMNA155)</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 (VCMNA183)</p>

9. Division Facts	<p>Grade 4:</p> <p>Recall multiplication facts up to 10×10 and related division facts (VCMNA155)</p> <p>Grade 5:</p> <p>Solve problems involving division by a one digit number, including those that result in a remainder(VCMNA184)</p>
10. Division Algorithm	<p>Grade 5:</p> <p>Solve problems involving division by a one digit number, including those that result in a remainder(VCMNA184)</p>
11. Missing Number Questions (Multiplication)	<p>Grade 4:</p> <p>Develop efficient mental and written strategies and use appropriate digital technologies for multiplication and division where there is no remainder (VCMNA156)</p>
12. Factors and Multiples	<p>Grade 5:</p> <p>Identify and describe factors and multiples of whole numbers and use them to solve problems (VCMNA181)</p>
13. Fraction representations	<p>Grade 3:</p> <p>Model and represent unit fractions including $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{5}$ and their multiples to complete a whole (VCMNA136)</p>
14. Adding Fractions with the Same Denominator	<p>Grade 5:</p> <p>Investigate strategies to solve problems involving addition and subtraction of fractions with the same denominator (VCMNA188)</p>
15. Fractions of a Number	<p>Grade 6:</p> <p>Find a simple fraction of a quantity where the result is a whole number, with and without digital technologies(VCMNA213)</p>
16. Equivalent Fractions	<p>Grade 4:</p> <p>Investigate equivalent fractions used in contexts (VCMNA157)</p>
17. Simplifying Fractions	<p>Grade 4:</p> <p>Investigate equivalent fractions used in contexts (VCMNA157)</p>
18. Adding Fractions with Related Denominators	<p>Grade 6:</p> <p>Solve problems involving addition and subtraction of fractions with the same or related denominators (VCMNA212)</p>
19. Estimating and Classifying Angles	<p>Grade 5:</p> <p>Estimate, measure and compare angles using degrees. Construct angles using a protractor(VCMMG202)</p>
20. Perimeter and Area of a Rectangle	<p>Grade 5:</p> <p>Calculate the perimeter and area of rectangles and the volume and capacity of prisms using familiar metric units (VCMMG196)</p>
21. Volume of a Rectangular Prism	<p>Grade 5:</p> <p>Calculate the perimeter and area of rectangles and the volume and capacity of prisms using familiar metric units (VCMMG196)</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(VCMNA241)
2. Adding and Subtracting Negative Integers	Year 7: Compare, order, add and subtract integers(VCMNA241)
3. Powers and Square Roots	Grade 6: Identify and describe properties of prime, composite, square and triangular numbers (VCMNA208) Year 7: Investigate and use square roots of perfect square numbers (VCMNA239)
4. Order of Operations	Grade 6: Explore the use of brackets and order of operations to write number sentences (VCMNA220)
5. Properties of Numbers	Grade 4: Investigate and use the properties of odd and even numbers (VCMNA151) Grade 6: Identify and describe properties of prime, composite, square and triangular numbers (VCMNA208)
6. Prime Factorisation	Year 7: Investigate index notation and represent whole numbers as products of powers of prime numbers(VCMNA238)
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(VCMNA181)
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 (VCMNA242)
9. Adding and Subtracting Fractions	Year 7: Solve problems involving addition and subtraction of fractions, including those with unrelated denominators(VCMNA243)
10. Multiplying Fractions	Year 7: Multiply and divide fractions and decimals using efficient written strategies and digital technologies (VCMNA244)
11. Dividing Fractions	Year 7: Multiply and divide fractions and decimals using efficient written strategies and digital technologies (VCMNA244)

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

24. Perimeter and Area	<p>Year 7:</p> <p>Establish the formulas for areas of rectangles, triangles and parallelograms and use these in problem solving (VCMMG258)</p>
25. Angles around Parallel Lines	<p>Year 7:</p> <p>Identify corresponding, alternate and co-interior angles when two straight lines are crossed by a transversal (VCMMG264)</p>
26. Angles in a Triangle	<p>Year 7:</p> <p>Demonstrate that the angle sum of a triangle is 180° and use this to find the angle sum of a quadrilateral(VCMMG263)</p> <p>Classify triangles according to their side and angle properties and describe quadrilaterals (VCMMG262)</p>
27. Probability	<p>Year 7:</p> <p>Construct sample spaces for single-step experiments with equally likely outcomes (VCMSP266)</p> <p>Assign probabilities to the outcomes of events and determine probabilities for events (VCMSP267)</p>
28. Statistics	<p>Year 7:</p> <p>Calculate mean, median, mode and range for sets of data. Interpret these statistics in the context of data(VCMSP270)</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(VCMNA241)
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 (VCMNA273)
3. Index Laws	Year 8: Use index notation with numbers to establish the index laws with positive integral indices and the zero index (VCMNA272)
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 (VCMNA277)
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 (VCMNA273)
6. Converting Fractions to Recurring and Terminating Decimals	Year 8: Investigate terminating and recurring decimals (VCMNA274)
7. Multiplying Decimals 2	Year 7: Multiply and divide fractions and decimals using efficient written strategies and digital technologies (VCMNA244)
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 (VCMNA276)
9. Simplifying Expressions	Year 8: Simplify algebraic expressions involving the four operations (VCMNA281)
10. Index Laws with Pronumerals	Year 8: Simplify algebraic expressions involving the four operations (VCMNA281)
11. Expanding	Year 8: Extend and apply the distributive law to the expansion of algebraic expressions (VCMNA279)
12. Factorising	Year 8: Factorise algebraic expressions by identifying numerical factors (VCMNA280)
13. Substituting into $ax+b$	Year 7: Create algebraic expressions and evaluate them by substituting a given value for each variable (VCMNA252)

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

23. Determining a Linear Rule	<p>Grade 3:</p> <p>Describe, continue, and create number patterns resulting from performing addition or subtraction (VCMNA138)</p> <p>Use a function machine and the inverse machine as a model to apply mathematical rules to numbers or shapes (VCMNA139)</p> <p>Year 7:</p> <p>Create algebraic expressions and evaluate them by substituting a given value for each variable (VCMNA252)</p> <p>Year 8:</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 (VCMNA273)</p> <p>*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</p>
24. Choosing and Using Formulas in Measurement	<p>Year 8:</p> <p>Find perimeters and areas of parallelograms, trapeziums, rhombuses and kites (VCMMG287)</p> <p>Year 8:</p> <p>Develop the formulas for volumes of rectangular and triangular prisms and prisms in general. Use formulas to solve problems involving volume (VCMMG289)</p>
25. Features of a Circle	<p>Year 8:</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 (VCMMG288)</p> <p>Year 8:</p> <p>Investigate the concept of irrational numbers, including π (VCMNA275)</p>
26. Angles Around Parallel Lines	<p>Year 7:</p> <p>Identify corresponding, alternate and co-interior angles when two straight lines are crossed by a transversal (VCMMG264)</p>
27. Probabilities from Two-Way Tables	<p>Year 8:</p> <p>Represent events in two-way tables and Venn diagrams and solve related problems (VCMSP296)</p>
28. Probabilities from Venn Diagrams	<p>Year 8:</p> <p>Represent events in two-way tables and Venn diagrams and solve related problems (VCMSP296)</p>
29. Statistics	<p>Year 7:</p> <p>Calculate mean, median, mode and range for sets of data. Interpret these statistics in the context of data(VCMSP270)</p>