

# year 8 mathsquad skill sequence

## Foundation

Skill Code and Descriptor	Sample question	Related Victorian curriculum link(s)
F01: Addition Algorithm	1.  $433 + 1094$	<b>Grade 4:</b> 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> )
F02: Subtraction Algorithm	2.  $1136 - 449$	<b>Grade 4:</b> 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> )
F03: Multiplication Algorithm	3.  $483 \times 5$	<b>Grade 5:</b> 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> )

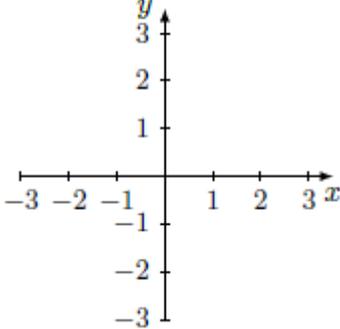
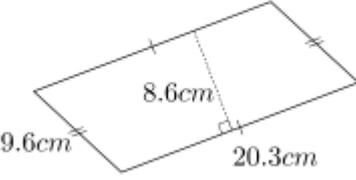
F04: Division Algorithm	4.  $2624 \div 4$	<p><b>Grade 5:</b> Solve problems involving division by a one digit number, including those that result in a remainder (<a href="#">VCMNA184</a>)</p>
F05: Addition and subtraction of integers	<p>5. a. <math>-2 + 5 =</math></p> <p>b. <math>1 - 2 =</math></p> <p>c. <math>-5 + -2 =</math></p> <p>d. <math>0 - -6 =</math></p>	<p><b>Year 7:</b> Compare, order, add and subtract integers(<a href="#">VCMNA241</a>)</p>
F06: Multiplication and division of integers	<p>6. a. <math>7 \times -7 =</math></p> <p>b. <math>-8 \times 5 =</math></p> <p>c. <math>-32 \div 4 =</math></p> <p>d. <math>35 \div -5 =</math></p>	<p><b>Year 8:</b> 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>
F07: Powers and Square Roots	<p>7. a. <math>12^2 =</math></p> <p>b. <math>\sqrt{49} =</math></p>	<p><b>Grade 6:</b> Identify and describe properties of prime, composite, square and triangular numbers (<a href="#">VCMNA208</a>)</p> <p><b>Year 7:</b> Investigate and use square roots of perfect square numbers (<a href="#">VCMNA239</a>)</p>

<p>F08: Missing factor question</p>	<p>8. Fill in the boxes to make each equation true</p> <p>a. <math>2 \times \square = 54</math></p> <p>b. <math>3 \times \square = 39</math></p> <p>c. <math>5 \times \square = 85</math></p>	<p>Year 5: Use equivalent number sentences involving multiplication and division to find unknown quantities (<a href="#">VCMNA193</a>)</p>
<p>F09: Factors and Multiples</p>	<p>9. a. List the factors of 20</p> <p>b. List the first 4 positive multiples of 12</p>	<p>Grade 5: Identify and describe factors and multiples of whole numbers and use them to solve problems (<a href="#">VCMNA181</a>)</p>
<p>F10: Fraction of a Number</p>	<p>10. Calculate the following</p> <p>a. <math>\frac{1}{5}</math> of 45 =</p> <p>b. <math>\frac{4}{5}</math> of 45 =</p>	<p>Grade 6: Find a simple fraction of a quantity where the result is a whole number, with and without digital technologies (<a href="#">VCMNA213</a>)</p>
<p>F11: Completing Equivalence Statements involving Whole Numbers, Mixed Numbers and Improper Fractions</p>	<p>11. Fill in the boxes to make each equation true</p> <p>a. <math>5 = \frac{\square}{7}</math></p> <p>b. <math>4\frac{5}{7} = \frac{\square}{7}</math></p> <p>c. <math>6\frac{\square}{7} = \frac{46}{7}</math></p>	<p>Year 7: Compare fractions using equivalence. Locate and represent positive and negative fractions and mixed numbers on a number line (<a href="#">VCMNA242</a>)</p>

<p>F12: Simplifying Fractions and Rounding Decimals</p>	<p>12. a. Write the following as a simplified fraction</p> $\frac{12}{36} =$ <p>b. Round 0.0837 to 3 decimal places (3 dp.)</p>	<p>Year 7: Compare fractions using equivalence. Locate and represent positive and negative fractions and mixed numbers on a number line (<a href="#">VCMNA242</a>)</p> <p>Year 7: Round decimals to a specified number of decimal places (<a href="#">VCMNA246</a>)</p>						
<p>F13: Adding Fractions with Related Denominators</p>	<p>13.  Calculate <math>\frac{3}{21} + \frac{4}{7}</math></p>	<p>Grade 6: Solve problems involving addition and subtraction of fractions with the same or related denominators (<a href="#">VCMNA212</a>)</p>						
<p>F14: Multiplying Fractions</p>	<p>14.  Calculate <math>\frac{3}{5} \times \frac{3}{6}</math></p>	<p>Year 7: Multiply and divide fractions and decimals using efficient written strategies and digital technologies (<a href="#">VCMNA244</a>)</p>						
<p>F15: Dividing Fractions</p>	<p>15.  Calculate <math>\frac{3}{4} \div \frac{9}{12}</math></p>	<p>Year 7: Multiply and divide fractions and decimals using efficient written strategies and digital technologies (<a href="#">VCMNA244</a>)</p>						
<p>F16: Converting between Fractions, Percentages and Decimals</p>	<p>16.  Complete the table below</p> <table border="1"> <tbody> <tr> <td>P</td> <td>F</td> <td>D</td> </tr> <tr> <td></td> <td></td> <td>0.92</td> </tr> </tbody> </table>	P	F	D			0.92	<p>Year 7: Connect fractions, decimals and percentages and carry out simple conversions (<a href="#">VCMNA247</a>)</p>
P	F	D						
		0.92						

<p>F17: Adding and Subtracting Decimals</p>	<p>17.  Evaluate <math>4.85 + 2.7</math></p>	<p><b>Grade 6:</b> 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>
<p>F18: Multiplying Decimals by Whole Numbers</p>	<p>18.  Evaluate <math>4 \times 5.66</math></p>	<p><b>Grade 6:</b> Multiply decimals by whole numbers and perform divisions by non-zero whole numbers where the results are terminating decimals, with and without digital technologies (<a href="#">VCMNA215</a>)</p>
<p>F19: Divide Decimals by Whole Numbers</p>	<p>19.  Evaluate <math>50.04 \div 9</math></p>	<p><b>Grade 6:</b> Multiply decimals by whole numbers and perform divisions by non-zero whole numbers where the results are terminating decimals, with and without digital technologies (<a href="#">VCMNA215</a>)</p>
<p>F20: Calculating a Percentage of a Number</p>	<p>20.  Calculate 80% of 32</p>	<p><b>Year 7:</b> Find percentages of quantities and express one quantity as a percentage of another, with and without digital technologies. (<a href="#">VCMNA248</a>)</p>
<p>F21: Substitution into a 2-step Expression of the form <math>ax + b</math> or <math>ax - b</math></p>	<p>21.  Substitute <math>x = 6</math> into <math>9x - 10</math> and evaluate.</p>	<p><b>Year 7:</b> Create algebraic expressions and evaluate them by substituting a given value for each variable (<a href="#">VCMNA252</a>)</p>

<p>F22: Solving 2-step Equations with Whole Number Solutions of the form <math>ax + b = c</math> or <math>ax - b = c</math></p>	<p>22.  Solve the following:</p> $36 = 7x - 6$	<p>Year 7: Solve simple linear equations (<a href="#">VCMNA256</a>)</p>												
<p>F23: Expanding and Factorising Expressions of the Form <math>ax + b</math></p>	<p>23. a. Expand <math>4(3x - 5)</math></p> <p>b. Factorise <math>20x + 16</math></p>	<p>Year 8: Extend and apply the distributive law to the expansion of algebraic expressions (<a href="#">VCMNA279</a>)</p> <p>Factorise algebraic expressions by identifying numerical factors (<a href="#">VCMNA280</a>)</p>												
<p>F24: Completing Coordinates</p>	<p>24. Consider the linear relationship</p> $y = 4x + 1$ <p>Complete the missing value in each coordinate so each satisfies the given relationship.</p> <p>(0, )</p> <p>(4, )</p>	<p>Year 7: Create algebraic expressions and evaluate them by substituting a given value for each variable(<a href="#">VCMNA252</a>)</p> <p>Solve simple linear equations (<a href="#">VCMNA256</a>)</p>												
<p>F25: Determining Linear Rules</p>	<p>25. The points below satisfy a linear relationship. Complete the rule below.</p> <table border="1"> <tr> <td><math>x</math></td> <td>-1</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td><math>y</math></td> <td>2</td> <td>5</td> <td>8</td> <td>11</td> <td>14</td> </tr> </table> <p><math>y =</math></p>	$x$	-1	0	1	2	3	$y$	2	5	8	11	14	<p>Year 7: Create algebraic expressions and evaluate them by substituting a given value for each variable (<a href="#">VCMNA252</a>)</p>
$x$	-1	0	1	2	3									
$y$	2	5	8	11	14									

<p>F26: Plotting Coordinates</p>	<p>26. Plot the points <math>(-2, -3)</math> and <math>(2, 0)</math> and join them with a line.</p> 	<p>Year 7: Given coordinates, plot points on the Cartesian plane, and find coordinates for a given point (<a href="#">VCMNA255</a>)</p>
<p>F27: Using Formulas in the Context of Measurement</p>	<p>27.  To the nearest whole number, calculate the area of the parallelogram below using the formula <math>A = \text{base} \times \text{height}</math>.</p>  <p><math>A =</math></p>	<p>Year 7: Establish the formulas for areas of rectangles, triangles and parallelograms and use these in problem solving (<a href="#">VCMMG258</a>)</p> <p>Calculate volumes of rectangular prisms (<a href="#">VCMMG259</a>)</p>
<p>F28: Angles Around a Point</p>	<p>28. a. Circle the word that classifies the relationship between the angles below.</p>  <p>supplementary    complementary vertically opposite</p> <p>b. What is the value of <math>\theta</math>?</p>	<p>Grade 6: Investigate, with and without digital technologies, angles on a straight line, angles at a point and vertically opposite angles. Use results to find unknown angles (<a href="#">VCMMG231</a>)</p>
<p>F29: Probability and Sample Space</p>	<p>29. a. A bag contains 7 balls numbered 1 to 7. A ball is randomly selected.</p> <p>a. What is the sample space?</p> <p>b. What is the probability of selecting a ball with an even number?</p>	<p>Year 7: 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>

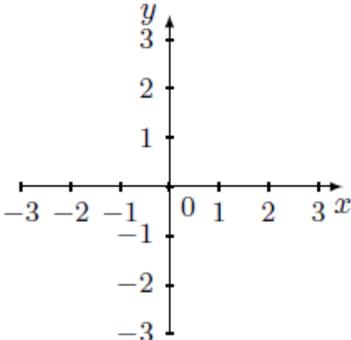
# Core

Skill Code and Descriptor	Sample question	Related Victorian curriculum link(s)
C01: Order of Operations	<p>1. a.  Calculate <math>5 + 12 \div 4</math></p> <p>b.  Calculate <math>(11 - 9)^4</math></p>	Grade 6: Explore the use of brackets and order of operations to write number sentences ( <a href="#">VCMNA220</a> )
C02: Highest Common Factor and Lowest Common Multiple	<p>2. a. Find the highest common factor of 16 and 28.</p> <p>b. Find the lowest common multiple of 7 and 8.</p>	Grade 5: Identify and describe factors and multiples of whole numbers and use them to solve problems ( <a href="#">VCMNA181</a> )
C03: Index laws $a^x \times a^y = a^{x+y}$ $a^x \div a^y = \frac{a^x}{a^y} = a^{x-y}$ $(a^x)^y = a^{xy}$	<p>3. Simplify the following, giving your answer in index form where appropriate.</p> <p>a. <math>9^4 \times 9 =</math></p> <p>b. <math>2^7 \div 2^2 =</math></p> <p>c. <math>(6^8)^2 =</math></p>	Year 8: Use index notation with numbers to establish the index laws with positive integral indices and the zero index ( <a href="#">VCMNA272</a> )
C04: Simplifying Ratios and Dividing a Quantity into a Ratio	<p>4. a. Simplify 18:6</p> <p>b. Divide 28 into the ratio 3:1</p>	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> )

<p>C05: Calculations involving Integers and the Four Operations</p>	<p>5. a. <math>8 + -1 =</math></p> <p>b. <math>-1 - 1 =</math></p> <p>c. <math>7 \times -6 =</math></p> <p>d. <math>-56 \div -7 =</math></p>	<p><b>Year 8:</b> 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>C06: Adding and Subtracting Fractions (including unrelated denominators)</p>	<p>6.  Calculate <math>\frac{2}{3} - \frac{1}{36}</math></p>	<p><b>Year 7:</b> Solve problems involving addition and subtraction of fractions, including those with unrelated denominators(VCMNA243)</p>
<p>C07: Multiplying and Dividing Fractions</p>	<p>7.  Calculate <math>\frac{4}{8} \div \frac{2}{9}</math></p>	<p><b>Year 7:</b> Multiply and divide fractions and decimals using efficient written strategies and digital technologies (VCMNA244)</p>
<p>C08: Adding, Subtracting and Multiplying Integers with Fractions</p>	<p>8.  a. Calculate <math>5 \left(-\frac{1}{2}\right)</math></p> <p>b. Calculate <math>-4 + \frac{5}{2}</math></p>	<p><b>Year 8:</b> 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>C09: Adding and Subtracting Decimals</p>	<p>9.  Evaluate <math>3.8 + 2.76</math></p>	<p><b>Grade 6:</b> 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>
<p>C10: Multiplying Decimals by Decimals</p>	<p>10.  Evaluate <math>2.98 \times 2.5</math></p>	<p><b>Grade 6:</b> Find a simple fraction of a quantity where the result is a whole number, with and without digital technologies (<a href="#">VCMNA213</a>)</p>
<p>C11: Converting a Fraction to a Decimal and Classifying it as Terminating or Recurring</p>	<p>11. a.  Convert <math>\frac{10}{11}</math> to a decimal. Round to 4 decimal places where necessary.</p> <p>b. Is <math>\frac{10}{11}</math> a recurring or terminating decimal?</p>	<p><b>Year 8:</b> Investigate terminating and recurring decimals (<a href="#">VCMNA274</a>)</p>
<p>C12: Increasing or Decreasing a Number by a Percentage</p>	<p>12.  Increase 33 by 6%.</p>	<p><b>Year 8:</b> Solve problems involving the use of percentages, including percentage increases and decreases and percentage error, with and without digital technologies (<a href="#">VCMNA276</a>)</p>

<p>C13: Substituting a Whole Number into a 2-step Expression, Possibly Resulting in a Fractional Answer, that Could be Positive or Negative</p>	<p>13.  Substitute <math>x = 4</math> into <math>\frac{x}{3} - 3</math> and evaluate.</p>	<p><b>Year 7:</b> Create algebraic expressions and evaluate them by substituting a given value for each variable (<a href="#">VCMNA252</a>)</p> <p><b>Year 8:</b> 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>C14: Substituting an Integer into an Expression of the Form <math>ax + b</math></p>	<p>14.  Substitute <math>x = -4</math> into <math>2x - 1</math> and evaluate.</p>	<p><b>Year 7:</b> Create algebraic expressions and evaluate them by substituting a given value for each variable (<a href="#">VCMNA252</a>)</p> <p><b>Year 8:</b> 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>C15: Substituting a Fraction into an Expression of the Form <math>ax + b</math></p>	<p>15.  Substitute <math>x = \frac{3}{7}</math> into <math>-4x - 2</math> and evaluate.</p>	<p><b>Year 7:</b> Create algebraic expressions and evaluate them by substituting a given value for each variable (<a href="#">VCMNA252</a>)</p> <p><b>Year 8:</b> 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>C16: Expanding and Factorising Expressions of the Form <math>ax + b</math> (where <math>a</math> and <math>b</math> are integers)</p>	<p>16. a. Expand <math>-10(5x - 4)</math></p> <p>b. Factorise <math>10x - 5</math></p>	<p><b>Year 8:</b> Extend and apply the distributive law to the expansion of algebraic expressions (<a href="#">VCMNA279</a>)</p> <p>Factorise algebraic expressions by identifying numerical factors (<a href="#">VCMNA280</a>)</p>
<p>C17: Solving 2-step Equations with Whole Number Solutions</p>	<p>17.  Solve the following:</p> $14 = 7(x - 1)$	<p><b>Year 7:</b> Solve simple linear equations (<a href="#">VCMNA256</a>)</p>
<p>C18: Solving Equations of the Form <math>ax + b = c</math> Where Any Value Could Be an Integer and the Unknown Could Be a Fraction</p>	<p>18.  Solve the following:</p> $-3x - 1 = -25$	<p><b>Year 8:</b> Solve linear equations using algebraic and graphical techniques. Verify solutions by substitution (<a href="#">VCMNA284</a>)</p>

<p>C19: Solving Equations of the form <math>a(x + b) = c</math> where <math>x</math> is fractional</p>	<p>19.  Solve the following:</p> $16 = 3(x - 3)$	<p><b>Year 8:</b> Solve linear equations using algebraic and graphical techniques. Verify solutions by substitution (VCMNA284)</p>
<p>C20: Simplifying Expressions involving Addition and Subtraction of Like Terms and Multiplication of Algebraic Terms</p>	<p>20. Simplify the following.</p> <p>a. <math>6 - 1 - 5x</math></p> <p>b. <math>6x \times 6</math></p>	<p><b>Year 8:</b> Simplify algebraic expressions involving the four operations (VCMNA281)</p>
<p>C21: Completing Coordinates (to find intercepts) of Linear Equations of the Form <math>y = ax + b</math></p>	<p>21. Consider the linear relationship</p> $y = 2x + 3$ <p>Complete the missing value in each coordinate so each satisfies the given relationship.</p> <p>(0, )</p> <p>( , 0)</p>	<p><b>Year 7:</b> Create algebraic expressions and evaluate them by substituting a given value for each variable (VCMNA252)</p> <p><b>Year 8:</b> Solve linear equations using algebraic and graphical techniques. Verify solutions by substitution (VCMNA284)</p>
<p>C22: Plotting Coordinates from Q21 to Sketch a Linear Graph with Intercepts Labelled</p>	<p>22. Sketch the graph of <math>y = 2x + 3</math>. Label the axis intercepts using your answers from Question 21 to assist you.</p> 	<p><b>Year 8:</b> Plot linear relationships on the Cartesian plane with and without the use of digital technologies (VCMNA283)</p>

C23: Determining a Linear Rule from a Table of Values (including negative gradients)

23. The points below satisfy a linear relationship. Complete the table and rule below.

$x$	-1	0	1	2	3
$y$	-6				22

$y =$

**Grade 3:**

Describe, continue, and create number patterns resulting from performing addition or subtraction (VCMNA138)

Use a function machine and the inverse machine as a model to apply mathematical rules to numbers or shapes (VCMNA139)

**Year 7:**

Create algebraic expressions and evaluate them by substituting a given value for each variable (VCMNA252)

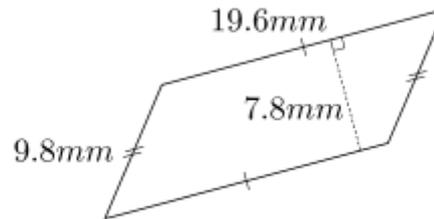
**Year 8:**

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)

\*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

C24: Calculating the Perimeter and Area of Quadrilaterals and Calculating the Volume of Prisms

24.  To the nearest whole number calculate the area of the parallelogram.



$A \approx$

**Year 8:**

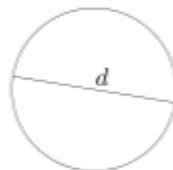
Find perimeters and areas of parallelograms, trapeziums, rhombuses and kites (VCMMG287)

**Year 8:**

Develop the formulas for volumes of rectangular and triangular prisms and prisms in general. Use formulas to solve problems involving volume (VCMMG289)

C25: Calculating the Circumference and Area of a Circle given the Radius or Diameter.

25.  The circle below has a diameter of 17.2cm. Calculate the following, giving answers to 2dp. where appropriate.



a. radius =

b. circumference =

c. area =

**Year 8:**

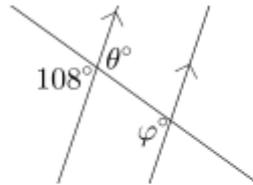
Investigate the relationship between features of circles such as circumference, area, radius and diameter. Use formulas to solve problems involving determining radius, diameter, circumference and area from each other (VCMMG288)

**Year 8:**

Investigate the concept of irrational numbers, including  $\pi$  (VCMNA275)

C26: Angles Around a Point and Parallel Lines

26. Consider the diagram below.



a. State the size of the unknown angles.

$$\theta^\circ = \quad \quad \quad \varphi^\circ =$$

b. What is the relationship between  $\theta$  and  $\varphi$ ?

Grade 6:

Investigate, with and without digital technologies, angles on a straight line, angles at a point and vertically opposite angles. Use results to find unknown angles (VCMMG231)

Year 7:

Identify corresponding, alternate and co-interior angles when two straight lines are crossed by a transversal (VCMMG264)

C27: Probabilities from Two-way Tables

27. Calculate the following probabilities using the two-way table below.

	C	C'	Total
D	4	4	8
D'	13	6	19
Total	17	10	27

a.  $P(D) =$

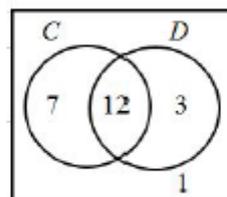
b.  $P(C \text{ and } D) =$

Year 8:

Represent events in two-way tables and Venn diagrams and solve related problems (VCMS296)

C28: Probabilities from Venn Diagrams

28. Calculate the following probabilities using the Venn diagram below.



a.  $P(C) =$

b.  $P(\text{not } D) =$

Year 8:

Represent events in two-way tables and Venn diagrams and solve related problems (VCMS296)

C29: Statistics – Calculating Mean, Median, Mode and Range

29. Calculate the following statistics for the below data set

0, 6, 5, 8, 4, 7, 1, 0

a. median =

b. mean to 1 dp.  $\approx$

c. mode =

d. range =

Year 7:

Calculate mean, median, mode and range for sets of data. Interpret these statistics in the context of data (VCMS270)

# Core Plus

Skill Code and Descriptor	Sample question	Related Victorian curriculum link(s)
C+1 Option 1: Adding and Subtracting Positive and Negative Fractions	C+1.  Calculate $-\frac{6}{8} + \frac{5}{6}$	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)
C+1 Option 2: Adding and Subtracting Positive and Negative Decimals	C+1.  Calculate $31.43 - 7.21$	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)
C+1 Option 3: Powers of Integers	C+1.  Calculate $(-2)^4$	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)
C+2 Option 1: Simplifying Ratios involving Fractions	C+2. Simplify $1\frac{3}{4} : \frac{5}{8}$	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)

<p>C+2 Option 2: Simplifying Ratios involving Decimals</p>	<p>C+2. Simplify 1.2 : 1</p>	<p>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)</p>												
<p>C+2 Option 3: Solving Ratio Equations</p>	<p>C+2. Find the value of <math>x</math> that makes the following equation true.</p> $10 : 7 = x : 10$	<p>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)</p>												
<p>C+3 Option 1: Solving Literal 2-step Equations</p>	<p>C+3.  Rearrange <math>ps - q = r</math> to make <math>s</math> the subject.</p>	<p>Year 8: Solve linear equations using algebraic and graphical techniques. Verify solutions by substitution (VCMNA284)</p>												
<p>C+3 Option 2: Determining Linear Relationships with Fractional Gradients</p>	<p>C+3. The points below satisfy a linear relationship. Complete the rule below.</p> <table border="1"> <tr> <td><math>x</math></td> <td>-1</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td><math>y</math></td> <td></td> <td>-4</td> <td></td> <td>-7</td> <td></td> </tr> </table> $y =$	$x$	-1	0	1	2	3	$y$		-4		-7		<p>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)</p>
$x$	-1	0	1	2	3									
$y$		-4		-7										
<p>C+4 Option 1: Finding an Original Amount after a Percentage Increase or Decrease</p>	<p>C+4.  A number is Decreased by 60% and the result is 8.8. What was the original number?</p>	<p>Year 8: Solve problems involving the use of percentages, including percentage increases and decreases and percentage error, with and without digital technologies (VCMNA276)</p>												

<p>C+4 Option 2: Determining the Radius or Diameter of a Circle given its Area</p>	<p><i>C+4.</i>  Determine the diameter of a circle which has an area of <math>43.763\text{cm}^2</math>. Give your answer to 2 decimal places.</p>	<p><b>Year 8:</b> 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><b>Year 8:</b> Investigate the concept of irrational numbers, including <math>\pi</math> (VCMNA275)</p>
<p>C+5 Extension Topic Questions Option 1: Converting fractions to recurring decimals</p>	<p><i>C+5.</i> Express <math>\frac{58}{9}</math> as a recurring decimal</p>	<p><b>Year 8:</b> Investigate terminating and recurring decimals (VCMNA274)</p>
<p>C+5 Extension Topic Questions Option 2: Converting recurring decimals to fractions</p>	<p><i>C+5.</i> Express <math>3.1\overline{3}</math> as an improper fraction</p>	<p><b>Year 8:</b> Investigate terminating and recurring decimals (VCMNA274)</p>
<p>C+5 Extension Topic Questions Option 3: Representing complex fractions as terminating decimals</p>	<p><i>C+5.</i> Express <math>\frac{106}{16}</math> as a terminating decimal</p>	<p><b>Year 8:</b> Investigate terminating and recurring decimals (VCMNA274)</p>

<p>C+5 Extension Topic Questions Option 4: Finding a term of an arithmetic sequence</p>	<p><i>C+5.</i> An arithmetic sequence begins with the numbers 4, 10, 16. What is the 97th term of the sequence?</p>	
<p>C+5 Extension Topic Questions Option 5: Finding the Term Number of a Term in an Arithmetic Sequence</p>	<p><i>C+5.</i> The 1st term of an arithmetic sequence is 27 and the 2nd term is 30. What is the term number of 258?</p>	
<p>C+5 Extension Topic Questions Option 6: Finding the Sum of Some Number of Terms in an Arithmetic Sequence</p>	<p><i>C+5.</i> An arithmetic sequence begins with the numbers 7, 5, 3. What is the sum of the first 27 terms?</p>	

<p>C+5 Extension Topic Questions Option 7: Finding the First Three Terms of an Arithmetic Sequence given Two Terms of the Sequence</p>	<p><i>C+5.</i> The 12th term of an arithmetic sequence is -5 and the 22nd term is -35. What are the first three terms of this sequence?</p>	
<p>C+6: Varied Challenging Problem Solving Questions</p>	<p><i>C+6.</i> ★ How many numbers less than 1000 have digits which sum to 8?</p>	