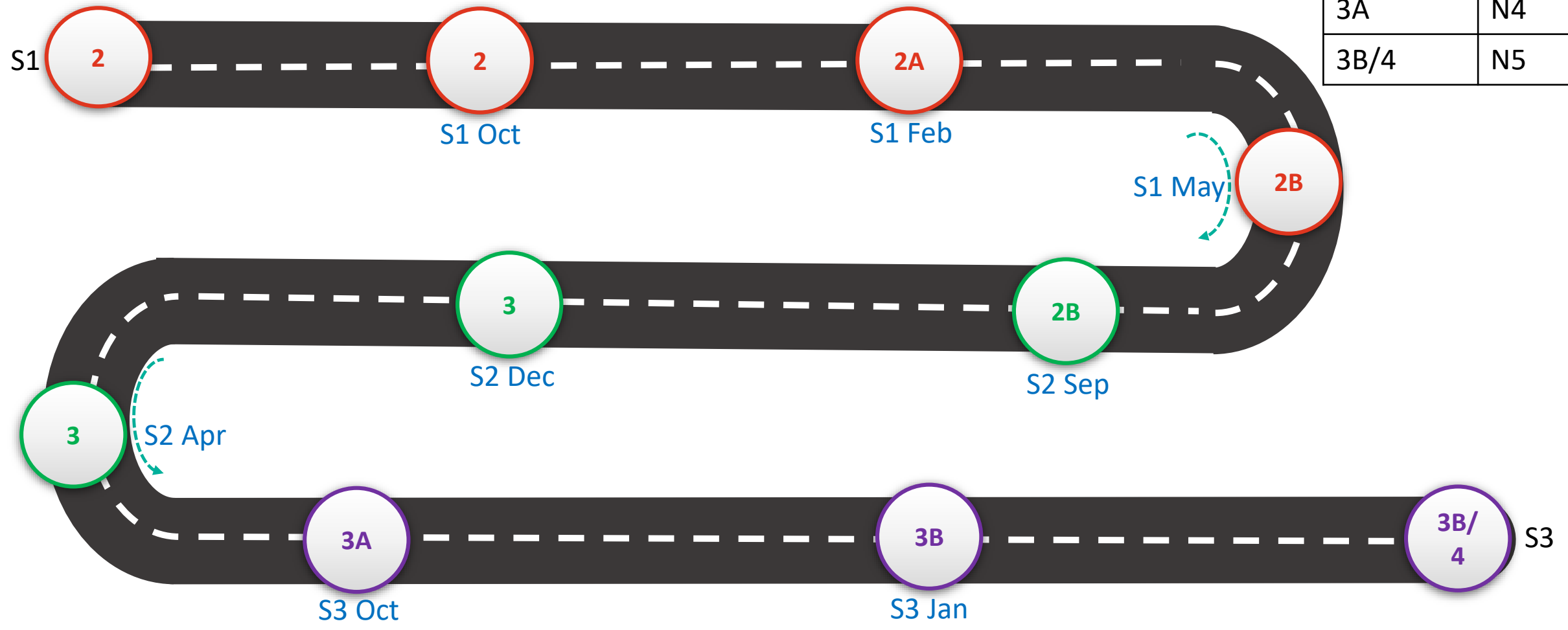


BGE Progression Framework to N5

Subject: Mathematics



By April S3	Pathway
2B	N3
3A	N4
3B/4	N5



Year	Period	Course Overview	<a href="#">&lt; Back</a> 	 <a href="#">Next &gt;</a>
S1	August - December	<ul style="list-style-type: none"> <li>• multiples &amp; factors</li> <li>• negative numbers</li> <li>• number sense</li> <li>• algebra</li> <li>• area &amp; volume</li> </ul>		
	January - May	<ul style="list-style-type: none"> <li>• fractions</li> <li>• angles</li> <li>• probability</li> <li>• percentages</li> </ul>		
S2	August - December	<ul style="list-style-type: none"> <li>• scale drawings and measurement</li> <li>• speed, distance &amp; time</li> <li>• expressions &amp; equations</li> <li>• finance</li> <li>• circles</li> <li>• changing the subject of a formula</li> </ul>		
	January - May	<ul style="list-style-type: none"> <li>• brackets &amp; factorising</li> <li>• powers, roots &amp; scientific notation</li> <li>• data analysis</li> <li>• ratio &amp; proportion</li> <li>• sequences &amp; coordinates</li> </ul>		
S3	August - December	<ul style="list-style-type: none"> <li>• numeracy</li> <li>• Pythagoras</li> <li>• brackets &amp; factorising</li> <li>• volume &amp; surface area</li> <li>• trigonometry</li> </ul>		
	January - May	<ul style="list-style-type: none"> <li>• statistics</li> <li>• circles</li> <li>• straight lines</li> <li>• algebraic fractions</li> </ul>		

On-Going Assessment  
Periodic Assessment  
High Quality Assessment  
Standardised Assessment



	August	September	October	November	December	January	February	March	April	May	June
S1		Multiples & factors Number sense Integers	Integers <a href="#">Assessment 1 - numeracy</a>	Algebra	Area & volume Enrichment – problem solving	Fractions Angles	Probability <a href="#">Assessment 2 - maths</a>	Enrichment carousel Percentages	<a href="#">Assessment 3 – numeracy &amp; maths</a>	Enrichment carousel	Fractions, decimals & percentages
S2	Brackets & factorising	Powers, roots & scientific notation	Data analysis	Ratio & proportion <a href="#">Assessment 1 - maths</a>	Sequences & coordinates Enrichment – problem solving	Scale drawings & measurement  Speed, distance & time	Expressions & equations	Finance <a href="#">Assessment 2 – numeracy &amp; maths</a> Enrichment carousel	Circles	Changing the subject of a formula Enrichment carousel <a href="#">Assessment 3 – numeracy &amp; maths</a>	
S3	Numeracy	Pythagoras  <b>SNSA</b>	Brackets & factorising <a href="#">Assessment 1 – numeracy &amp; maths</a>	Volume and surface area Trig.	<a href="#">Assessment 2 – numeracy &amp; maths</a> Enrichment – problem solving	Statistics Circles	Straight lines	Algebraic fractions <a href="#">Assessment 3 – numeracy &amp; maths</a>	Holistic questions	N4/N5 Numeracy	

# S1 Assessment 1

Everyone can...	Most people can also...	Some people can also...
Use number sense strategies for addition and subtraction of two-digit numbers.	Use number sense strategies for multiplying two-digit numbers	Use number sense strategies with operations on decimal fractions.
Perform arithmetic operations involving one negative number. $-9 + 7 = -2$ $5 \times (-8) = -40$	Perform arithmetic operations involving two negative numbers. $-10 - (-11) = 1$ $-30 \div (-5) = 6$	Perform arithmetic operations involving three negative numbers. $-2 + (-3) \times (-5) = 13$
Multiply or divide a number including a decimal fraction by a multiple of 10. $1.8 \div 20 = 1.8 \div 10 \div 2 = 0.18 \div 2 = 0.09$	Multiply or divide a number including a decimal fraction by a multiple of 100. $300 \times 0.15 = 3 \times 100 \times 0.15 = 3 \times 15 = 45$	Multiply or divide a number including a decimal fraction by a decimal fraction. $2.1 \div 0.03 = 210 \div 3 = 70$
Write down the multiples of a given number. $6, 12, 18, 24, 30...$	Find the lowest common multiple of two numbers. l.c.m. of 9 and 12 = 36	In context, find the lowest common multiple of three or more numbers.
Write down all the factors of a given number. $12 = 1 \times 12, 2 \times 6, 3 \times 4$	Find the highest common factor of two numbers. h.c.f. of 14 and 21 = 7	Write a number as a product of prime numbers. $100 = 2 \times 50 = 2 \times 2 \times 25 = 2 \times 2 \times 5 \times 5$

# S1 Assessment 2

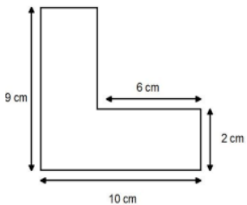
## Everyone can...

Simplify expressions involving two variables.  
 $2a + b + 3a + b = 5a + 2b$

Evaluate an expression by substituting two given values.  
 $a = 3, b = 5$   
 $2a - b = 6 - 5 = 1$

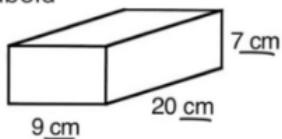
Solve a simple equation.  
 $x - 5 = 9$   
 $x = 14$

Calculate the perimeter of a compound shape.



Calculate the volume of a cuboid.

Find the volume of this cuboid



$$V = l \times b \times h$$

$$V = 9 \times 20 \times 7$$

$$V = 1260 \text{ cm}^3$$

## Most people can also...

Simplify expressions involving variables and constants.  
 $5n - 1 + 2m - n + 3 = 4n + 2m + 2$

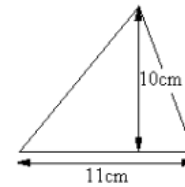
Evaluate an expression by substituting three given values, one of which is a negative.  
 $p = 1, q = 10, r = -2$   
 $3q - p + 2r = 30 - 1 - 4 = 25$

Solve a two-step equation.  
 $4a + 7 = 31$   
 $4a = 24$   
 $a = 6$

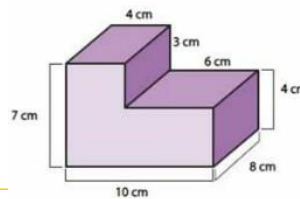
Calculate the area of a triangle.

$$\text{Area} = \frac{1}{2} \times \text{base} \times \text{perpendicular height}$$

$$= \frac{1}{2} \times 11 \times 10 = 55 \text{ cm}^2$$



Calculate the volume of a compound shape.



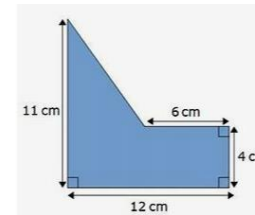
## Some people can also...

Simplify expressions involving variables as powers.  
 $x^2 + y - 5 + 2x^2 - x = 3x^2 + y - x - 5$

Evaluate an expression that includes powers, by substituting values that include negatives.  
 $n = -3, m = -5$   
 $n^2 - 3m = 9 + 15 = 24$

Solve a two-step equation that includes a negative variable.  
 $1 - 2x = 9$   
 $2x = -8$   
 $x = -4$

Calculate the area of a compound shape.



Calculate the volume of a more complex compound shape.

# S1 Assessment 3

[< Back](#) 

Everyone can...	Most people can also...	Some people can also...
Number sense		
Perform calculations involving negative numbers. $20 - (-5) = 25$	Perform calculations in the correct order, (BODMAS) including a negative number. $10 + (-3) \times 7 = 10 + (-21) = -11$	Perform calculations in the correct order, (BODMAS) including more than one negative number. $5 - (-12) \div (-6) = 5 - 2 = 3$
Multiply or divide a number including a decimal fraction by a multiple of 10. $35.2 \times 20 = 35.2 \times 2 \times 10 = 70.4 \times 10 = 704$	Multiply or divide a number including a decimal fraction by a multiple of 100. $12.3 \div 300 = 12.3 \div 3 \div 100 = 4.1 \div 100 = 0.041$	Multiply or divide a number including a decimal fraction by another decimal fraction. $1.8 \div 0.03 = 180 \div 3 = 60$
Simplify a fraction using highest common factor. $\frac{27}{36} = \frac{3}{4}$	Change an improper fraction to a mixed number. $\frac{19}{5} = 3\frac{4}{5}$	Change a mixed number to an improper fraction. $7\frac{5}{6} = \frac{47}{6}$
Add or subtract two fractions with the same denominator. $\frac{1}{7} + \frac{3}{7} = \frac{4}{7}$	Add or subtract two fractions where one denominator needs to be changed. $\frac{2}{3} - \frac{1}{9} = \frac{6}{9} - \frac{1}{9} = \frac{5}{9}$	Add or subtract two fractions where both denominators need to be changed $\frac{1}{4} + \frac{1}{5} = \frac{5}{20} + \frac{4}{20} = \frac{9}{20}$

# S2 Assessment 1

Everyone can...	Most people can also...	Some people can also...
<p>Expand a single bracket.  <math>5(y - 3) = 5y - 15</math></p>	<p>Expand more than one bracket and simplify expressions.  <math>2(3x + 1) + 3(x - 4) = 6x + 2 + 3x - 12 = 9x - 10</math></p>	<p>Expand brackets and simplify more difficult expressions.  <math>4(a - 2) - 3(2a - 5) = 4a - 8 - 6a + 15 = -2a + 7</math></p>
<p>Factorise an expression using a numeric common factor.  <math>10 - 30n = 10(1 - 3n)</math></p>	<p>Factorise an expression using an algebraic common factor.  <math>2ab + 6bc = 2b(a + 3c)</math></p>	<p>Factorise a quadratic expression using a common factor.  <math>5xy^2 + 15xy = 5xy(y + 3)</math></p>
<p>Solve an equation with a variable on both sides.</p>	<p>Solve an equation involving a bracket.</p>	<p>Solve an equation with brackets on both sides.</p>
<p>Evaluate a power without a calculator.  <math>9^2 = 81</math></p>	<p>Evaluate and compare numbers raised to different powers.  <math>5^3</math> and <math>4^4</math></p>	<p>Evaluate a power with a negative base.  <math>(-2)^4 = 16</math></p>
<p>Evaluate a square root.  <math>\sqrt{36} = 6</math></p>	<p>Evaluate a cube root.  <math>\sqrt[3]{27} = 3</math></p>	<p>Solve problems involving roots.  <math>\sqrt{90}</math> lies between 9 and 10.</p>
<p>Write a basic number in scientific notation.  <math>5000 = 5 \times 10^3</math></p>	<p>Write a large number in scientific notation.  <math>19\,543\,000 = 1.9543 \times 10^7</math></p>	<p>Write a small number in scientific notation.  <math>0.0000067 = 6.7 \times 10^{-6}</math></p>
<p>Convert a basic number from scientific notation.  <math>7 \times 10^5 = 700\,000</math></p>	<p>Convert a large number from scientific notation.  <math>2.908 \times 10^6 = 2\,908\,000</math></p>	<p>Convert a small number from scientific notation.  <math>9.75 \times 10^{-5} = 0.0000975</math></p>
<p>Multiply two fractions.  <math>\frac{4}{5} \times \frac{2}{3} = \frac{8}{15}</math></p>	<p>Add or subtract two mixed numbers.  <math>2\frac{1}{3} - 1\frac{1}{2} = \frac{7}{3} - \frac{3}{2} = \frac{14}{6} - \frac{9}{6} = \frac{5}{6}</math></p>	<p>Multiply or divide two mixed numbers.  <math>3\frac{1}{2} \div 2\frac{3}{4} = \frac{7}{2} \times \frac{11}{4} = \frac{77}{8}</math></p>

# S2 Assessment 2

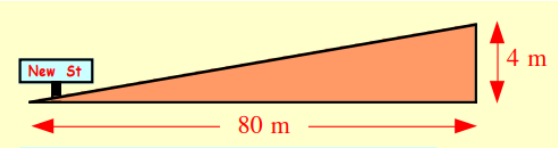
Everyone can...	Most people can also...	Some people can also...
<p>Add or subtract fractions where one denominator needs to be changed, simplifying where appropriate.</p> $\frac{7}{12} + \frac{1}{4} = \frac{7}{12} + \frac{3}{12} = \frac{10}{12} = \frac{5}{6}$	<p>Add or subtract two mixed numbers with different denominators.</p> $2\frac{1}{3} - 1\frac{1}{2} = \frac{7}{3} - \frac{3}{2} = \frac{14}{6} - \frac{9}{6} = \frac{5}{6}$	<p>Add or subtract more than two mixed numbers with different denominators.</p>
<p>Multiply two fractions.</p> $\frac{4}{5} \times \frac{2}{3} = \frac{8}{15}$	<p>Multiply a fraction and a mixed number.</p> $5\frac{1}{4} \times \frac{5}{8} = \frac{21}{5} \times \frac{5}{8} = \frac{21}{8} \times \frac{5}{5} = \frac{21}{8}$	<p>Multiply two or more mixed numbers.</p> $4\frac{1}{2} \times 3\frac{2}{3} = \frac{9}{2} \times \frac{11}{3} = \frac{99}{6} = \frac{33}{2}$
<p>Divide two fractions.</p> $\frac{2}{3} \div \frac{3}{5} = \frac{2}{3} \times \frac{5}{3} = \frac{10}{9}$	<p>Divide a fraction by a whole number.</p> $\frac{5}{8} \div 3 = \frac{5}{8} \times \frac{1}{3} = \frac{5}{24}$	<p>Divide two mixed numbers.</p> $3\frac{1}{2} \div 2\frac{3}{4} = \frac{7}{2} \times \frac{11}{4} = \frac{77}{8}$
<p>Write a percentage as a fraction, simplifying where appropriate.</p> $28\% = \frac{28}{100} = \frac{7}{25}$	<p>Write a fraction as a percentage.</p> $\frac{7}{20} = \frac{35}{100} = 35\%$	<p>Write a mixed number as a decimal fraction.</p> $7\frac{18}{30} = 7\frac{6}{10} = 7.6$
<p>Calculate a percentage of an amount using a calculator.</p> $9\% \text{ of } \pounds 240 = 0.09 \times 240 = 21.6$	<p>Calculate a percentage increase or decrease using a calculator.</p> $\text{Increase } 340 \text{ by } 15\% = 115\% \text{ of } 340 = 1.15 \times 340 = 391$	<p>Calculate a percentage increase or decrease using a calculator.</p> $\text{Decrease } 250 \text{ by } 8\% = 92\% \text{ of } 250 = 0.92 \times 250 = 230$
<p>Solve word problems involving adding and subtracting fractions.</p>	<p>Solve word problems involving multiplying and dividing fractions.</p>	<p>Solve word problems involving mixed numbers.</p>



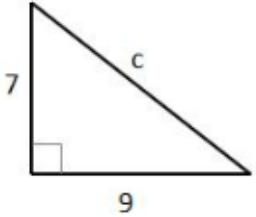
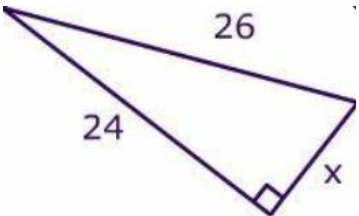
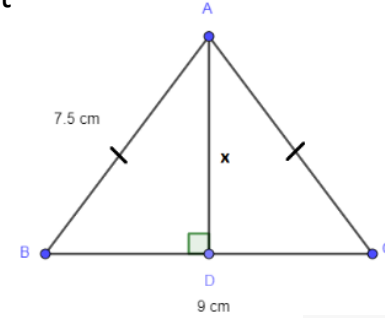
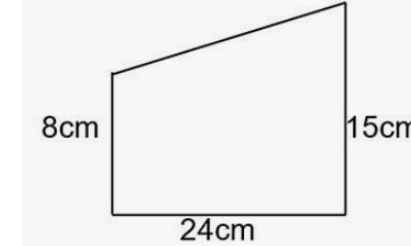
## S2 Assessment 2

Everyone can...	Most people can also...	Some people can also...
Find the mode of a data set.	Calculate the mean or median of a data set.	Select a suitable average to compare data sets.
Extract required data from a graph, chart or table.	Extract data from a graph, chart or table and use it in related calculations.	

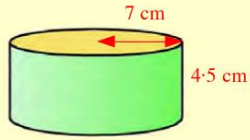
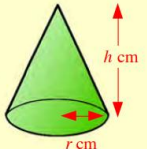
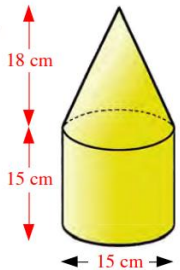
# S2 Assessment 3

Everyone can...	Most people can also...	Some people can also...
<p>Calculate the mode and range of a data set. 7, 4, 9, 7, 7, 10, 4, 8 Mode = 7 Range = <math>10 - 4 = 6</math></p>	<p>Calculate the mean and median of a data set. 10, 12, 12, 15, 17, 18 Mean = <math>\frac{84}{6} = 14</math> Median = <math>\frac{(12+15)}{2} = 13.5</math></p>	<p>Given an average, work backwards to find a missing value from a data set. 9, x, 20, 11, 3 If mean = 11, then <math>43 + x = 5 \times 11 = 55</math> <math>x = 12</math></p>
<p>Find the next term in a simple sequence of numbers. 3, 10, 17, 24...</p>	<p>Find the next term in a sequence of negative numbers. 3, -2, -7, -12...</p>	<p>Find the next term in a more advanced sequence of numbers. 2, 3, 5, 8...</p>
<p>Calculate gradient.</p>  <p><b>gradient</b> = <math>\frac{4}{80} = \frac{1}{20}</math></p>	<p>Calculate the gradient of a line in it's most simplified form.</p>	<p>Calculate the gradient of a line by first finding the related distances.</p>
<p>Find a term in a sequence from its nth term. <math>4n + 1 \rightarrow 5, 9, 13, 17 \dots</math></p>	<p>Find the nth term for a given sequence. <math>-1, 2, 5, 8 \dots \rightarrow 3n - 4</math></p>	
<p>Complete a table of values and plot points</p>		
<p>Use a given two-part ratio to proportionally increase/decrease a quantity.</p>	<p>Use a given ratio to proportionally share out an amount or quantity.</p>	<p>Use inverse proportion to calculate a related quantity.</p>

# S3 Assessment 1

Everyone can...	Most people can also...	Some people can also...
Multiply a bracket. $5(a + 4) = 5a + 20$	Multiply a pair of brackets. $(x + 3)(x - 2) = x^2 + x - 6$	Multiply a pair of brackets and gather like terms. $(x - 3)(x - 7) - 5x = x^2 - 10x + 21 - 5x$ $= x^2 - 15x + 21$
Factorise an expression using a common factor. $24x - 3 = 3(8x - 1)$	Factorise a difference of two squares or trinomial quadratic expression. $x^2 - 25 = (x + 5)(x - 5)$ $x^2 + x - 20 = (x - 4)(x + 5)$	Factorise a trinomial with non-unitary $x^2$ term. $3x^2 + 14x - 5 = (3x^2 - 1)(x + 5)$
Use Pythagoras' Theorem to calculate a hypotenuse  $c^2 = 7^2 + 9^2$ $c^2 = 49 + 81$ $c^2 = 130$ $c = \sqrt{130}$ $c = 11.40$	Use Pythagoras' Theorem to calculate a shorter side.  $x^2 = 26^2 - 24^2$ $= 100$ $x = \sqrt{100}$ $x = 10$	Use Pythagoras' Theorem to solve problems in it  

# S3 Assessment 2

Mathematics	Applications
Use trigonometry to calculate angles.	Apply Pythagoras' Theorem to calculate lengths.
Use trigonometry to calculate lengths.	Calculate the volume of a prism and cylinder. <div style="text-align: right; margin-top: 10px;">  <div style="border: 1px solid black; padding: 5px; display: inline-block; margin-left: 10px;"> <math display="block">V = \pi r^2 h</math> <math display="block">V = 3.14 \times 7 \times 7 \times 4.5</math> <math display="block">V = 692.37 \text{ cm}^3</math> </div> </div>
Find the equation of a straight line from two points.	Calculate the volume of a cone. <div style="text-align: right; margin-top: 10px;"> <p>A <b>Circular Based</b> Pyramid is simply called a <b>CONE</b>. The formula for its volume is :-</p> <div style="border: 1px solid black; border-radius: 10px; padding: 2px 10px; display: inline-block; margin-bottom: 5px;"> <math>V = \frac{1}{3}\pi r^2 h</math> </div>  </div>
Multiply a pair of brackets. $(x + 3)(x - 2) = x^2 + x - 6$	Calculate the volume of a sphere.
Factorise a difference of two squares or trinomial quadratic expression. $x^2 - 25 = (x + 5)(x - 5)$ $x^2 + x - 20 = (x - 4)(x + 5)$	Calculate the volume of compound shapes. <div style="text-align: right; margin-top: 10px;">  </div>
Add/subtract and simplify algebraic fractions.	Calculate the standard deviation of a data set.