



## CAMI Education links: Maths NQF Level 2

<b>MATHEMATICS - NQF Level 2</b>		
<b>CONTENT</b>	<b>LEARNING OUTCOME</b>	<b>CAMI LINK</b>
<b>1.1 Computational tools, estimation and approximations</b>	<ul style="list-style-type: none"><li>• Scientific calculator</li><li>- addition</li><li>- subtraction</li><li>- multiplication</li><li>- division</li><li>- squares</li><li>- cubes</li><li>- square roots</li><li>- cube roots</li><li>• Estimate and approximate physical quantities</li><li>- length</li><li>- mass</li><li>- time</li><li>- temperature</li></ul>	<b>1.7.5.8</b> <b>2.3.4.9</b> <b>1.8.3.1</b> <b>1.8.3.2</b> <b>1.8.3.3</b> <b>1.8.3.4</b>  <b>9.1.1.3</b> <b>9.1.3.3</b> <b>9.2.1.9</b> <b>9.1.4</b>
<b>1.2 Numbers</b>	<ul style="list-style-type: none"><li>• Rational and irrational numbers</li><li>• Rounding off</li><li>• Convert rational numbers</li><li>• Exponential laws</li><li>• Rationalize fractions with surd denominators</li><li>• Add, subtract, multiply and divide simple surds</li></ul>	<b>1.8.6.1</b>  <b>1.7.1.7</b>  <b>2.3.5.3</b> <b>2.3.5.6</b>  <b>4.3.1.1</b> <b>4.3.1.2</b> <b>4.3.1.3</b> <b>4.3.1.5</b> <b>4.3.1.6</b> <b>4.3.1.7</b> <b>4.3.1.8</b>  <b>4.3.6.8</b> <b>4.3.6.9</b>  <b>4.3.6.1</b> <b>4.3.6.2</b> <b>4.3.6.3</b> <b>4.3.6.4</b>



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	<ul style="list-style-type: none"><li>• Manipulate technical and non-technical formulae</li><li>• Arithmetic sequences and series</li></ul>	4.3.6.5 4.3.6.6  4.2.4.3  4.1.6.1 4.1.6.2 4.1.6.4 4.1.6.7 4.1.6.8
<b>2.1 Graphs and algebraic and transcendental functions</b>	<ul style="list-style-type: none"><li>• Generate graphs through point-by-point plotting</li><li>• Use the generated graph to make and test conjectures</li><li>• Generalize the effects of parameters <math>a</math> and <math>q</math><ul style="list-style-type: none"><li>- <math>y = ax + q</math></li><li>- <math>y = ax^2 + q</math></li><li>- <math>y = \frac{a}{x} + q</math></li><li>- <math>y = ab^x + q ; b &gt; 0</math></li><li>- <math>y = a \sin x + q</math></li><li>- <math>y = a \cos x + q</math></li><li>- <math>y = a \tan x + q</math></li></ul></li></ul>	6.4.1.1 6.5.5.1 6.7.2    6.2.3 6.4.3 6.5.5.3 6.7.3
<b>2.1 Functions</b>	<ul style="list-style-type: none"><li>• Define functions</li><li>• Identify characteristics of functions:<ul style="list-style-type: none"><li>- Domain and range</li><li>- Intercepts with axes</li><li>- Turning points, minima and maxima</li><li>- Asymptotes</li><li>- Shape and symmetry</li><li>- Periodicity and amplitude</li><li>- Functions and non-functions</li></ul></li></ul>	6.2.8.1 6.4.2 6.4.3 6.4.5.1 6.5.5.2 6.5.5.3 6.7.1 6.7.3 6.7.6.1



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	<ul style="list-style-type: none"><li>- Continuous and non-continuous</li><li>• Sketch graphs and find equations of the following graphs:<ul style="list-style-type: none"><li>- <math>y = ax + q</math></li><li>- <math>y = ax^2 + q</math></li><li>- <math>y = \frac{a}{x} + q</math></li><li>- <math>y = ab^x + q ; b &gt; 0</math></li><li>- <math>y = a \sin x + q</math></li><li>- <math>y = a \cos x + q</math></li><li>- <math>y = a \tan x + q</math></li></ul></li></ul>	6.1.4 6.2.4 6.2.6 6.3.3 6.3.4 6.3.5 6.3.6 6.4.4 6.4.5.1 6.4.5.2 6.5.5.4 6.5.5.5 6.6.2 6.6.3 6.7.4
<b>2.2</b> <b>Manipulate and simplify algebraic expressions</b>	<ul style="list-style-type: none"><li>• Products of two binomials</li><li>• Products of binomial with trinomials</li><li>• Factorization:<ul style="list-style-type: none"><li>- common factor</li><li>- difference between two squares</li><li>- trinomials</li></ul></li><li>• Simplify algebraic fractions with monomial denominators</li></ul>	4.4.4.3 4.4.4.4 4.4.4.5  4.4.7.2 4.4.7.3  4.5.1.4 4.5.1.5  4.5.3.4 4.5.3.5  4.5.4.2 4.5.4.3  2.2.2.8 4.7.3.2 4.7.3.3 4.7.4.1 4.7.4.2 4.7.4.3 4.7.5.1



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		<b>4.7.5.2</b>
<b>2.3 Algebraic equations and inequalities</b>	<ul style="list-style-type: none"><li>• Linear equations</li><li>• Quadratic equations</li><li>• Exponential equations in the form <math>ka^x = m, x \in Z</math> (using exponential laws)</li><li>• Solve inequalities in one variable and represent the answer in the set builder notation, interval notation and on a number line</li><li>• Solve simultaneous equations with two unknowns algebraically and graphically, where both equations are linear.</li></ul>	<b>4.2.1.3</b> <b>4.2.1.8</b> <b>4.2.1.9</b> <b>4.2.2.2</b> <b>4.2.2.3</b> <b>4.2.3.1</b> <b>4.2.3.2</b> <b>4.2.3.3</b> <b>4.2.3.5</b> <b>4.2.3.6</b>  <b>4.2.5.4</b> <b>4.2.5.5</b>  <b>4.9.1.1</b> <b>4.9.1.2</b>  <b>5.3.1.2</b> <b>5.3.1.3</b> <b>5.3.1.4</b>  <b>4.6.1.1</b> <b>4.6.1.2</b> <b>4.6.1.3</b> <b>4.6.2.1</b>
<b>3.1 Measurement</b>	<ul style="list-style-type: none"><li>• Read scales on measuring instruments correctly. (Include the ruler and protractor)</li><li>• Use symbols and SI units as appropriate to the situation</li></ul>	<b>9.1.1.3</b> <b>9.1.1.4</b> <b>9.1.3.3</b> <b>9.1.4</b> <b>8.1.6.1</b>



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<p><b>3.2</b> Perimeter, surface area and volume in two and three dimensional geometrical shapes</p>	<ul style="list-style-type: none"><li>• Calculate the perimeter and surface area of the following:<ul style="list-style-type: none"><li>- square</li><li>- rectangle</li><li>- circle</li><li>- triangle</li><li>- parallelogram</li><li>- trapezium</li><li>- hexagon</li></ul></li><li>• Calculate the volume of the following geometric objects:<ul style="list-style-type: none"><li>- cubes</li><li>- rectangular prisms</li><li>- cylinders</li><li>- triangular prisms</li><li>- hexagonal prisms</li></ul></li><li>• Investigate the effect on area of laminas where one or more dimensions are multiplied by a constant factor <math>k</math></li><li>• Investigate the effect on the volume and surface area of right prisms and cylinders where one or more dimensions are multiplied by a constant factor <math>k</math></li></ul>	<p><b>9.3.1.4</b> <b>9.3.1.5</b> <b>9.3.1.6</b> <b>9.3.1.7</b> <b>9.3.1.8</b> <b>9.3.3.6</b> <b>9.3.2.6</b> <b>9.3.4.6</b> <b>9.3.5.1</b> <b>9.3.5.2</b> <b>9.3.6.4</b> <b>9.3.6.5</b></p> <p><b>9.5.2.1</b> <b>9.5.2.2</b> <b>9.5.2.3</b> <b>9.5.3.1</b> <b>9.5.3.2</b> <b>9.5.6.1</b></p>
<p><b>3.3</b> Cartesian plane</p>	<ul style="list-style-type: none"><li>• Use the Cartesian co-ordinate system to plot points, lines and polygons</li><li>• Use the Cartesian co-ordinate system to calculate</li></ul>	<p><b>6.1.2.1</b> <b>6.2.1</b></p> <p><b>6.1.2.2</b> <b>6.1.2.3</b></p>



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	<p>distance between two points</p> <ul style="list-style-type: none"><li>• Use the Cartesian co-ordinate system to find the gradient of the line joining two points</li><li>• Use the Cartesian co-ordinate system to find the co-ordinates of the midpoint of a line segment joining two points</li></ul>	<p><b>8.8.1.1</b> <b>8.8.1.2</b></p> <p><b>6.3.2</b> <b>6.3.3</b></p> <p><b>8.8.2.1</b> <b>8.8.2.3</b></p>
<p><b>3.4</b> <b>Transformations</b></p>	<ul style="list-style-type: none"><li>• Find the coordinates of the point (x;y) after it is translated <math>p</math> units horizontally and <math>q</math> units vertically</li><li>• Find the coordinates of the point (x;y) after it is reflected about the x-axis, the y-axis, the line <math>y = x</math> and the line <math>y = -x</math></li></ul>	<p><b>8.10.4.1</b></p> <p><b>8.10.2.4</b> <b>8.10.2.5</b></p>
<p><b>3.5</b> <b>Constructing and interpreting geometrical models</b></p>	<ul style="list-style-type: none"><li>• Investigate the relationship between the sides of a right-angled triangle to develop the theorem of Pythagoras</li><li>• Use the theorem of Pythagoras to calculate a missing length in a right-angled triangle leaving answers in the most appropriate form.</li></ul>	<p><b>7.1.1.1</b> <b>7.1.1.2</b> <b>7.1.1.3</b> <b>7.1.1.4</b> <b>7.1.1.5</b></p>
<p><b>3.6</b> <b>Constructing and interpreting trigonometric</b></p>	<ul style="list-style-type: none"><li>• Define and use the following trigonometric functions: <math>\sin \theta</math>; <math>\cos \theta</math>; <math>\tan \theta</math></li></ul>	<p><b>7.2.1.1</b> <b>7.2.1.3</b></p>



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<b>models</b>	<ul style="list-style-type: none"><li>• Calculate trigonometric ratios in each of the quadrants where one ratio in that quadrant is given: e.g. If <math>\sin \theta = \frac{3}{5}</math>; <math>90^\circ &lt; \theta &lt; 180^\circ</math> determine <math>\cos \theta</math> and <math>\tan \theta</math></li><li>• Solve problems in two dimensions by using <math>\sin \theta</math>; <math>\cos \theta</math>; <math>\tan \theta</math></li><li>• Express an appreciation of the contribution to the history of the development and the use of geometry and trigonometry by various cultures.</li></ul>	<b>7.6.5.1</b>  <b>7.1.1.6</b>
<b>4.1</b> <b>Central tendency and dispersion of data</b>	<ul style="list-style-type: none"><li>• Calculate the central tendency of ungrouped data namely the mean, median and mode</li><li>• Calculate measures of dispersion including range, percentiles, quartiles, inter-quartile range and semi-inter-quartile range</li></ul>	<b>10.3.1.4</b>  <b>10.5.1</b> <b>10.5.2</b>
<b>4.2</b> <b>Represent data effectively</b>	<ul style="list-style-type: none"><li>• Construction of Frequency Distribution/Tally Chart</li><li>• Bar and compound bar graphs</li><li>• Construction of the stem and leaf plot</li><li>• Histograms (grouped data)</li></ul>	<b>10.1.1.4</b>  <b>10.1.2.5</b> <b>10.1.2.6</b>  <b>10.1.5.1</b>  <b>10.3.2.1</b>



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	<ul style="list-style-type: none"><li>• Frequency polygons</li><li>• Pie charts</li><li>• Line and broken line graphs</li></ul>	<b>10.1.3.1</b> <b>10.1.4.2</b> <b>10.3.2.2</b> <b>10.3.2.3</b>
<b>5.1</b> <b>Personal and household finance</b>	<ul style="list-style-type: none"><li>• Describe financial concepts related to personal finances, methods of financing and financial control</li><li>• Draw up a projected personal and household monthly budget</li><li>• Record actual income and expenditure over a period (one month, six months or twelve months) and compare to the projected budget</li><li>• Identify and explain variances between actual and projected figures</li><li>• Provide possible corrective methods of financial control</li></ul>	
<b>5.2</b> <b>Simple and compound interest</b>	<ul style="list-style-type: none"><li>• Differentiate between simple and compound interest</li><li>• Explain the advantages and disadvantages of using simple and compound interest in specific situations</li><li>• Use and manipulate the simple interest growth formula <math>A = P(1 + i.n)</math> to solve problems</li></ul>	<b>10.7.1.4</b> <b>10.7.1.5</b>





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	<ul style="list-style-type: none"><li>• Use and manipulate the compound interest formula <math>A = P(1 + I)^n</math> to solve problems subject to only annual compounding being made</li></ul>	<b>10.7.2.3</b> <b>10.7.2.4</b> <b>10.7.2.5</b>
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