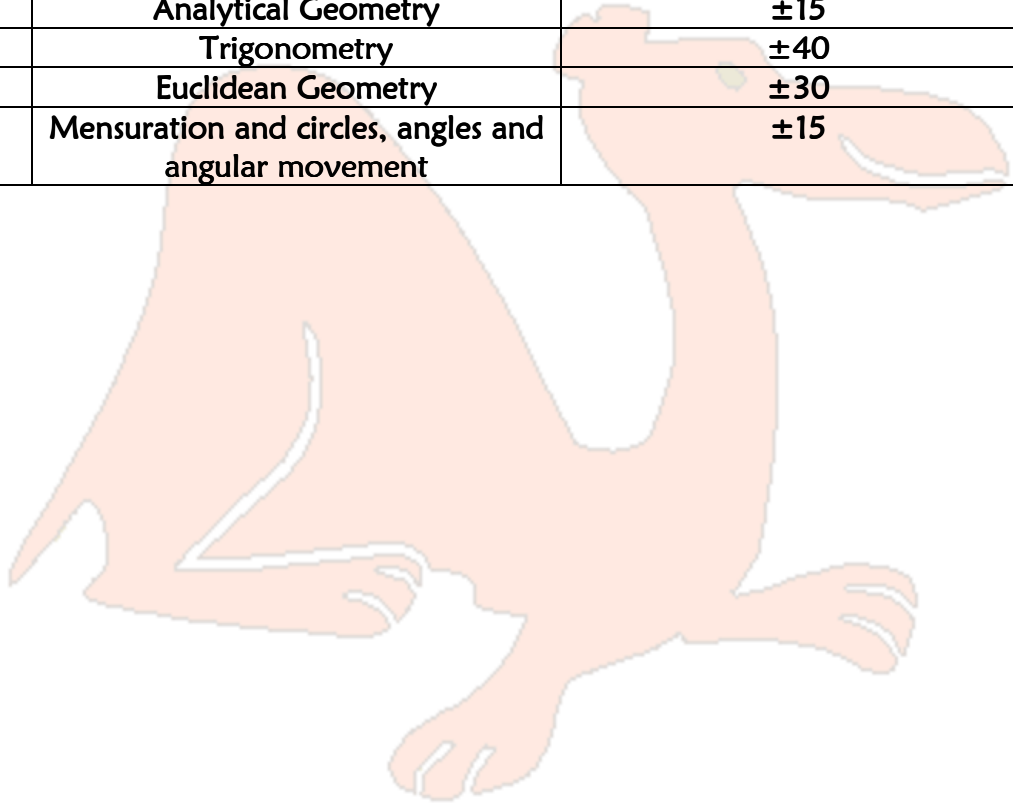




# CAMI Education linked to CAPS: Mathematics Grade 10

The main topics in the Technical Mathematics Curriculum

NUMBER	TOPIC	MARK DISTRIBUTION for FINAL EXAMS
1	Algebra	±60
2	Functions and Graphs	±25
3	Finance, growth and decay	±15
4	Analytical Geometry	±15
5	Trigonometry	±40
6	Euclidean Geometry	±30
7	Mensuration and circles, angles and angular movement	±15





# CAMI Education linked to CAPS: Mathematics Grade 10

GRADE 10_Term 1		
TOPICS	CONTENT	CAMI KEYS
TERM 1		
Introduction (2 weeks)	Mathematical language and concepts used in previous years are revised	Previous Grades
Number system (3 weeks)	<ul style="list-style-type: none"> <li>Understand that real numbers can be natural, whole, integers, rational and irrational</li> <li>Introduce binary and complex numbers</li> <li>Round real numbers off to significant/appropriate degree of accuracy</li> <li>Convert rational numbers into decimal numbers and vice versa</li> <li>Determine between which to integers a given simple surd lies</li> <li>Set builder notation, interval notation and number lines</li> </ul>	<b>1.8.6.1</b> <b>1.8.6.2</b>  <b>1.8.6.3</b>  <b>1.7.1.5</b>  <b>2.3.5.3</b> <b>2.3.5.7</b> <b>2.3.5.9</b>  <b>4.3.5.7</b>  <b>1.8.7.1</b> <b>1.8.7.2</b> <b>1.8.7.3</b>
Exponents (2 weeks)	1. Revise laws of exponents studied in Grade 9 where $x, y > 0$ and $m, n \in \mathbb{Z}$ <ul style="list-style-type: none"> <li><math>x^m \times x^n = x^{m+n}</math></li> <li><math>x^m \div x^n = x^{m-n}</math></li> <li><math>(x^m)^n = x^{mn}</math></li> <li><math>x^m \times y^m = (xy)^m</math></li> </ul> Also by definition: <ul style="list-style-type: none"> <li><math>x^{-n} = \frac{1}{x^n}; x \neq 0</math></li> <li><math>x^0 = 1, x \neq 0</math></li> </ul>	<b>4.3.1.1</b> <b>4.3.1.3</b> <b>4.3.1.5</b> <b>4.3.1.7</b> <b>4.3.1.8</b>  <b>4.3.2.1</b> <b>4.3.2.2</b> <b>4.3.2.3</b>



## CAMI Education linked to CAPS: Mathematics Grade 10

	2. Use the laws of exponents to simplify expressions and solve easy exponential equations (the exponents may only be whole numbers) 3. Revise scientific notation	<b>4.9.1.1</b> <b>4.9.1.2</b> <b>4.9.1.3</b>  <b>1.8.5.1</b> <b>1.8.5.2</b> <b>1.8.5.3</b> <b>1.8.5.4</b> <b>1.8.5.5</b> <b>1.8.5.6</b> <b>1.8.5.7</b>
<b>Mensuration</b>  <b>(1 week)</b>	1. Conversions of units, square units and cube units <b>All conversions should be done both ways</b> 2. Applications in technical fields	<b>9.1.2.1</b> <b>9.1.3.8</b> <b>9.1.3.9</b>
<b>Algebraic expressions</b>  <b>(3 weeks)</b>	1. Revise notation (interval, et builder, number line, sets)  2. Adding and subtracting of algebraic terms  3. Multiplication of a binomial by a binomial  4. Multiplication of a binomial by a trinomial  5. Determine the HCF and LCM of not more than three numerical or monomial algebraic expressions by making use of factorization	<b>1.8.7.1</b> <b>1.8.7.2</b> <b>1.8.7.3</b>  <b>4.1.8.4</b> <b>4.1.8.5</b> <b>4.1.9.7</b> <b>4.1.10.5</b>  <b>4.4.6.3</b> <b>4.4.6.4</b>  <b>4.4.7.2</b> <b>4.4.7.3</b>  <b>4.7.1.3</b> <b>4.7.1.4</b> <b>4.7.6.1</b> <b>4.7.2.2</b> <b>4.7.2.3</b>



## CAMI Education linked to CAPS: Mathematics Grade 10

	<p>6. Factorization of the following types:</p> <ul style="list-style-type: none"> <li>• Common factors</li> <li>• Grouping in pairs</li> <li>• Difference of two squares</li> <li>• Addition/subtraction of two cubes</li> <li>• Trinomials</li> </ul>	<p>4.7.6.2 4.7.6.3 4.7.6.4 4.7.6.5</p> <p>4.5.1.4 4.5.1.5</p> <p>4.5.2.1 4.5.2.2 4.5.2.3</p> <p>4.5.3.4 4.5.3.5</p> <p>4.5.8</p> <p>4.5.4.1 4.5.4.2 4.5.4.3</p>
<b>TERM 2</b>		
<p><b>Algebraic expressions (continue)</b> <b>(2 weeks)</b></p>	<p>7. Do addition, subtraction, multiplication and division of algebraic fractions using factorization (numerators should be limited to the polynomials covered in factorization)</p>	<p>4.7.3.3 4.7.4.3 4.7.5.1 4.7.5.2</p>
	<p>1.1 Revise notation (interval, set builder, number line, sets)</p> <p>1.2 Solve linear equations</p> <p>1.3 Solve equations with fractions</p>	<p>1.8.7.1 1.8.7.2 1.8.7.3</p> <p>4.2.1.7 4.2.1.8 4.2.2.3</p> <p>4.2.3.4 4.2.3.5</p>



## CAMI Education linked to CAPS: Mathematics Grade 10

<p><b>Equations and Inequalities</b></p> <p>(3 weeks)</p>	<p>2. Solve quadratic equations by factorization</p> <p>3. Solve simultaneous linear equations with two variables</p> <p>4.1 Do basic Grade 8 and 9 word problems</p> <p>4.2 Solve word problems involving linear, quadratic or simultaneous linear equations</p> <p>5. Solve simple linear inequalities (and show solution graphically)</p> <p>6. Manipulation of formulae (technical related)</p>	<p>4.2.3.6 4.2.3.7 4.2.3.8 4.2.3.9 4.2.3.10</p> <p>4.2.5.5 4.2.5.6</p> <p>4.6.1.2 4.6.1.3</p> <p>Revision</p> <p>4.6.2.3</p> <p>5.3.1.2 5.3.1.3 5.1.3.4 5.3.4.1</p> <p>4.2.4.3</p>
<p><b>Trigonometry</b></p>	<p>1. Know definitions of the trigonometric ratios sine, <math>\cos\theta</math> and <math>\tan\theta</math>, using right-angled triangles for <math>0^\circ \leq \theta \leq 360^\circ</math></p> <p>2. Introduce the reciprocals of the 3 basic trigonometric ratios, sine, <math>\cos\theta</math> and <math>\tan\theta</math>:</p>	<p>7.2.1.1 7.2.1.4</p>



# CAMI Education linked to CAPS: Mathematics Grade 10

<p><b>(3 weeks)</b></p>	<ul style="list-style-type: none"> <li>• <math>\operatorname{cosec} \theta = \frac{1}{\sin \theta}</math></li> <li>• <math>\sec \theta = \frac{1}{\cos \theta}</math></li> <li>• <math>\cot \theta = \frac{1}{\tan \theta}</math></li> </ul> <p>3. Trigonometric ratios in each of the quadrants are calculated where one ratio in the quadrant is given by making use of diagrams</p> <p>4. Practice the use of a calculator for questions applicable to trigonometry</p> <p>5. Solve simple trigonometric equations for angles between <math>0^\circ</math> and <math>90^\circ</math></p> <p>6. Solve two-dimensional problems involving right-angles triangles</p> <p>7. Trigonometry graphs for <math>0^\circ \leq \theta \leq 360^\circ</math></p> <p><math>y = a \cdot \sin \theta</math></p> <ul style="list-style-type: none"> <li>• <math>y = a \cdot \cos \theta</math></li> <li><math>y = a \cdot \tan \theta</math></li> <li>• <math>y = a \cdot \sin \theta + q</math></li> <li>• <math>y = a \cdot \cos \theta + q</math></li> </ul>	<p><b>7.6.5.1</b></p> <p><b>7.6.1.3</b></p> <p><b>7.6.2.1</b> <b>7.6.2.3</b> <b>7.6.2.5</b></p> <p><b>7.7.1.1</b> <b>7.7.1.2</b> <b>7.7.1.3</b> <b>7.7.5.1</b> <b>7.7.5.2</b></p> <p><b>7.8.1.1</b> <b>7.8.2.1</b> <b>7.8.2.2</b></p> <p><b>7.8.3.1</b></p>
<b>TERM 3</b>		
	<p>Represent geometric figures on a Cartesian co-ordinate system. Apply for any two points <math>(x_1; y_1)</math> and</p>	



## CAMI Education linked to CAPS: Mathematics Grade 10

<p><b>Analytical Geometry</b>  (1 week)</p>	<p><math>(x_2; y_2)</math> formulae for determining the:</p> <ol style="list-style-type: none"><li>1. distance between two points</li><li>2. gradient of a line segment connecting the two points (and from that identify parallel and perpendicular lines)</li><li>3. coordinates of the mid-point of the line segment joining the two points; and</li><li>4. the equation of a straight line passing through two points <math>y = mx + c</math></li></ol>	<p><b>8.8.1.1</b> <b>8.8.1.2</b> <b>8.8.1.3</b></p> <p><b>8.8.3.1</b> <b>8.8.3.2</b></p> <p><b>8.8.2.1</b> <b>8.8.2.2</b> <b>8.8.2.3</b></p> <p><b>8.8.5.1</b> <b>8.8.5.2</b></p>
<p><b>Functions and Graphs</b>  (3 weeks)</p>	<ol style="list-style-type: none"><li>1. Functional notation</li><li>2. Generate graphs by means of point-by-point plotting supported by available technology</li><li>3. Drawing of the following functions:<ul style="list-style-type: none"><li>• Linear function: <math>y = mx + c</math> (revise)</li><li>• Quadratic: <math>y = ax^2 + q</math></li><li>• Hyperbola: <math>y = \frac{a}{x}</math></li><li>• Exponential: <math>y = a.b^x</math> where <math>b \neq 1</math> and <math>b &gt; 0</math></li></ul></li></ol>	<p><b>6.1.3</b></p> <p><b>6.1.2.3</b></p> <p><b>6.1.5</b></p> <p><b>6.4.1.1</b> <b>6.4.1.2</b></p> <p><b>6.5.5.1</b> <b>6.5.5.4</b> <b>6.5.5.5</b></p> <p><b>6.7.1</b> <b>6.7.2</b></p>



## CAMI Education linked to CAPS: Mathematics Grade 10

	<p><b>NOTE:</b> <math>a, b, c, m, p, q \in R</math></p> <p><math>a \neq 0</math> for parabola only</p>	
<p><b>Euclidean Geometry</b></p> <p><b>(4 weeks)</b></p>	<ol style="list-style-type: none"> <li>1. Revise basic geometry done in Grades 8 and 9. Lines and parallel lines, angles, triangles, congruency and similarity.</li> <li>2. Apply the properties of line segments joining the mid-points of two sides of a triangle. Do practical problems.</li> <li>3. Know the features of the following special quadrilaterals: the kite, parallelogram, rectangle, rhombus, square and trapezium (apply to practical problems).</li> <li>4. Pythagoras' Theorem             <ul style="list-style-type: none"> <li>• Calculate the unknown side of a right-angled triangle</li> </ul> </li> </ol>	<p><b>Revision</b></p> <p><b>8.3.3</b></p> <p><b>8.4.3.1</b> <b>8.4.4.1</b> <b>8.4.4.2</b> <b>8.4.5.1</b> <b>8.4.5.2</b> <b>8.4.6</b> <b>8.4.7</b></p> <p><b>7.1.1.2</b> <b>7.1.1.3</b></p>
<b>TERM 4</b>		
<p><b>Analytical Geometry</b></p> <p><b>(1 week)</b></p>	Continuation from term 3	
<p><b>Circles, angles and angular movement</b></p> <p><b>(1 week)</b></p>	<ol style="list-style-type: none"> <li>1. Define a radian</li> <li>2. Indicate the relationship between degrees and radians, convert degrees to radians or convert radians to degrees, convert degrees and minutes to radians and radians to degree and minutes</li> </ol>	
<p><b>Finance and Growth</b></p>	Use the simple and compound growth formulae $A = P(1 + i.n)$ and $A = P(1 + i)^n$	<p><b>10.7.1.3</b> <b>10.7.1.4</b> <b>10.7.1.5</b></p>





## CAMI Education linked to CAPS: Mathematics Grade 10

<b>(2 weeks)</b>	to solve problems, including interest, hire purchase, inflation, population growth and other real life problems.  Understand the implications of fluctuating foreign exchange rates (e.g. on the petrol price, imports, exports, overseas travel)	<b>10.7.2.5</b> <b>10.7.2.6</b>
<b>Revision (2 weeks)</b>		

