

**Wah Yan College Kowloon**  
**F.6 Mathematics (Core) Scheme of Work (2016-2017)**

<b>Textbook</b>	1. New Progress in Senior Mathematics 6A (Compulsory Part) (with Public Exam Essentials and Student's Revision CD)
<b>Other Resources</b>	

**◆Repertoire of Self-directed Learning Skills:**

**1. reading to learn, 2. notes-taking, 3. looking up words in the dictionary, 4. pre-lesson preparation, 5. group discussion, 6. group presentation, 7. initiative to ask questions, 8. setting learning objectives and doing reflection, 9. eLearning platform with instant feedback, 10. flipped classroom, 11. peer assessment, 12. searching for information on the internet, 13. project learning, 14. training of higher-order thinking skills, etc.**

**SL: Scheduled number of lessons**

**AL: Actual number of lessons**

<b>School Term</b>	<b>Weeks</b>	<b>Topics/ Extended Parts*</b>	<b>Learning Objectives/ Teaching Focus</b>	<b>SL/AL</b>	<b>Teaching and Learning Activities</b>	<b>Consolidation and Assessment</b>	<b>Self-directed Learning Skills◆</b>	<b>Values#</b>	<b>Basic Law Education ※</b>
<b>First Term (3/9/2017-30/12/2017, Weeks 1-17)</b>	1-4	<b>Chapter 21 Measures of Dispersion</b> <ul style="list-style-type: none"> <li>• To understand the concept of dispersion</li> <li>• To understand the concepts of range and inter-quartil</li> </ul>	<b>Let's Review (pp.176 – 177)</b> <ul style="list-style-type: none"> <li>• Teachers may ask students to review the techniques for collecting and organizing data, and use statistical graphs to represent frequency distribution and different measures of central tendency.</li> </ul>	0.5 hour /0.5 hour	Demonstrating some examples and giving some classwork	<ul style="list-style-type: none"> <li>• Worksheet 21.0 (Sets 1 &amp; 2)</li> </ul>			

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		<p>e range</p> <ul style="list-style-type: none"> <li>• To construct and interpret box-and-whisker diagrams and use them to compare the distributions of different sets of data</li> <li>• To understand the concept of standard deviation</li> <li>• To compare the <b>dispersion of</b> different</li> </ul>							

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		sets of data using appropriate measures <b>Non-foundation</b> <ul style="list-style-type: none"> <li>To                understand                the                applications                of the                standard                deviation in                real-life                problems</li> </ul> <b>Non-foundation</b> <ul style="list-style-type: none"> <li>To explore                and make                conjecture                on the                effects of                dispersion                in different                situations</li> </ul>							
			<b>21.1 Range and</b>	2 hours	Demonstrati	• Additional			

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			<p><b>Inter-quartile Range (pp.178 – 188)</b></p> <ul style="list-style-type: none"> <li>Teachers can remind students the difference in calculating range and inter-quartile range of grouped and ungrouped data.</li> </ul>	/2 hours	ng some examples and giving some classwork	<p>Examples 21.1 – 21.5</p> <ul style="list-style-type: none"> <li>Worksheet 21.1 (Sets 1 &amp; 2)</li> <li>Ongoing Assessment Package: Quiz 21.1</li> <li>Test Bank 21.1</li> </ul>			
			<p><b>21.2 Box-and-whisker Diagrams (pp.189 – 198)</b></p> <ul style="list-style-type: none"> <li>Teachers can illustrate the general configuration of a box-and-whisker diagram.</li> <li>Teachers can teach students how to use box-and-whisker diagrams to compare</li> </ul>	3 hours /3 hours	Demonstrating some examples and giving some classwork	<ul style="list-style-type: none"> <li>Additional Examples 21.6 – 21.7</li> <li>Worksheet 21.2 (Sets 1 &amp; 2)</li> <li>Ongoing Assessment Package: Quiz 21.2</li> <li>Test Bank 21.2</li> </ul>			

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			<p>different sets of data.</p> <ul style="list-style-type: none"> <li>Teachers can help students develop their information technology skills in drawing the box-and-whisker diagram by using a spreadsheet.</li> </ul>						
			<p><b>21.3 Standard Deviation (pp.198 – 209)</b></p> <ul style="list-style-type: none"> <li>Teachers can use two sets of data with the same mean but different dispersions to point out the meaning of standard deviation of the data.</li> </ul>	<p>3 hours /3 hours</p>	<p>Demonstrating some examples and giving some classwork</p>	<ul style="list-style-type: none"> <li>Additional Examples 21.8 – 21.11</li> <li>Worksheet 21.3 (Sets 1 &amp; 2)</li> <li>Ongoing Assessment Package: Quiz 21.3</li> <li>Test Bank 21.3</li> </ul>			
			<p><i>Non-foundation</i></p> <p><b>21.4 Applications of Standard</b></p>	<p>2.5 hours /2.5 hours</p>	<p>Demonstrating some</p>	<ul style="list-style-type: none"> <li>Additional Examples</li> </ul>			

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			<p><b>Deviation (pp.210 – 218)</b></p> <ul style="list-style-type: none"> <li>Teachers can tell students to use the formula for standard score to find the standard deviation.</li> <li>Teachers can ask students what a standard deviation of 0 represents.</li> </ul>		examples and giving some classwork	21.12 – 21.15 <ul style="list-style-type: none"> <li>Worksheet 21.4 (Sets 1 &amp; 2)</li> <li>Ongoing Assessment Package: Quiz 21.4</li> <li>Test Bank 21.4</li> </ul>			
			<p><i>Non-foundation</i></p> <p><b>21.5 Effects on the Dispersion with a Change in Data (pp.218 – 227)</b></p> <ul style="list-style-type: none"> <li>Teachers can discuss with students about the change on the dispersion of data after making</li> </ul>	2 hours /2 hours	Demonstrating some examples and giving some classwork	<ul style="list-style-type: none"> <li>Additional Examples 21.16 – 21.17</li> <li>Worksheet 21.5 (Sets 1 &amp; 2)</li> <li>Ongoing Assessment Package:</li> </ul>			

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			different changes to data values.			Quiz 21.5 • Test Bank 21.5			
			<b>Enrichment Mathematics – Applications of the Coefficient of Variation (pp.246 – 247)</b> <ul style="list-style-type: none"> <li>Teachers can point out that the standard deviation is commonly used to compare different sets of data in daily life.</li> </ul>	0.5 hour /0.5 hour	Demonstrating some examples and giving some classwork				
	5-6	<b>Chapter 22 Uses and Abuses of Statistics</b> <ul style="list-style-type: none"> <li>To recognize different techniques</li> </ul>	<b>Let's Review (p.250)</b> <ul style="list-style-type: none"> <li>Teachers can ask students to review sampling techniques and different methods of data collection.</li> </ul>	0.5 hour /0.5 hour	Demonstrating some examples and giving some classwork				

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		<p>in survey sampling and the basic principles of questionnaire design</p> <ul style="list-style-type: none"> <li>• To discuss and recognize the uses and abuses of statistical methods in various daily-life activities or investigations</li> <li>• To assess statistical investigations presented</li> </ul>							



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		in different sources such as the news media, research reports, etc							
			<b>22.1 Statistical Surveys (pp.250 – 255)</b> <ul style="list-style-type: none"> <li>Teachers can ask students to discuss in groups about the strengths and weaknesses of various methods of surveys.</li> </ul>	2 hours /2 hours	Demonstrating some examples and giving some classwork	<ul style="list-style-type: none"> <li>Worksheet 22.1 (Sets 1 &amp; 2)</li> </ul>			
			<b>22.2 Sampling Methods (pp.256 – 264)</b> <ul style="list-style-type: none"> <li>Teachers can discuss with students about the reasons of using sampling method as</li> </ul>	3 hours /3 hours	Demonstrating some examples and giving some classwork	<ul style="list-style-type: none"> <li>Additional Examples 22.1 – 22.3</li> <li>Worksheet 22.2 (Sets 1 &amp; 2)</li> <li>Ongoing</li> </ul>			

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			<p>a statistical method.</p> <ul style="list-style-type: none"> <li>Teachers can point out the difference between probability sampling and non-probability sampling.</li> </ul>			<p>Assessment Package: Quiz 22.2</p> <ul style="list-style-type: none"> <li>Test Bank 22.2</li> </ul>			
			<p><b>22.3 Statistical Investigations (pp.265 – 273)</b></p> <ul style="list-style-type: none"> <li>Through reading various statistical reports, teachers can discuss the credibility of the reports with students.</li> <li>Teachers can also ask the students to assess the statistical investigations in groups.</li> </ul>	<p>2 hours /2 hours</p>	<p>Demonstrating some examples and giving some classwork</p>	<ul style="list-style-type: none"> <li>Additional Examples 22.4 – 22.5</li> <li>Worksheet 22.3 (Sets 1 &amp; 2)</li> <li>Ongoing Assessment Package: Quiz 22.3</li> <li>Test Bank 22.3</li> </ul>			

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			<b>Enrichment Mathematics – Population Census and By-census in Hong Kong (pp.286 – 287)</b> <ul style="list-style-type: none"> <li>Teachers can ask students to find out some data from population census and do a project.</li> </ul>	0.5 hour /0.5 hour	Demonstrating some examples and giving some classwork				
	7-11	<b>Chapter 23 Locus</b> <ul style="list-style-type: none"> <li>To understand the concept of loci and describe and sketch the locus of points under given conditions</li> <li>To describe the locus of</li> </ul>	<b>23.1 Concept of Loci (pp.290 – 300)</b> <ul style="list-style-type: none"> <li>Teachers can help students investigate the locus of a moving point by geometric software 'winggeom'.</li> <li>Teachers can teach the students how to use algebraic equations to describe the simple locus of a</li> </ul>	7 hours /7 hours	Demonstrating some examples and giving some classwork	<ul style="list-style-type: none"> <li>Additional Examples 23.1 – 23.6</li> <li>Worksheet 23.1 (Sets 1 &amp; 2)</li> <li>Ongoing Assessment Package: Quiz 23.1</li> <li>Test Bank 23.1</li> </ul>			

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		points with algebraic equations <ul style="list-style-type: none"> <li>To understand the equation of a circle</li> </ul> <i>Non-foundation</i> <ul style="list-style-type: none"> <li>To find the number and coordinates of the points of intersection of a straight line and a circle</li> </ul> <i>Non-foundation</i> <ul style="list-style-type: none"> <li>To find the equations of tangents to a circle</li> </ul>	moving point.						
			<b>23.2 Equations of Circles (pp.300 –</b>	5 hours /5 hours	Demonstrating some	<ul style="list-style-type: none"> <li>Additional Examples</li> </ul>			

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			<p><b>312)</b></p> <ul style="list-style-type: none"> <li>Teachers can deduce the equation of circle and transform the equation in the form of <math>x^2 + y^2 + Dx + Ey + F = 0</math> or <math>(x - h)^2 + (y - k)^2 = r^2</math>.</li> <li>Teachers may remind students that the coefficients of <math>x^2</math> and <math>y^2</math> must be equal.</li> </ul>		<p>examples and giving some classwork</p>	<p>23.7 – 23.12</p> <ul style="list-style-type: none"> <li>Worksheet 23.1 (Sets 1 &amp; 2)</li> <li>Ongoing Assessment Package: Quiz 23.1</li> <li>Test Bank 23.1</li> </ul>			
			<p><i>Non-foundation</i></p> <p><b>23.3 Intersection of a Straight Line and a Circle (pp.313 – 319)</b></p> <ul style="list-style-type: none"> <li>Teachers may point out the conditions of the intersection of a straight line and a circle.</li> </ul>	<p>5 hours /5 hours</p>	<p>Demonstrating some examples and giving some classwork</p>	<ul style="list-style-type: none"> <li>Additional Examples 23.13 – 23.15</li> <li>Worksheet 23.3 (Sets 1 &amp; 2)</li> <li>Ongoing Assessment</li> </ul>			

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			<ul style="list-style-type: none"> <li>Teachers can ask students to review how to solve the simultaneous equations.</li> </ul>			Package: Quiz 23.3 <ul style="list-style-type: none"> <li>Test Bank 23.3</li> </ul>			
			<b>Enrichment Mathematics – Loci in a Parabola (pp.332 – 333)</b> <ul style="list-style-type: none"> <li>Teachers can point out the properties of parabola.</li> <li>Teachers can introduce the focus and directrix of parabola.</li> </ul>	0.5 hour /0.5 hour	Demonstrating some examples and giving some classwork				
	12-16	<b>Chapter 24 Inequalities and Linear Programming</b> <ul style="list-style-type: none"> <li>To solve compound linear inequalities</li> </ul>	<b>Let's Review (p.336)</b> <ul style="list-style-type: none"> <li>Teachers may review the method of solving a linear inequality in one unknown.</li> </ul>	0.5 hour /0.5 hour	Demonstrating some examples and giving some classwork	<ul style="list-style-type: none"> <li>Worksheet 24.0 (Sets 1 &amp; 2)</li> <li>Test Bank 24.0</li> </ul>			

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		<p>in one unknown</p> <ul style="list-style-type: none"> <li>To solve quadratic inequalities in one unknown by the graphical method</li> </ul> <p><b>Non-foundation</b></p> <ul style="list-style-type: none"> <li>To solve quadratic inequalities in one unknown by the algebraic method</li> </ul> <p><b>Non-foundation</b></p> <ul style="list-style-type: none"> <li>To represent the graphs of linear</li> </ul>	<ul style="list-style-type: none"> <li>Teachers may review the properties of inequalities.</li> </ul>						

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		inequalities in two unknowns on a plane <b>Non-foundation</b> <ul style="list-style-type: none"> <li>To solve systems of linear inequalities in two unknowns</li> </ul> <b>Non-foundation</b> <ul style="list-style-type: none"> <li>To solve linear programming problems</li> </ul>							
			<b>24.1 Compound Linear Inequalities in One Unknown (pp.337 – 346)</b> <ul style="list-style-type: none"> <li>Teachers can introduce the methods of solving compound linear inequalities.</li> </ul>	2 hours /2 hours	Demonstrating some examples and giving some classwork	<ul style="list-style-type: none"> <li>Additional Examples 24.1 – 24.5</li> <li>Worksheet 24.1 (Sets 1 &amp; 2)</li> <li>Ongoing Assessment</li> </ul>			



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						Package: Quiz 24.1 • Test Bank 24.1			
			<b>24.2 Quadratic Inequalities in One Unknown (pp.346 – 354)</b> <ul style="list-style-type: none"> <li>Teachers can review solving inequalities graphically.</li> </ul> <p><i>Non-foundation</i></p> <ul style="list-style-type: none"> <li>Teachers may teach the skills of solving an inequality by the algebraic method.</li> </ul>	3 hours /3 hours	Demonstrating some examples and giving some classwork	<ul style="list-style-type: none"> <li>Additional Examples 24.6 – 24.9</li> <li>Worksheet 24.2 (Sets 1 &amp; 2)</li> <li>Ongoing Assessment Package: Quiz 24.2</li> <li>Test Bank 24.2</li> </ul>			
			<p><i>Non-foundation</i></p> <b>24.3 Linear Inequalities in Two Unknowns (pp.354 – 366)</b>	3 hours /3 hours	Demonstrating some examples and giving	<ul style="list-style-type: none"> <li>Additional Examples 24.10 – 24.12</li> </ul>			

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			<ul style="list-style-type: none"> <li>Teachers may explain to students when to use solid line or dotted line in solving linear inequalities in two unknowns.</li> </ul>		some classwork	<ul style="list-style-type: none"> <li>Worksheet 24.3 (Sets 1 &amp; 2)</li> <li>Ongoing Assessment Package: Quiz 24.3</li> <li>Test Bank 24.3</li> </ul>			
			<p><b>Non-foundation</b></p> <p><b>24.4 Linear Programming (pp.367 – 376)</b></p> <ul style="list-style-type: none"> <li>Teachers can remind students that under the same constraints, the optimal solutions may differ from different objective functions.</li> <li>Teacher may ask students to verify the result by using</li> </ul>	3 hours /3 hours	Demonstrating some examples and giving some classwork	<ul style="list-style-type: none"> <li>Additional Examples 24.13 – 24.14</li> <li>Worksheet 24.4 (Sets 1 &amp; 2)</li> <li>Ongoing Assessment Package: Quiz 24.4</li> <li>Test Bank 24.4</li> </ul>			

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			a computer software like 'Winplot'.						
			<p><b><i>Non-foundation</i></b></p> <p><b>24.5 Applications of Linear Programming (pp.376 – 385)</b></p> <ul style="list-style-type: none"> <li>Teachers can discuss with students about examples of linear programming in modeling real-life problems.</li> </ul>	4 hours /4 hours	Demonstrating some examples and giving some classwork	<ul style="list-style-type: none"> <li>Additional Examples 24.15 – 24.17</li> <li>Worksheet 24.5 (Sets 1 &amp; 2)</li> <li>Ongoing Assessment Package: Quiz 24.5</li> <li>Test Bank 24.5</li> </ul>			
			<b>Enrichment Mathematics – Understanding the Concepts of Operations Research (pp.402 – 403)</b>	0.5 hour /0.5 hour	Demonstrating some examples and giving some classwork				

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			<ul style="list-style-type: none"> <li>Teacher may introduce the development of linear programming.</li> </ul>						
<b>Second Term (31/12/2017- 18/7/2018, Weeks 18-46)</b>	18-24 26	<b>Revisions</b>			Demonstrating some examples and giving some classwork				

\* The extended parts should be marked with asterisks. These parts should be more challenging and can be covered when the students can master the knowledge and skills covered in the conventional topics.

**# Core Values of Wah Yan College, Kowloon**

I. Love and care	1. Accept & feel positive about himself 2. Appreciation & Gratitude 3. Empathy & Compassion	4. Forgiveness & Reconciliation 5. Service 6. Family as a basic unit of society; marriage is the foundation of a family
II. Strive for excellence	7. Reflective 8. Commitment 9. Perseverance	10. Curiosity & willingness to learn 11. Value imagination and creativity
III. Respect and Justice	12. Life is valuable and respectable 13. Openness to good in all things	15. Integrity 16. Faithfulness

	14. Respect for himself & others	
IV. Responsibility	17. Freedom & Self-discipline 18. Care for the environment	19. Social Identities: citizen identity, national identity and global citizen identity
V. Faith	20. Experience of God 21. Explore & practise one's faith	22. Appreciate religious liturgies