LAW TING PONG SECONDARY SCHOOL
S1 MATHEMATICS 2020 – 2021
Course Outline

1. Introduction to the Syllabus

The Department of Mathematics at LTPSS strives to develop students' mathematical knowledge, skills and concepts that can facilitate their future development in various aspects. Our syllabus aims to provide content knowledge which serves as a means to strength students numeracy, develop students' generic skills and build positive attitudes towards mathematics learning.

2. Learning Objectives

The S1 syllabus aims to:

2.1 Knowledge Domain

Induce children to understand and grasp the knowledge of the following:

- basic numbers and their operations;
- elementary algebra and equations;
- introduction to geometry, angle related to lines and mensuration of simple figures;
- basic percentage;
- elementary coordinates;
- introduction to statistics and estimation.

2.2 Skill Domain

Develop the following skills and capabilities in:

- Numeracy
- Problem-solving skills
- Logical thinking skills
- Analytical skills
- Communication skills
- Presentation skills
- Creativity

2.3. Attitude Domain

Foster the attitudes to be:

- Self-regulated
- Inquisitive
- Persistence
- Reflective
- Proactive
- Aspire to higher performance

3. Syllabus Details

Week	Delivery Schedule	Section	Learning Objectives	Summative Assessment	Special Date
1	1/9-4/9 (2)	**Administration Work**			Short-Day until next Fri
2	7/9-11/9 (5)	***Chapter 0—Revision on Fundamental Arithmetic*** **0.1 Arithmetic Operation**	• Recognize the concept of natural numbers, whole numbers, even numbers and odd numbers • Revise the four basic arithmetic operations and describe expressions involving these operations by words. • Learn how to perform mixed operations with or without brackets. • Revise the concepts of multiples and factors.	Pre-test 7/9	
		0.2 L.C.M and H.C.F.	• Revise the concepts of L.C.M and H.C.F.		
		0.3 Fractions and Decimals	• Revise different types of fractions. • Revised how to expand or reduce fractions. • Revise the conversion between fraction and decimals.		
3	14/9-18/9	**0.4 Arithmetic Operations of**	• Revise how to perform four basic operations of		

	(5)	**Fractions and Decimals** ***Chapter 1—Basic Mathematics*** **1.1 More about H.C.F and L.C.M.** **1.2 More about Arithmetic Operations**	fractions and decimals. • Understand the concept of power. • Learn how to perform prime factorization of natural numbers. • Learn how to find the L.C.M and H.C.F using short division. • Learn how to find the L.C.M and H.C.F using prime factorization. • Learn how to perform mixed operations of whole numbers with brackets. • Learn how to perform mixed operation of fractions and decimals. • Learn different expressions for multiplication and division.		
4	21/9-25/9 (5)	**1.3 Test of Divisibility** ***Chapter 2—Directed Numbers and the Number Line*** **2.1 Concepts of Directed**	• Revise the tests of divisibility of 2, 3, 5 and 10. • Learn the tests of divisibility of 4, 6, 8 and 9. • Understand the concepts of directed numbers intuitively and note their uses in our daily life. • Understand the number line and the ordering of		

		Numbers	directed numbers on the number line.		
5	28/9-2/10 (3)	**2.2 Addition and Subtraction of Directed Numbers**	• Perform addition and subtraction of directed numbers by using the number line.	Chp 0&1 5/10	Holiday from Wed to Fri
6	5/10-9/10 (5)	**2.3 Multiplication and Division of Directed Numbers**	• Explore the rules of removing brackets for addition and subtraction of directed numbers • Explore the rules for multiplication and division of directed numbers.		
7	12/10-16/10 (5)	**2.4 Mixed Operations of Directed Numbers** ***Chapter 3—Introduction to Algebra*** **3.1 Algebraic Language**	• Learn the mixed operations of directed numbers • Solve simple application problems involving mixed operations of directed numbers. • Introduce the basic concept of algebra and state the similarities and differences between algebra and arithmetic. • Learn the conversion between word phrases and algebraic expressions.		

			• Learn and simplify simple algebraic expressions.		
8	19/10-23/10 (5)	**3.2 Formulas and Method of Substitution** **<u>3.3 Sequences</u>**	• Learn the basic concept of formulas. • Recognize some common formulas and apply the method of substitution to find the values of variables in the formula. • <u>Recognize the concept of sequences of numbers and guess the next term in a sequence with explanation.</u> • <u>Recognize some common sequences.</u>	Chp 2 19/10	
9	26/10-30/10 (4)	***Chapter 10—Manipulation of Simple Polynomials*** **10.1 Laws of Positive Integral Indices**	• <u>Learn to find a certain term using the general term of a sequence.</u> • <u>Recognize the input-processing-output concept of functions.</u> • Learn the laws of positive integral indices for $a^m \times a^n$ and $a^m \div a^n$.		Holiday on Mon

		10.2 Polynomials	• Understand the concepts of monomials and polynomials. • Understand the meanings of coefficients, degrees, constant terms, like terms and unlike terms. • Learn how to simplify polynomials and arrange the terms in ascending or descending powers of a variable. • Learn how to find the values of polynomials by substitution.		
10	2/11-6/11 (5)	**10.3 Addition and Subtraction of Polynomials** **10.4 Multiplication of Polynomials**	• Learn the addition and subtraction of polynomials. • Learn the multiplication of a monomial and a polynomial. Learn the multiplication of a binomial and a polynomial.	Chp 3 2/11	
11	9/11-13/11 (0)	**Term Break**			
12	16/11-20/11 (5)	***Chapter 4—Algebraic Equations in One Unknown*** **4.1 Algebraic Equations in One Unknown**	• Understand algebraic equations in one unknown and recall the principle of balance to solve equations. • Introduce the technique of transposing terms to solve equations.		

		4.2 More about Solving Equations	• Introduce three techniques of solving equations in one unknown: 1. Combining term with the same unknown.		
13	23/11-27/11 (5)	**4.3 Applications of Algebraic Equations in One Unknown**	• Introduce three techniques of solving equations in one unknown: 2. Removing brackets 3. Eliminating denominators • Set up algebraic equations in one unknown from problem situations.	Chp 10 23/11	Short-Day from Thu to Fri
14	30/11-4/12 (5)	***Chapter 7—Percentages (I)*** **7.1 Simple Problems on Percentages**	• Solve daily-life problems involving algebraic equations in one unknown. • Understand the relationship between the part and the whole by using percentages.		
15	7/12-11/12 (4)	**7.2 Percentage Change**	• <u>Recognize that comparing increase or decrease between two quantities by percentage.</u> • Solve problems involving percentages,	Chp 4 7/12	

		7.3 Profit and Loss	including application of equations. • Apply the formula of percentage change to solve problems. • Introduce the terms profit, loss, profit percent and loss percent, and their relationship.		
16	14/12-18/12 (5)	**7.4 Discount**	• Introduce the terms discount and discount percent.	Chp 7 14/12	
17 18	21/12–25/12 28/12–1/1 (0)	**Christmas and New Year Holiday**			
19	4/1-8/1 (5)	***Chapter 8—Approximate Values and Numerical Estimation*** **8.1 Approximate Values**	• Recognize the concept of approximate values. • Learn to round off, round up and round down a number to a certain place and a certain number of decimal places. • Understand the meaning of significant figures.		

			• Learn to round off, round up and round down a number to a certain number of significant figures.		
20	11/1-15/1 (5)	**8.2 Numerical Estimation** **Revision (Chp 4,7 and 8)**	• Understand the estimation strategies including rounding off, rounding up and rounding down. • Solve real-life problems related to numerical estimation.		
21	18/1-22/1 (5)	**Revision Week (Chp 0-3,10)**		Chp 8 18/1	
22	25/1-29/1 (0)	**Summative Assessment (Chp 0-4,7,8,10)**			
23	1/1-5/1 (5)	***Chapter 5—Introduction to Geometry*** **5.1 Basic Concepts in Geometry**	• Introduce the three fundamental elements of geometry: points, lines and surfaces. • Learn the difference between straight lines and line segments. • Introduce the concept of angles and method of naming. • Identify different types of angles. • Introduce the concepts of parallel lines and perpendicular lines, and their methods of		

			representation.		
		5.2 Plane Figures	• Introduce the concept of circles. • Introduce the concept of triangles and their representations. • Learn the classification of triangles by their sides and angles.		
24	8/2-10/2 (3)		• Understand that the sum of all interior angles of a triangle is 180 degree. • Introduce the concept of polygons and the method of naming. • Learn the classification of polygons by their angles and sides. • Finding unknowns in simple figures by using the properties of these angles.		Lunar New Year Holiday Start
25	15/2-19/2 (5)	**Lunar New Year Holiday**			
26	22/2-26/2 (5)	***Chapter 11—Angles related to Lines*** **11.1 Angles related to Intersecting Lines** **11.2 Angles related to Parallel**	• Recognize different types of angles on a straight line, angles at a point and vertically opposite angles. • Recognize the angles related to intersecting	Chp 5 22/2	Second Term Start

		Lines	lines such as corresponding angles, alternate angles and interior angles on the same side. • Explore the angle properties associate with parallel lines, and find unknowns in simple figures by using them.		
27	2/3-5/3(4)	**11.3 Identifying Parallel Lines** ***Chapter 12—Introduction to Coordinates*** **12.1 Rectangular Coordinate System**	• Understand the conditions for two lines to be parallel. • Learn the rectangular coordinate system. • Use an ordered pair to represent a point on the rectangular coordinate system. • Recognize four quadrants. • Understand points on the *x*-axis or the *y*-axis have zero *y*-coordinate or *x*-coordinate.		Holiday on Mon Parents' Day on Sat

28	8/3-12/3(5)	**12.2 Distance between Two Points** ***Chapter 9—Areas and Volumes (I)*** **9.1 Revision on Areas of Polygons** **12.3 Areas of Plane Figures**	• Learn to find the distance between two points lying on the same vertical or horizontal line on a rectangular coordinate plane. • Recognize the formula of the areas of plane figures. • Learn to use the splitting method and the filling method to find the areas of the simple polygons. • Learn to find the areas of plane figures on a rectangular coordinate plane.	Chp 11 8/3	
29	15/3-19/3(2)	**12.4 Transformation of Points on the Coordinate Plane**	• Study the images of points on a rectangular coordinate plane after different types of transformation, including: 1. Horizontal and vertical translations.		Sport Day from Tue to Thu
30	22/3-26/3(1)		2. Reflection about the *x*-axis or the *y*-axis		
31	29/3-2/4(0)	**Easter Holiday**			

32	7/4-9/4(2)		3. Reflation about lines parallel to the *x*-axis or the *y*-axis. 4. Rotation about the origin		Holiday from Mon to Tue
33	12/4-16/4(5)	**Activity: Coordinate Game**			
34	19/4-23/4(5)	***Chapter 5—Introduction to Geometry*** **5.4 Three-Dimensional Figures**	• Introduce the two types of solids: polyhedral and non-polyhedral. • Recognize different solids and understand the characteristics of the solids. • Introduce the concept of cross-sections and uniform cross-sections of solids and draw them. • Learn to sketch simple solids and draw their 2-D representations using isometric grid paper and oblique paper.	Chp 12 19/4	
35	26/4-30/4(5)	**9.2 Volumes and Total Surface Areas of Prisms**	• Review the concept of a prism. • Learn the formula for calculating the volume of a prism. • Understand the concept of the total surface area of a prism. • Learn the formula for calculating the total		

			surface area of a prism. • Learn how to solve problems related to volumes and surface areas of prisms.		
36	3/5-7/5(5)	***Chapter 6—Introduction to Statistics and Statistical Charts*** **6.1 Introduction to Statistics**	• Learn to classify numerical data into discrete/continuous. • Learn how to use a frequency distribution table to organize data. • Learn how to organize data into appropriate number of groups.	Chp 9 3/5	
37	10/5-14/5(5)	**6.2 Simple Statistical Charts** **6.3 Stem-and-Leaf Diagrams**	• Learn how to construct and interpret bar charts, broken-line graphs, combination charts and pie charts. • Learn how to construct and interpret stem-and-leaf diagrams and back-to-back stem-and-leaf diagrams.		
38	17/5-21/5(4)	**Consolidation Week**		Chp 6 17/5	Holiday on Wed
39	24/5-28/5(5)				
40	31/5-4/6(5)	**Revision Week**			
41	7/6-7/9(3)				

Week 41-43	**Examination**

4. Formative Assessment Modes

We may assess our students' learning in the following modes:

- Group discussion and presentation
- IT game design
- Micro-teaching videos
- Mathematics card game
- Mathematics puzzles
- Analysis of 3D-figures

5. Summative Assessments

Examination will be conducted during the year to judge the extent of students' learning. The purpose is to grade or certify students, evaluate their progress or to find out the effectiveness of a curriculum.

Assessment	Format	Mark Distribution	Time
Mid-term Test	Section A: MC Section B: Conventional questions	30 70	45 mins
Final Exam	Section A: MC Section B: Conventional questions	30 70	1 hr 30 mins

Weighting of Component Parts

Term	Assessment item	1st. Continuous Assessment	2nd Continuous Assessment	Final Assessment
1st term	Homework	20%	-	30%
	Chapter Tests & Quiz	80%	-	
	Mid-term Assessment	-	-	10%
2nd term	Homework	-	10%	30%
	Project		10%	
	Chapter Tests & Quiz	-	80%	
	Final Exam	-	-	30%
Total		100%	100%	100%

6. Grade Boundaries

Students' attainment at different stages of the school year is reported in performance grades. The mark ranges for the grades are as follows. The grade descriptors are as follows.

Performance Grade	Performance Descriptor
A* **(90 or above)**	Demonstrate comprehensive knowledge and understanding of materials in all the domains of the mathematics curriculum by applying them successfully to a wide range of unfamiliar situations; communicate and express ideas precisely and logically using mathematical language, notations, tables, diagrams and graphs; and integrate knowledge, understanding and skills from different areas of the curriculum to enable them to solve complex problems.
A **(80 – 89)**	
B **(66 – 79)**	Demonstrate sound knowledge and understanding materials in the domains of the mathematics curriculum by applying them successfully to some unfamiliar situations; communicate and express ideas accurately using mathematical language, notations, tables, diagrams and graphs; and integrate knowledge, understanding and skills from different areas of the curriculum to enable them to solve a range of problems including some difficult ones.
C **(46 – 65)**	Demonstrate adequate knowledge and understanding of materials in the domains of the mathematics curriculum by applying them successfully to familiar and some unfamiliar situations; communicate and express ideas appropriately using mathematical language, notations, tables, diagrams and graphs; and integrate knowledge, understanding and skills from different areas of the curriculum to enable them to solve straightforward problems satisfactorily.
D **(30 – 45)**	Demonstrate basic knowledge and understanding of materials in the domains of the mathematics curriculum by employing simple algorithms, formulas or procedures to perform routine tasks; communicate and express fundamental ideas using mathematical language, notations, tables, diagrams and graphs; and are able to solve some straightforward problems satisfactorily.
E **(Below 30)**	Demonstrate elementary knowledge and understanding of materials in the domains of the mathematics curriculum by performing straightforward algebraic, geometric and data-handling procedures according to direct instructions; attempt to communicate and express simple ideas using mathematical language, notations, tables, diagrams and graph; and are able to solve some straightforward problems with appropriate help.

7. Course materials

(Book 1A) Junior Secondary Mathematics in Action 1A – Longman Hong Kong Education
(Book 1B) Junior Secondary Mathematics in Action 1B – Longman Hong Kong Education
Mathematics Classwork Book
Mathematics Homework Book
Mathematics Folder

8. Role of Parents at home

Parents are encouraged to talk to their child about their learning in class on a regular basis. They should also discuss the results obtained by their child to find out how well they are doing in their mathematics course.

LAW TING PONG SECONDARY SCHOOL
S2 MATHEMATICS 2020 – 2021
Course Outline

1. Introduction to the Syllabus

The Department of Mathematics at LTPSS strives to develop students' mathematical knowledge, skills and concepts that can facilitate their future development in various aspects. Our curriculum aims to provide content knowledge which serves as a means to develop students' thinking abilities and foster students' generic skills and positive attitudes towards mathematics learning.

2. Learning Objectives

The S2 syllabus aims to:

2.1. Knowledge Domain

Induce children to understand and grasp the knowledge of the following:

- the simultaneous linear equations,
- the identities, and formulas;
- the approximation and error;
- the statistical methods and statistical measures;
- the angles related to rectilinear figures;
- the congruence and similarity of triangles;
- the introduction of deductive geometry
- the circle and cylinder;
- the basic idea of trigonometric ratios;
- the Pythagoras theorem and irrational number.

2.2. Skill Domain

Develop the following skills and capabilities in:

- Numeracy
- Problem-solving skills
- Logical thinking skills
- Analytical skills
- Presentation skills

2.3. Attitude Domain

Foster the attitudes to be:

- Self-regulated
- Proactive
- Persistence
- Motivated
- Reflective

3. Syllabus Details

Week	Delivery Schedule	Chapter/ Section	Learning Objectives	Summative Assessment
1	1/9–4/9 (2)	Classroom Rule	● Collecting Summer Holiday HW ● Understand the rules of Math lesson	
2	7/9–11/9 (5)	**Ch1 Rate and Ratio** 1.1 Rates 1.2 Ratios	● To learn the concept of a rate ● To understand the concept of Ratios ● To learn how to simplify ratios ● To learn ratios of three quantities	
3	14/9–18/9 (5)	1.3 Applications of Ratios	● To explore the applications of ratios	Ch1 Test (17/9)

4	21/9–25/9 (5)	**Ch8 Laws of Integral Indices** 8.1 Laws of Positive Integral Indices 8.2 Zero and Negative Integral Indices	● To learn the laws of positive integral indices ● To understand the meanings of zero and negative integral indices	
5	28/9–2/10 (3)	8.3 Scientific Notation 8.4 Different Numeral Systems ***	● To learn the meaning of scientific notation ● To learn the denary system, binary system and hexadecimal system	Ch8 Test (8/10)
6	5/10–9/10 (5)	**Ch2 Identities and Factorization** 2.1 Meaning of Identities	● To understand the meaning of identities	
7	12/10–16/10 (5)	2.2 Some Important Algebraic Identities	● To explore some important algebraic identities	
8	19/10–23/10 (5)	2.3 Factorization of Simple Algebraic Expressions	● To understand the factorization of simple algebraic expressions	Ch2 Test (29/10)
9	26/10–30/10 (4)	**Ch3 Algebraic Fractions and Formulas** 3.1 Manipulation of Simple Algebraic Fractions	● To understand the manipulation of simple algebraic fractions, including addition, subtraction, multiplication and division	
10	2/11–6/11 (5)	3.2 Formulas and Substitution	● To understand the meaning of formulas	
11	9/11–13/11 (0)	Term Break		
12	16/11–20/11 (5)	3.3 Change of Subject	● To learn the method of substitution	Ch3 Test (19/11)

13	23/11–27/11 (5)	**Ch4 Approximation and Errors** 4.1 Significant Figures	● To understand the meaning of significant figures	
14	30/11–4/12 (5)	4.2 Errors **Ch6 More about Statistical Diagrams** 6.1 Histograms	● To understand and calculate different types of error ● To learn histograms	Ch4 Test (3/12)
15	7/12–11/12 (4)	6.2 Frequency Polygons and Curves 6.3 Cumulative Frequency Polygons and Curves	● To learn frequency polygons and curves ● To learn cumulative frequency polygon and curves ● To understand percentiles, quartiles and median	
16	14/12–18/12 (5)	6.4 Choosing an Appropriate Diagram to Present Data 6.5 Abuses of Statistical Diagrams	● To learn how to choose an appropriate diagram to present data ● To know the abuses of statistical diagrams	Ch6 Test (17/12)
17	21/12–25/12 (0)	Christmas and New Year Holidays		
18	28/12–1/1 (0)	Christmas and New Year Holidays		
19	4/1–8/1 (5)	**Ch7 Linear Equations in Two Unknowns** 7.1 Linear Equations in Two Unknowns and their Graphs 7.2 Solving Simultaneous	● To learn the concept of linear equations in two unknowns ● To explore the graphs of linear equations in two unknowns ● To learn how to solve simultaneous linear equations in two unknowns by the graphical method	

		Linear Equations in Two Unknowns by the Graphical Method		
20	11/1–15/1 (5)	7.3 Solving Simultaneous Linear Equations in Two Unknowns by Algebraic Methods 7.4 Applications of Simultaneous Linear Equations in Two Unknowns	● To learn how to solve simultaneous linear equations in two unknowns by method of substitution and method of elimination ● To learn how to apply it to solve daily-life problems	Ch7 Test (4/2)
21	18/1–22/1 (5)	Revision (Ch1,8,2,3,4,6)		
22	25/1–29/1 (0)	Summative Assessment		
23	1/2–5/2 (5)	Paper Checking		
24	8/2–12/2 (3)	**Ch5 Angles related to Rectilinear Figures** 5.1 Angles of a Triangle	● To learn angles of a triangle	
25	15/2–19/2 (0)	Lunar New Year Holiday		
26	22–26/2	5.2 Isosceles Triangles and	● To explore isosceles triangles and equilateral triangles	

	(5)	Equilateral Triangles		
27	1/3–5/3 (4)	5.3 Angles of a Polygon	● To learn angles of a polygon	Ch5 Test (4/3)
28	8/3–12/3 (5)	**Ch9 Introduction to Deductive Geometry** 9.1 Deductive Geometry 9.2 Deductive Proofs about Angles related to Lines and Triangles	● To realize the shortcomings of making judgment by intuition ● To learn the proofs of the theorems about angles related to lines and triangles	
29	15/3–19/3 (2)	9.3 Deductive Proofs about Congruent Triangles and Isosceles Triangles 9.4 Deductive Proofs about Similar Triangles	● To understand and use the properties and conditions for congruent triangles to perform simple proofs ● To understand and use the properties and conditions for similar triangles to perform simple proofs	
30	22/3–26/3 (1)	Experiential Learning Week		
31	29/3–2/4 (0)	Easter Holiday		
32	5/4–9/4 (2)	9.5 Geometric Construction Using Compasses and A straight Edge *** **Ch10 Pythagoras' Theorem and Irrational Numbers**	● To learn how to use compasses and a straight edge to do geometric construction ● To learn the meanings of square roots and surds	Ch9 Test (8/4)

		10.1 Square Roots and Surds		
33	12/4–16/4 (5)	10.2 Pythagoras' Theorem and its Proofs	● To explore the Pythagoras' theorem and its proofs	
34	19/4–23/4 (5)	10.3 Converse of Pythagoras' Theorem 10.4 Applications of Pythagoras' Theorem and its Converse 10.5 Rational Numbers and Irrational Numbers	● To learn the converse of Pythagoras' theorem ● To use Pythagoras' theorem and its converse to solve problems in real life ● To learn the definitions of rational numbers and irrational numbers	
35	26/4–30/4 (5)	10.6 Manipulations of Surds ***	● To investigate the properties of surds ● To learn how to rationalize the denominators of expressions	Ch10 Test (29/4)
36	3/5–7/5 (5)	**Ch12 Trigonometric Ratios** 12.1 Introduction to Trigonometric Ratios 12.2 Sine Ratio 12.3 Cosine Ratio	● To learn the trigonometric ratios ● To learn the concept of sine ratio for acute angles ● To learn the concept of cosine ratio for acute angles	
37	10/5–14/5 (5)	12.4 Tangent Ratio 12.5 Simple Applications of Trigonometric Ratios	● To learn the concept of tangent ratio for acute angles ● To use trigonometric ratios to solve simple problems involving plane figures and real-life problems	Ch12 Test (13/5)
38	17/5–21/5 (4)	**Ch11 Areas and Volumes (II)**	● To review the formula for calculating the circumference and area of a circle ● To learn the formula for calculating the lengths of arcs and areas of sectors	

		11.1 Circumferences and Areas of Circles 11.2 Lengths of Arcs and Areas of Sectors		
39	24/5–28/5 (5)	11.3 Cylinders	To understand and apply the formulas to calculate the volumes and total surface areas of cylinders	Ch11 Test (27/5)
40	31/5–4/6 (4)	Revision (Ch1–12)		
41	7/6–11/6 (3)	Revision (Ch1–12)		
42	14/6–18/6 (0)	Final Exam		
43	21/6–25/6 (1)	Final Exam		
44	28/6–2/7 (2)	Paper Checking		

*** Non-foundation Topics

4. Formative Assessment Modes

We may assess our students' learning in the following modes:

- Discussion and presentation
- Poster walk
- Game design and battle
- Mathematics puzzles
- Projects

5. Summative Assessments

Examination will be conducted during the year to judge the extent of students' learning. The purpose is to grade or certify students, evaluate their progress or to find out the effectiveness of a curriculum.

Assessment	Format	Mark Distribution	Time
Mid-term Test	Section A: MC Section B: Conventional questions	30 70	45 mins
Final Exam	Section A: MC Section B: Conventional questions	30 70	1 hr 30 mins

Weighting of Component Parts

Term	Assessment item	1st. Continuous Assessment	2nd Continuous Assessment	Final Assessment
1st term	Homework	20%	-	30%
	Chapter Tests & Quiz	80%	-	
	Mid-term Assessment	-	-	10%
2nd term	Homework	-	20%	30%
	Chapter Tests & Quiz	-	80%	
	Final Exam	-	-	30%
Total		100%	100%	100%

6. Grade Boundaries

Students' attainment at different stages of the school year is reported in performance grades. The mark ranges for the grades are as follows.

The grade descriptors are as follows.

Performance Grade	Performance Descriptor
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A **(80 – 89)**	
B **(66 – 79)**	Demonstrate sound knowledge and understanding materials in the domains of the mathematics curriculum by applying them successfully to some unfamiliar situations; communicate and express ideas accurately using mathematical language, notations, tables, diagrams and graphs; and integrate knowledge, understanding and skills from different areas of the curriculum to enable them to solve a range of problems including some difficult ones.
C **(46 – 65)**	Demonstrate adequate knowledge and understanding of materials in the domains of the mathematics curriculum by applying them successfully to familiar and some unfamiliar situations; communicate and express ideas appropriately using mathematical language, notations, tables, diagrams and graphs; and integrate knowledge, understanding and skills from different areas of the curriculum to enable them to solve straightforward problems satisfactorily.
D **(30 – 45)**	Demonstrate basic knowledge and understanding of materials in the domains of the mathematics curriculum by employing simple algorithms, formulas or procedures to perform routine tasks; communicate and express fundamental ideas using mathematical language, notations, tables, diagrams and graphs; and are able to solve some straightforward problems satisfactorily.
E **(Below 30)**	Demonstrate elementary knowledge and understanding of materials in the domains of the mathematics curriculum by performing straightforward algebraic, geometric and data-handling procedures according to direct instructions; attempt to communicate and express simple ideas using mathematical language, notations, tables, diagrams and graph; and are able to solve some straightforward problems with appropriate help.

7. Course Materials

(Book 2A) Mathematics in Action 2A (2017 3rd Edition) – Longman Hong Kong Education.
(Book 2B) Mathematics in Action 2B (2017 3rd Edition) – Longman Hong Kong Education.
Mathematics Classwork Book
Mathematics Homework Book
Mathematics Folder
Calculator

8. Role of Parents at home

Parents are encouraged to talk to their child about their learning in class on a regular basis. They should also discuss the results obtained by their child to find out how well they are doing in their mathematics course.

LAW TING PONG SECONDARY SCHOOL
S3 MATHEMATICS 2020 – 21
Course Outline

1. Introduction to the Syllabus

The Department of Mathematics at LTPSS strives to develop students' mathematical knowledge, skills and concepts that can facilitate their future development in various aspects. Our syllabus aims to provide opportunities to students to strengthen their logical thinking abilities, foster their problem-solving skills and build up a positive attitudes towards mathematics learning.

2. Learning Objectives

The S3 syllabus aims to:

2.1. Knowledge Domain

Induce children to understand and grasp the knowledge of the following:

- the equations, inequalities, identities, formulas and functions;
- the measurement in 3-D figures;
- the statistical methods and measures;
- the special lines and centres in a triangle;
- the trigonometric ratios and functions;
- the simple ideas of probability and laws of probability.

2.2. Skill Domain

Develop the following skills and capabilities:

- Numeracy
- Problem-solving skills
- Logical thinking skills
- Analytical skills
- Communication skills
- Presentation skills

2.3. Attitude Domain

Foster the attitudes to be:

- Self-regulated
- Inquiring
- Persistent
- Reflective
- Aspiring to higher performance

3. Syllabus Details

Week	Delivery Schedule	Chapter/ Section	Learning Objectives	Summative Assessment	Remark
1	1/9– 4/9 (1)	Administration work	● Collecting Summer Holiday HW ● Explore the rules of Mathematics lesson		
2	7/9 – 11/9 (5)	**Ch2 Linear Inequalities in One Unknown** 2.1 Basic Concept of Inequalities 2.2 Basic Properties of Inequalities	● To understand the meaning of “<”, “=” and “>”. ● To understand the representation of intervals on a number line.		

3	14/9 – 18/9 (5)	2.3 Linear Inequalities in One Unknown	● To explore the rules regarding addition and subtraction of inequalities. ● To explore the rules regarding multiplication and division of inequalities ● To explore the solutions of an inequality.		
4	21/9 – 25/9 (5)	**Ch1 More about Factorization of Polynomials** 1.1 Factorization by Cross-method	● To factorize quadratic polynomials by the cross-method	Ch.2 test	
5	28/9 – 2/10 (2)	1.2 Sum and Difference of Two Cubes	● To factorize polynomials using the identities of the sum and difference of two cubes		
6	5/10 – 9/10 (4)	**Ch3 Percentages (II)** 3.1 More about Percentage Change 3.2 Increase or Decrease at a Constant Rate	● To understand the applications of percentage increase and decrease. ● To understand the applications of Successive percentage changes.		
7	12/10 – 16/10 (5)	3.3 Interest 3.4 Taxation	● To recognize the applications of simple and compound interest ● To understand the applications of taxation	Ch.1 test	
8	19/10 – 23/10 (5)	**Ch4 Special Lines and Centres in a Triangle** 4.1 Special Lines in a Triangle 4.2 Centres of a Triangle	● To recognize the angles bisectors, medians, altitudes and perpendicular bisectors ● To understand the relationship among the three sides of a triangles		
9	26/10 – 30/10 (4)	4.3 Triangle Inequality	● To explore and recognize the properties of centres of a triangle, including incentre, circumcentre, centroid and orthocentre ●	Ch.3 test	

10	2/11 – 6/11 (5)	**Ch5 Quadrilaterals** 5.1 Basic Terms of a Quadrilaterals 5.2 Parallelograms	● To study the properties of the parallelograms		
11	9/11 – 13/11 (0)	Term Break			
12	16/11 – 20/11 (5)	5.3 Properties of Some Other Special Quadrilaterals 5.4 Simple Proofs related to Parallelograms	● To study the properties of other special quadrilaterals including rectangles, squares, rhombuses and trapeziums ● To perform simple proofs ●		
13	23/11 – 27/11 (5)	5.5 Mid-point Theorem and Intercept Theorem	● To explore the mid-pt theorem and intercept theorem	Ch.4&5 test	
14	30/11 – 4/12 (5)	**Ch7 Area and Volumes (II)** 7.1 Pyramids 7.2 Circular Cones 7.3 Frustums	● To study the pyramids (Volume and Total surface area) ● To study the circular Cones (Volume and Total surface area) ● To study the frustums (Volume and Total surface area)		
15	7/12 –11/12 (4)	7.4 Spheres 7.5 Formulas for Lengths, Area and Volumes	● To study the sphere (Volume and Total surface area) ● To understand the formulas for length, area and volume		
16	14/12 –18/12 (5)	7.6 Similar Shapes	● To understand the relationship between lengths, areas and volumes of similar solids		
17	21/12 –25/12 (0)	Christmas and New Year Holidays			
18	28/12 –1/1 (0)	Christmas and New Year Holidays			
19	4/1 –8/1 (5)	**Ch6 More about 3-D Figures** 6.1 Symmetries of Solids 6.2 Nets of Solids	● To understand the idea of reflectional and rotational symmetries ● To explore and identify the net of a given solid		

20	11/1 –15/1(5)	6.3 2-D Representations of Solids 6.4 Points, Lines and Planes in Solids	● To imagine and sketch the 3-D objects from 2-D representations. ● To identify the angle between a line and a plane and the angle between two planes	Ch.6&7 test	
21	18/1 –22/1(5)	Revision (Ch.1,2,3,4,5,6,7)			
22	25/1 –29/1 (5)	Summative Assessment			
23	1/2 –5/2 (5)	TSA Mock Test 1+ Paper Checking Day			
24	8/2 –12/2 (2)	Lunar New Year Holiday			
25	15/2 –19/2 (0)	Lunar New Year Holiday			
26	22/2 –26/2 (5)	**Ch8 Coordinates Geometry of Straight Lines** 8.1 Distance between Any Two Points on a Plane 8.2 Slope of a Straight Line	● To find the distance between two points on a rectangular coordinate plane. ● To learn and apply the slope formula		
27	1/3 –5/3 (4)	8.3 Parallel and Perpendicular Lines	● To explore the relation between the slopes of parallel lines and perpendicular lines.		
28	9/3 –12/3 (4)	8.4 Points of Division 8.5 Using Analytic Approach to Prove Results Relating to Rectilinear Figures	● To find the ratios of line segments on a straight line.	Ch.8 test	
29	15/3 –19/3 (2)	**Ch9 Trigonometric Relations** 9.1 Trigonometric Ratios of Special Angles	● To review trigonometric ratios ● To explore the exact values of trigonometric ratios of the special angles 30°, 45° and 60°		
30	22/3 –26/3 (1)	Experiential Learning Week			

31	29/3 –2/4 (0)	Easter Holiday			
32	5/4 –9/4 (3)	TSA Mock Test 2			
33	12/4 – 16/4 (5)	9.2 Finding Trigonometric Ratios by Constructing Right-Angled Triangles 9.3 Trigonometric Identities	● To learn how to construct a right-angled triangles then use Pythagoras Theorem so as to find the other two trigonometric ratios ● To explore the basic trigonometric identities, and use them to simply expressions.	Ch9 Test	
34	19/4 – 23/4 (5)	**Ch10 Applications of Trigonometry** 10.1 Gradients	● To study slope and gradient ● To learn how to solve daily-life problems on gradients ●		
35	26/4 –30/4 (5)	10.3 Bearings 10.4 Applications of Trigonometry to Rectilinear Figures	● To learn the concepts of angles of elevation and depression ● To understand the bearing of geometry ● To apply trigonometric ratios to solve problems on rectilinear figures	Ch10 Test	
36	3/5 –7/5 (5)	**Ch12 Introduction to Probability** 12.1 Probability 12.2 Further Problems on Probability	● To explore the meaning of probability ● To calculate the theoretical probability ● To learn how to use tree diagrams and tables to solve further problems on probability		
37	10/5 –14/5 (5)	12.3 Experimental Probability 12.4 Expected Value	● To calculate the experimental probability ● To explore the meaning of expected value and solve related problems	Ch12 Test	
38	17/5 –21/5 (4)	**Ch11 Measures of Central Tendency** 11.1 Introduction to Central Tendency 11.2 Means 11.3 Medians	● To investigate the accuracy of the means obtained from different grouping methods ● To study different methods to find the means of data. ● To study different methods to find the medians of data.		

		11.4 Modes and Modal Class	● To find the modes of ungrouped data sets and modal classes of grouped data		
39	24/5 – 28/5 (5)	11.5 More about Means, Medians and Modes 11.6 Misuses of Averages	● To choose the appropriate averages in different situations to reflect the central tendency ● To determine whether the averages used to reflect central tendency are appropriate		
40	31/5 – 4/6 (5)	11.7 Effects of Data Change on Measures of Central Tendency 11.8 Weighted Means	● To understand the effects on the averages when the data sets are modified ● To find the weighted means of data sets	Ch11 Test	
41	7/6 – 11/6 (3)	Revision			
42	14/6 – 18/6 (0)	Final Examination			
43	21/6 – 25/6 (1)	S3 TSA			
44	28/6 –2/7 (2)	Paper Checking			

4. Formative Assessment Modes

We may assess our students' learning in the following modes:

- Discussion and presentation
- Projects
- Poster walk
- Mathematics card game
- Constructions and analysis of 3D models

5. Summative Assessments

Examination will be conducted during the year to judge the extent of students' learning. The purpose is to grade or certify students, evaluate their progress or to find out the effectiveness of a curriculum.

Assessment	Format	Mark Distribution	Time
Mid-term Assessment	Section A: MC Section B: Conventional questions	30 70	45 mins
Final Exam	Section A: MC Section B: Conventional questions	30 70	1 hr 45 mins

Weighting of Component Parts

Term	Assessment item	1st. Continuous Assessment	2nd Continuous Assessment	Final Assessment
1st term	Homework	20%	-	30%
	Chapter Tests & Quiz	80%	-	
	Mid-term Assessment	-	-	10%
2nd term	Homework	-	20%	30%
	Chapter Tests & Quiz	-	80%	
	Final Exam	-	-	30%
Total		100%	100%	100%

6. Grade Boundaries

Students' attainment at different stages of the school year is reported in performance grades. The mark ranges for the grades are as follows.

The grade descriptors are as follows.

Performance Grade	Performance Descriptor
A* **(90 or above)**	Demonstrate comprehensive knowledge and understanding of materials in all the domains of the mathematics curriculum by applying them successfully to a wide range of unfamiliar situations; communicate and express ideas precisely and logically using mathematical language, notations, tables, diagrams and graphs; and integrate knowledge, understanding and skills from different areas of the curriculum to enable them to solve complex problems.
A **(80 – 89)**	
B **(66 – 79)**	Demonstrate sound knowledge and understanding materials in the domains of the mathematics curriculum by applying them successfully to some unfamiliar situations; communicate and express ideas accurately using mathematical language, notations, tables, diagrams and graphs; and integrate knowledge, understanding and skills from different areas of the curriculum to enable them to solve a range of problems including some difficult ones.
C **(46 – 65)**	Demonstrate adequate knowledge and understanding of materials in the domains of the mathematics curriculum by applying them successfully to familiar and some unfamiliar situations; communicate and express ideas appropriately using mathematical language, notations, tables, diagrams and graphs; and integrate knowledge, understanding and skills from different areas of the curriculum to enable them to solve straightforward problems satisfactorily.
D **(30 – 45)**	Demonstrate basic knowledge and understanding of materials in the domains of the mathematics curriculum by employing simple algorithms, formulas or procedures to perform routine tasks; communicate and express fundamental ideas using mathematical language, notations, tables, diagrams and graphs; and are able to solve some straightforward problems satisfactorily.
E **(Below 30)**	Demonstrate elementary knowledge and understanding of materials in the domains of the mathematics curriculum by performing straightforward algebraic, geometric and data-handling procedures according to direct instructions; attempt to communicate and express simple ideas using mathematical language, notations, tables, diagrams and graph; and are able to solve some straightforward problems with appropriate help.

7. Course Materials

(Book 3A) Mathematics in Action 3A (2017 3rd Edition) – Longman Hong Kong Education.
(Book 3B) Mathematics in Action 3B (2017 3rd Edition) – Longman Hong Kong Education.
Mathematics Classwork Book
Mathematics Homework Book
Mathematics Folder
Calculator

8. Role of Parents at home

Parents are encouraged to talk to their child about their learning in class on a regular basis. They should also discuss the results obtained by their child to find out how well they are doing in their mathematics course.