#### CLIL Module Plan

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School	ITT Buonarro	ti Pozzo							
School Grade	O Primary C		ОМі	O Middle		<ul><li>High</li></ul>			
School Year	01	O 2	• 3	3	0 4		0 5		
Subject	Matematica	Topic	<b>Topic</b> Trigor			nometric functions and equations			
<b>CLIL Language</b>	English			O Deutsch					

# Personal and social-cultural preconditions of all people involved

The class 3INA is composed of 21 boys belonging to different social backgrounds. Some of them are commuters and this means that sometimes they come late. Three students are learners with special needs. The class does not have a homogeneous level of disciplinary skills and some students have learning difficulties in mathematics due to the lack of an appropriate study method. On the whole, they are well motivated. The level of performance increases during the class activity, when they show enthusiasm to come to the blackboard to solve exercise or problems proposed by the teacher. Only one third of this group has not experienced Clil lessons so far, while more than half of them has experienced it during the first two years of the secondary school. The CEFR level of students varies from A2 to B1. \*\*\*\*During the development of this module, I realised that a group of the students was impressed by one of the chosen videos (which I had considered the least meaningful) as if they were kinesthetic learners. In fact, they easily and pleasantly remembered the Soh, Cah, Toa Theorems, mentioned in that video, probably because the tribal rhythm heard activated such a kind of naturalistic intelligence. https://www.teachingchannel.org/videos/introductionto-trigonometry

Students' prior knowledge, skills, competencies

#### **Subject**

The students should have the following: knowledge: Measure of an angle; Algebraic equations; Pitagora's Theorem; Radical rules; What is a function and what is a graph; Cartesian plane; Skills The students should be able to: plot an angle given its size; find solutions of an algebraic equation (first and second degree); plot a point on the Cartesian plane; apply the Pitagora's Theorem; plot the graph of a function given some of its points. Competencies The students can: solve a problem using the available data; make comparison among graphs recognizing analogies and differences;

#### Language

The students should have the following knowledge: Passive forms and simple past; Some conditional forms; Generally scientific vocabulary; Skills: The students should be able to: listen to the teacher's lesson or a video understanding the general meaning of the contents with the help of subtitles if necessary; read meaningful material such a short text understanding the general meaning; speak with the teacher or other classmates, in pairs or in small groups, ask for help and further information when it is necessary; deduce the main information of a written text or a video; write simple explanations about what they are doing while they are solving exercise (using Present Simple or Continuous). Competencies: The students should: know how English language works at an intermediate level; interact quite fluently; express simple thoughts in writing.

**Timetable fit** 

Module

Length 14 lessons for trig functions and 9 for Trig equations

#### Description of teaching and learning strategies

Flipped classroom: Two or three weeks before starting this module, the students are invited to find and select on the Internet one video which better introduces the topic and gives motivations and applications taken from the real life about how trigonometry could be useful. The students send the link to the teacher who will select some of them in order to share with all the students. The link of the most significant videos will be posted on the Edmodo platform and all the class has to watch them before starting the module. Even during the development of the module watching some videos before the lesson will be an adopted strategy for a better awareness which improves the learning. Cooperative Learning and working in small groups in order to promote interaction and communication during the lesson. ICT learning tools: The file with the materials will be posted on Edmodo, lesson by lesson, and projected on the interactive whiteboard to avoid anxiety about taking notes during the activity and making it available also for those students who eventually miss some lessons. Materials to support content and language scaffolding: This module is based on authentic material taken from the Internet. At the beginning of most of the lessons there is a list of keywords. The students are invited to recognize the meaning using different educational way (brainstorming, internet...) Time managing: Even if the time for each activity is fixed in advance, it will be important to consider that it may be necessary to dedicate some lessons only carrying out exercises (on the blackboard or in small groups). Multimodality lesson: Most of the lesson has to be devoted to plotting graphs and figures which can facilitate the visualization. This can be done not only with a blackboard and colored chalks, but also with Geogebra, an easy way to use free software. SEE ALSO \*\*\*\* There is no more space here to add further informations

#### Overall Module Plan

Unit: 1

Definition of trigonometric function

Unit length: 6

Lesson 1

Introduction to the topic

Lesson 2

Radians and degrees

Lesson 3

Definition of sine and cosine Goniometric values for the main angles

Lesson 4

Definition of tangent and cotangent

Lesson 5

Graphs

Lesson 6

**Exercises** 

Unit: 2

Associated angles

Unit length: 4 hours

Lesson 1

Associated angles

Lesson 2

**Exercises** 

Lesson 3

**Exercises** 

Lesson 4

**Exercises** 

Unit: 3
Inverse trig functions
Unit length: 6 hours

Lesson 2
Values of main angles

Lesson 3
Exercises

Lesson 4

Unit: 4

Trigonometric equations

Unit length: 9 hours

Lesson 2

Equations which can be solved using elementary equations

Classwork

Lesson 3

Equations which can be solved using elementary equations

Linear Equations

Lesson 4

Lesson 5

Homogeneous equations of second degree

Lesson 6

Exercises

**Lesson 7**Exercises

Lesson 8

Exercises

Lesson 9

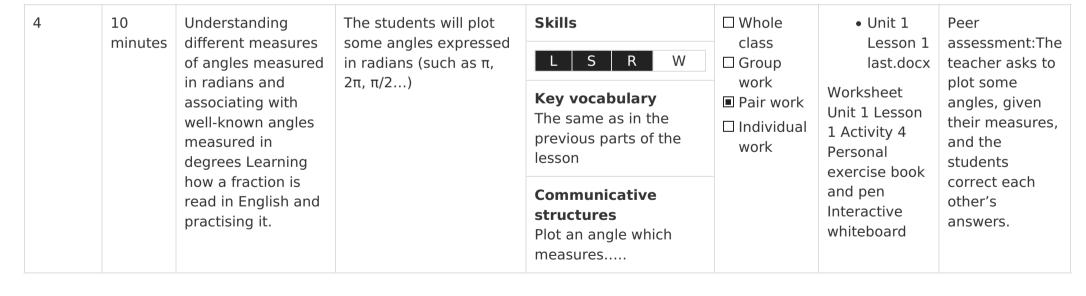
Classwork

Activity	Timing	Learning Outcomes	<b>Activity Procedure</b>	Language	Interaction	Materials	Assessment

1 20 Increasing the Screening of the best Skills Whole the teacher Interactive minutes motivation in videos among those class checks if the whiteboard S dealing with the R found by the students. W ☐ Group students link 3'.13" link whole module The videos are chosen work understand the 5'20" link 4'8" **Key vocabulary** Getting the hang of by the teacher as □ Pair work aim of the link 3'42" Trigonometry, metric some of the described in the section whole activity ☐ Individual system, measurement, important "Description of teaching asking work periodic, distances, and learning strategies" applications of questions, vibration, rayleigh trigonometry in listening to scattering, atomic mathematics and their answers nucleus, to bank, MRI, physics and adding new magnetic field, data tips or further compression, Fourier information if transform, suspension necessary bridge shape, atomic clocks hypotenuse, angle, adjacent and opposite side, soh, cah, toa theorems Communicative structures What are the main application of...? What do you think would be important to understand...? Do you know other applications for this topic? Could you imagine another application of...?

2	minutes meaning of the key words students look for the meaning of the listed words, which are projected on the interactive whiteboard After 5 minutes, the teacher asks them, randomly, to explain the meanings. They can use	meaning of the key	students look for the meaning of the listed words, which are projected on the interactive whiteboard After 5 minutes, the teacher asks them, randomly, to explain the meanings. They can use a synonym or a whole	Key vocabulary radius, angle, radian, degree, arc, subtend, intersection, size of an angle, radiuses or radii, circumference, circle, full revolution, pi, length of an arc, to convert between radians and degrees and vice versa, simplify, divisible by, left side, right-hand,	□ Whole class □ Group work ■ Pair work □ Individual work	• Unit 1 Lesson 1 last.docx Interactive board Personal exercise- book and pen Worksheet Unit 1 Lesson 1 Activity 2	Formative assessment The teacher asks each group to explain with a sentence the meaning of the words and to provide examples
			Communicative structures What does it mean the word?				

3	10 minutes	Understanding why angles are measured in degrees. Understanding the definition of radian. Understanding how to transform the measure of an angle from degrees to radians and vice versa.	The students watch the video. The video could be interrupted sometimes to underline and focus on important steps. At the end the teacher poses the questions written in the worksheet.	Key vocabulary The same as in the previous ten minutes  Communicative structures Did you understand why? Why did the ancient mathematicians introduce the degrees? Why is it important to use radians? How is a radian defined?	■ Whole class □ Group work □ Pair work □ Individual work	• Unit 1 Lesson 1 last.docx  link Worksheet Unit 1 Lesson 1 Activity 3	
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Unit number 1 Lesson number 2 Title Radians and degrees

Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	20 minutes	Being able to understand a written text, which is the transcript of a video.	The students have to fill in the gaps of the text uploaded on Edmodo, which the students should have printed before the lesson.	Key vocabulary The same as the previous lesson  Communicative structures Explain how to convert the measure of an angle which measures from degrees to radians (or vice versa)	□ Whole class □ Group work □ Pair work ■ Individual work	• Unit 1 Lesson 2last.docx Worksheet Unit 1 lesson 2 Activity 1	Formative assessment: the teacher checks if the students have filled the gaps with the right words asking one by one to read the whole sentence. One sentence –one student.

2 20 minutes	Learning the method, which is used to convert an angle from degrees and vice versa. Applying this method to find the correspondent of the main angles.	The students plot the table on the exercise book filling it with the main angles expressed in degrees and the corresponding in radians.	L S R W  Key vocabulary The same as in the previous lesson  Communicative structures Complete the table in order to learn how to convert from degrees to radians and vice versa Which is the correspondent of?	□ Whole class □ Group work □ Pair work ■ Individual work	• Unit 1 Lesson 2last.docx Exercise book	Formative assessment The teacher asks to complete a table with angles and radians in order to find the correspondence for the main angles,
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3	10 minutes	Checking if the work is correct	The students correct in pair the conversion table degrees-radians	Key vocabulary Main angles  Communicative structures Explain how to convert the measure of an angle which measures from degrees to radians (or vice versa) Check if you table is correct comparing it with your desk-mate	□ Whole class □ Group work ■ Pair work □ Individual work	• Unit 1 Lesson 2last.docx Exercise book	Pair assessment
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Unit number 1 Lesson number 3 Title Definition of sine and cosine Goniometric values for the main angles

Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
·	Activation of prior knowledge: ensuring	The teacher asks the students if they	Skills	■ Whole class	class  Group	Students have to say the parts they have not understood., so	
	that all the students have understood the concepts introduced in the first two lessons	need further explanations and	L S R W	□ Group work			
		concepts introduced in	checks with them their homework.	<b>Key vocabulary</b> The same as in the previous two lessons	□ Pair work □ Individual work		that they are, in some way, forced to speak
				Communicative structures Is there anybody who didn't understand?			

2	20 Understanding how the sine and the cosine functions are defined, starting from the definition given on the unit circle	sine and the cosine functions are defined,	and the cosine definition projected on the interactive	Skills  L S R W	□ Whole class □ Group	<ul><li>unit 1 lesson 3 last.docx</li></ul>	Self- Assessment:Test taken from
		whiteboard, the students have to plot the unit circle and, following the instruction, they should be able to recognize which is the sine and the	Key vocabulary unit circle, counterclockwise direction, cosine, sine, x-coordinate and y coordinate, trig function, intersect,	work Pair work Individual work	Exercise book Unit 1 lesson 3 activity 2	Khanacademy	
			cosine of a given angle.	Communicative structures What is the unit circle definition of the trigonometric functions?			

3 20 Being able to Using the Skills ☐ Whole • unit 1 Formative minutes understand the worksheet, the class lesson 3 assessment: The S R difference between the students follow the L W ☐ Group last.docx teacher ask the sine and the cosine given instructions. work students the Exercise book **Key vocabulary** function and how they ☐ Pair work values they Worksheet 1 unit circle, are related with the unit have found. ■ Individual Lesson 3 counterclockwise circle Finding the trig work Activity 3 direction, altitude, value for sine and hypotenuse, opposite cosine, using a right side, base, height, triangle having cosine, sine, tangent, hypotenuse equal to 1 cotangent, adjacent and angles of 30° and side, x-coordinate and y 60° and a right triangle coordinate, trig having angles of 45°. function, intersect, \*soh cah toa theorems, right triangle trig ratios Communicative structures Which is the value for the sine (or cosine) function corresponding to an angle having measure equal to ...?

Unit number 1 Lesson number 4 Title Definition of tangent and cotangent

Activity	Timing	Learning Outcomes	<b>Activity Procedure</b>	Language	Interaction	Materials	Assessment
1	10 minutes	Summarizing the main trig values for sine and cosine	The teacher asks the students randomly the value for sine and cosine, given the measure of an angle, after having seen the video which gives very useful tips	Key vocabulary Pinkie, thumb  Communicative structures Which is the values for the sine (or cosine) functions corresponding to an angle having measure equal to?	■ Whole class □ Group work □ Pair work □ Individual work	link 5' 01"	Ongoing assessment: the teacher checks if the students understand the suggested tips for memorizing the main trig values posing questions, listening to their answers and adding eventually some new tips

2	20 minutes	Understanding the definition of the tangent and the cotangent of an angle based, firstly, on the geometrical construction, then finding the relation with sine and cosine using similar triangles	The teacher draws on the blackboard the unit circle, the tangent of an angle and the similar triangle having as catheti the sine and cosine of the same angle. Students are frequently asked questions, in order to make them able to discover the relations between the three functions	Skills  L S R W  Key vocabulary Tangent, cotangent, similar triangles, corresponding sides	■ Whole class Group work Pair work Individual work	Blackboard with colored chalks, exercise book	Ongoing assessment: the teacher asks frequently to complete the relations or to solve the equations which lead to the final results
				Communicative structures Which is the correspondent of this side in the other triangle?			
3 15 minutes	Using the relations, finding the main values for the tangent and cotangent and memorizing them or, better, being able to calculate them when	The students complete the table, which was started in the previous lessons, adding the values for the tangent and the cotangent of 0°, 30°, 45° and so on.	Skills  L S R W  Key vocabulary The same as in the previous activity	□ Whole class □ Group work ■ Pair work □ Individual work	Exercise book, table started to complete in the previous	Pair assessment The students check in pair the written values	
		it is necessary. (This depends on the learning style of the student)		Communicative structures Which is the value for the tangent (or cotangent) function corresponding to an angle having measure equal to?		lesson	

4	5 minutes	Summarizing the found values	The students are asked about the values and check if the table has been correctly completed	L S R W  Key vocabulary The same as in the previous activities  Communicative structures The same as in the previous activities	■ Whole class □ Group work □ Pair work □ Individual work	Exercise book	Formative assessment: The teacher asks the student the values they have found.
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Unit number 1 Lesson number 5 Title Graphs

Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	20 minutes	Being able to graph the sine, cosine, tangent and cotangent functions Being able to recognize all those graphs	Using the table completed in the last lesson, the students plot on the cartesian plane the graphs of the fourth function, starting from the sine and following the instructions given in the worksheet of this lesson	L S R W  Key vocabulary The same as in the previous lesson  Communicative structures Plot the graph	□ Whole class □ Group work □ Pair work ■ Individual work	• unit 1 lesson 5 last.docx  Interactive whiteboard Exercise book Worksheet Unit 1 Lesson 5 Activity 1	Ongoing assessment: the teacher checks if the students understand the aim of the whole activity walking in the class and observing what and how they are doing.

2 10 Learning more A student opens geogebra **Skills** ■ Whole Ongoing Interactive about the graphs and plots the graph of the class minutes assessment: whitehoard S R of the four sine of the function. Then he L W ☐ Group the teacher Exercise book functions or she describes which are work checks if the Geogebra **Key vocabulary** comparing their the main characteristics. ☐ Pair work students The same as in the own graphs with Another student does the have □ Individual previous lessons the correspondent same with the cosine. understood work graphs made with Another with the tangent the main Communicative geogebra and another with the characteristic structures Observing, cotangent. of the Compare the graph of describing and functions. ...and the graph of... comparing the asking them and describe the main trig functions to observe. differences. graphs describe and compare the graphs on the whiteboard **Skills** Whole 3 20 Reviewing the The teacher asks the whole • unit 1 Ongoing minutes main class to describe the main class lesson 5 assessment: S R W transformations of characteristics of the graph ☐ Group last.docx the teacher the graphs: of a function when it has work checks if the Interactive Kev vocabulary dilation. been transformed ☐ Pair work students are whiteboard The same as in the multiplying it by a constant translation and able to ☐ Individual Geogebra previous lessons or multiplying only its changing of the connect the work Worksheet period variable or adding to it a information Unit 1 Lesson Communicative constant either to the they possess 5 Activity 3 structures variable or to the function. (they have Compare the graphs... After each question the already seen

teacher plots a function,

differences with the basic

underlining the main

correspondent graph

The graph of .. is less...

in comparison with...

more...compared to....

The graph of... is

these graphs

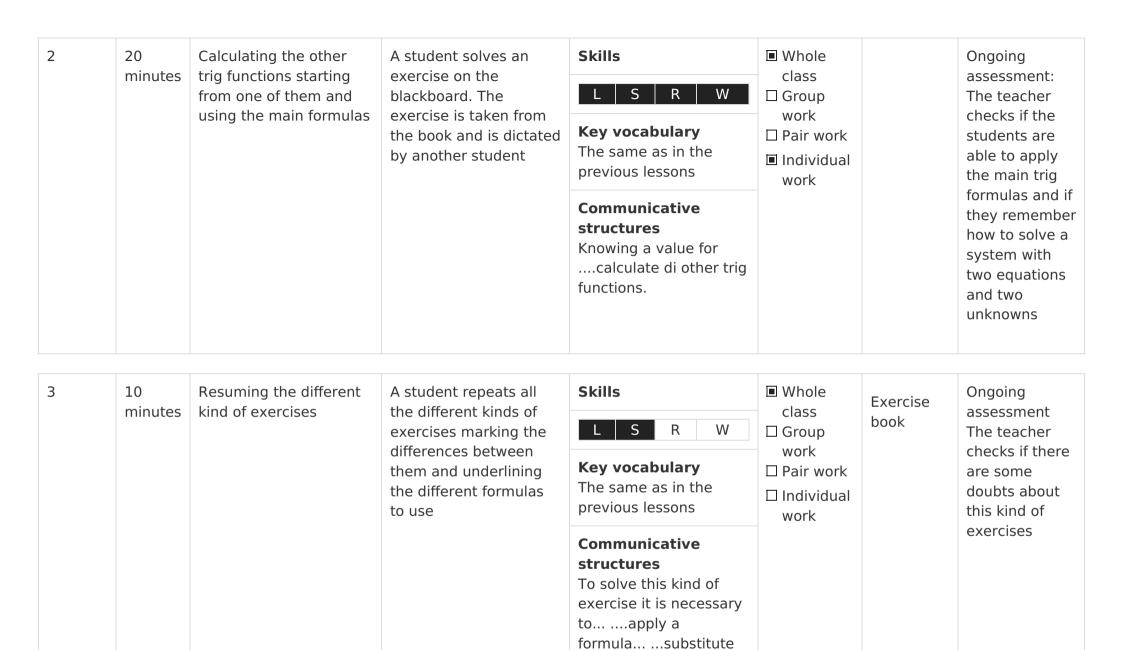
teacher) with

the new ones

with the ICT

Unit number1Lesson number6TitleExercises

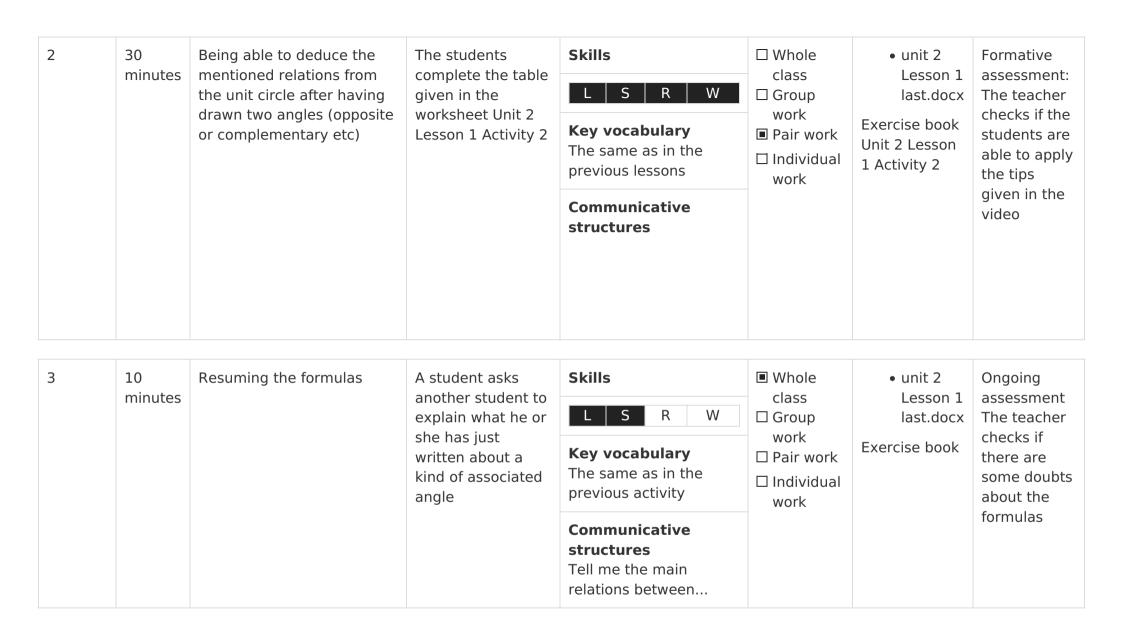
Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	20 minutes	Being able to simplify expression with trig functions (the main aim is to memorize the main trig values) Reviewing the calculus with radicals	A student solves an exercise on the blackboard. The exercise is taken from the book and is dictated by another student	Key vocabulary The same as in the previous lessons  Communicative structures Simplify the expression	■ Whole class □ Group work □ Pair work ■ Individual work	Blackboard with chalk Exercise book	Ongoing assessment: The teacher checks if the students have memorized the main trig values, if they are able to work with radians, if they remember the calculus with radicals



this expression with...

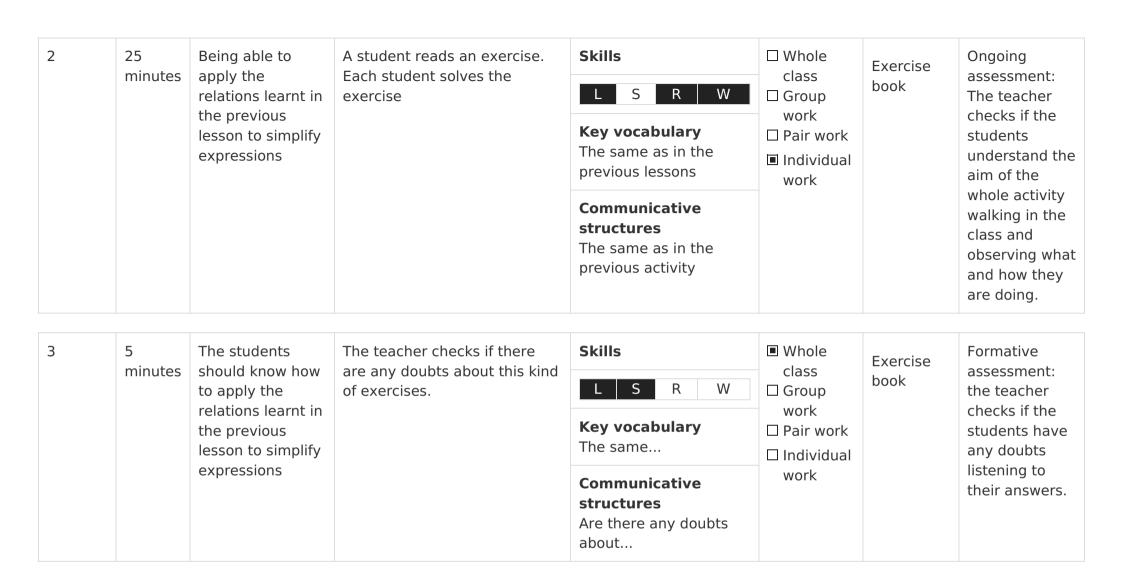
 Unit number
 2
 Lesson number
 1
 Title
 Associated angles

Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	10 minutes	Understanding the relation for associated angles: complementary, supplementary, explementary, opposite angles and for angles which differ by $\pi$ or $\pi/2$ .	Watching the video students discover that there are angles which presents some kind of symmetry.	Key vocabulary flip, above and below the x axes, figure out, supplementary, different symmetry  Communicative structures	■ Whole class Group work Pair work Individual work	link interactive whiteboard	Ongoing assessment: The teacher asks the students if they have understood the general meaning of the video



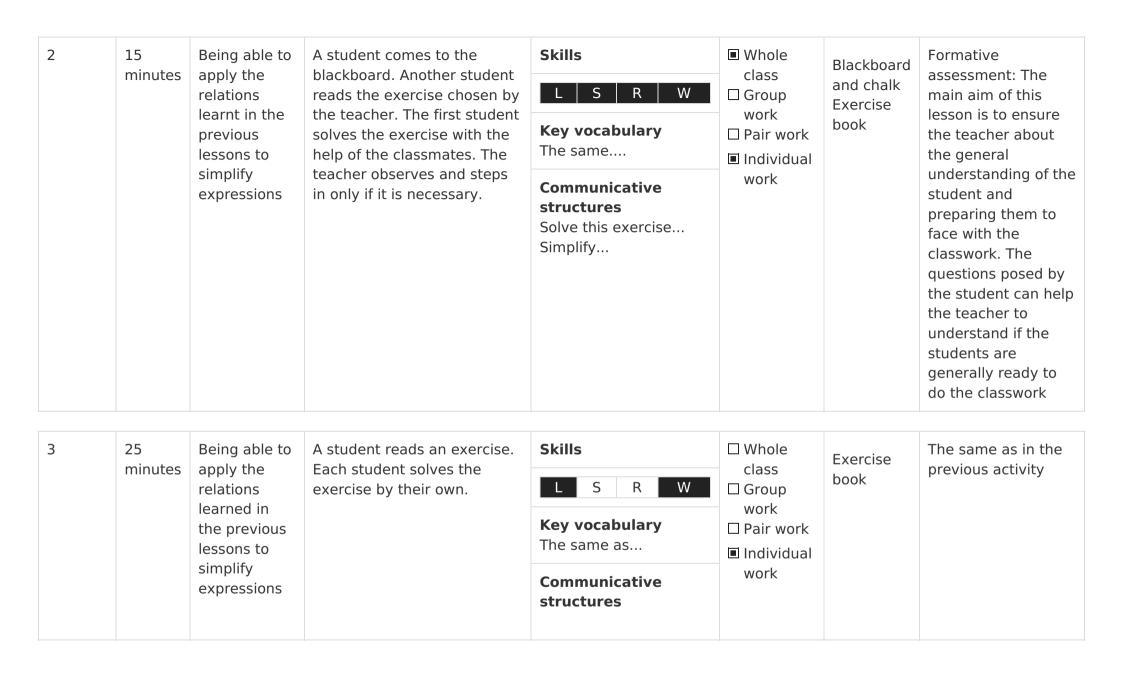
Unit number2Lesson number2TitleExercises

Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	20 minutes	Being able to apply the relations learnt in	A student comes to the blackboard. Another student reads the exercise chosen by	Skills  L S R W	■ Whole class	Blackboard and chalk	Ongoing assessment: The teacher
		the previous lesson to simplify expressions.	the teacher. The first student solves the exercise with the help of the teacher and the students.	<b>Key vocabulary</b> The same as in the previous lesson	work  Pair work  Individual work	Exercise book	can understand the general comprehension
				Communicative structures Apply the relation and solve			of this topic



 Unit number
 2
 Lesson number
 3
 Title
 Exercises

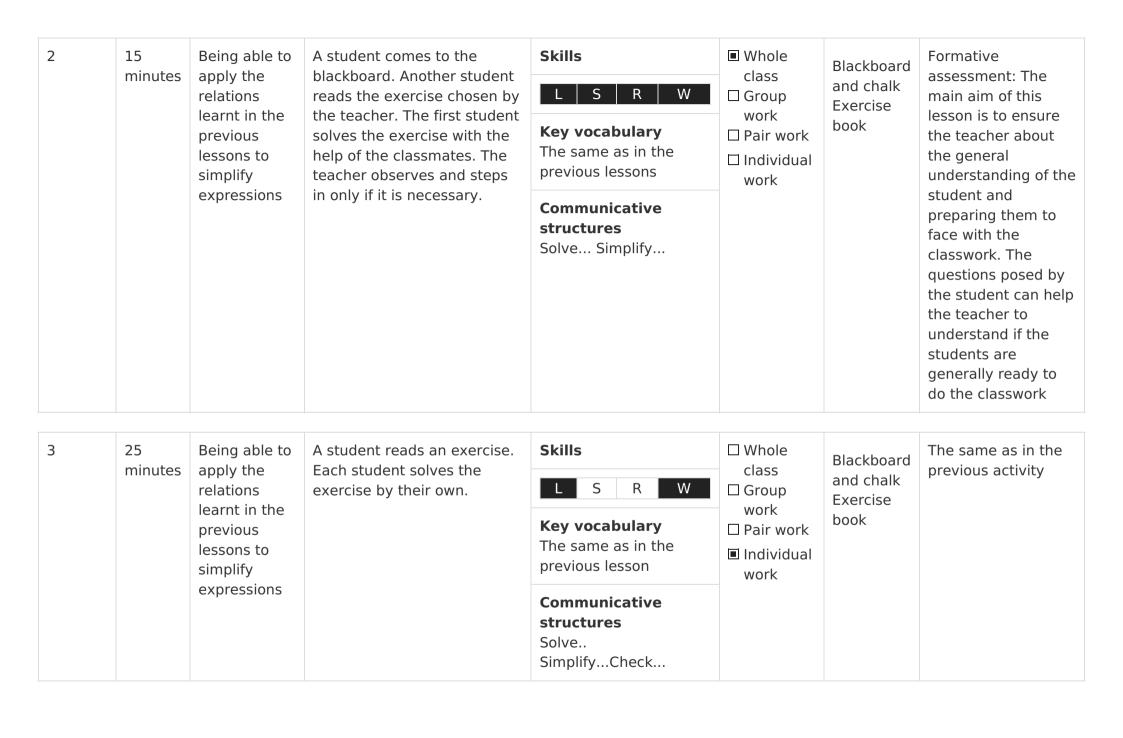
Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	5 minutes	Resuming the main relations useful to solve the exercise	The teacher asks some students to tell the class the relations learnt in the previous lessons	Skills  L S R W  Key vocabulary The same  Communicative structures Explain which is the relation betweenand What are the main	■ Whole class □ Group work □ Pair work □ Individual work	Exercise book	Ongoing assessment The teacher checks if the students have learnt the formulas and the relations before applying them.



4	minutes	Resuming the different kind of exercises and giving instructions about how to	The teacher checks if there are any doubts about this kind of exercises and writes on the blackboard the pages containing the exercises in order to be ready for the classwork	L S R W  Key vocabulary The same as in the previous lessons	■ Whole class □ Group work □ Pair work □ Individual	Exercise book	The same as in the previous activity
		find other exercises on the book	Cidoswork	Communicative structures The same as in the previous lessons	work		

Unit number 2 Lesson number 4 Title Exercises

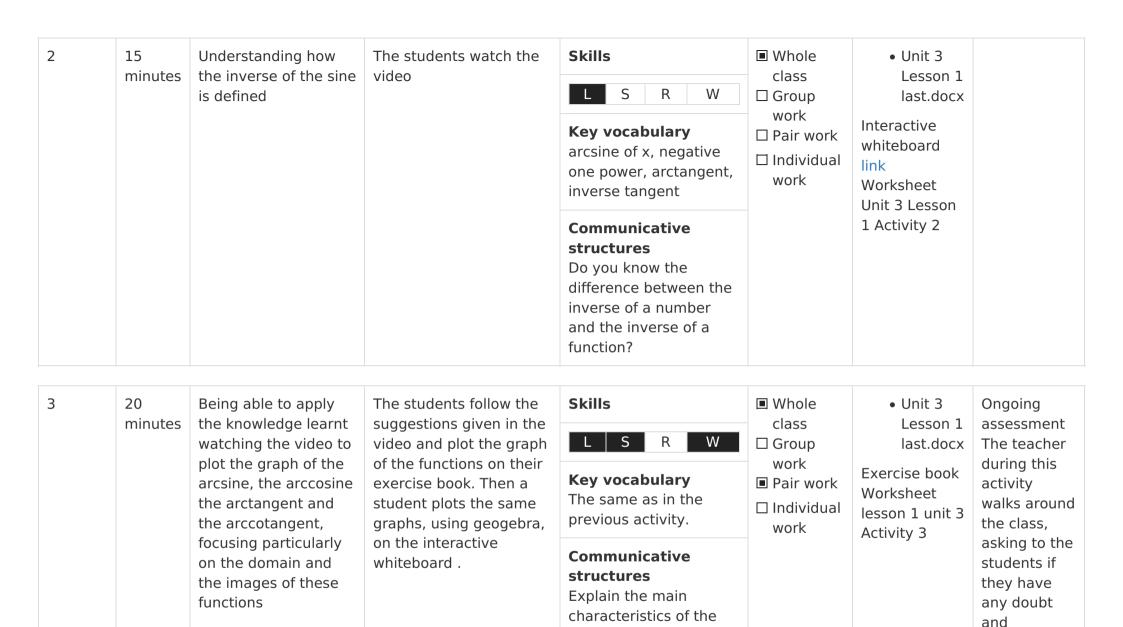
Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	5 minutes	Resuming the main relations useful to solve the exercise	The teacher asks some students to tell the class the relations learnt in the previous lessons	Key vocabulary The same as in the previous lessons  Communicative structures Explain which is the relation betweenand What are the main formulas connecting	■ Whole class □ Group work □ Pair work □ Individual work	Exercise book	Formative assessment The teacher checks if the students have learnt the formulas and the relations before applying them.



4	5 minutes	Resuming the different kind of exercises and giving instructions about how to find other exercises on the book	The teachers checks if there are any doubts about this kind of exercises and writes on the blackboard the pages containing the exercises in order to be ready for the classwork.	Key vocabulary The same as in the previous lessons  Communicative structures The same as in the previous activity	■ Whole class □ Group work □ Pair work □ Individual work	Exercise book	The same as in the previous activities
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Unit number 3 Lesson number 1 Title Definition of the inverse trig functions

Activity	Timing	<b>Learning Outcomes</b>	<b>Activity Procedure</b>	Language	Interaction	Materials	Assessment
	15 minutes	Understanding why it is necessary to introduce the inverse of each trig function	A student reads the text projected on the interactive whiteboard. All the students can interrupt the reading if they do not understand some concepts. At the end of the reading the teacher asks to another student to resume with their own words the main contents.	L S R W  Key vocabulary inverse function, inverse operation  Communicative structures Why do we need to introduce inverse trig functions?	■ Whole class □ Group work □ Pair work □ Individual work	• Unit 3 Lesson 1 last.docx  Interactive whiteboard link Worksheet Unit 3 Lesson 1 Activity 1	Ongoing assessment: during the resuming made by the second student, the teacher checks if they have understood why the inverse trig functions become necessary



graph. Compare the

graph of the sine and

arcsine and describe

the symmetry....

providing

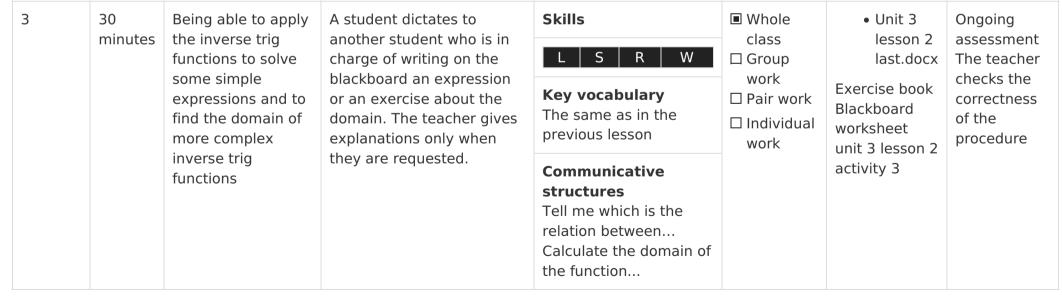
advice if

necessary

Unit number3Lesson number2TitleValues of main angles

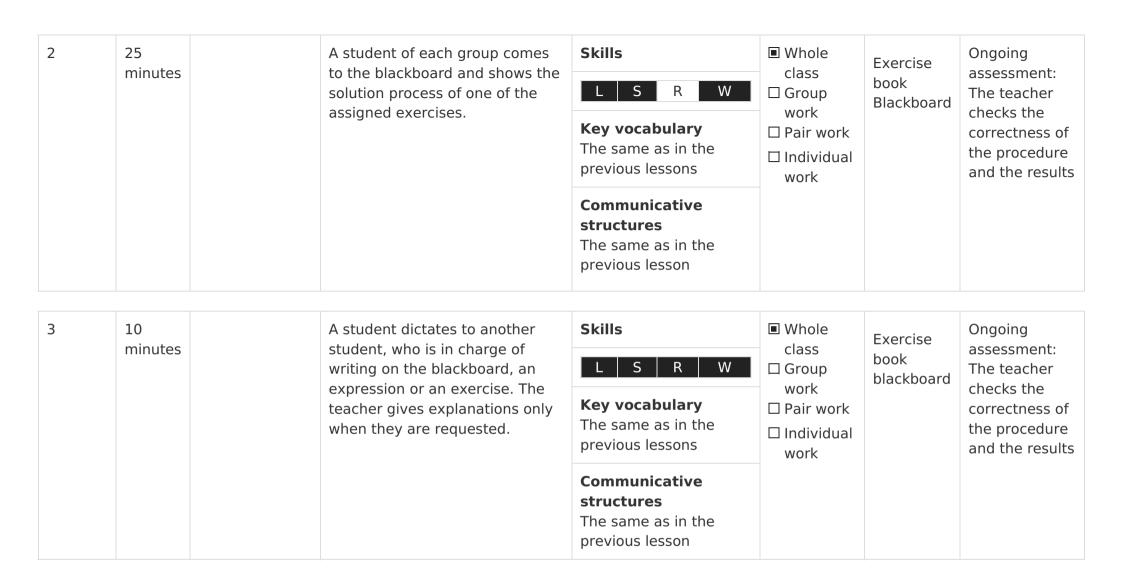
Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	15 minutes	Being able to apply the learned inverse trig functions to find the corresponding angles	The students complete the table given in the worksheet unit 3 lesson 2 activity 1.	Skills  L S R W  Key vocabulary The same as in the previous lesson	☐ Whole class ☐ Group work ■ Pair work ☐ Individual work	• Unit 3 lesson 2 last.docx  Exercise book worksheet unit 3 lesson 2 activity 1	
				Communicative structures			

2	5 minutes	Being able to listen and correct their	A student asks his classmate to say the	Skills	■ Whole class	• Unit 3 lesson 2	Pair- assessment
		own work when it is wrong	measure of the angle (in degrees or in radians) which corresponds to one	L S R W  Key vocabulary	☐ Group work ■ Pair work	last.docx Exercise book	The students correct in pair the
			of the main trig value. One of the greatest difficulty about this topic is to	The same as in the previous lesson	□ Individual work		values written in the
			respect the codomain of the functions.	Communicative structures Which is the angle correspondent of a value of the equal to,,,,_			table



 Unit number
 3
 Lesson number
 3
 Title
 Exercises

Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	15 minutes	At the end of the lesson students should be able to solve all kinds of exercises learnt so far	The teacher divides the class into three groups. Each group has to solve some exercises. The exercises are different for each group.	L S R W  Key vocabulary The same as in the previous lessons  Communicative structures	□ Whole class ■ Group work □ Pair work □ Individual work	Exercise book Blackboard	Ongoing assessment: The teacher checks if the students are able to solve the equations walking around the class, observing what they do and answering the requests of clarification



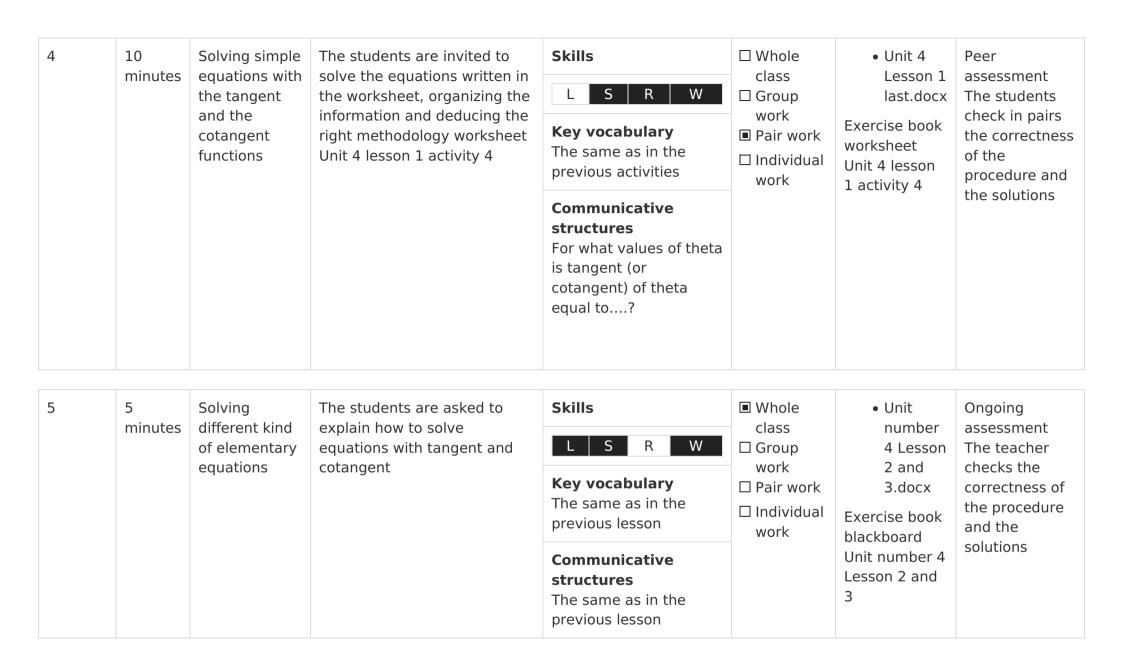
Unit number 3 Lesson number 4 Title Classwork

Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	50 minutes	Evaluation of the previous outcomes	Written test: The teacher hands in the photocopy with the exercises that the	Skills  L S R W	□ Whole class □ Group	MATHS     CLASSWORK     Last docy	Summative assessment
		outcomes	students have to solve	Key vocabulary The same as in the previous lessons	work Pair work Individual work	1 last.docx • assessment grid.docx	
				Communicative structures See in the file Maths Classwork 1			

Unit number 4 Lesson number 1 Title Elementary equations

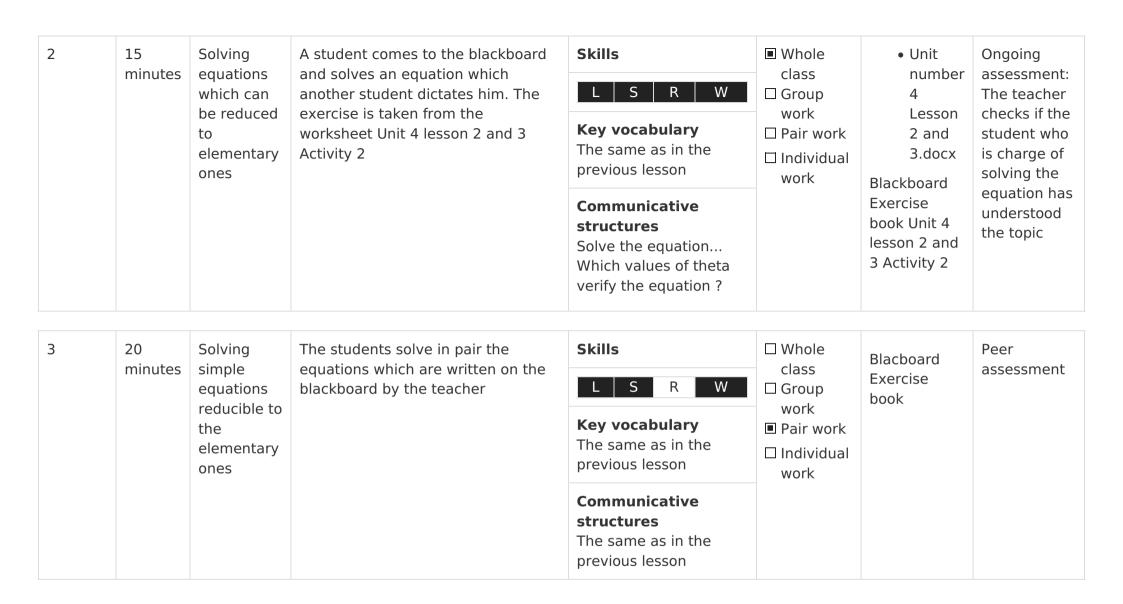
Activity	Timing	Learning Outcomes	<b>Activity Procedure</b>	Language	Interaction	Materials	Assessment
1	minutes w	Understanding what a trigonometric equation is	The teacher explains to the whole class what a trig equation is and illustrates the different kinds which will be learnt	Skills  L S R W  Key vocabulary	■ Whole class □ Group work □ Pair work	blackboard	
			learnt	elementary equations  Communicative	□ Individual work		
				structures What does it mean "solving an equation"?			

2	15 minutes	Solving simple equations with the sine function	After having watched the video, the students solve the equation given in the worksheet Unit 4 lesson 1 activity 2	Key vocabulary equaled, pattern, integer  Communicative structures For what values of theta does sine of theta equal to?	<ul> <li>■ Whole class</li> <li>□ Group work</li> <li>■ Pair work</li> <li>□ Individual work</li> </ul>	• Unit 4 Lesson 1 last.docx  link Exercise book worksheet Unit 4 lesson 1 activity 2	Ongoing assessment: The teacher checks if the students are able to solve the equations walking around the class, observing what they do and answering the requests of clarification
3	15 minutes	Solving simple equations with the cosine function	After having watched the video, the students solve the equation given in the worksheet Unit 4 lesson 1 activity 3	Key vocabulary The same as in the previous activities  Communicative structures For what values of theta is cosine of theta equal to?	■ Whole class □ Group work ■ Pair work □ Individual work	• Unit 4 Lesson 1 last.docx link 5'17" Exercise book worksheet Unit 4 lesson 1 activity 3	Ongoing assessment The teacher checks if the students are able to solve the equations walking around the class, observing what they do and answering the requests of clarification



Unit number 4 Lesson number 2 Title Equations which can be solved using elementary equations

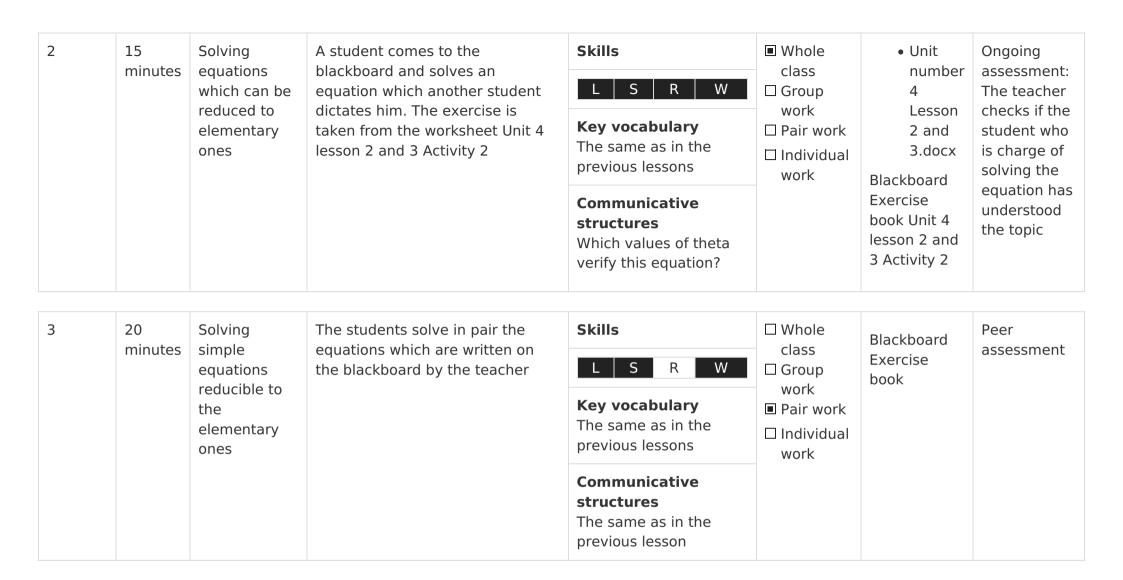
Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	5 minutes	Being able to solve elementary equations	The teacher invites a student to resume the four kinds of elementary equations learnt in the previous lesson, underlining the differences and the similarities among them	Skills  L S R W  Key vocabulary The same as in the previous lesson	■ Whole class □ Group work □ Pair work □ Individual work	Blackboard	Ongoing assessment The teacher checks if the student who is charge of resuming
				Communicative structures The same as in the previous lesson			has understood the topic



4	10 minutes	Solving simple trig equations	Resuming The students are invited to tell the solutions for an equation, explaining the procedure they have followed to reduce it to an elementary one	L S R W  Key vocabulary The same as in the previous lesson  Communicative structures Explain how you have solved this equation	■ Whole class Group work Pair work Individual work	Exercise book	Ongoing assessment The teacher checks the correctness of the procedure and the solutions
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Unit number 4 Lesson number 3 Title Equations which can be solved using elementary equations

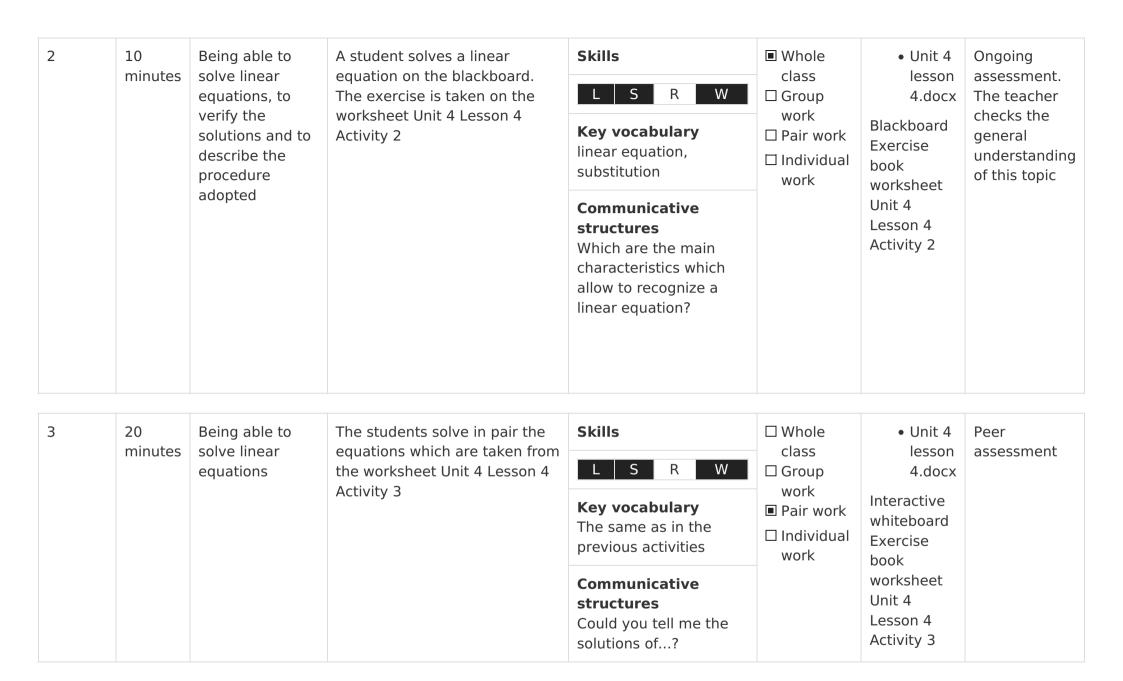
Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	5 minutes	Being able to solve elementary equations	The teacher invites a student to resume the four kinds of elementary equations learnt in the previous lesson, underlining the differences and the similarities among them	Skills  L S R W  Key vocabulary The same as in the previous lessons	■ Whole class □ Group work □ Pair work □ Individual work	Blackboard	Ongoing assessment The teacher checks if the student who is in charge of resuming
				Communicative structures The same as in the previous lesson			has understood the topic



4	10 minutes	Solving simple equations Being able to explain the procedure for doing it	Resuming The students are invited to tell the solutions for an equation, explaining the procedure they have followed to reduce it to an elementary one	L S R W  Key vocabulary The same as in the previous lesson  Communicative structures Explain how you have solved this equation	■ Whole class Group work Pair work Individual work	Exercise book Blackboard	Ongoing assessment The teacher checks the correctness of the procedure and the solutions
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 Unit number
 4
 Lesson number
 4
 Title
 Linear Equations

Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	5 minutes	Understanding what a linear equation is, how it is written and which is one of the possible	The teacher explains how a linear equation is written, the reason of its name and shows the procedure to solve it theoretically using the intersection with the unit circle.	Skills  L S R W  Key vocabulary Linear equation	■ Whole class Group work Pair work Individual	Blackboard	
		method to solve it		Communicative structures	work		



4	15 minutes	Being able to solve linear	A student dictates an equation to another student, who writes	Skills	□ Whole class	• Unit 4 lesson	Ongoing assessment
	minutes	equations	it on the blackboard. The	L S R W	☐ Group	4.docx	The teacher
			second student solves the equation. The other students are requested to solve it individually and check the	<b>Key vocabulary</b> The same as in the previous activities	work Pair work Individual work	Exercise book Blackboard worksheet	checks the correctness of the procedure and the
			procedure and the result at the end.	Communicative structures Explain the steps you are doing to solve this equation		Unit 4 Lesson 4 Activity 4	solutions

Unit number 4 Lesson number 5 Title Homogeneous equations of second degree

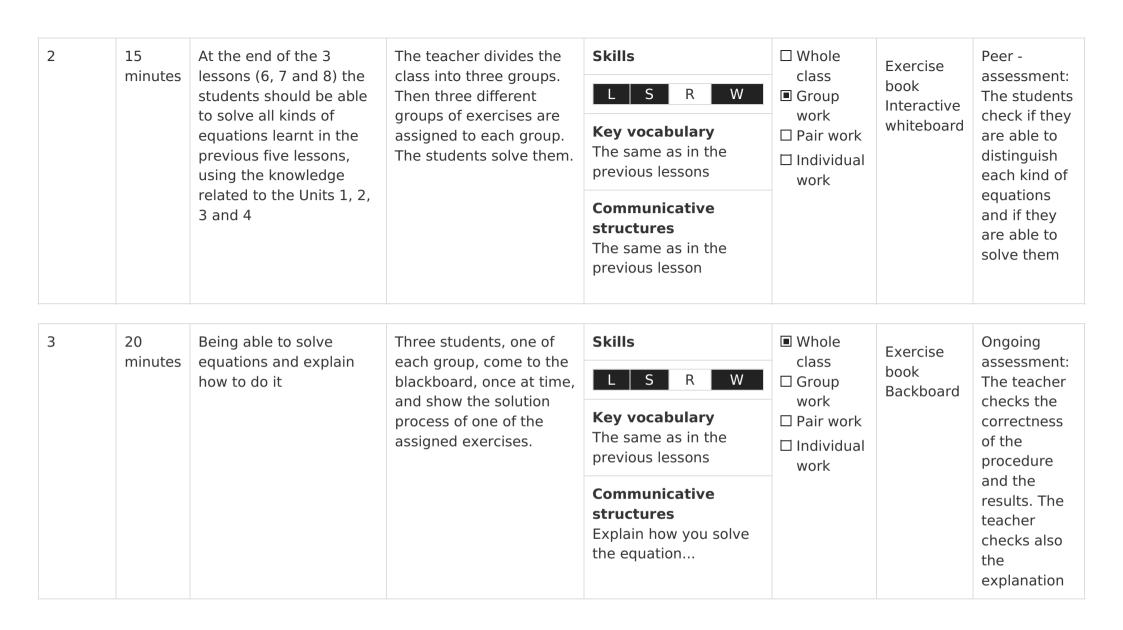
Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	5 minutes	Learning the solving method for homogeneous equations of second degree Being able to apply it	The teacher explains what a homogeneous equation is, why it is so called and shows the procedure to solve it using a general method.	Skills  L S R W  Key vocabulary homogeneous equations  Communicative structures Which are the main characteristics which allow to recognize a homogeneous equation?	■ Whole class □ Group work □ Pair work □ Individual work	Blackboard Exercise book	

2	10 minutes	Being able to solve homogeneous equations of second degree	A student solves a homogeneous equation on the blackboard worksheet Unit 4 Lesson 5 activity 2	L S R W  Key vocabulary The same as in the previous activity  Communicative structures Explain the steps you do to solve	■ Whole class Group work Pair work Individual work	• Unit number 4 Lesson 5.docx  Blackboard Exercise book Worksheet Unit 4 Lesson 5 activity 2	Ongoing assessment
3	15 minutes	Being able to solve homogeneous equations of second degree	The students solve in pair the equations which are projected on the interactive whiteboard worksheet Unit 4 Lesson 5 activity 3	Skills  L S R W  Key vocabulary The same as in the previous lesson  Communicative structures	□ Whole class □ Group work ■ Pair work □ Individual work	• Unit number 4 Lesson 5.docx Interactive whiteboard Exercise book Worksheet Unit 4 Lesson 5 activity 3	Peer- assessment: The students check in pair if they are able to solve this kind of equation and check the found solutions.

4	20 minutes	Being able to solve homogeneous equations of second degree, even when there is a known term in the equation.	A student dictates an equation to another student, who is in charge of writing on the blackboard. The second student solves the equation. The other students are requested to solve it individually and to check the procedure and the result at the end Worksheet Unit 4 Lesson 5 activity 4	L S R W  Key vocabulary The same as in the previous activities  Communicative structures Explain the steps you are doing to solve this equation	■ Whole class □ Group work □ Pair work ■ Individual work	• Unit number 4 Lesson 5.docx  Exercise book Blackboard Worksheet Unit 4 Lesson 5 activity 4	Ongoing assessment The teacher checks the correctness of the procedure and the solutions

Unit number 4 Lesson number 6 Title Exercises

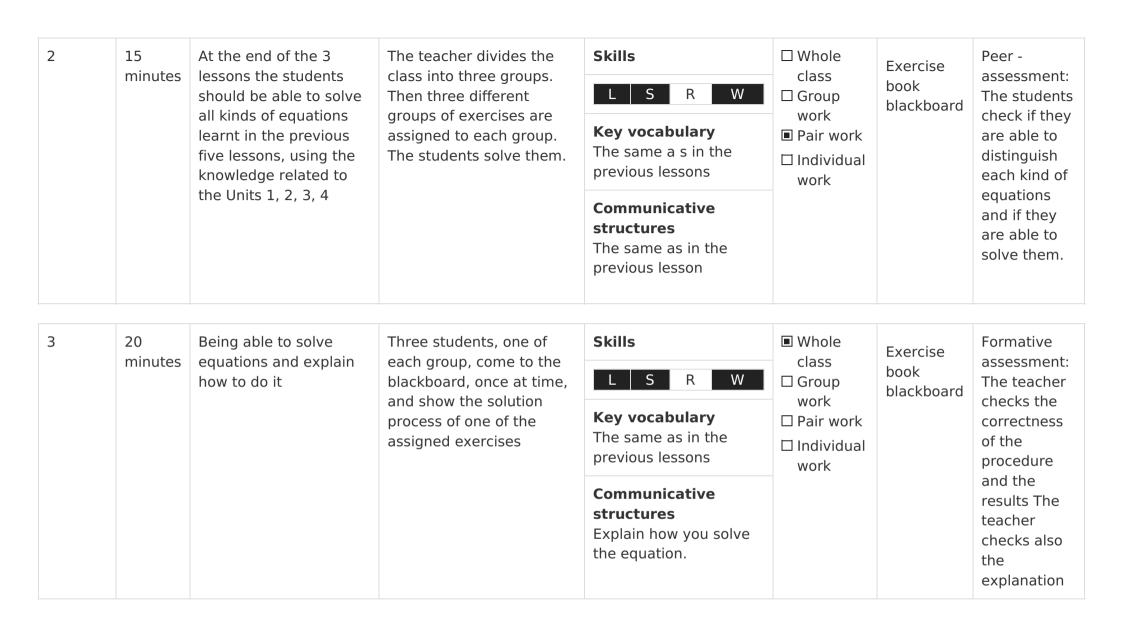
Activity	Timing	Learning Outcomes	<b>Activity Procedure</b>	Language	Interaction	Materials	Assessment
1	5 minutes	Resuming the different kinds of equations	The teacher explains shortly the purpose of the lesson and recalls all the kinds of equations learnt so far.	Skills  L S R W  Key vocabulary The same as in the previous lessons	■ Whole class □ Group work □ Pair work □ Individual work	Blackboard	
				Communicative structures The same as in the previous lessons			



4	10 minutes	The same as in the previous activity	A student dictates an equation to another	Skills	■ Whole class	Exercise	Formative assessment
	student who is writing on the blackboard; the equation is chosen from the book. The teacher	L S R W  Key vocabulary The same as in the	☐ Group work ☐ Pair work ☐ Individual	book Blackboard	The teacher checks the correctness of the		
			provides explanations only if they are requested.	Communicative structures Solve the equation and explain all the steps you made for solving this equation	□ Individual work		procedure and the results The teacher checks also the explanation

Unit number4Lesson number7TitleExercises

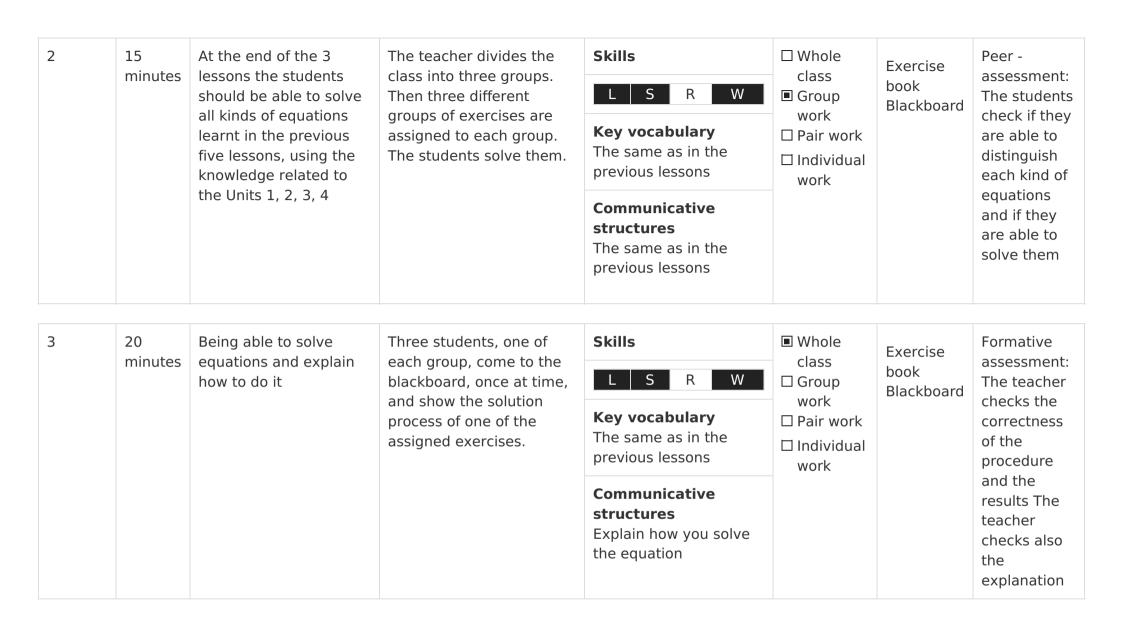
Activity	Timing	Learning Outcomes	<b>Activity Procedure</b>	Language	Interaction	Materials	Assessment
1	5 minutes	Resuming the different kinds of equations	The teacher underlines shortly the purpose of the lesson and recalls all the kinds of equations learnt so far.	Skills  L S R W  Key vocabulary The same as in the previous lessons	■ Whole class □ Group work □ Pair work □ Individual work	Blackboard	
				Communicative structures The same as in the previous lessons			



4	10 minutes	The same as in the previous activity	A student dictates an equation to another student, who is writing on the blackboard, the equation is chosen from the book. The teacher provides explanations only if they are requested.	Skills  L S R W  Key vocabulary The same as in the previous lessons	Class E	Blackboard Exercise book	Formative assessment The teacher checks the correctness of the procedure and the results The teacher checks also the explanation
				Communicative structures Solve the equation and explain all the steps you made for solving this equation			

Unit number4Lesson number8TitleExercises

Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1 5 m	5 minutes	Resuming the different kinds of equations	The teacher explains shortly the purpose of the lesson and recalls all the kinds of equations learnt so far.	Skills  L S R W  Key vocabulary The same as in the previous lesson	■ Whole class Group work Pair work Individual work	Blackboard	
				Communicative structures The same as in the previous lesson			



only if they are requested  Communicative structures Solve the equation and	4	10 minutes	student, who is writing the blackboard; the equation is chosen from the book. The teacher provides explanations	equation to another student, who is writing on the blackboard; the equation is chosen from the book. The teacher	L S R W  Key vocabulary The same as in the previous lessons	work □ Pair work □ Individual		Formative assessment The teacher checks the correctness of the
you made in solving this equation				·	Communicative structures Solve the equation and explain all the steps you made in solving		procedure and the results The teacher checks also the explanation	

 Unit number
 4
 Lesson number
 9
 Title
 Classwork

Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	50 Evaluation Written test: The teacher hands the photocopy with the exercises that the students	Skills  L S R W	□ Whole class □ Group	• MATHS CLASSWORK 2.docx	Summative assessment: Teacher		
		outcomes	have to solve.	<b>Key vocabulary</b> The same as in the previous lessons	work  Pair work  Individual work	• assessment grid.docx	checks if students are able to solve all the kinds of the equations
				Communicative structures The same as in the previous lessons			