

Measuring angles

School	<input checked="" type="radio"/> Primary <input type="radio"/> Middle <input type="radio"/> High				
Year / Class	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input checked="" type="radio"/> 4	<input type="radio"/> 5
Subject : Geometry			Topic: “Measure angles and segments and reduce in scale 1:10”		
CLIL language	English				

Teacher / Teaching team profile	Teacher's role:	<input checked="" type="checkbox"/> Main Teacher <input type="checkbox"/> Co-teacher <input type="checkbox"/> Other: _____	Subject taught: Geometry
	Teacher's role:	<input type="checkbox"/> Main Teacher <input type="checkbox"/> Co-teacher <input type="checkbox"/> Other: _____	Subject taught: _____

Student group profile (general)	CEFR Level:	<input checked="" type="checkbox"/> A1 <input type="checkbox"/> B1	<input type="checkbox"/> A2 <input type="checkbox"/> B2	<input type="checkbox"/> C1 <input type="checkbox"/> C2
	<input checked="" type="checkbox"/> Experiences of CLIL (one year) <input type="checkbox"/> English mother tongue <input type="checkbox"/> Other mother tongue	<input type="checkbox"/> Migrant background <input type="checkbox"/> Special Educational Needs:____ <input checked="" type="checkbox"/> Other: 12 pupils		

Timetable fit	<input type="checkbox"/> Module <input checked="" type="checkbox"/> Lesson (2 hours)	Previous lessons: differences and classifications of angles. Creations of a Lap Book with the types of angles and the use of a protractor.
		Future lessons: geo-reference the course map created in the previous lesson using a compass and cardinal points; explain the activity results to the other group of work and introduce inches (culture).

Resources & tools	Rulers (1m), paper tape, worksheets, protractors, pencils, felt-tips and A3 sheets of squared paper, angles flashcards and visual organizer: tables.
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Students' prior knowledge, skills, competencies	Subject	Language
	Geometry: types of angles, segments and lines, equivalences and shapes vocabulary; Maths: operations, use of scales; Geography: use of scales to create a map; cardinal points and compass.	Interacting orally in a group: share ideas and find solutions to simple task. Vocabulary: words belonging to the semantic field of geometric shapes and types of angles. Numbers. Directions and prepositions of place. Structures: “What is it? It is a____”; “This course /path is composed by”; “The angle measures”; “I can see”

Learning Outcomes expected for this lesson	Identify a path with the segments and angles; Understand the differences between symbols that are used to identify angles (A) and segments (AB); Correctly measure angles and segments; Classify the different types of angles; Understand and use correctly the expressions: <i>more than</i> , <i>less than</i> and <i>equal to</i> ; Reduce the path in scale 1:10 using equivalences and think about the operations; Identify other angles on the path without teacher's “help”;
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	Understand that in the UK exists another system to measure the length (linear measurement: inches).
Methodology	<i>Scaffolding (worksheet and visual organisers); TPR; Hands-on activities; Cooperative learning.</i>

Activity	Activity aims	Activity Procedure	Language	Interaction	Materials (please cite all sources)	Timing	Assessment
1	Activate already acquired knowledge and recall information (brainstorming and warm up)	<p>Before starting the lesson, the teacher prepares on the floor a path composed by segments and different types of angles.</p> <p>SS: sit down around the path and look at the path. T: invites students to observe the path and find segments and angles. SS: answer the questions and try to identify the path parts. T: encourages students to talk and give them positive feedback.</p>	<p>T: <i>“What is it?; look at the path and show witch parts compose it; How many segments? How many angles?”</i></p> <p>SS: answer. Look at path, stand up and indicate the parts on the real path (on the floor).</p> <p>T: recall and name the angles; show the flashcards and repeat the name of the angles. <i>“This is a angle. It measures degrees.”</i></p>	Whole class	<p>Paper tape to prepare the path and felt-tips to write the segment letters and angle letters. <i>(see Attachment)</i></p> <p>Angles flashcards to recall the pre-knowledge about angles.</p>	10'	Observation of students: participation and ability to respect speaking turns

2	<p>Knowledge: select tools and measure the segments</p>	<p>T: divides the classroom in three homogeneous groups of four; provides each group with a tools box and invites them to select the necessary tools for the activity;</p> <p>SS: cooperate and select their roles;</p> <p>SS: select the tools for the activity and start to measure the segments; complete the table with the measures.</p>	<p>T: “<i>Can you select the tools for the activity?</i>”</p> <p>SS: cooperate and share ideas: “<i>The first segment measures ____m</i>”.</p>	Group work	<p>Tools box with: protractor, compass, rule, pen, marker, etc.</p> <p>Teacher’s worksheet (<i>see Attachment, exercise 1</i>)</p>	15’	<p>Observation of students: participation and interaction with classmates; selection of the right tools and correct measurement; interaction using the new vocabulary and structures.</p>
3	<p>Knowledge: find angles on the path; measure the angles and classify them using the table</p>	<p>SS: select the right tool to measure the angles and decide the type of angle.</p>	<p>T: “<i>Which tool is necessary to measure the angle?</i>”; “<i>Can you tell me a name of an angle?</i>”</p> <p>SS:” <i>It’s necessary a ____</i>”; “<i>There is the _____ angle.</i>”</p>	Group work	<p>Tools box: protractor</p> <p>Teacher’s worksheet (<i>see Attachment, exercise 2</i>)</p>	20’	<p>Observation of students’ participation and interaction with classmates; use and measurement with the protractor; Checking if students can answer to simple questions.</p>

4	<p>Knowledge: compare angles and use the expressions: <i>more than</i>, <i>less than</i> and <i>equal to</i>.</p>	<p>T: asks to compare the angles and shows students the math symbols flashcards</p> <p>SS: look at the flashcards and compare the angles and complete the sentences on the worksheet;</p> <p>SS: a volunteer for each group reads the sentences while another mate indicates the angles on the path.</p>	<p>T: <i>"This flashcard represents the symbol equal to" etc.</i></p> <p>SS: <i>"Angle A is equal to angle B" etc.</i></p> <p>T: <i>"Can you read the sentences to your classmates?"</i></p> <p><i>"Can you indicate the angles on the path?"</i>;</p>	<p>Group work</p> <p>Whole class</p>	<p>Flashcards</p> <p>Teacher's worksheet (see Attachment, exercise 3)</p>	15'	<p>Formative assessing: comprehension of the task, Use of the new vocabulary and math symbols, interaction and collaboration..</p>
5	<p>Knowledge: reduce the path in scale (1:10).</p>	<p>T: invites students to answer the exercise number 4 on the worksheet, completing the table with the path measurements in cm, and reduce in scale 1:10 for their own map;</p> <p>SS: use equivalences and operations to complete the table.</p>	<p>T: <i>"What operation or procedure is necessary to reduce in scale?"</i></p> <p>SS: <i>"We use equivalence."</i></p>	<p>Whole class</p> <p>Group work</p>	<p>Teacher's worksheet.</p> <p>(see Attachment, exercise 4)</p>	15'	<p>Observing if students are able to use equivalences;</p>
6	<p>Knowledge: reflect on the operations used to reduce in scale (1:10).</p>	<p>SS: think of all the operations used to reduce in scale</p>		<p>Group work</p>	<p>Teacher's worksheet (see Attachment, exercise 4 – part 2)</p>	5'	<p>Observing if students are able to reflect on their own activity.</p>

7	Knowledge: use the data collected to create a map in scale (1:10).	<p>T: invites students to draw the path in scale on a A3 sheet;</p> <p>SS: use the collected data to draw the path and cooperate to understand that only the segments must be reduced and not the angles.</p>	SS: “ <i>the segment AB measure _____cm</i> ” <i>etc..</i>	Group work	Tools box: ruler, protractor, pencil (<i>see Attachment, worksheet</i>)	30’	Observing students’ cooperation to find the right solution for reducing in scale the path. Group formative assessment.
8	Knowledge: find on the map full rotation angles	<p>T: invites students to find full rotation angles on the path and on their own map</p> <p>SS: look at their own map and try to find full rotation angles.</p>	<p>T: “<i>Can you find full rotation angles on the map or path? Can you indicate them?</i>”</p> <p>SS: “ <i>It’s here.</i> ”</p>	Group work	Red pen, worksheet (<i>see Attachment, exercise 5</i>)	15’	Observing if students are able to find angles on the path.