

## ISOMETRIES (Transformation of the plane)

<b>School</b>	<input type="radio"/> Primary <input checked="" type="radio"/> Middle <input type="radio"/> High
<b>Year / Class</b>	<input type="radio"/> 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
<b>Subject :</b>	<b>Topic: Isometry</b>
<b>CLIL language</b>	<b>English</b>

<b>Teacher / Teaching team profile</b>	Teacher's role: <input checked="" type="radio"/> Main Teacher <input type="radio"/> Co-teacher <input type="radio"/> Other: _____	Subject taught: <u>Maths</u>
	Teacher's role: <input type="radio"/> Main Teacher <input checked="" type="radio"/> Co-teacher <input type="radio"/> Other: _____	Subject taught: <u>English</u>
	<input type="radio"/>	

<b>Student group profile (general)</b>	CEFR Level: <input type="radio"/> A1 <input checked="" type="radio"/> A2 <input type="radio"/> C1 <input type="radio"/> B1 <input type="radio"/> B2 <input type="radio"/> C2
	<input type="radio"/> Experiences of CLIL <input type="radio"/> Migrant background <input type="radio"/> English mother tongue <input type="radio"/> Special Educational Needs : <input checked="" type="radio"/> Other mother tongue <input type="radio"/> Other: _____

<b>Timetable fit</b>	<input checked="" type="radio"/> Module <input type="radio"/> Lesson	Previous lessons:
		Future lessons:

<b>Resources &amp; tools</b>	LIM, worksheets prepared by the teacher, congruent figures in "crepla", small mirrors, bilingual dictionary, exercise book, ruler, goniometer.
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	Subject	Language
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<p><b>Students' prior knowledge, skills, competencies</b></p>	<ul style="list-style-type: none"> <li>○ know something about Euclidean geometry (like segment, line,...);</li> <li>○ know something about relations;</li> <li>○ be able to use a ruler, goniometer;</li> <li>○ draw a point in a Cartesian plane;</li> <li>○ find the coordinates of a point in a Cartesian plane.</li> </ul>	<ul style="list-style-type: none"> <li>○ know some vocabulary about Maths and geometry;</li> <li>○ know the use of the present simple;</li> <li>○ be able to construct simple sentences.</li> </ul>
<p><b>Learning Outcomes expected for this lesson</b></p>	<p><b><u>Education objectives:</u></b></p> <ul style="list-style-type: none"> <li>○ recognize and visualize transformations of 2D shapes;</li> <li>○ transformation of 2D shapes by translation, rotation, reflection and combination of them;</li> <li>○ draw the line of symmetry, the reflection;</li> <li>○ explain where you can find symmetry in nature (for example: butterflies, snowflakes ...)</li> </ul> <p><i>At the end of the Module they:</i></p> <ul style="list-style-type: none"> <li>○ know             <ul style="list-style-type: none"> <li>▪ what is a transformation of a 2D shape;</li> <li>▪ how to explain the difference between the different types of transformation.</li> </ul> </li> <li>○ are able to             <ul style="list-style-type: none"> <li>▪ identify transformation in the Cartesian plane;</li> <li>▪ give an example of transformation;</li> <li>▪ hypothesize why nature uses, for example, symmetry;</li> <li>▪ draw the line of symmetry of an object;</li> <li>▪ draw the reflection;</li> <li>▪ use creativity to explain what you observe;</li> <li>▪ describe and put in order the steps to create isometry;</li> <li>▪ classify isometries;</li> <li>▪ decide and justify when isometry is a translation, a rotation or a symmetry.</li> </ul> </li> </ul>	
<p><b>Methodology</b></p>	<p><i>I encourage collaborative work so that learners can provide scaffolding for each other, even if at the end of the lesson I will discuss the topic in plenary. This permits me to understand if there is something not clear, which I can repeat the next lesson.</i></p> <p><i>I prefer laboratory work because in this case the students are actors of their education and can learn a lot from peers.</i></p> <p><i>The language will be BICS (Basic Interpersonal Communication Skills) during the discussion in plenary and CALP (Cognitive Academic Language Proficiency) during the use of flashcards or on some worksheets.</i></p> <p><i>To integrate English and Maths, I always try to use English during my explanation and on the worksheets. The scaffolding I will provide is a bilingual dictionary and code-switching. There are some topics which are important to know also in Italian, or that can be easier in their mother tongue. I also will use, for scaffolding, images or visual examples.</i></p> <p><i>For the assessment, I will use formative assessment at the end of every lesson to make sure that everybody has understood what we have done. As a formative assessment, I give the students some exercises and some questions to answer. I will prefer closed answers (like true or false, multiple choice), or cloze texts in order to understand if the students are able to read and comprehend a scientific text or question in English and also because open questions are difficult at their level of English.</i></p>	

Activity	Activity aims	Activity Procedure	Language aim	Interaction	Materials (please cite all sources)	Timing	Assessment
1	<p>The purpose of this activity is:</p> <ul style="list-style-type: none"> <li>○ to introduce the topic;</li> <li>○ to understand what the students know about Maths in English, in order to activate prior knowledge</li> </ul>	<p>In this activity I will give the students some flashcards (attached 1): one has the definition and the other has the term to define.</p> <p>The students have to go around the classroom to look for the pairs. When the students have found the term and definition they will draw this. At the end we will create a poster with these flashcards.</p>	<p>The language skills which will be developed are:</p> <ul style="list-style-type: none"> <li>○ memorise and remember new vocabulary about maths (like segment, length, square, etc.);</li> <li>○ LOTS (Low Order Thinking Skills).</li> </ul>	<p>There is a first part where the students work in pairs and at the end we read together all the definitions as a correction of the exercise .</p>	<p>Flashcards (created with the site <a href="http://flashcardmachine.com/">http://flashcardmachine.com/</a> and definitions coming from the book "MAT Digit 2", Bonola and Forno) and a poster. For homework the students use this site and these flashcards to do some online games.</p>	<p>The time for this activity is 2 hours divided in:</p> <ul style="list-style-type: none"> <li>○ 1.30 hours think, pair and share for every flashcard;</li> <li>○ 30 minutes for assessment.</li> </ul>	<p>The assessment will be: the teacher reads the definition and the students write the corresponding word.</p>

2	<p>The purpose of this activity is:</p> <ul style="list-style-type: none"> <li>to understand and explain the difference between <b>congruence</b> and <b>similarity</b>.</li> </ul>	<p>In this activity I will divide the students in groups of three and give them a worksheet (congruence) and some shapes of different size. They have to observe the different figures and try to find a definition of congruence and similarity.</p>	<p>The skills which will be developed are:</p> <ul style="list-style-type: none"> <li>understanding of new vocabulary about maths with the use of scaffolding and a bilingual dictionary;</li> <li>use of LOTS and conjecturing definitions with HOTS.</li> </ul>	<p>In this activity the students work in groups of three. At the end we do an assessment in plenary correcting the wrong definitions.</p>	<p>Worksheet "congruence", some figures made by "crepla", a bilingual vocabulary.</p>	<p>The time for this activity is 1 hour.</p>	<p>The assessment will be some oral questions like: "show me two congruent figures" or "show me two similar figures" that students can ask each other or to the class group.</p>
3a	<p>The purpose of this activity is:</p> <ul style="list-style-type: none"> <li>to understand which type of transformation of the plane is a <b>dilation</b>;</li> <li>to explain to the classroom the characteristics of this transformation.</li> </ul>	<p>In this activity I divide the students in groups of three and give them a worksheet (dilation). The students have to complete the worksheet by discussing with the group. At the end the students have to create a map to explain to the other classmates the transformation.</p>	<p>The skills which will be developed are:</p> <ul style="list-style-type: none"> <li>to consolidate the use of the present simple and the formulation of simple sentences about this transformation;</li> <li>to create a mind map using HOTS about the transformation they have studied;</li> <li>to explain to other students the characteristics of this transformation</li> </ul>	<p>In this activity the students work in group of three.</p>	<p>Worksheet "dilation", ruler, dictionary.</p>	<p>The time for this activity is 2 hours.</p>	<p>At the end the teacher collects the maps, reads them and evaluates this project.</p>

<p><b>3b</b></p>	<p><i>The purpose of this activity is:</i></p> <ul style="list-style-type: none"> <li>○ <i>to understand which type of transformation of the plane is a <b>point reflection</b>;</i></li> <li>○ <i>to explain to the classroom the characteristics of this transformation.</i></li> </ul>	<p><i>In this activity I divide the students in groups of three and give them a worksheet (point reflection). The students have to complete the worksheet by discussing with the group. At the end the students have to create a map to explain the transformation to the other classmates.</i></p>	<p><i>The skills which will be developed are:</i></p> <ul style="list-style-type: none"> <li>○ <i>to consolidate the use of the present simple and the formulation of simple sentences about this transformation;</i></li> <li>○ <i>to create a mind map using HOTS about the transformation they have studied;</i></li> <li>○ <i>to explain to other students the characteristics of this transformation</i></li> </ul>	<p><i>In this activity the students work in groups of three.</i></p>	<p><i>Worksheet “point reflection”, ruler, mirror, vocabulary.</i></p>	<p><i>The time for this activity is 2 hours.</i></p>	<p><i>At the end the teacher collects the maps, reads them and evaluates this project.</i></p>
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3c	<p>The purpose of this activity is:</p> <ul style="list-style-type: none"> <li>◦ to understand which type of transformation of the plane is a <b>reflection</b>;</li> <li>◦ to explain to the class the characteristics of this transformation.</li> </ul>	<p>In this activity I divide the students in groups of three and give them a worksheet (reflection). The students have to complete the worksheet by discussing with the group. At the end the students have to create a map to explain the transformation to the other classmates.</p>	<p>The skills which will be developed are:</p> <ul style="list-style-type: none"> <li>◦ to consolidate the use of the present simple and the formulation of simple sentences about this transformation;</li> <li>◦ to create a mind map using HOTS about the transformation they have studied;</li> <li>◦ to explain to other students the characteristics of this transformation</li> </ul>	<p>In this activity the students work in groups of three.</p>	<p>Worksheet "reflection", ruler, mirror, vocabulary.</p>	<p>The time for this activity is 2 hours.</p>	<p>At the end the teacher collects the maps, reads them and evaluates this project.</p>
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<p>3d</p>	<p>The purpose of this activity is:</p> <ul style="list-style-type: none"> <li>◦ to understand which type of transformation of the plane is a <b>translation</b>;</li> <li>◦ to explain to the class the characteristics of this transformation.</li> </ul>	<p>In this activity I divide the students in groups of three and give them a worksheet (translation). The students have to complete the worksheet by discussing with the group. At the end the students have to create a map to explain the transformation to the other classmates.</p>	<p>The skills which will be developed are:</p> <ul style="list-style-type: none"> <li>◦ to consolidate the use of the present simple and the formulation of simple sentences about this transformation;</li> <li>◦ to create a mind map using HOTS about the transformation they have studied;</li> <li>◦ to explain to other students the characteristics of this transformation</li> </ul>	<p>In this activity the students work in groups of three.</p>	<p>Worksheet “translation”, ruler, vocabulary.</p>	<p>The time for this activity is 2 hours.</p>	<p>At the end the teacher collects the maps, reads them and evaluates this project.</p>
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3e	<p>The purpose of this activity is:</p> <ul style="list-style-type: none"> <li>to understand which type of transformation of the plane is a <b>rotation</b>;</li> <li>to explain to the class the characteristics of this transformation.</li> </ul>	<p>In this activity I divide the students in groups of three and give them a worksheet (rotation). The students have to complete the worksheet by discussing with the group. At the end the students have to create a map to explain the transformation to the other classmates.</p>	<p>The skills which will be developed are:</p> <ul style="list-style-type: none"> <li>to consolidate the use of the present simple and the formulation of simple sentences about this transformation;</li> <li>to create a mind map using HOTS about the transformation they have studied;</li> <li>to explain to other students the characteristics of this transformation</li> </ul>	<p>In this activity the students work in groups of three.</p>	<p>Worksheet “dilation”, ruler, goniometer, vocabulary.</p>	<p>The time for this activity is 2 hours.</p>	<p>At the end the teacher collects the maps, reads them and evaluates this project.</p>
4	<p>The purpose of this activity is:</p> <ul style="list-style-type: none"> <li>to explain the transformation studied before;</li> <li>to understand the different transformations of the plane</li> </ul>	<p>Every group explains to the other classmates what has been learnt about the transformation it had. The other students have to listen to the group and to copy the map.</p>	<p>The skills which will be developed are:</p> <ul style="list-style-type: none"> <li>to consolidate the use of the simple present tense;</li> <li>to consolidate the formulation of simple sentences;</li> <li>to explain HOTS;</li> <li>to take notes copying HOTS.</li> </ul>	<p>In this activity we work and discuss in plenary.</p>	<p>Maps created by the students (and corrected by the teacher).</p>	<p>The time for this activity is 2 hours.</p>	<p>At the end the teacher asks some oral questions to the students to check if they have understood the information.</p>

5	<p>The purpose of this activity is:</p> <ul style="list-style-type: none"> <li>to play with transformations.</li> </ul>	<p>The students do these games using the transformation they have studied in the previous lessons.</p>		<p>In this activity every student works alone.</p>	<p>Worksheets coming from <a href="https://www.tes.com/teaching-resource/translation-rotation-reflection-enlargement-task-6192919">https://www.tes.com/teaching-resource/translation-rotation-reflection-enlargement-task-6192919</a></p>	<p>The time for this activity is 1 hour, but the students finish the work at home.</p>	<p>At the end the teacher checks if the image is right or wrong.</p>
6	<p>The purpose of this activity is :</p> <ul style="list-style-type: none"> <li>to give a conclusion to the topic;</li> <li>to check if there is something to clarify.</li> </ul>	<p>The teacher gives the students some exercises about every transformation coming from the book "MAT Digit 2", Bonola and Forno.</p>	<p>The skills which will be developed are:</p> <ul style="list-style-type: none"> <li>to consolidate the formulation of simple sentences;</li> <li>to explain HOTS.</li> </ul>	<p>In this activity the students work in groups of three.</p>	<p>Exercise coming from the book "MAT Digit 2", Bonola and Forno or from their textbook, LIM and Geogebra to explain the exercises.</p>	<p>The time for this activity is 1 hour.</p>	<p>At the end we discuss, in plenary the results of the exercises.</p>
7	<p>The purpose of this activity is:</p> <ul style="list-style-type: none"> <li>to assess what the students have learned during these activities.</li> </ul> <p>Here students can demonstrate the competences developed in cognition, content, language and culture.</p>	<p>The teacher prepares the written assessment sheet and the students do it.</p> <p>The exercises given are multiple choice, true or false, cloze text and some exercises in the Cartesian plane. The language of the assessment is English, even if there are not discursive sentences.</p>	<p>The skills which will be consolidated is the use of language in simple sentences.</p>	<p>In this activity every student works alone.</p>	<p>Worksheet "Assessment".</p>	<p>The time for this activity is 1 hour.</p>	<p>The teacher evaluates the skills in Maths developed and the language skills in English</p>

