**03.2 Framework of the lesson plan**

**Age group/grade:** 13- 17

**Lesson title**: Cross sections of a cube

**School Discipline:** Mathematic

**Key concepts:** Math

**Objectives:**

* Visualize the intersection of planes in space.
* Apply parallelism criteria between lines and planes.
* Identify the cut sections in a cube.
* Solve problems.
* Investigate connections between different geometric contexts.
* Gamification geometric concepts.
* Motivate students for discipline.

**Skills developed:** Students will explore the polygons obtained by planes that intersect the cube, that is, build the section produced by the intersection of the plane with the cube where three points are represented.

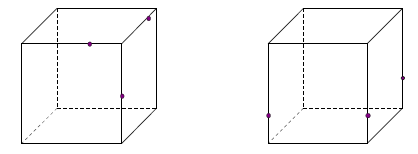
**Materials/Equipment needed:**

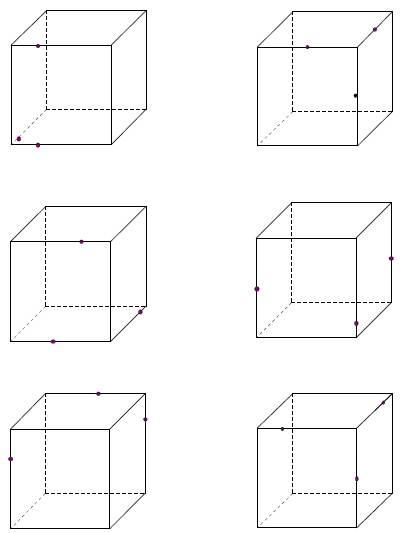
* Computer with video projector;
* VR glasses;
* VR video/link: <https://eloquent-ramanujan-887aa5.netlify.app/architectural-buildings.html>

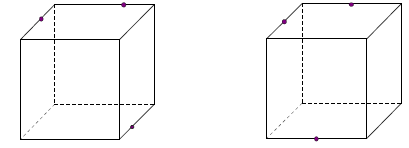
**Lesson plan:**

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| **Stages** | **Description of activity** | **Time** |
| **Preparation before the lesson** | Introducing students to VR glasses if this is their first VR experience.  Proper and safe use of VR glasses.  Potential adverse effects of VR glasses.  Students should be given the choice to opt out of using VR. |  |
| **Introduction** | The teacher presents the cube topic and its section and links to the students' prior knowledge.  The cube is a polyhedron that, despite its simplicity, allows for a great diversity of situations with regard to the sections produced in it by a plane.  Explanation of the notion of section using the cube.  "The section produced in a solid by a plane is the intersection of the plane with that solid, that is, the set of points common to the solid and the plane." | 5 min |
| **Initial Immersive Experience** | * Each student will build a section in a cube from three points given according to annex A. * Identify and classify the polygon defined by the section obtained. * Each group presents its reasoning that will be evaluated by the other groups. | 5 min |
| **Guided Immersive Experience** | The students identify others situations, as for example see:   * <https://www.geogebra.org/m/jaevjs6z> * <https://www.khanacademy.org/math/geometry/hs-geo-solids/hs-geo-2d-vs-3d/v/ways-to-cut-a-cube> * <https://contrib.pbslearningmedia.org/WGBH/conv20/mgbh-int-xsection/index.html> | 15 min |
| **Follow up** | Students, in groups, identify the cubes that can generate some geometric figures that exist in the classroom.  All groups share the results. | 15 min |
| **Formative Assessment** | Teacher collects the students’ responses and makes corrections if needed. | 5 min |

Annex A



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