Didactical Document Theme-Based Trail on Geometry (grades 7-9)

French curriculum

Trail Codes:

In a city/a village :

576947 "Geometry in Reyrieux, France"

In a highschool :

287951 "Geometry in the highschool "Raoul Dufy", Lyon, France"

List of the tasks

Geometry in Reyrieux 1. Coordinates of the stadium : 0728795 2. Symmetries of a fence : 3828797 3. Volume of the potting soil : 4928793 4. Spherical coordinates of the bell tower : 4536666 5. Bell tower spatial coordinates : 8936665 6. The shapes for God : 4828787 7. Surface of a conical roof : 5736539 8. Stained glass area : 2328792 9. The symmetries of the rosette : 1637287 10. Volume of a trash bin : 0928794 11. Windows change : 0428796	Geometry in the Highschool Raoul Dufy - Lyon - France 1. The excess volume of the gymnasium : 4639296 2. An ant's trail : 0139306 3. The useful length of the ladder : 3534023 4. The useful length of the ladder (cos) : 3935798 5. The useful length of the ladder (sin) : 6835799 6. The 3rd floor hallway : 2635795 7. The area of the hidden apartment : 2535791

Title	Grade	Main concepts	Students learn	Data to collect	Objects	MCM References
Compute volumes of usual solids or solids made of known ones	7	Volume of a **cuboïd** or a **prism**	. Identify a **cuboïd** in his environment . measure dimensions . compute the **volume of a cuboid** . (unit conversion of volume - if needed)	Height and dimensions of the base area	. potting soil . pillar around the playground	4928793
Compute volumes of usual solids or solids made of known ones	7	Volume of a **cylinder**	. Identify a **cylinder** in his environment . measure dimensions . compute the **volume of a cylinder** . (unit conversion of volume - if needed)	Height and radius of a cylinder	. trash bin	0928794
Compute volumes of usual solids or solids made of known one	8	Volume of a **cone** or a **pyramid**	. Identify a **cone** in his environment . measure dimensions . compute the **volume of a cone** . (unit conversion of volume - if needed)	Height and dimension(s) of the base area of a cone or a pyramid	. Roof of a house/building	4639296
Compute volumes of usual solids or solids made of known one	9	Volume of a **sphere**	. Identify a **sphere** in his environment . measure dimensions . compute the **volume of a sphere** . (unit conversion of volume - if needed)	Radius of a sphere		
Solids	8	Solids identification	Recognize a known solid by its perspective (MCQ)	Recognized shapes	.church	4828787

representations						
Solids representations	8	nets for cuboids, prism or cylinder	. Unfold the net of a known solid . Find the shortest path between two points of the surface of a known solid	sides/radius and height of an extruded solid (cuboid prism or cylinder)	.Pillar .Bench .Flower pot .Small house	0139306
Solids representations	8	nets for cones	.Find the apothem and then angle of the missing sector of the unfold net of a cone . Find the area of the upper surface of a cone	side/radius and height of a cone	. Roof of a tower	5736539
Solids representations	9	planar section of a known solid	Identify the correct planar section for a known solid (MCQ)	dimensions of the solid		
Solids representations	9	view of a known solid	Identify the view for a known solid (MCQ)	dimensions of the solid		
Coordinates	7	Planar coordinates	Find **2D** coordinates for a given frame (origin and axis)	X and Y distances of a point from the origin	. touristic map of a city	0728795
Coordinates	8	Spatial coordinates	Find **3D** coordinates for a given frame (origin and axis)	X, Y and Z distances of a point from the origin	. urban object to identify	8936665
Coordinates	9	Spherical coordinates	Find **spherical** coordinates for a given frame (observation	angles for latitude and/or longitude	. top of a building from a	4536666

			center and meridian plane)		certain point of view	
Unit conversions	see “Compute volumes”					
Scaling	7	distances from a map scale	Use a map scale to compute distances	. scaling factor . distance on the map	. touristic map of a city . emergency exit map in buildings	2635795
Scaling	8	areas and volumes from a map scale	Use a map scale to compute area and/or volumes	. scaling factor . distance**s** on the map	. touristic map of a city . emergency exit map in buildings	2535791
Transformations and their actions on lengths and angles	7	Axial and central symmetry	Find all the symmetries (axial and central) of a shape	. shape to analyse	. metallic guardrail	3828797
Transformations and their actions on lengths and angles	8	Translations	Find an unreachable thing that is translated to a reachable object that can be measured (find something not obvious!)			
Transformations and their actions on lengths and angles	9	Rotations	. Find all the point symmetries of a shape	. shape to analyse	. rosace of a church . polyhedral roof . O windows in highschool	1637287
Transformations and their actions on lengths and angles	9	Homothety	see “Thales Theorem”			

Thales theorem and its reciprocal	8	Thales Theorem	. compute unreachable lengths using **Thales theorem**	. height of an aligned reachable object . distances to both objects		
Pythagoras theorem and its reciprocal + **Trigonometry**	8	Pythagoras theorem	. compute unreachable lengths using **Pythagoras theorem**	. lengths of the two reachable sides of a right triangle	. length of an emergency ladder	3534023
Pythagoras theorem and its reciprocal + **Trigonometry**	8	Cosine	. compute unreachable lengths using cosine	. length of a side of a right triangle . angle between two sides	. length of an emergency ladder	3935798
Pythagoras theorem and its reciprocal + **Trigonometry**	9	Sine and Tangent	. compute unreachable lengths using sine or tangent	. length of a side of a right triangle . angle between two sides	. length of an emergency ladder	6835799