Treasure Hunt - Sample solution

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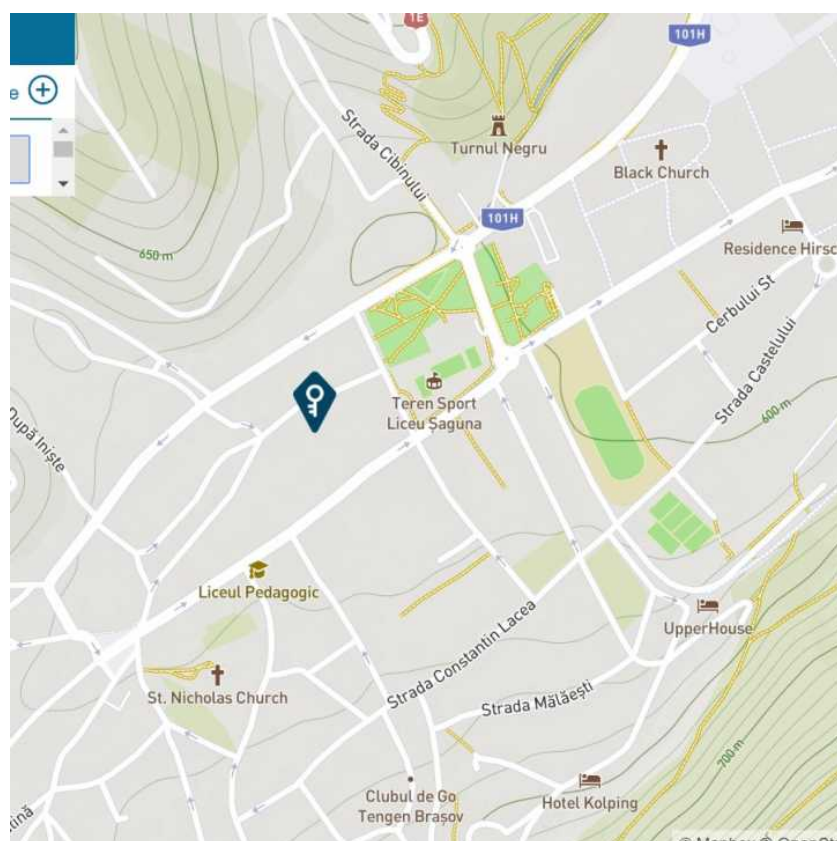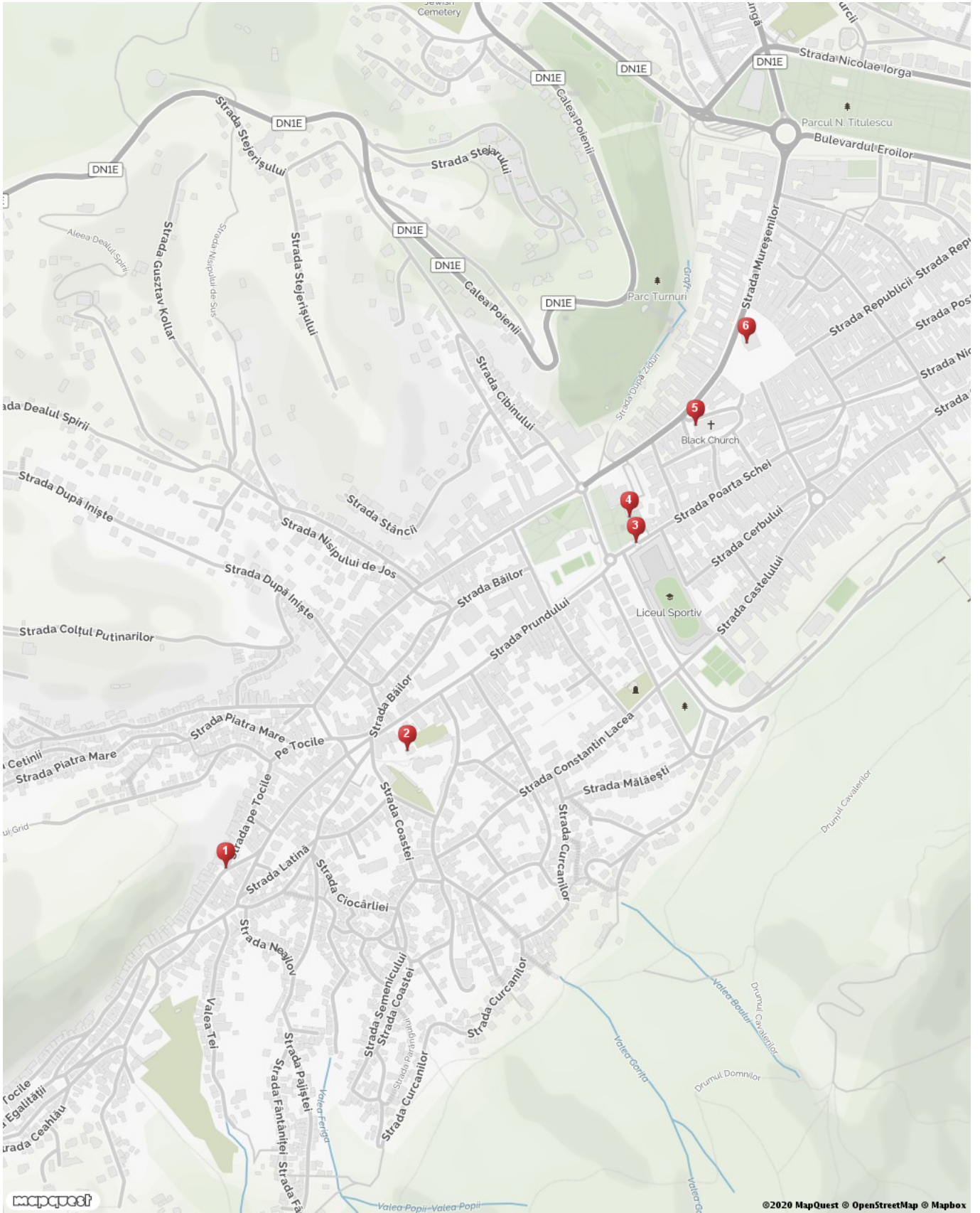

21.06.20

Information about this route

Number of tasks:	6
Expected duration:	~ 01 h 30 min
Length:	~ 1.3 km
Recommended from class:	13
Recommended aids:	•
Tags:	Geometry, Number, Maths,

1. Task: Christianity

Determine the area (in m²) of the roof section of this tourist attraction, knowing that the height of the roof is 0.8 m

Answer:

| 0.6 | 0.7 | 0.9 | 1.0 |

![MCM logo]

Sample solution:

(between 0.7 and 0.9 is "green" and below 0.6 or above 1.0 is "orange ")

Hint 1

You have to determine the dimension of an isosceles triangle

Hint 2

Since its height is given, you only have to determine the width of the roof

Hint 3

The area of a triangle of base b and height h is A=(b·h)/2 (mind the units!)

2. Task: The First Romanian School

The principal of the first Romanian school wants to cover the teachers' staircase with a carpet. Determine the dimensions (in m²) of the carpet.

Answer:

| 5.6 | 5.7 | 5.9 | 6.0 |

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Sample solution:

between 5.7 and 5.9 is "green" and below 5.6 or above 6.0 is "orange"
$(16 \cdot 0.20 + 17 \cdot 0.24) \cdot 0.8 = 7.28 \cdot 0.8 = 5.824$ m²

Hint 1

You have to measure the dimensions of one step (depth, height, width)

Hint 2

You have to count the steps (heights). If you will find n heights then you will have n+1 depths. The sum of the heights and the depths represents the length of the carpet. The width of the stair represents the width of the carpet

Hint 3

The area of a rectangle is A= l·w (mind the units!)

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3. Task: Schei Gate

Calculate the width (in cm) of the main gate using your step.

Answer:

| 300 | 350 | 450 | 500 |

Sample solution:

between 350 and 450 is "green" and below 300 or above 500 is ''orange''

Hint 1

You have to measure your own step.

Hint 2

You have to determine how many steps are between the pillars of the gate. Don't forget the measure of you step. (mind the units!)

Hint 3

You can measure the distance with a roulette and then compare the two results. Did you solve correctly?

4. Task: Catherine's Gate

The shape of the first floor of Catherine's Gate is a square-based prism. Your task is to determine the volume of the body of the first floor (m³), considering that all the bricks of the first floor have the same height.

Answer:

| 340 | 350 | 360 | 370 |

Sample solution:

between 350 and 360 is "green" and below 340 or above 370 is ''orange''

Hint 1

You have to count how many bricks are in the height of the first floor. and to measure the height of a brick. Then you are able to calculate the height (h) of the first floor.

Hint 2

You have to measure side length of the gate and then to calculate the area of the base -B (the base is a square!)

Hint 3

You have to determine the volume: V=B·h (B is the area of the base and h is the height between the bases) Mind the units!

5. Task: Black Church

On the left right side of the Black Church is the statue of Johannes Honterus . Your task is to determine the lateral surface area of the the pedestal of the statue (m²) on which is engraved the inscription with the year of construction.

Answer:

3.5	4.5	5.5	6.5

Sample solution:

between 1.4 and 1.5 is "green" and below 1.35 or above 1.55 is "orange"

Hint 1

Hint 2

You have to measure the length of the eight rectangles and the height of the pedestal.

Hint 3

You have to determine the lateral surface area: S= (perimeter of the base) * h

6. Task: The old town hall

You are a restorer and you have to paint the entrance doors from the Old Town Hall Museum. Determine the amount of paint (l) needed for painting the doors, knowing that 0.2 l of paint are needed for 1 m²

Answer:

1.3	1.4	1.5	1.6

Sample solution:

between 1.4 and 1.5 is "green" and below 1.3 or above 1.6 is "orange"

Hint 1

You have to measure the height and the width of one door in order to determine its area (i.e. the area of a rectangle: A=h·w). The you have to measure the height and the width of one glass in order to determine its area .

Hint 2

Subtraction the glass area from the door area in order to obtain the area to be covered with paint for one side of a door.

Hint 3

Be careful: A door has two sides and you have to paint two doors. Then you have to determine the quantity of the paint. (mind the units!)