

OUTDOOR MATHEMATICS IN THE PRIMARY SCHOOL

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Tasks 1 and 2

FIRST TASK:

Sidewalk observation (in Prague the pavement simulated carpets). You should find more than 10 different decors in Prague, examine them at different angles and get photo documentation. We will share your experience and photo documentation.

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2-



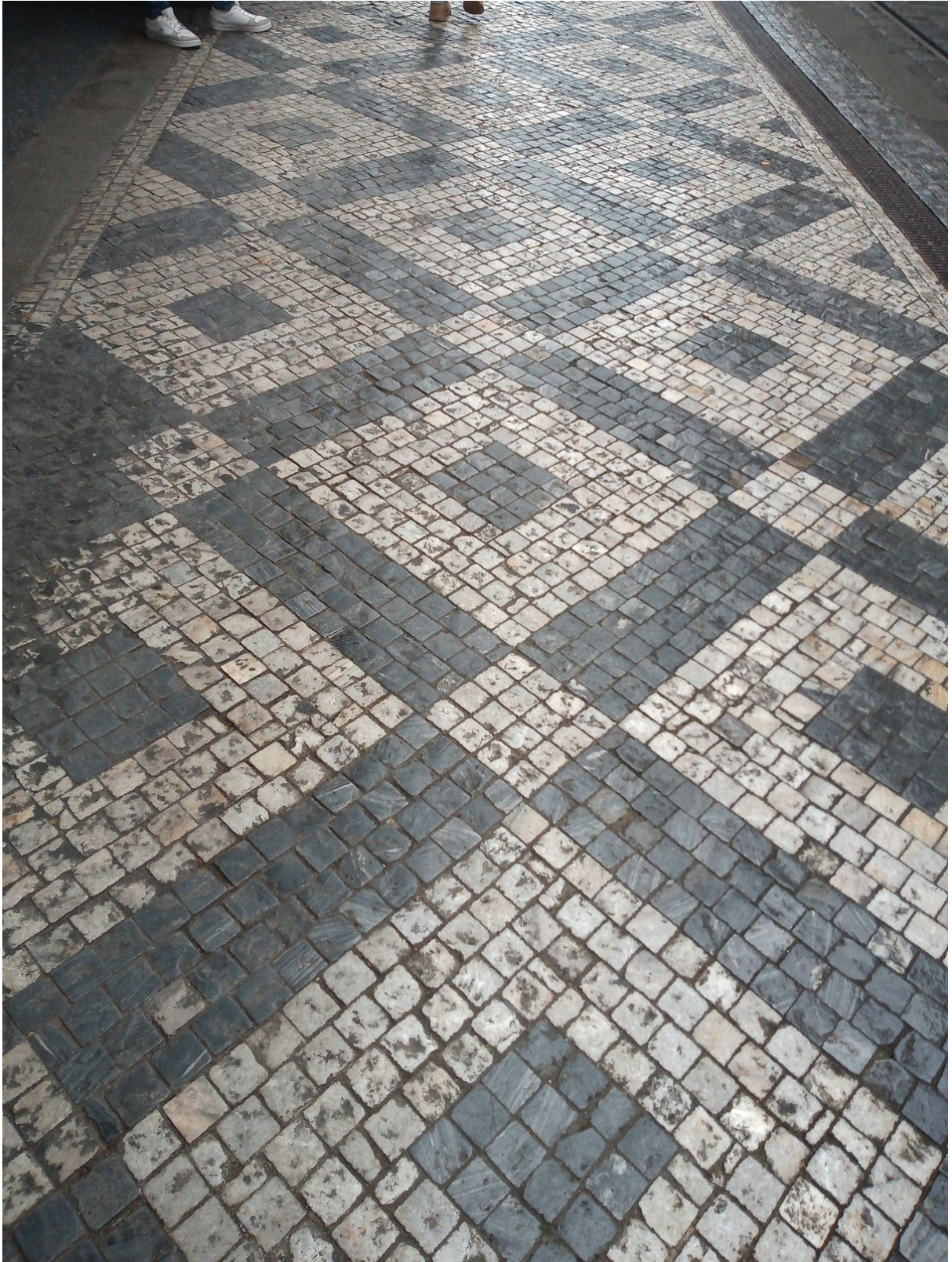
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SECOND TASK:

Observe:

a) Prague bridges, compare their age and length (estimation);

b) the domes of the church spiers and estimate the radii of the three largest.

Always make estimates from three places, write the final opinion (estimate) and paste it into Moodle.

- + *put in the forum experience with fulfilling tasks and ideas on how to use that part of the city (street, house whoe/detail, technical monument, park, art object, in teaching in kindergarten or primary school in relation to school mathematics or in preparing for it.*

BRIDGES

The first challenge I have faced has been estimating the length of the bridges, because it is something I had never done and did not even know where to start.

It occurred to me that I could roughly calculate how many cars could be lined up on each bridge. I placed myself at a point where I could more or less see the length of the bridges from a panoramic view. To get the perfect vision I would have had to stand right in front of the middle of the bridge, on a boat on the river. But, from one shore, I had to take the perspective into account: the cars that I was imagining had to get smaller proportionally.

I started by calculating the length of the Charles Bridge. In this case it was easier, because I could stand on the shore of the island that is more or less in front of the bridge. An average car is 4 meters, and I could imagine about 90 cars on the Charles Bridge. Therefore, I estimated that the bridge was about 360 meters.

Obviously the method I used was not exact at all, but also, I did not take into account that the Charles Bridge reaches a little beyond the river bank. That is, it is longer than the width of the river. And I couldn't see that from my perspective on the island.

To get a more accurate conclusion I measured the length with my own steps, crossing the bridge. My steps will measure about 70 centimeters. I calculated about 300 steps to what I thought was the middle of the bridge. Therefore, the entire bridge would measure about 600 steps. $600 \times 0.7 = 420$. The bridge would measure 420 meters.

Later, I was able to see (via Internet) that the bridge actually measures 561 meters.

About the age of the Charles Bridge, is 663 years old, because it was built between years 1357-1402. And it is Prague's oldest bridge.

On the other side, to estimate the length of Legion Bridge (the bridge that crosses the aforementioned island, I placed myself in the middle of the Jiráskův Bridge, and used the same method (the first one I have explained). Thus, I could imagine about 60 cars. Therefore, I estimated that it was about 240 meters. Later I could see that it is actually 311 meters long.

This bridge was built in 1933, so it is 87 years old. It is by far a lot newer than the bridge to one side, the Charles Bridge.

DOMES

To estimate the radius of the dome of a church, I would have to walk along the "edge" of the dome (below it), following the perimeter along the ground. I would take steps of approximately one meter and I would count. The number of steps I would divide by 6.28, because a circle is $2 \times \text{PI} \times \text{radius}$.

I have not been able to enter the churches to measure the radius, and I couldn't think about another way to estimate the radio of a dome.

USING THE CITY TO LEARN MATHEMATICS

Children need to experience and live with their own eyes to internalize learning. In classrooms there are more and more tangible materials for children to learn mathematics, but it is not yet standardized to use the city or the same school. That is, to use the macro-space as a teaching resource.

This is a shame, because this option, in addition to offering a very rich variety of resources, also has other benefits for children: such as being outdoors (which helps to avoid stress, monotony or boredom) and know and experience their close environment.

I still have a lot to learn about how to use more concrete elements of the city for learning mathematics, and I hope to discover it or start to get in touch with it in this subject.