

THE CONCEPT OF ORIENTATION

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Spatial orientation describes the visualisation of a spatial arrangement in which the observer is part of the situation. Students must be able to use concepts of position, direction and orientation to describe the physical world and to solve problems.

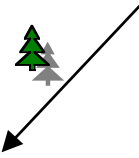
In my work, I examine the concept of orientation, in particular concepts of left, right, clockwise, anticlockwise.

I give two different mathematical definitions of orientation based on axiomatic geometry and elaborate exercises for elementary school pupils following the conception of the definitions.

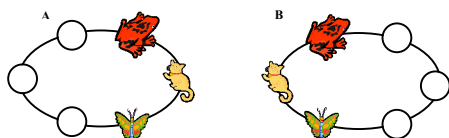
The concept of orientation in Hilbert's book: Foundation of Geometry (1899) is based on the theorem: *Any line in a plane divide it into two parts.*

The concept of orientation in Kerékjártó's book: Foundation of Geometry (Elementary structure of Euclidean geometry) (1937) is based on the concept of permutation of half-lines on a plane with a common start point.

Two examples of the exercises:

1. we  On which side of the street is the tree, if the arrow shows the direction walk on the street?

2. There are two merry-go-rounds in the park next to each other. Before it started we made this photo:



A starts such that the frog is the first. B turns in the same direction. Who will be the first on the B merry-go round, the frog or the butterfly?

I asked three children of different ages (6, 8, 10 years old) to do the exercises. I wanted to check whether my exercises are able to convey the crucial points of the concept of orientation, and to get a first feedback about the idea using axiomatic geometry to construct exercises in teaching of certain problems. I was also interested in what depth different ages are familiar with the concept of orientation.