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Teaching Functions Using a Realistic Mathematics Education Approach: A Theoretical Perspective

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ABSTRACT This paper discusses how the notion of a function can be developed for high school learners through the use of different representations and models; verbal, visual, graphical and symbolic. The realistic mathematics education approach provides the framework that guides the discussion. Using the matchstick problem as an example, multiple-representations of the function concept inherent in it are mathematised. The possible representations of the function are; geometric patterns, independent - dependent variables, ordered pairs, fish diagrams, number sequences (quadratic sequences, arithmetic sequences, geometric sequences), dual bar graphs, graphs on the Cartesian plane and the functional f(x) symbolism. It is argued that multiple representations that start with the informal and every day and then gradually progress to the formal and abstract, help learners to gain insight of the big idea functions in mathematics. The paper provides mathematics educators a platform which facilitates a realistic mathematics education approach to teaching functions which can be extended to other mathematical topics.