

ZMATH 2004f.04883

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Constructing coordinate graphs: representing corresponding ordered values with variation in two-dimensional space.

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Coordinate graphs of time-series data have been significant in the history of statistical graphing and in recent school mathematics curricula. A survey task to construct a graph to represent data about temperature change over time was administered to 133 students in Grades 3, 5, 7, and 9. Four response levels described the degree to which students transformed a table of data into a coordinate graph. Nonstatistical responses did not display the data, showing either the context or a graph form only. Single Aspect responses showed data along a single dimension, either in a table of corresponding values, or a graph of a single variable. Inadequate Coordinate responses showed bivariate data in two-dimensional space but inadequately showed either spatial variation or correspondence of values. Appropriate Coordinate graphs displayed both correspondence and variation of values along ordered axes, either as a bar graph of discrete values or as a line graph of continuous variation. These levels of coordinate graph production were then related to levels of response obtained by the same students on two other survey tasks: one involving speculative data generation from a verbal statement of covariation, and the other involving verbal and numerical graph interpretation from a coordinate scattergraph. Features of graphical representations that may prompt student development at different levels are discussed.

Classification: K42 K43

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