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Summary: Many mathematics teacher educators encounter the challenge of creating or choosing mathematical tasks that evoke important mathematical insights and connections yet remain firmly grounded in school mathematics. This challenge increases substantially when trying to meet the needs of practicing secondary mathematics teachers pursuing graduate work in mathematics. This paper articulates characteristics of mathematical tasks that can help teachers develop their mathematical knowledge grounded in school mathematics by drawing on (a) work with practicing secondary mathematics teachers in a mathematics graduate program and (b) relevant research literature on the professional development of mathematics teachers and profound understanding of fundamental mathematics for teaching.

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Keywords: inservice teacher education; problem posing; high-yield tasks; profound understanding of school mathematics; mathematical habits of mind; graduate program in mathematics for teaching; transformations of functions; finite differences in bivariate data; subject content knowledge
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